To PLATE 3 (Above)

## KEY TO THE SUBGENERA OF *CULEX* AND *LUTZIA* FOURTH-INSTAR LARVAE

Characters: Seta 1-S represented by 3 or more pairs of setae

1. Siphon as long as or shorter than saddle 1. Siphon distinctly longer than saddle, if 2. Pecten extending to apex of siphon shorter, then 2. Pecten not extending to apex of siphon **LUTZIA**<sup>a</sup> CULEX Subgenus Metalutzia 1. Seta 3-P distinctly shorter and weaker 1. Seta 3-P as long or slightly shorter and than setae 1.2-P as strong as setae 1,2-P 2. Siphon without lateral setae 2. Siphon usually with 1-3 lateral setae<sup>b</sup>

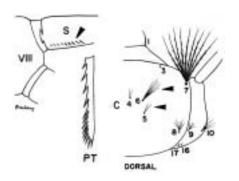
<sup>a</sup>The larvae of *Lutzia* are inseparable and are not included in this key. <sup>b</sup>Except in subgenus *Oculeomyia* and *Cx. gelidus* of subgenus *Culex.* 

To PLATE 2

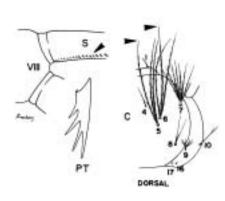
From PLATE 1: Seta 3-P distinctly shorter and weaker than setae 1,2-P; siphon without lateral setae



- Pecten spines long, each with 2 types of denticles, distal denticles closely spaced and proximal denticles widely spaced
- 2. Setae 5,6-C short, seta 5-C about half length of seta 6-C
- 1. Pecten spines short, each with denticles of similar size
- 2. Setae 5,6-C long, seta 5-C about length of seta 6-C

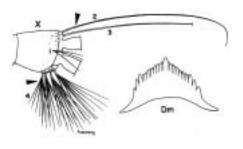


Subgenu*s Eumelanomyia* Mochthogenes Group



- 1. Dorsomentum of head with more than 25 narrow teeth
- 2. Seta 4-X usually with 4 pairs of setae, occasionally 5 or 6
- 3. Seta 2-X single

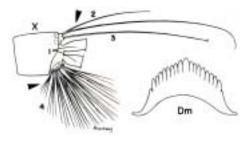
- Dorsomentum of head with fewer than 25 broad teeth
- 2. Seta 4-X with 5 or more pairs of setae
- 3. Seta 2-X single or branched



Subgenus Culiciomyia

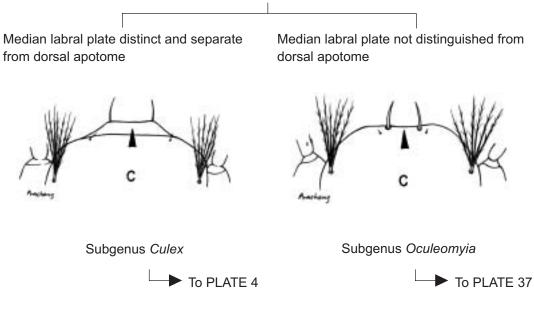
► To PLATE 13

► To PLATE 21



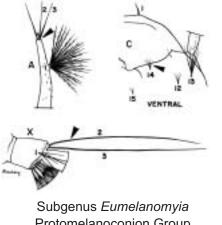
→ To PLATE 3 (Below)

From PLATE 1: Seta 3-P as long or slightly shorter and as strong as setae 1,2-P; siphon usually with 1-3 lateral setae



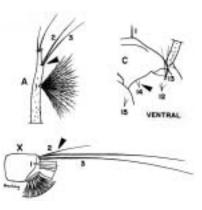
From PLATE 2: Dorsomentum of head with fewer than 25 broad teeth; seta 4-X with 5 or more pairs of setae; seta 2-X single or branched

- 1. Setae 2,3-A placed at apex of antenna
- 2. Seta 2-X single
- 3. Seta 14-C with 4-6 branches
- 1. Setae 2,3-A placed subapically, if at apex then
- 2. Seta 2-X usually branched
- 3. Seta 14-C bifid (occasionally triple or more branched)



Protomelanoconion Group

► To PLATE 21



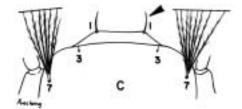
Subgenus Lophoceraomyia

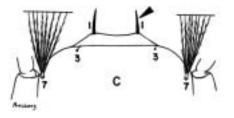


# KEY TO THE SPECIES OF SUBGENUS CULEX FOURTH-INSTAR LARVAE

From PLATE 3: Median labral plate distinct and separate from dorsal apotome

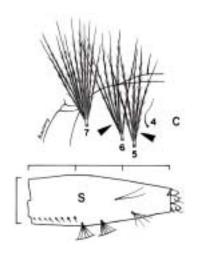
Seta 1-C pale, slender and distally tapered Seta 1-C dark, stout, apex pointed or blunt or filamentous





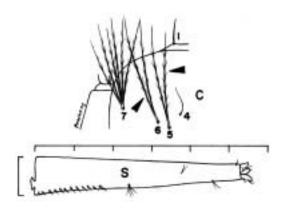


- 1. Setae 5,6-C with 4-6 branches
- 2. Siphon swollen medially, length less than 4 times width at base



Cx. quinquefasciatus

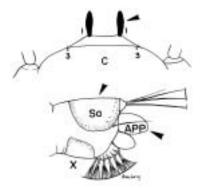
- 1. Setae 5,6-C double
- 2. Siphon gently tapered, length 4-9 times width at base

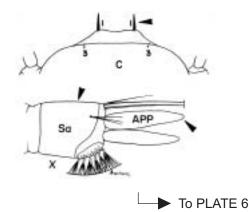


Cx. fuscocephala

## From PLATE 4: Seta 1-C dark, stout, apex pointed or blunt

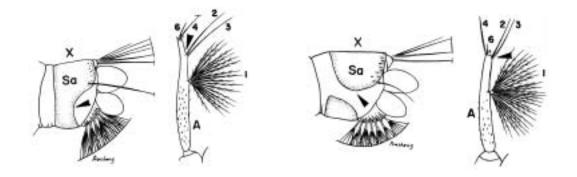
- 1. Seta 1-C flattened, with blunt apex
- 2. Anal papillae shorter than saddle
- 1. Seta 1-C not flattened, tapering to sharp point
- 2. Anal papillae longer than saddle







