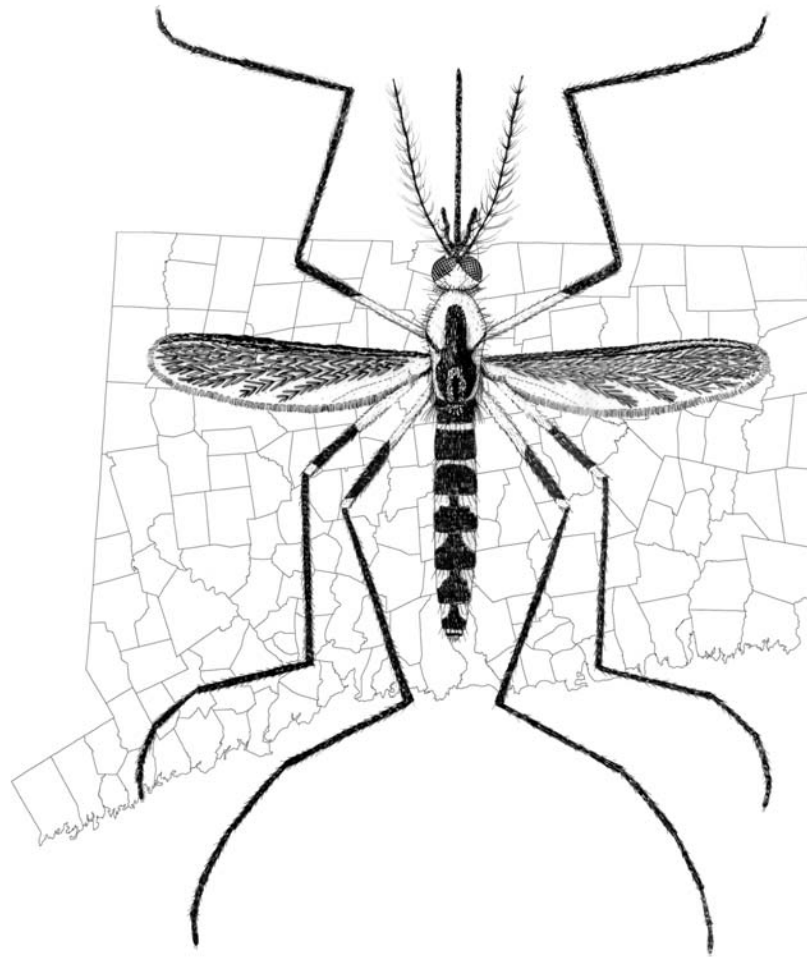


IDENTIFICATION GUIDE TO THE MOSQUITOES OF CONNECTICUT



Theodore G. Andreadis, Michael C. Thomas, & John J. Shepard

Illustrations by Gale Ridge

The Connecticut Agricultural Experiment Station
123 Huntington Street
New Haven, CT 06511



ACKNOWLEDGEMENTS

This identification guide provides fully illustrated diagnostic keys and current information on the biology, distribution, and public health importance of 49 species of mosquitoes known to occur in the state of Connecticut. The morphological terms used throughout the volume follow those proposed by R. E. Harbach and K. L. Knight, *Taxonomist's Glossary of Mosquito Anatomy* (1980). The illustration style and descriptive format used in keys were largely adapted from *Identification and Geographical Distribution of the Mosquitoes of North America, North of Mexico* by R. F. Darsie Jr. and R. A. Ward (1981). Figures used in the larval keys and species descriptions were reprinted with permission from the *Mosquitoes of North America (North of Mexico)* by S. J. Carpenter and W. J. LaCasse, © 1955, Regents of the University of California. Additional references consulted in preparation of this manual included *Mosquitoes of New York, Part I* (1979) and *II* (1987) by R. G. Means, and *Mosquitoes of Indiana* by R. E. Siverly (1972).

We wish to express our appreciation to Dr. Jane E. O'Donnell, Manager of Scientific Collections, University of Connecticut, and Dr. Raymond J. Pupedis, Collections Manager of Entomology, Peabody Museum of Natural History, Yale University, for permission to examine adult female specimens in their insect collections.

Funding for this publication was provided in part by United States Department of Agriculture Cooperative Agreement 58-6615-1-218 and Hatch CONH00768, and Centers for Disease Control and Prevention Laboratory Capacity for Infectious Diseases Cooperative Agreement U50/CCU116806-01-1.

© 2005 The Connecticut Agricultural Experiment Station

Bulletin No. 966

CONTENTS

Acknowledgements	i
Introduction	1
Checklist of Connecticut Mosquitoes	3
County Distribution Records	4
Arboviruses Isolated from Mosquitoes in Connecticut	6
Keys to Fourth Instar Mosquito Larvae	
Larval morphology	7
Key to Genera	9
<i>Aedes</i> and <i>Ochlerotatus</i>	15
<i>Anopheles</i>	27
<i>Culex</i>	30
<i>Culiseta</i>	32
<i>Psorophora</i>	35
Keys to Adult Female Mosquitoes	
Adult morphology	37
Key to Genera	40
<i>Aedes</i> and <i>Ochlerotatus</i>	44
<i>Anopheles</i>	55
<i>Culex</i>	57
<i>Culiseta</i>	59
<i>Psorophora</i>	61
Species Descriptions and Biological Notes	62
Selected Literature References	161

INTRODUCTION

Historical Perspective

The first account of the mosquitoes (family Culicidae) of Connecticut was published in 1904 by W. E. Britton and H. L. Viereck, who provided brief descriptions and diagnostic keys to 21 species represented in four genera: *Aedes* Meigen, *Anopheles* Meigen, *Culex* L. and *Psorophora* Robineau-Desvoidy. In 1945, R. Matheson published a monograph on the *Diptera of Connecticut* in which he included descriptions, keys, and local distribution records for 33 species that included five additional genera: *Culiseta* Felt, *Mansonia* Blanchard, *Orthopodomyia* Theobald, and *Wyeomyia* Theobald. The list of recognized species in the state was increased to 37 with the addition of *Culiseta inornata* (Williston), *Culiseta melanura* (Coquillett), and *Ochlerotatus grossbecki* Dyar & Knab by R. C. Wallis who further reviewed the biology and life histories of the major pest species in a 1960 CAES Bulletin entitled *Mosquitoes in Connecticut*. However in that publication, he erroneously included *Anopheles earlei* Vargas after Carpenter and LaCasse (1955), who incorrectly reported that Matheson (1945) had recorded this species from the state. New state distribution and collection records for *Ochlerotatus thibaulti* Dyar & Knab (Wallis and Whitman 1971); *Toxorhynchites rutilus septentrionalis* (Dyar & Knab) (Main et al. 1976); *Culiseta impatiens* (Walker), *Culiseta minnesotae* Barr, and *Ochlerotatus hendersoni* Cockerell (Darsie and Ward 1981); *Ochlerotatus communis* (De Geer) and *Ochlerotatus punctor* (Kirby) (Andreadis 1986); *Ochlerotatus japonicus* (Theobald) (Andreadis et al. 2001); and *Anopheles barberi* Coquillett, *Culex erraticus* (Dyar & Knab), and *Ochlerotatus diantaeus* (Howard, Dyar & Knab) (Andreadis 2003) were subsequently recognized in ensuing years. With this publication we now report the discovery of *Aedes albopictus* (Skuse) and *Psorophora columbiae* (Dyar & Knab) bringing to 49 the number of currently recognized species distributed among 11 genera in Connecticut. Larval and adult female voucher specimens for most species are held in the collection of The Connecticut Agricultural Experiment Station, New Haven, Connecticut.