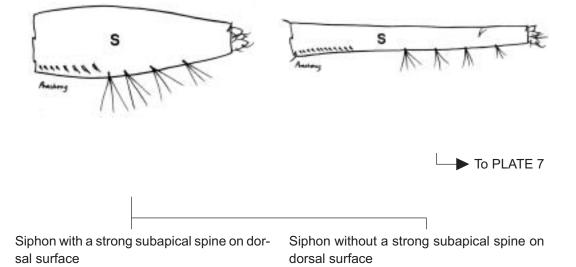
- 1. Saddle complete
- 2. Seta 2,3-A inserted subapically
- 1. Saddle incomplete
- 2. Seta 2,3-A inserted apically

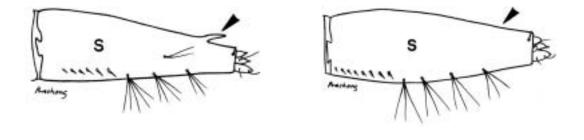


From PLATE 5: Seta 1-C not flattened, tapering to sharp point; anal papillae longer than saddle



Siphon short, fusiform, middle distinctly swollen, length 3-4 times width at base Siphon longer, more or less cylindrical, length at least 5 times width at base

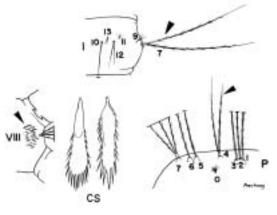




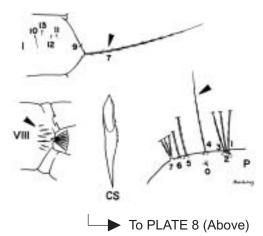
Cx. hutchinsoni

From PLATE 6: Siphon longer, more or less cylindrical, length at least 5 times width at base

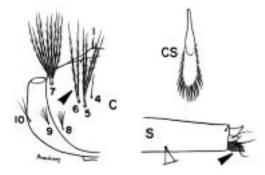
- 1. Seta 7-I double
- 2. Comb scales rounded and evenly fringed or with pointed apex and fringe at sides
- 3. Seta 4-P with 2 or more branches (occasionally single)



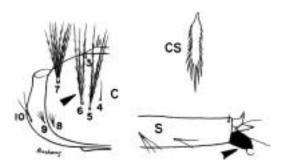
- 1. Seta 7-l single
- 2. Comb scales spinelike with pointed apex, with or without fringe at sides, if rounded at apex then
- 3. Seta 4-P single



- 1. Seta 6-C double (sometimes triple)
- 2. Comb scales evenly fringed at sides and apex
- 3. Posterolateral plate of spiracular apparatus small, dark brown
- 1. Seta 6-C triple (sometimes 4-branched)
- 2. Comb scales spinelike or with pointed apex, fringed at sides
- 3. Posterolateral plate of spiracular apparatus large, blackish

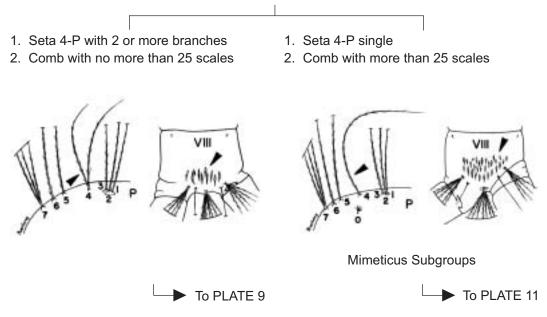


Cx. tritaeniorhynchus



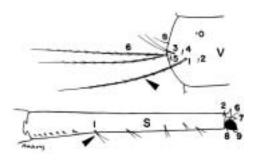


From PLATE 7: Seta 7-I single; comb scales spinelike with pointed apex, with or without fringe at sides, if rounded at apex then; seta 4-P single

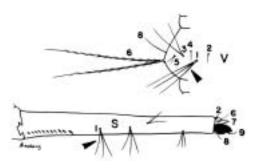


From PLATE 7: Seta 6-C triple (sometimes 4-branched); comb scales spinelike or with pointed apex, fringed at sides; posterolateral plate of spiracular apparatus large, blackish

- 1. Seta 1-IV, V single and strong, as long as seta 6-IV, V
- 1. Seta 1-IV, V with 2 or more branches, shorter than seta 6-IV, V
- 2. Seta 1-S inconspicuous, shorter than diameter of siphon
- 2. Seta 1-S conspicuous, as long as or longer than diameter of siphon

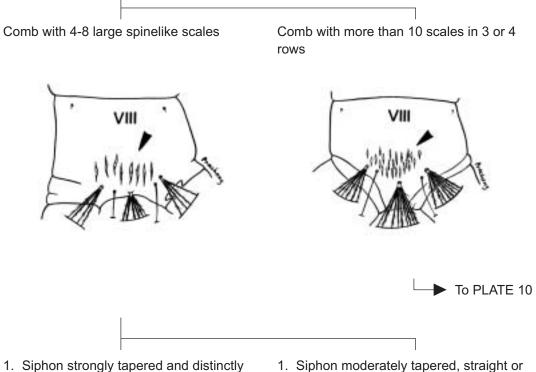


Cx. whitei

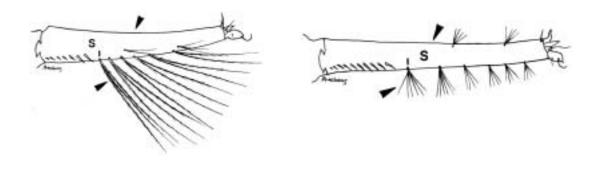


Cx. barraudi and Cx. edwardsi

From PLATE 8: Seta 4-P with 2 or more branches; comb with no more than 25 scales

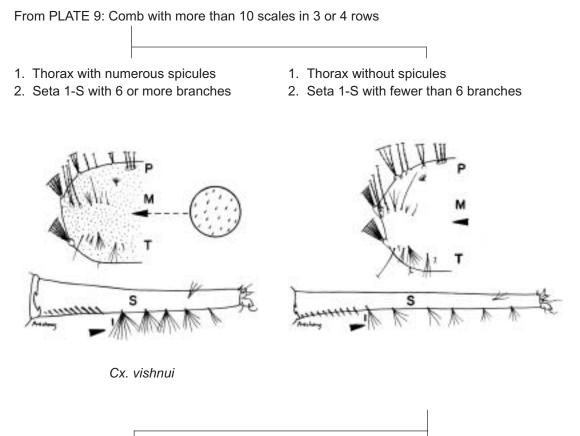


- 1. Siphon strongly tapered and distinctly curved
- Seta 1-S with 2 or 3 branches, each 4 or 5 times longer than diameter of siphon at point of attachment
- Siphon moderately tapered, straight or slightly curved
- 2. Seta 1-S with 4-6 branches no longer than diameter of siphon at point of attachment