Systematics

With the exception noted below, we have followed the classification scheme of the family Culicidae as specified by K. L. Knight and A. Stone, *A Catalog of the Mosquitoes of the World (Diptera: Culicidae)*, Thomas Say Foundation Vol. 6, (1977), K. L. Knight, *Supplement to a Catalog of the Mosquitoes of the World (Diptera: Culicidae)* Thomas Say Foundation Vol. 6: Suppl. (1978), and Darsie and Ward (1981). We have not included references to subfamilies, subgenera or subspecies. The species keys and descriptions have been arranged in alphabetical order for ease of use.

We fully embrace the recent elevation of the subgenus *Ochlerotatus* to generic rank by J. F. Reinert (*J. Am. Mosq. Control Assoc.* 16:175-188, 2000) who divided the subgenera formally placed in *Aedes* into two genera, *Aedes* and *Ochlerotatus*. However, we recognize the difficulty in distinguishing *Aedes* from *Ochlerotatus* at the generic level, as adult females cannot be identified morphologically without dissection of the genitalia. Therefore, in order to facilitate timely identification without dissection as is

necessary for arbovirus surveillance, we have elected to combine these two taxa in the Keys to Species (*Aedes* & *Ochlerotatus*) and have made no attempt to differentiate members of either genus in the Keys to Genera. The three species of *Aedes* known to occur in the state: *Ae. albopictus*, *Aedes cinereus* Meigen and *Aedes vexans* (Meigen), can be accurately and reliably identified in the combined key.

Using the Manual

This identification guide is designed for use in Connecticut and contains standard dichotomous keys for identification of fourth instar larvae and adult females of 49 species of mosquitoes known to occur in the state. With a few exceptions (*An. earlei*, *Ochlerotatus decticus* Howard, Dyar & Knab, *Ochlerotatus implicates* Vockeroth, *Ochlerotatus impiger* (Walker)), these keys may also be used to reliably identify most species encountered in New England. The manual is intended for use by extension entomologists, field biologists, public health officials and professionals involved in mosquito surveillance and control. Familiarity with mosquito morphology is essential and all terms used in the keys are accordingly illustrated and identified at the beginning of the larval (Plates 1, 2) and adult (Plates 3, 4, 5) keys. Most morphological structures can be readily viewed and differentiated with a dissecting microscope with a magnification range of 10 to 100X. Examination of individual comb scales in fourth instar larvae may require use of a compound microscope with magnifications up to 400X. All couplets used in the keys have accompanying illustrations that show the specific character or array of characters mentioned in the text. While the larval keys have been written to reliably identify mature fourth instars, identification of early instar larvae of some species is possible. However, the user is advised that morphological features change as larvae mature (e.g. head hairs, anal saddle), and this may result in misidentification.

Additional features of this manual are the inclusion of (1.) County distribution records largely obtained from examination of over one million field-collected specimens state wide; (2.) Taxonomic details of key morphological characters with accompanying full-page illustrations of adult females and larvae of each species; (3.) Biological notes on the larval habitat, host-feeding preferences, over wintering stage, and larval and adult phenology in Connecticut based on collection data in the state; (4.) Seasonal adult abundance summarized from our statewide arbovirus surveillance program 1999 – 2004; (5.) Summary of arboviruses isolated from each species in Connecticut; and (6.) List of 149 selected literature references to mosquitoes and mosquito-borne diseases in Connecticut arranged by subject area.

CHECKLIST OF CONNECTICUT MOSQUITOES

Genus *Aedes* Meigen

Aedes albopictus (Skuse)
Aedes cinereus Meigen
Aedes vexans (Meigen)

Genus *Anopheles* Meigen

Anopheles barberi Coquillett
Anopheles crucians Wiedemann
Anopheles punctipennis (Say)
Anopheles quadrimaculatus Say
Anopheles walkeri Theobald

Genus *Coquillettidia* Dyar

Coquillettidia perturbans (Walker)

Genus *Culex* Linnaeus

Culex erraticus (Dyar & Knab)
Culex pipiens Linnaeus
Culex restuans Theobald
Culex salinarius Coquillett
Culex territans Walker

Genus *Culiseta* Felt

Culiseta impatiens (Walker)
Culiseta inornata (Williston)
Culiseta melanura (Coquillett)
Culiseta minnesotae Barr
Culiseta morsitans (Theobald)

Genus *Ochlerotatus* Lynch Arribalzaga

Ochlerotatus abserratus (Felt & Young)
Ochlerotatus atropalpus (Coquillett)
Ochlerotatus aurifer (Coquillett)
Ochlerotatus canadensis (Theobald)
Ochlerotatus cantator (Coquillett)
Ochlerotatus communis (De Geer)
Ochlerotatus diantaeus (Howard, Dyar & Knab)
Ochlerotatus dorsalis (Meigen)
Ochlerotatus excrucians (Walker)
Ochlerotatus fitchii (Felt & Young)
Ochlerotatus grossbecki Dyar & Knab
Ochlerotatus hendersoni Cockerell

Ochlerotatus intrudens Dyar
Ochlerotatus japonicus (Theobald)
Ochlerotatus provocans (Walker)
Ochlerotatus punctor (Kirby)
Ochlerotatus sollicitans (Walker)
Ochlerotatus sticticus (Meigen)
Ochlerotatus stimulans (Walker)
Ochlerotatus taeniorhynchus (Wiedemann)
Ochlerotatus thibaulti Dyar & Knab
Ochlerotatus triseriatus (Coquillett)
Ochlerotatus trivittatus (Coquillett)

Genus *Orthopodomyia* Theobald

Orthopodomyia signifera (Coquillett)

Genus *Psorophora* Robineau-Desvoidy

Psorophora ciliata (Fabricius)
Psorophora columbiae (Dyar & Knab)
Psorophora ferox (von Humboldt)

Genus *Toxorhynchites* Theobald

Toxorhynchites rutilus septentrionalis
(Dyar & Knab)

Genus *Uranotaenia* Lynch Arribalzaga

Uranotaenia sapphirina (Osten Sacken)

Genus *Wyeomyia* Theobald

Wyeomyia smithii (Coquillett)

COUNTY DISTRIBUTION RECORDS

<i>Mosquito Species</i>	County							
	Fairfield	Hartford	Litchfield	Middlesex	New Haven	New London	Tolland	Windham
<i>Aedes</i>								
<i>Aedes albopictus</i>	X							
<i>Aedes cinereus</i>	X	X	X	X	X	X	X	X
<i>Aedes vexans</i>	X	X	X	X	X	X	X	X
<i>Anopheles</i>								
<i>Anopheles barberi</i>	X	X	X	X	X	X		X
<i>Anopheles crucians</i>	X	X		X	X	X		X
<i>Anopheles punctipennis</i>	X	X	X	X	X	X	X	X
<i>Anopheles quadrimaculatus</i>	X	X	X	X	X	X	X	X
<i>Anopheles walkeri</i>	X	X	X	X	X	X	X	X
<i>Coquillettidia</i>								
<i>Coquillettidia perturbans</i>	X	X	X	X	X	X	X	X
<i>Culex</i>								
<i>Culex erraticus</i>	X							
<i>Culex pipiens</i>	X	X	X	X	X	X	X	X
<i>Culex restuans</i>	X	X	X	X	X	X	X	X
<i>Culex salinarius</i>	X	X	X	X	X	X	X	X
<i>Culex territans</i>	X	X	X	X	X	X	X	X
<i>Culiseta</i>								
<i>Culiseta impatiens</i>		X						
<i>Culiseta inornata</i>	X	X			X	X		
<i>Culiseta melanura</i>	X	X	X	X	X	X	X	X
<i>Culiseta minnesotae</i>	X	X	X	X	X	X	X	
<i>Culiseta morsitans</i>	X	X	X	X	X	X	X	X
<i>Ochlerotatus</i>								
<i>Ochlerotatus abserratus</i>	X	X	X	X	X	X	X	X
<i>Ochlerotatus atropalpus</i>	X		X	X	X	X	X	X
<i>Ochlerotatus aurifer</i>	X	X	X	X	X	X	X	X
<i>Ochlerotatus canadensis</i>	X	X	X	X	X	X	X	X
<i>Ochlerotatus cantator</i>	X	X	X	X	X	X	X	X
<i>Ochlerotatus communis</i>	X	X	X	X	X	X	X	
<i>Ochlerotatus diantaesus</i>			X					
<i>Ochlerotatus dorsalis</i>					X			
<i>Ochlerotatus excrucians</i>	X	X	X	X	X	X	X	X
<i>Ochlerotatus fitchii</i>	X	X	X	X	X	X	X	