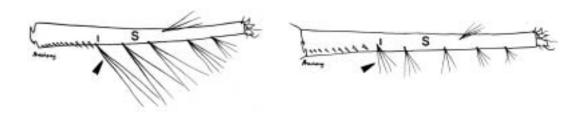
Cx. whitmorei

Cx. pseudovishnui



Siphon strongly tapered distally, proximal pairs of seta 1-S long, 3-5 times as long as diameter of siphon at point of attachment

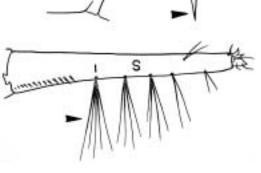
Siphon not strongly tapered distally, proximal pairs of seta 1-S shorter or slightly longer than diameter of siphon at point of attachment

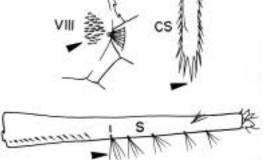


Cx. alienus

Cx. perplexus

From PLATE 8: Seta 4-P single; comb with more than 25 scales Siphon with one or more (usually more) Siphon without spines on distal 0.5 of venstrong spines on distal 0.5 of ventral surface tral surface s Cx. jacksoni 1. Comb scales with strong median apical 1. Comb scales with or without strong spine median apical spine 2. Seta 1-S weak, shorter than or as long 2. Seta 1-S strong, 2-3 times as long as diameter of siphon at point of attachas diameter of siphon at point of ment attachment



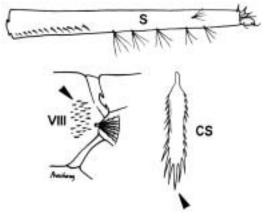


Cx. mimeticus

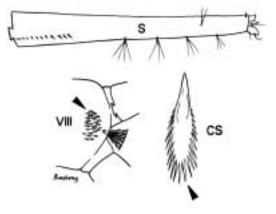
To PLATE 12

From PLATE 11: Comb scales with or without strong median apical spine; seta 1-S weak, shorter than or as long as diameter of siphon at point of attachment

- 1. Siphon long, 7 or more times width at base
- 2. Comb scales with median apical spine slightly longer than lateral spines
- 1. Siphon shorter, thicker and darker, usually less than 7 times width at base
- 2. Comb scales with median apical spine similar to lateral spines



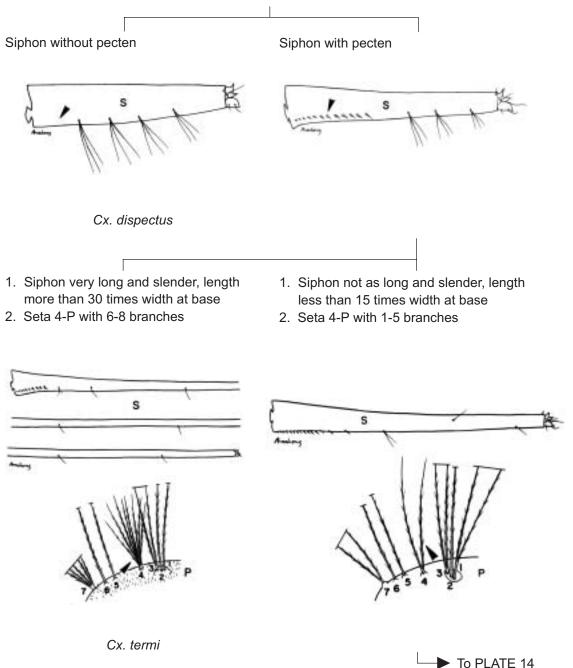
Cx. mimulus



Cx. murrelli

## KEY TO THE SPECIES OF SUBGENUS *CULICIOMYIA* FOURTH-INSTAR LARVAE

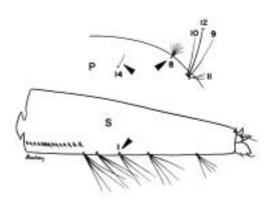
From PLATE 2: Dorsomentum of head with more than 25 narrow teeth; seta 4-X usually with 4 pairs of setae, occasionally 5-6; seta 2-X single



From PLATE 13: Siphon not as long and slender, length less than 15 times width at base; seta 4-P with 1-5 branches

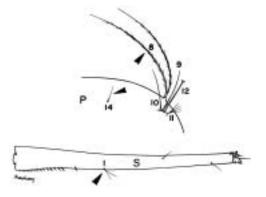


- 1. Seta 8-P very short, no longer than seta 14-P
- 2. Siphon with 5 pairs of seta 1-S



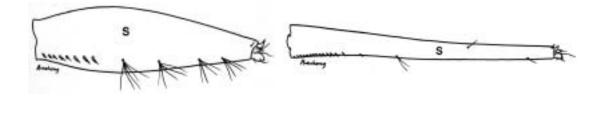
Cx. harrisoni

- 1. Seta 8-P much longer than seta 14-P
- 2. Siphon with 3 or 4 (rarely 5) pairs of seta 1-S



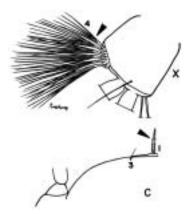
Siphon swollen or distinctly expanded medially

Siphon slender and gently tapering toward apex, sometimes slightly expanded in the middle



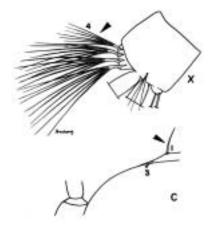
From PLATE 14: Siphon swollen or distinctly expanded medially

- 1. Ventral brush (seta 4-X) with 5 or more pairs of setae
- 2. Seta 1-C flat, dark, spiniform, with lateral barbs or fine spicules

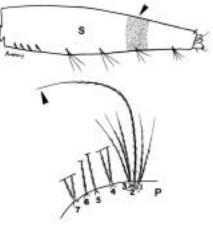


Cx. lampangensis

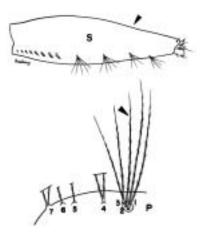
- Ventral brush (seta 4-X) with fewer than 5 pairs of setae
- 2. Seta 1-C pale, flat or filamentous, with or without lateral barbs



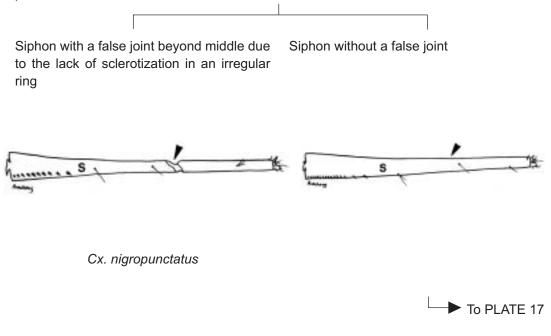
- 1. Siphon with a dark subapical band 1. Siphon without a
- Seta 2-P much longer than setae 1- and 3-P
- 1. Siphon without a dark subapical band
  - 2. Seta 2-P slightly shorter than setae 1and/or 3-P



Cx. barrinus

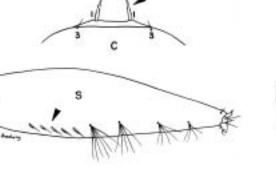


From PLATE 14: Siphon slender and gently tapering toward apex, sometimes slightly expanded in the middle



From PLATE 15: Siphon without a dark subapical band; seta 2-P slightly shorter than setae 1- and/or 3-P

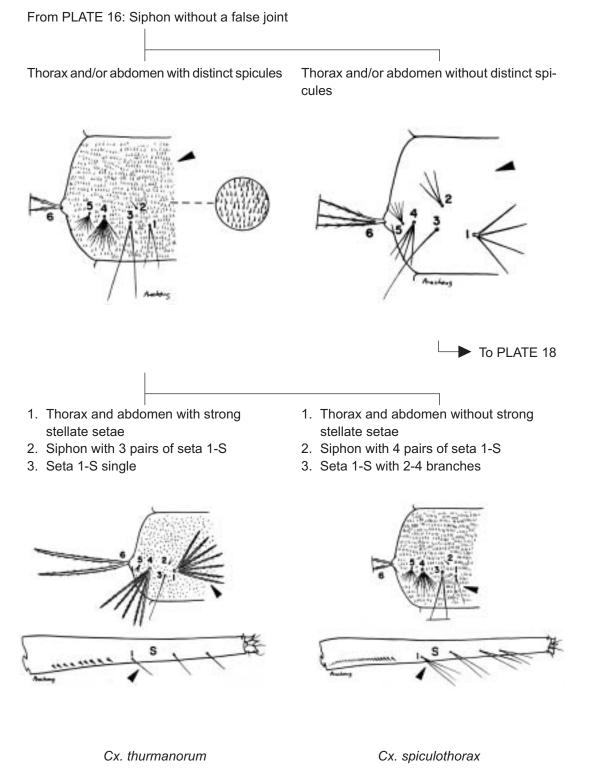
- 1. Seta 1-C robust, lightly pigmented, frequently with lateral spicules
- 1. Seta 1-C fine, filamentous
- 2. Siphon with 6-10 pecten spines
- 2. Siphon with 3-5 pecten spines