<i>Mosquito Species</i>	County							
	Fairfield	Hartford	Litchfield	Middlesex	New Haven	New London	Tolland	Windham
<i>Ochlerotatus grossbecki</i>	X				X			
<i>Ochlerotatus hendersoni</i>	X	X			X			
<i>Ochlerotatus intrudens</i>	X	X	X		X	X		
<i>Ochlerotatus japonicus</i>	X	X	X	X	X	X	X	X
<i>Ochlerotatus provocans</i>		X	X				X	
<i>Ochlerotatus punctor</i>			X					
<i>Ochlerotatus sollicitans</i>	X	X		X	X	X	X	
<i>Ochlerotatus sticticus</i>	X	X	X	X	X	X	X	X
<i>Ochlerotatus stimulans</i>	X	X	X	X	X	X	X	X
<i>Ochlerotatus taeniorhynchus</i>	X			X	X	X		
<i>Ochlerotatus thibaulti</i>	X	X	X	X	X	X	X	X
<i>Ochlerotatus triseriatus</i>	X	X	X	X	X	X	X	X
<i>Ochlerotatus trivittatus</i>	X	X	X	X	X	X	X	X
<i>Orthopodomyia</i>								
<i>Orthopodomyia signifera</i>	X	X	X	X	X	X		
<i>Psorophora</i>								
<i>Psorophora ciliata</i>		X			X	X		
<i>Psorophora columbiae</i>	X							
<i>Psorophora ferox</i>	X	X	X	X	X	X	X	X
<i>Toxorhynchites</i>								
<i>Toxorhynchites rutilus septentrionalis</i>				X	X	X		
<i>Uranotaenia</i>								
<i>Uranotaenia sapphirina</i>	X	X	X	X	X	X	X	X
<i>Wyeomyia</i>								
<i>Wyeomyia smithii</i>		X	X		X		X	

ARBOVIRUSES ISOLATED FROM MOSQUITOES IN CONNECTICUT

<i>Mosquito Species</i>	Arbovirus*							
	CV	EEE	FL	HJ	JC	TVT	WEE	WN
<i>Aedes</i>								
<i>Aedes cinereus</i>	X	X		X	X			X
<i>Aedes vexans</i>	X	X		X	X			X
<i>Anopheles</i>								
<i>Anopheles punctipennis</i>	X	X		X	X	X		X
<i>Anopheles quadrimaculatus</i>	X	X		X				X
<i>Anopheles walkeri</i>	X	X			X			X
<i>Coquillettidia</i>								
<i>Coquillettidia perturbans</i>	X	X	X	X	X	X		X
<i>Culex</i>								
<i>Culex pipiens</i>		X	X	X				X
<i>Culex restuans</i>		X	X	X	X			X
<i>Culex salinarius</i>		X	X	X				X
<i>Culex territans</i>		X						
<i>Culiseta</i>								
<i>Culiseta melanura</i>	X	X	X	X			X	X
<i>Culiseta morsitans</i>		X		X	X			
<i>Ochlerotatus</i>								
<i>Ochlerotatus abserratus</i>					X			
<i>Ochlerotatus aurifer</i>					X			
<i>Ochlerotatus canadensis</i>	X	X		X	X			X
<i>Ochlerotatus cantator</i>	X	X		X	X			X
<i>Ochlerotatus communis</i>					X			
<i>Ochlerotatus excrucians</i>					X			
<i>Ochlerotatus provocans</i>					X			
<i>Ochlerotatus sollicitans</i>	X	X			X			X
<i>Ochlerotatus sticticus</i>	X	X			X	X		X
<i>Ochlerotatus stimulans</i>				X	X			
<i>Ochlerotatus taeniorhynchus</i>	X	X			X			X
<i>Ochlerotatus triseriatus</i>	X	X		X	X			X
<i>Ochlerotatus trivittatus</i>	X	X			X	X		X
<i>Psorophora</i>								
<i>Psorophora ferox</i>	X	X		X	X	X		X
<i>Uranotaenia</i>								
<i>Uranotaenia sapphirina</i>		X		X				X

* CV-Cache Valley, EEE-Eastern equine encephalitis, FL-Flanders, HJ-Highlands J, JC-Jamestown Canyon, TVT-Trivittatus, WEE-Western equine encephalitis, WN-West Nile

Larval Morphology

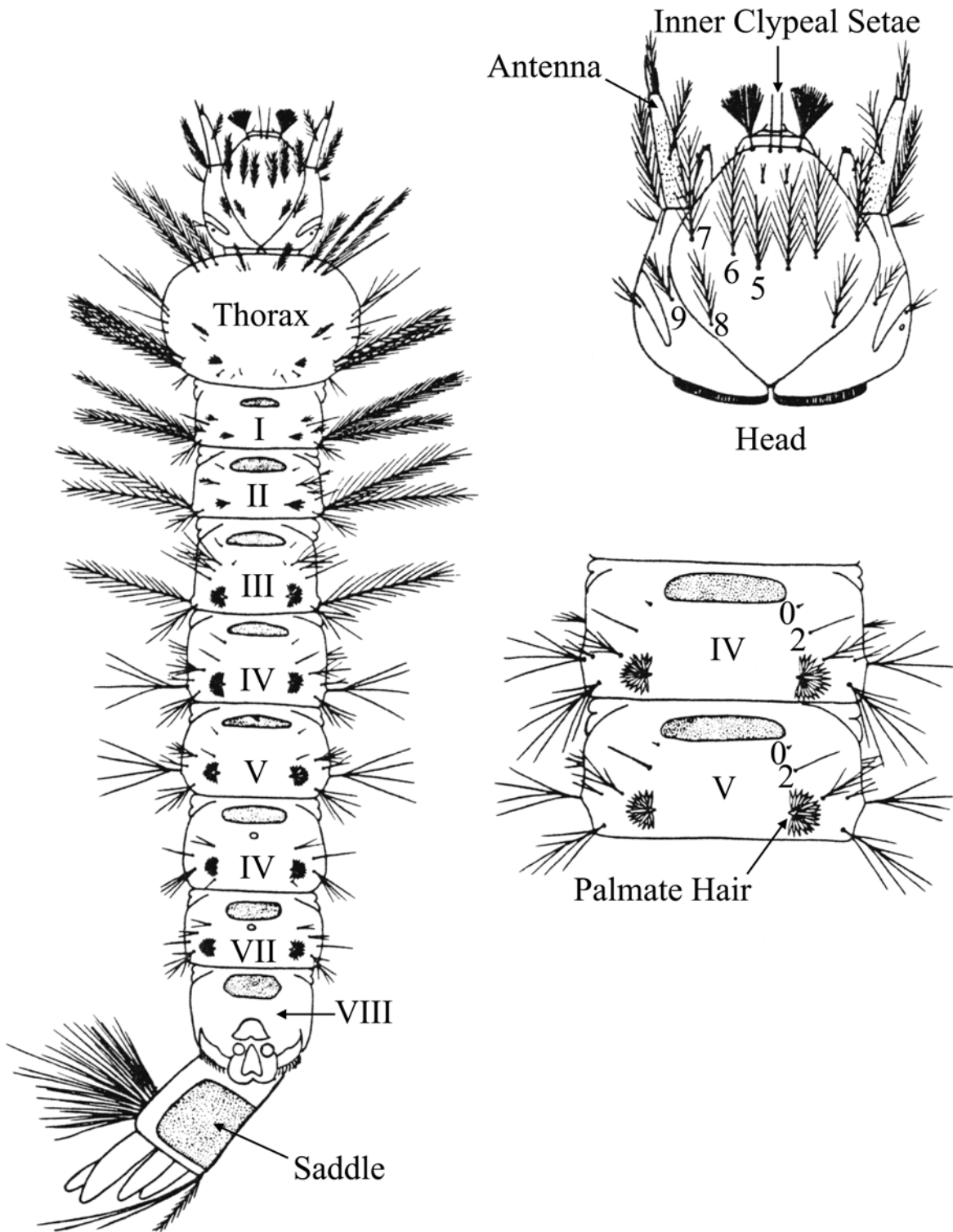


Plate 1. Fourth instar anopheline larva

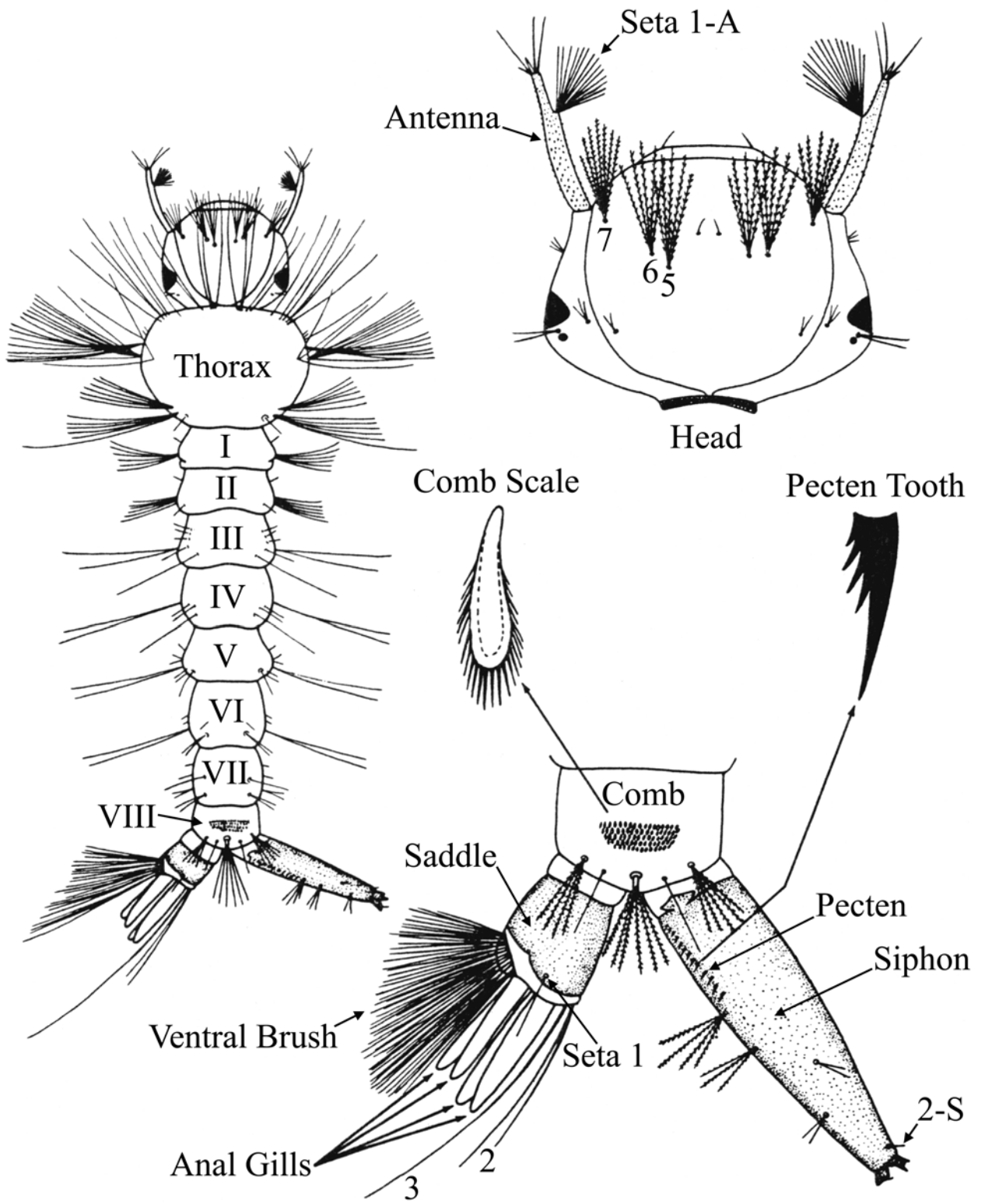


Plate 2. Fourth instar culicine larva

Key to Fourth Instar Mosquito Larvae of Connecticut

GENERA

1. Siphon absent (Fig. 1); abdominal segments with palmate hairs (P) dorsally, at least on segments IV-V (Fig. 2) *Anopheles*

Siphon (S) present (Fig. 3); abdominal segments without palmate hairs (Fig. 4) 2

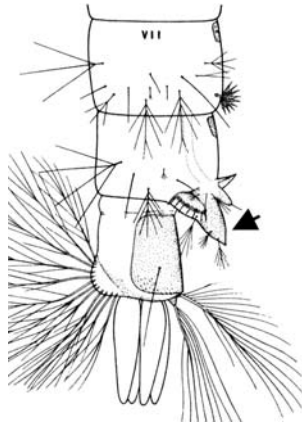


Fig. 1

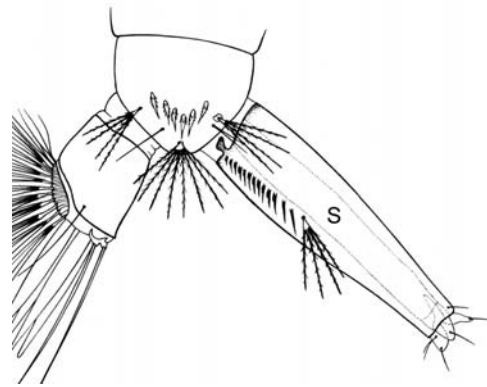


Fig. 3

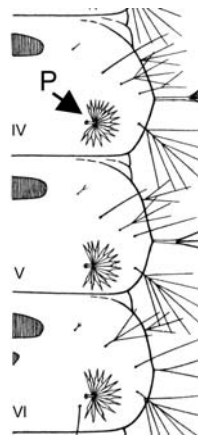


Fig. 2

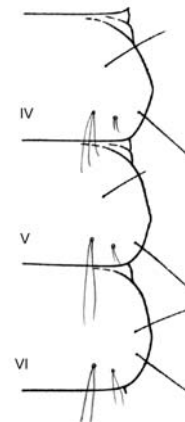


Fig. 4

2. Siphon short, distal end pointed with dorsal, saw-toothed projections adapted for piercing aquatic plant tissue (Fig. 5) *Coquillettidia perturbans*