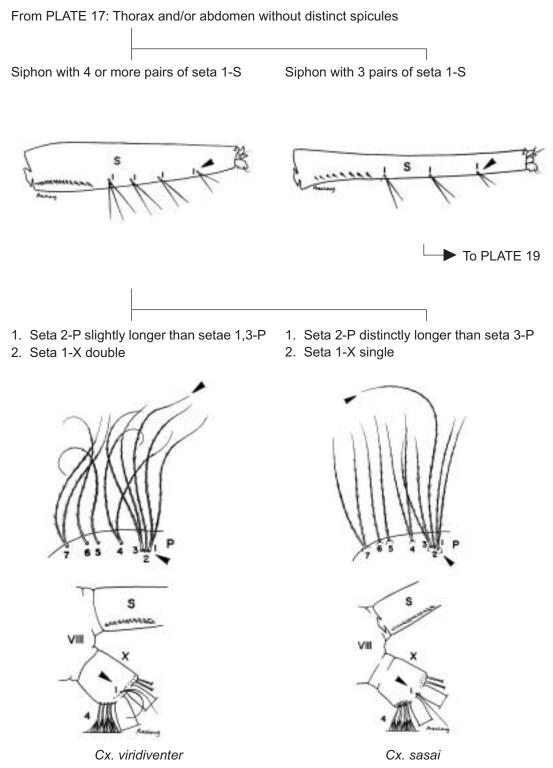


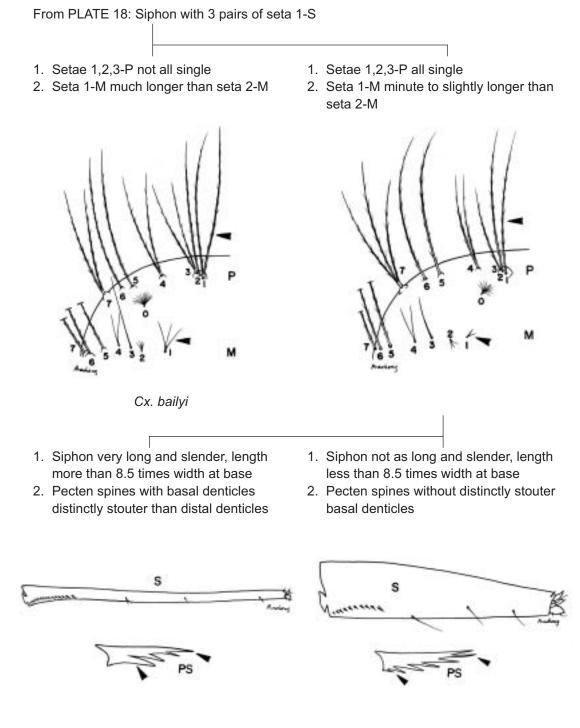
s

Cx. papuensis

Cx. pallidothorax







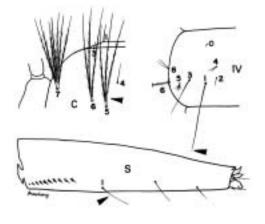
Cx. scanloni

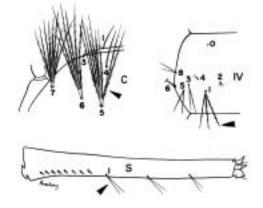
► To PLATE 20

From PLATE 19: Siphon not as long and slender, length less than 8.5 times width at base; pecten spines without distinctly stouter basal denticles

- 1. Seta 5-C with 3 branches (occasionally 4)
- 2. Seta 1-IV, V very long, extending far beyond distal margin of segment
- 3. Seta 1-S single or double

- 1. Seta 5-C usually with 4 or more branches
- 2. Seta 1-IV, V not as long, not extending much beyond distal margin of segment
- 3. Seta 1-S with 2 or 3 branches





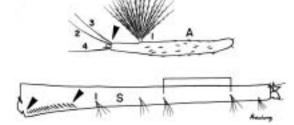
Cx. spathifurca

Cx. fragilis

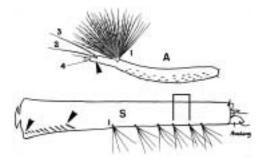
# KEY TO GROUPS, SUBGROUPS, AND SPECIES OF SUBGENUS *EUMELANOMYIA* – FOURTH-INSTAR LARVAE

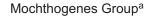
From PLATE 2: Pecten spines long, each with 2 types of denticles, distal denticles closely spaced and proximal denticles widely spaced; setae 5,6-C short, seta 5-C about half length of seta 6-C. **Or** From PLATE 3: Setae 2,3-A placed at apex of antenna; seta 2-X single; seta 14-C with 4-6 branches

- Antennal setae 2,3-A placed apically
  Siphon with seta 1-S short and widely
  Siphon
- spacedPecten with distal spines 2 or 3 times as long as basal spines
- 1. Antennal setae 2,3-A placed subapically
- 2. Siphon with seta 1-S subequal, closely spaced
- 3. Pecten with distal spines 4 or 5 times as long as basal spines



Protomelanoconion Group

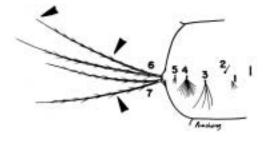




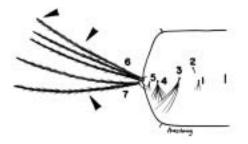
To PLATE 22

Abdominal setae 6-I,II and 7-I pale yellowish and tapered to a fine point

Abdominal setae 6-I,II and 7-I very dark brownish and abruptly tapered to a point



Cx. brevipalpis



Cx. phangngae

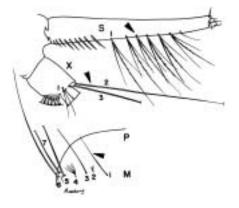
<sup>a</sup>The larvae of *Cx. hinglungensis* and *Cx. otachati* are unknown.

From PLATE 21: Antennal setae 2, 3-A placed subapically; siphon with seta 1-S subequal, closely spaced; pecten with distal spines 4 or 5 times as long as basal spines

- Comb with a few large spinelike scales mixed with several small, evenly fringed scales
- 2. Seta 4-P strong, nearly as long as seta 3-P

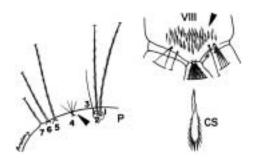
Malayi Subgroup *Cx. malayi* 

- 1. Seta 2-X single
- Siphon with 7 or 8 pairs of seta 1-S, most pairs with one branch much longer than others
- 3. Seta 1-M as long as seta 3-M

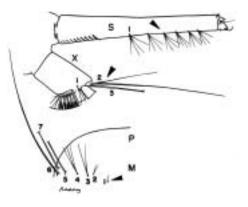


Cx. oresbius

- 1. Comb with small evenly fringed scales only
- 2. Seta 4-P minute, much shorter than seta 3-P

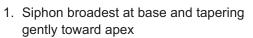


- 1. Seta 2-X usually double or triple
- Siphon with 5 or 6 pairs of seta 1-S, most pairs without a much longer branch
- 3. Seta 1-M shorter than seta 3-M

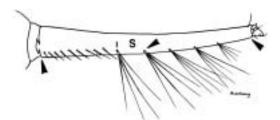


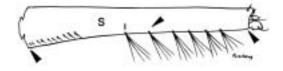
To PLATE 23

From PLATE 22: Seta 2-X usually double or triple; siphon with 5 or 6 pairs of seta 1-S, most pairs without a much longer branch; seta1-M shorter than seta 3-M



- 2. First 2 or 3 pairs of seta 1-S long, length 3 or 4 times as long as width at point of attachment
- 1. Siphon more or less cylindrical, not obviously tapered distally
- 2. Most pairs of seta 1-S short, as long as width at point of attachment



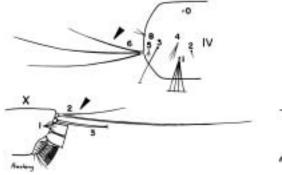


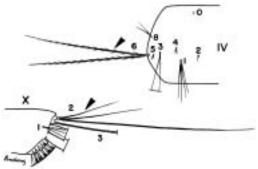
Cx. tenuipalpis



- 1. Seta 6-III-V with 3 or 4 branches, if double then
- 1. Seta 6-III-V double
- 2. Seta 2-X with 3 or 4 branches