Siphon cylindrical or spindle shaped; the distal end not specially adapted (Fig. 6) . . 3

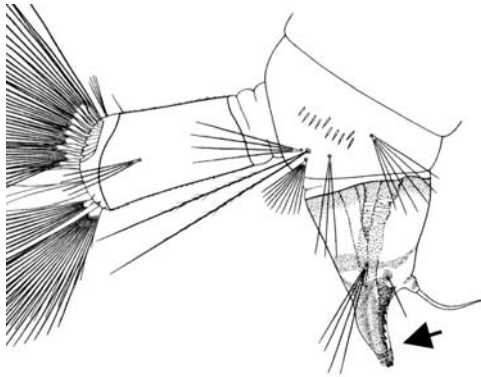


Fig. 5

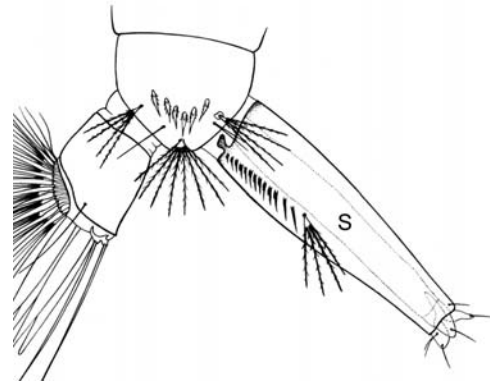


Fig. 6

- 3. Siphon (S) without pecten teeth (Fig. 7) 4
- Siphon with pecten teeth (PT) (Fig. 8) 6

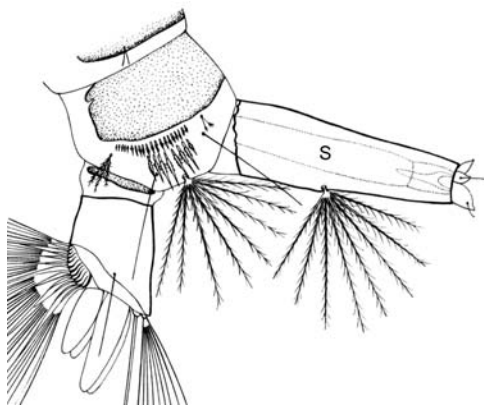


Fig. 7

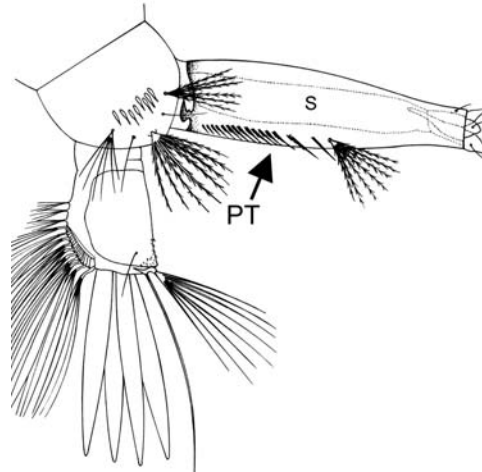


Fig. 8

- 4. Lateral mouth brush composed of a few stout, strongly curved rods (Fig. 9); comb scales absent on eighth abdominal segment (Fig. 10)
Toxorhynchites rutilus septentrionalis

Lateral mouth brush composed of numerous fine filaments (Fig. 11); comb scales present on eighth abdominal segment (Fig. 12) 5

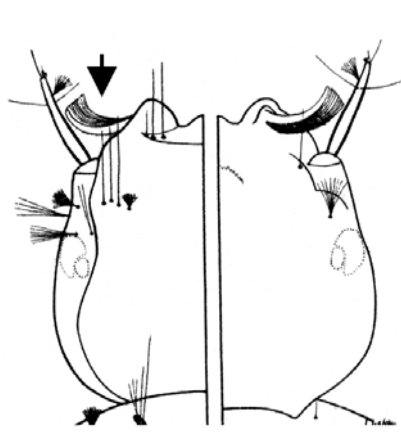


Fig. 9

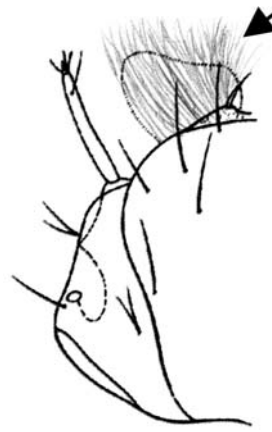


Fig. 11

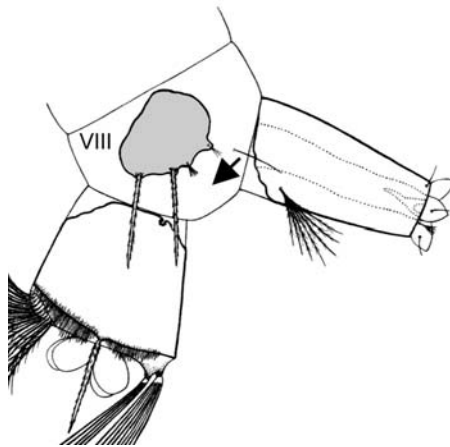


Fig. 10

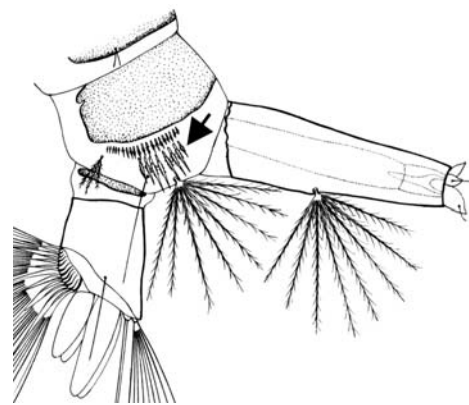


Fig. 12

5. Siphon with numerous setae over entire length; anal segment without median ventral brush; comb scales in single row (Fig. 13) *Wyeomyia smithii*

Siphon with one pair of ventrally located setal tufts; anal segment with well developed median ventral brush; comb scales in two rows (Fig. 14)
 *Orthopodomyia signifera*



Fig. 13

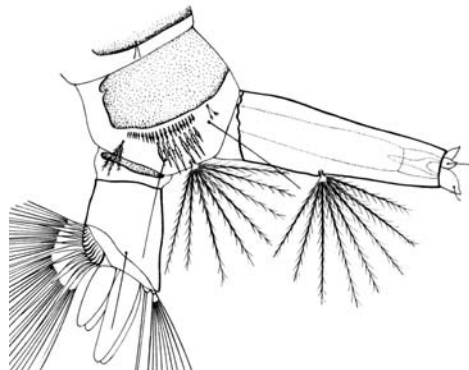


Fig. 14

6. Head longer than wide (Fig. 15); head hairs 5 and 6 stout; abdominal segment VIII with large, lateral sclerotized comb plate (CP) bearing a row of comb scales along posterior margin (Fig. 16) *Uranotaenia sapphirina*