2. Seta 2-X double





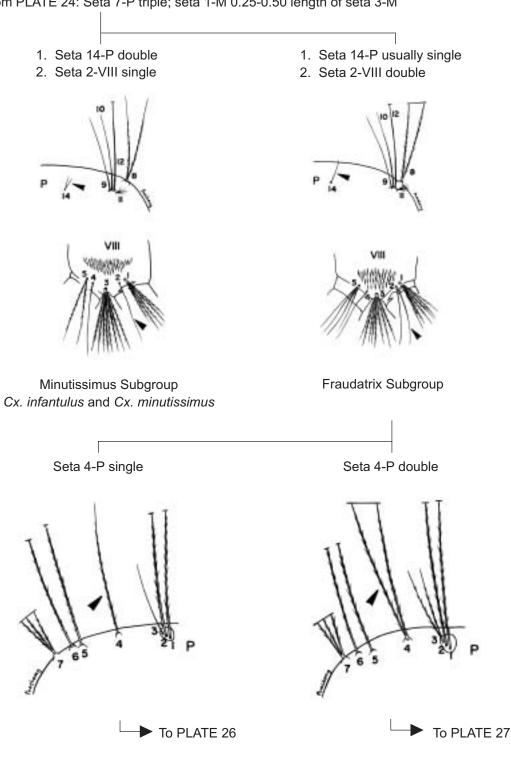
Cx. foliatus

# KEY TO GROUPS AND SPECIES OF SUBGENUS LOPHOCERAOMYIA FOURTH-INSTAR LARVAE<sup>a</sup>

From PLATE 3: Setae 2,3-A placed subapically, if at apex then; seta 2-X usually branched; seta 14-C bifid (occasionally triple or more branched)

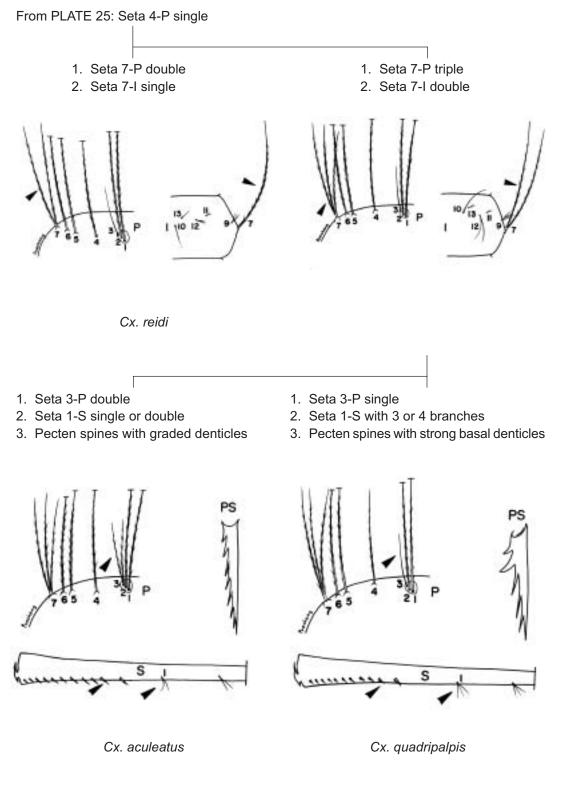
1. Setae 2,3-A placed subapically 1. Setae 2,3-A placed apically 2. Setae 16,17-C absent 2. Setae 16,17-C present Mammilifer Group (in part) Brevipalpis Subgroup To PLATE 36 (Above) 1. Seta 7-P triple (except in *Cx. reidi*) 1. Seta 7-P double 2. Seta 1-M 0.25-0.50 length of seta 3-M 2. Seta 1-M usually as long as seta 3-M (except in Cx. pholeter) Fraudatrix Group Mammilifer Group (in part) and Wilfredi Group To PLATE 25 To PLATE 30

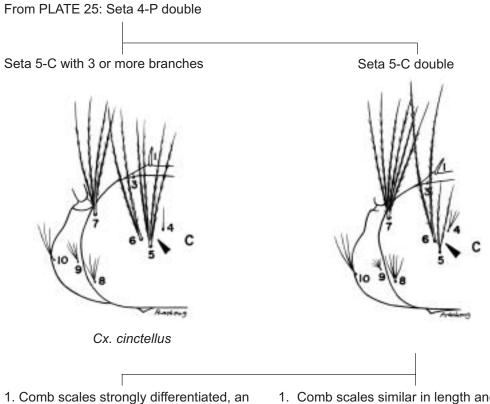
<sup>a</sup>The larvae of *Cx. gracicornis*, *Cx. hirtipalpis*, and *Cx. incomptus* are unknown.



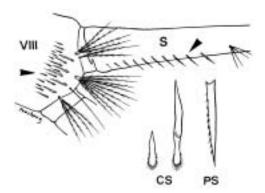
From PLATE 24: Seta 7-P triple; seta 1-M 0.25-0.50 length of seta 3-M

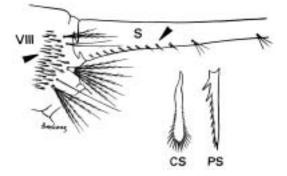
PLATE 26





- anterior row of short scales and a posterior row of remarkably long ones
- 2. Pecten spines simple or with numerous inconspicuous fine denticles
- 1. Comb scales similar in length and size
- 2. Pecten spines with distinct fringe of strong denticles





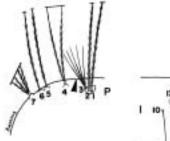
Cx. alphus

From PLATE 27: Comb scales similar in length and size; pecten spines with distinct fringe of strong denticles

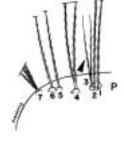


- 1. Seta 3-P with 4 or more branches, usually more
- 2. Seta 7-I single

- 1. Seta 3-P single to 4-branched
- 2. Seta 7-I double



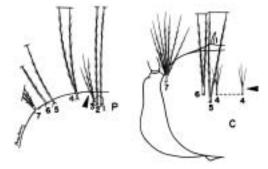
1 10 12 10 7

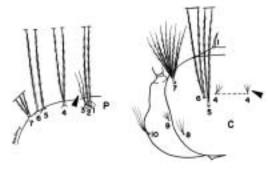




Cx. rubithoracis

- 1. Seta 3-P with 3 or 4 branches
- 2. Seta 4-C longer than distance between bases of the pair
- 1. Seta 3-P single or double
- 2. Seta 4-C at most 0.5 as long as distance between bases of the pair