Head wider than long (Fig. 17); abdominal segment VIII without comb plate, or if present, small (Fig. 18) 7

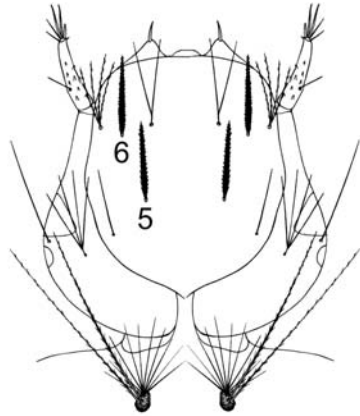


Fig. 15

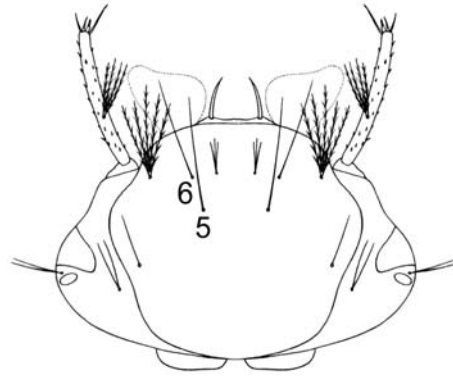


Fig. 17

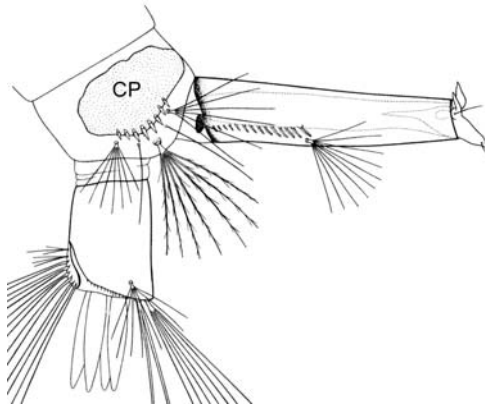


Fig. 16

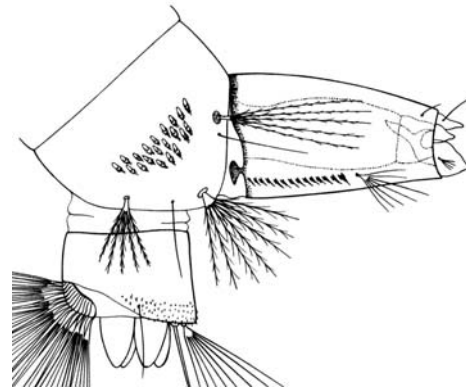


Fig. 18

7. Siphon with basal pair of branched ventral setae (Fig. 19) *Culiseta*

Siphon without basal pair of branched ventral setae, setae elsewhere on siphon (Fig. 20) 8

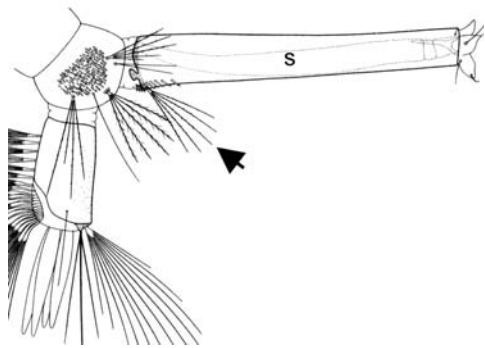


Fig. 19

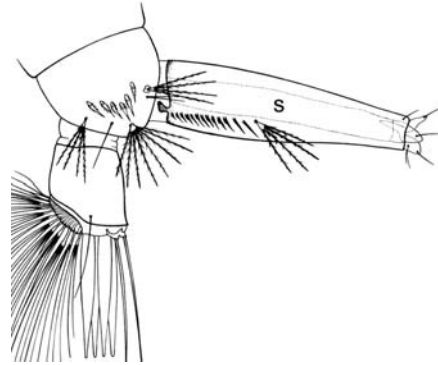


Fig. 20

8. Siphon with three or more pairs of ventral setae (Fig. 21) *Culex*

Siphon with only one pair of ventral setae (Fig. 22) 9

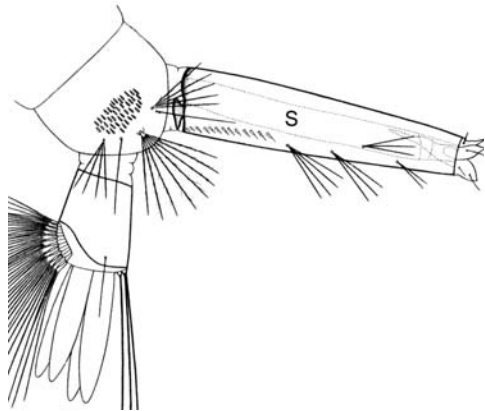


Fig. 21

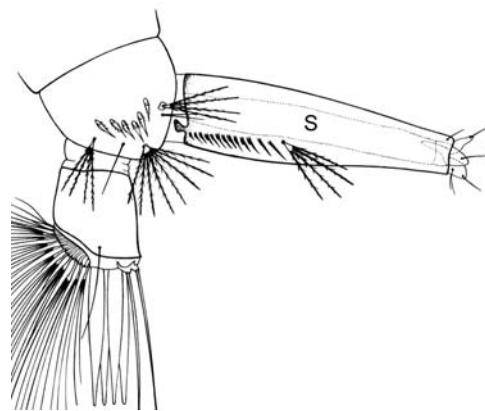


Fig. 22

9. Anal segment completely ringed by saddle, pierced on ventral side by tufts of ventral brush (Fig. 23) *Psorophora*

Anal segment not completely ringed by saddle (Fig. 24), or if complete, not pierced by tufts of ventral brush (Fig. 25) *Aedes & Ochlerotatus*

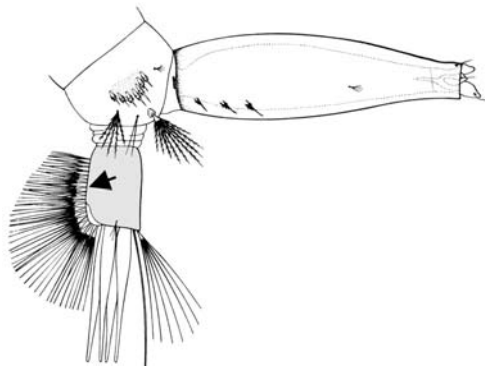


Fig. 23

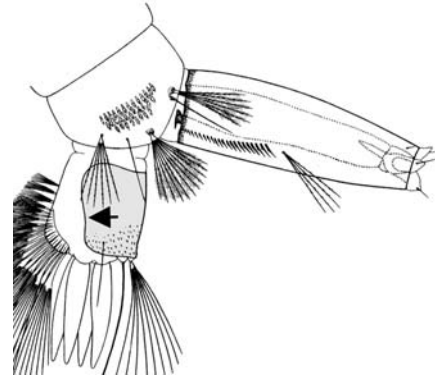


Fig. 24

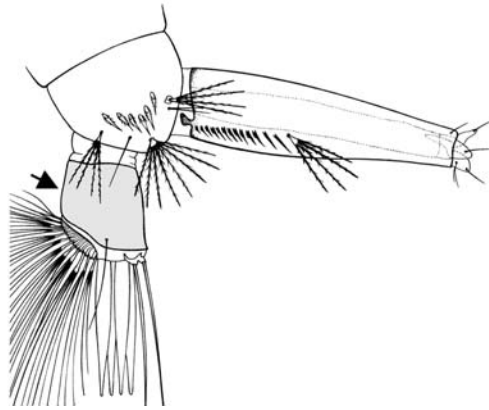


Fig. 25

AEDES & OCHLEROTATUS

1. Siphon (S) with more than one pair of setae in addition to siphonal seta 2-S (Fig. 26) .
 ***Ochlerotatus provocans***

Siphon with only one pair of setae in addition to siphonal seta 2-S (Fig. 27) 2

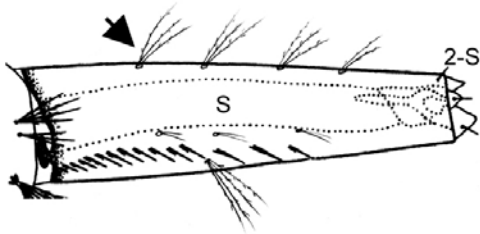


Fig. 26

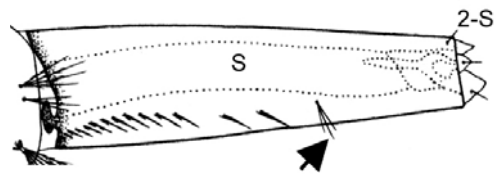


Fig. 27

2. Siphonal tuft inserted within pecten teeth (Fig. 28) 3

Siphonal tuft inserted beyond pecten teeth (Fig. 29) 4

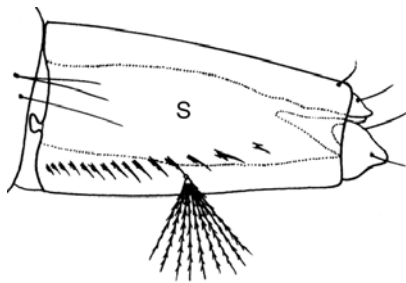


Fig. 28

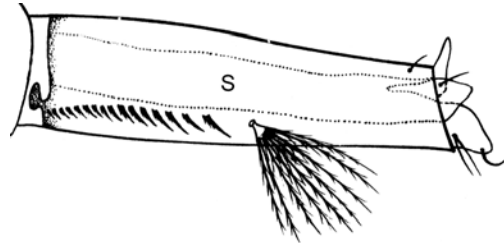


Fig. 29

3. Head hairs 5 and 6 single (Fig. 30) ***Ochlerotatus atropalpus***

Head hairs 5 and 6 multibranching, arranged in a straight line on anterior margin of head capsule (Fig. 31) ***Ochlerotatus japonicus***

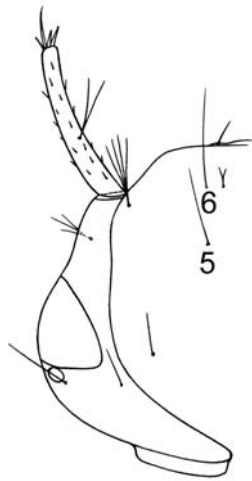


Fig. 30

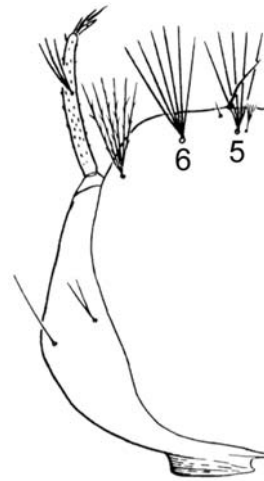


Fig. 31

- 4. Saddle completely encircling anal segment (Fig. 32) 5
- Saddle incomplete, only partially encircling anal segment (Fig. 33) 9

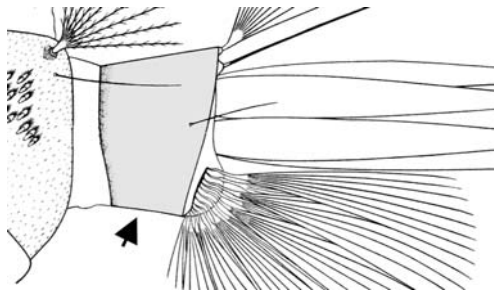


Fig. 32

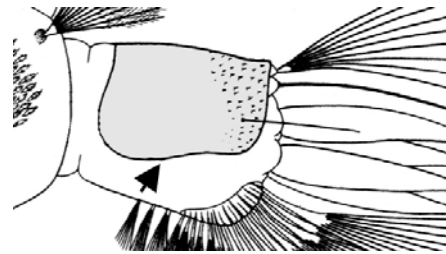


Fig. 33

- 5. Comb scale rounded apically and fringed with subequal spinules (Fig. 34)
 *Ochlerotatus taeniorhynchus*

Comb scale with median spine longer and stouter than subapical spinules; subapical spinules not more than two-thirds as long as the median spine (Fig. 35) 6



Fig. 34

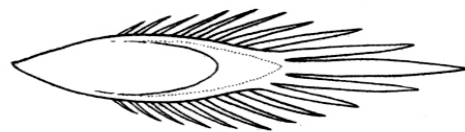


Fig. 35

6. Median spine of comb scale not more than one and one-half times the length of subapical spinules (Fig. 36) *Ochlerotatus trivittatus*

Median spine of comb scale at least four times the length of subapical spinules (Fig. 37) 7

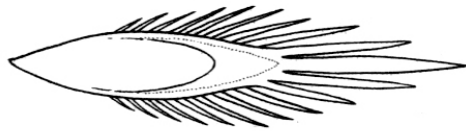


Fig. 36



Fig. 37

7. Anal segment setae 2 and 3 single (Fig. 38); most setae on head and body coarse, about equal in diameter throughout (Fig. 39) *Ochlerotatus abserratus*

Anal segment seta 2 multibranched, seta 3 single (Fig. 40); head and body setae slender and tapering distally (Fig. 41) 8

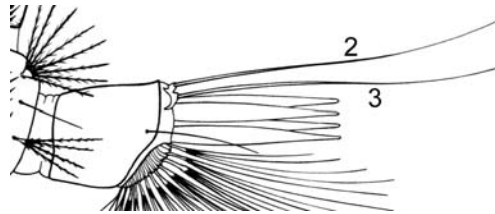


Fig. 38

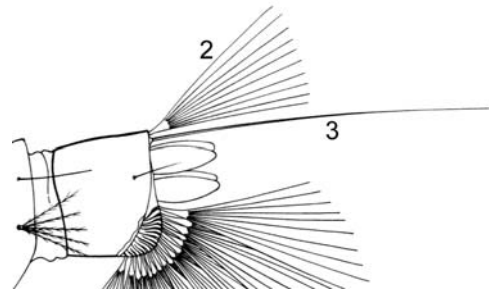


Fig. 40

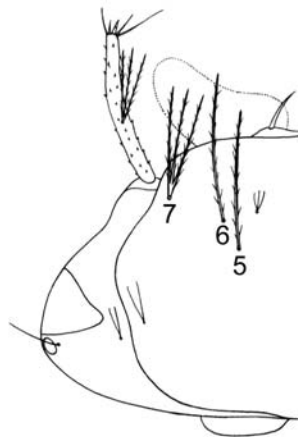


Fig. 39

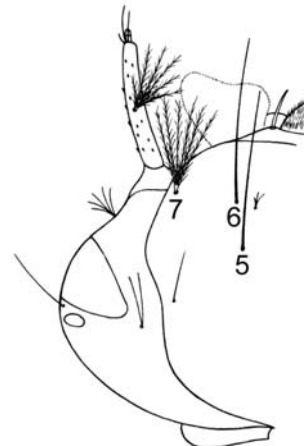


Fig. 41

8. Siphonal seta 2-S much shorter than distal pecten tooth (Fig. 42); anal segment seta 1 about equal in length to saddle; anal gills long and pointed (Fig. 43) *Ochlerotatus punctor*