Cx. whartoni

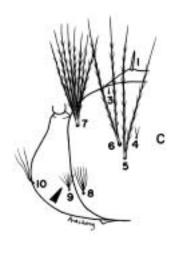
From PLATE 28: Seta 3-P single or double; seta 4-C at most 0.5 as long as distance between bases of the pair

Seta 9-C larger than seta 8-C and placed at a considerable distance cephalad of the latter

HI B C

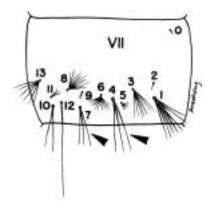
Cx. macdonaldi

Seta 9-C subequal to seta 8-C and placed slightly cephalad of the latter

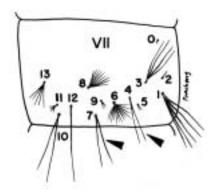


Setae 4- and 7-VII usually triple





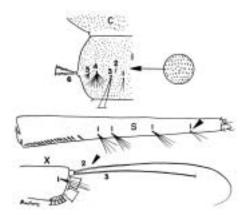
Cx. pairoji



Cx. variatus

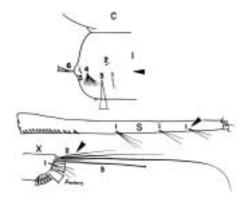
From PLATE 24: Seta 7-P double; seta 1-M usually as long as seta 3-M

- 1. Thorax and abdomen heavily spiculate, spicules large, setiform
- 2. Siphon with 4 pairs of seta 1-S
- 3. Seta 2-X single



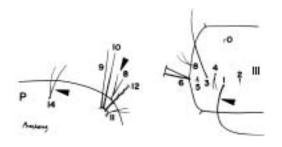
Cx. spiculosus

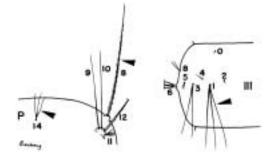
- 1. Thorax and abdomen not spiculate or lightly to moderately spiculate
- 2. Siphon with 3 or 4 pairs of seta 1-S
- 3. Seta 2-X branched<sup>a</sup>



- 1. Seta 8-P usually small, inconspicuous, same size as seta 14-P
- 2. Seta 1-III-VI single

- 1. Seta 8-P strong, conspicuous, much longer than seta 14-P
- 2. Seta 1-III-VI with 2 or more branches





Cx. pholeter

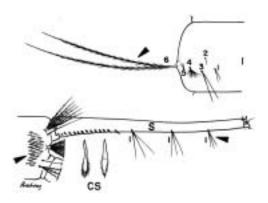
<sup>a</sup>Occasionally single in Cx. eukrines.

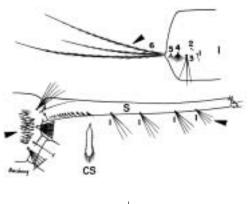
To PLATE 31

PLATE 30

From PLATE 30: Seta 8-P strong, conspicuous, much longer than seta 14-P; seta 1-III-VI with 2 or more branches

- 1. Seta 6-I,II double
- 2. Comb scales with pointed apical fringe, or produced into a strong median spine
- 3. Siphon with 3 pairs of seta 1-S
- 1. Seta 6-I and usually on 6-II triple
- 2. Comb scales with evenly rounded apical fringe of fine spicules
- 3. Siphon with 3 or 4 pairs of seta 1-S

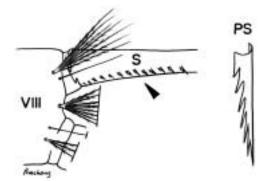


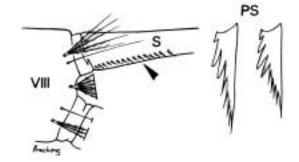


To PLATE 32

Pecten spines with graded denticles

Pecten spines with 1-3 strong basal denticles and 5 or more graded denticles distally



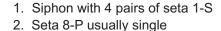


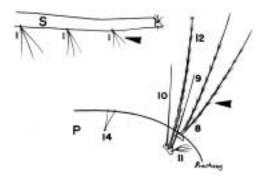
Cx. bicornutus

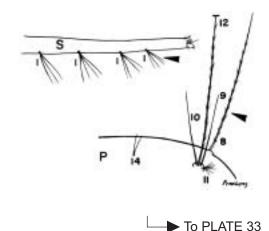
Cx. minor

From PLATE 31: Seta 6-I and usually on 6-II triple; comb scales with evenly rounded apical fringe of fine spicules; siphon with 3 or 4 pairs of seta 1-S

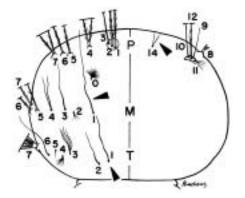
- 1. Siphon with 3 pairs of seta 1-S, if 4 pairs then
- 2. Seta 8-P double



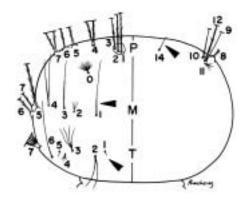




- 1. Seta 14-P double
- 2. Seta 1-M longer than seta 3-M
- 3. Seta 1-T longer than 2-T, same size as 6-T
- 1. Seta 14-P single
- 2. Seta 1-M shorter or as long as seta 3-M
- 3. Seta 1-T distinctly shorter than 2-T



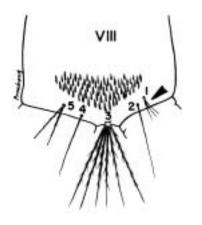
Cx. bengalensis



Cx. mammilifer

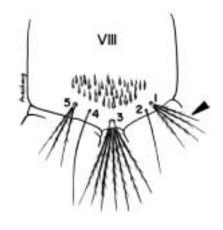
## From PLATE 32: Siphon with 4 pairs of seta 1-S; seta 8-P usually single

Seta 1-VIII weak, short, less than 0.5 length of 5-VIII, double or triple

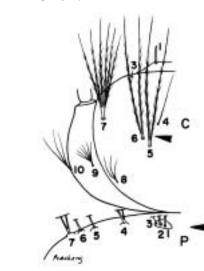


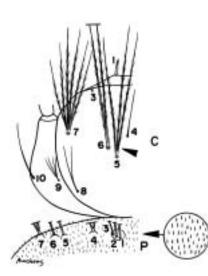
Cx. tuberis

Seta 1-VIII as long as or subequal to 5-VIII, with 4 or 5 branches (occasionally 3)



- 1. Seta 5-C with 3 or 4 branches
- 2. Thorax and abdomen lightly to moderately spiculate
- 1. Seta 5-C double
- 2. Thorax and abdomen without spicules or lightly spiculate

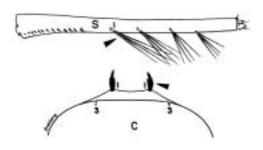




Cx. traubi

From PLATE 33: Seta 5-C double; thorax and abdomen without spicules or lightly spiculate

- 1. Seta 1-S dark and strong, with 4 branches, 4-5 times as long as width at points of attachment
- 2. Seta 1-C usually swollen at middle or distally forked into 2 or 3 apical spines
- Seta 1-S weak, with 2 or 3 branches, 1-3 times as long as width at points of attachment
- 2. Seta 1-C slender and spiniform

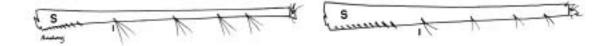


Lunder of the second se

Cx. ganapathi



- 1. Head, siphon and saddle dark brown
- 2. Siphon long, 10-19 times width at base
- 1. Head, siphon and saddle pale yellow
- 2. Siphon short, 7-9 times width at base

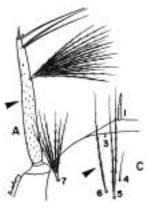


## Cx. demissus

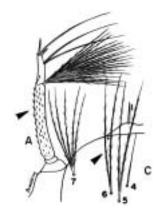


From PLATE 34: Head, siphon and saddle pale yellow; siphon short, 7-9 times width at base

- 1. Seta 6-C single
- 2. Antennal shaft with weak and fine spicules
- 1. Seta 6-C double
- 2. Antennal shaft with stronger spicules

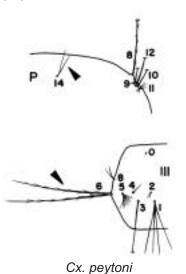


Cx. eukrines



- 1. Seta 14-P double
- 2. Setae 6-III-VI usually double (occasionally 3)
- 1. Seta 14-P single

2. Setae 6-III-VI with 3-5 branches



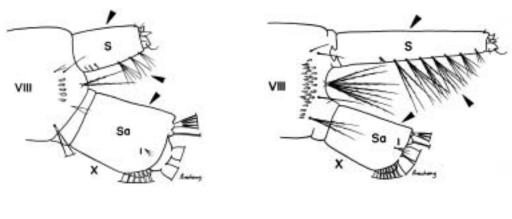




Wilfredi Group

From PLATE 24: Setae 2,3-A placed apically; setae 16,17-C absent

- 1. Siphon shorter than saddle
- 2. Seta 1-S with 3 pairs of weak setae
- 1. Siphon longer than saddle
- 2. Seta 1-S with 6-9 pairs of strong setae



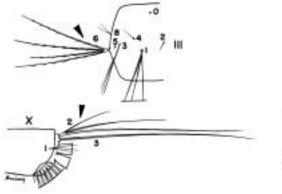
Cx. curtipalpis

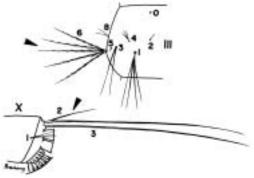


From PLATE 35: Seta 14-P single; setae 6- III-VI with 3-5 branches

- 1. Setae 6-III-VI 3 or 4-branched
- 2. Seta 2-X usually triple

- 1. Setae 6-III-VI 5-branched
- 2. Seta 2-X usually double





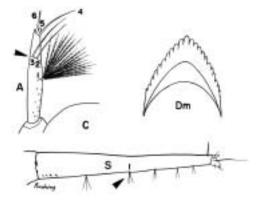
Cx. wilfredi

Cx. pilifemoralis

# KEY TO THE SPECIES OF SUBGENUS OCULEOMYIA FOURTH-INSTAR LARVAE<sup>a</sup>

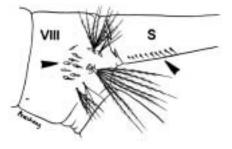
From PLATE 3: Median labral plate not distinguished from dorsal apotome

- 1. Setae 2,3-A inserted between antennal apex and base of seta 1-A
- 2. Dorsomentum with distinct lateral teeth
- 3. Siphon with 5 or 6 pairs of seta 1-S
- 1. Setae 2,3-A inserted at or close to antennal apex
- 2. Dorsomentum minutely serrate, forming a straight-sided triangle
- 3. Siphon with 4 or fewer pairs of seta 1-S



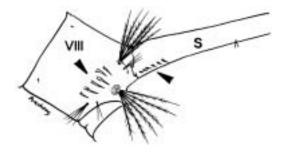
Cx. sinensis

- A C Dm
- 1. Comb usually with 8 or more scales (range 6-13)
- 2. Siphon with 7-10 pecten spines
- 1. Comb usually with 6 or fewer scales (range 4-7)
- 2. Siphon with fewer than 7 pecten spines (range 3-8)



Cx. pseudosinensis

<sup>a</sup>The larva of *Cx. longicornis* is unknown.

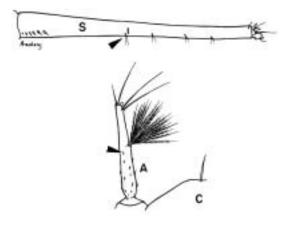


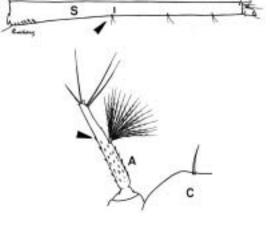


From PLATE 37: Comb usually with 6 or fewer scales; siphon with fewer than 7 pecten spines



- 1. Siphon with 4 pairs of seta 1-S
- 2. Antenna smooth or with some spicules on basal 0.5
- 1. Siphon with 3 pairs of seta 1-S
- 2. Antenna with stronger and more numerous spicules on basal 0.5





Cx. bitaeniorhynchus

Cx. infula and Cx. sp. near infula