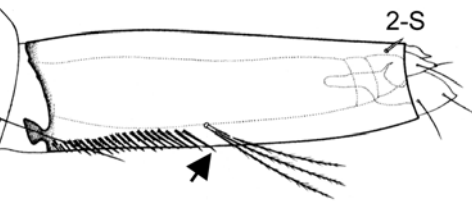


Fig. 42

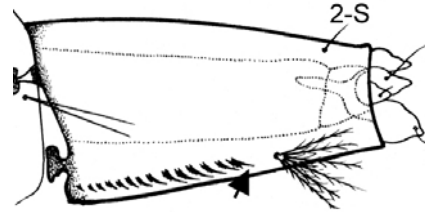


Fig. 44

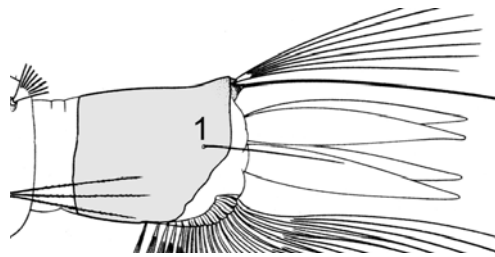


Fig. 43

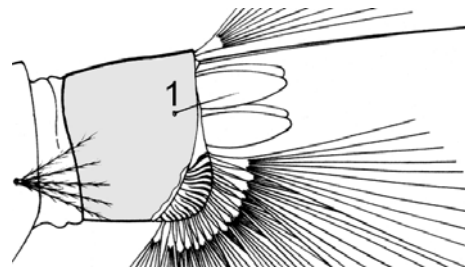


Fig. 45

- Siphonal seta 2-S subequal to length of distal pecten tooth (Fig. 44); anal segment seta 1 shorter than saddle; anal gills bud like (Fig. 45) *Ochlerotatus sollicitans*

9. Outer pecten teeth (PT) distally detached (Fig. 46) 10
 Pecten teeth more or less evenly spaced (Fig. 47) 15

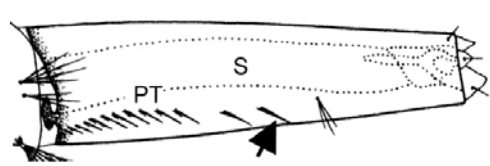


Fig. 46

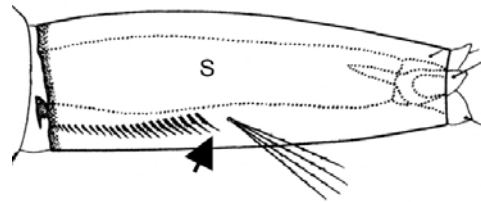


Fig. 47

10. Antenna (A) as long or longer than head (Fig. 48) 11
 Antenna shorter than head (Fig. 49) 12



Fig. 48

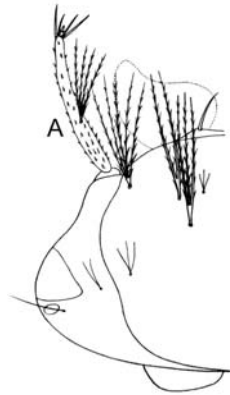


Fig. 49

11. Antennal seta 1-A attached near middle of shaft (Fig. 50); comb scales (CS) in irregular row, usually fifteen or fewer (Fig. 51) *Ochlerotatus diantaeus*

Antennal seta 1-A attached beyond middle (Fig. 52); comb scales in patch of twenty or more (Fig. 53) *Ochlerotatus aurifer*

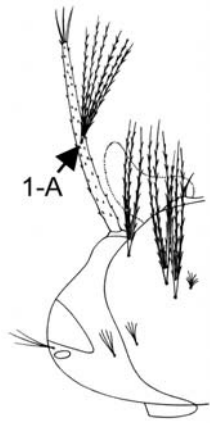


Fig. 50

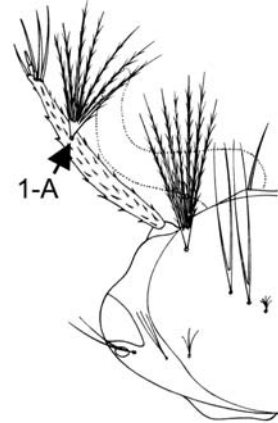


Fig. 52



Fig. 51

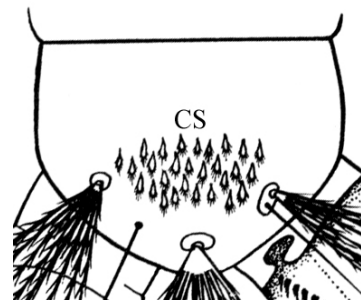


Fig. 53

12. Comb scales in patch of eighteen or more (Fig. 54); siphon (S) long and slender, siphonal index about 5.0 (Fig. 55) *Ochlerotatus excrucians*

Comb scales in single or irregular double row, usually seventeen or fewer (Fig. 56); siphonal index less than 5.0 (Fig. 57) 13

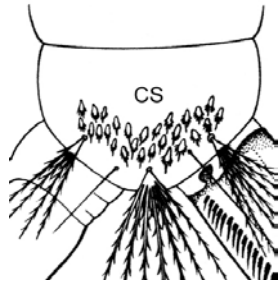


Fig. 54

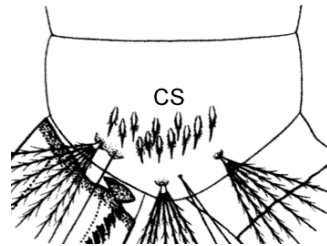


Fig. 56

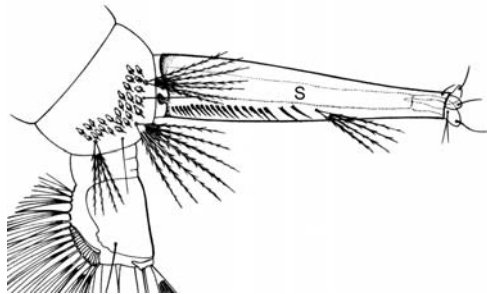


Fig. 55

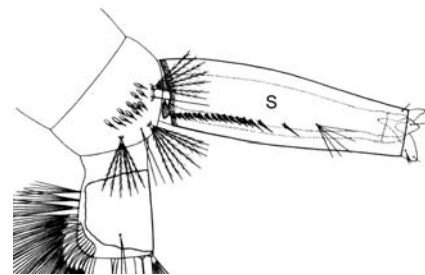


Fig. 57

13. Head hairs 5, 6, and 7 inserted nearly in a straight line (Fig. 58) *Aedes cinereus*

Head hair 6 inserted anterior to line between head hairs 5 and 7 (Fig. 59) 14

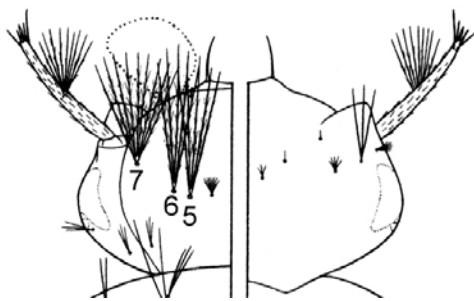


Fig. 58

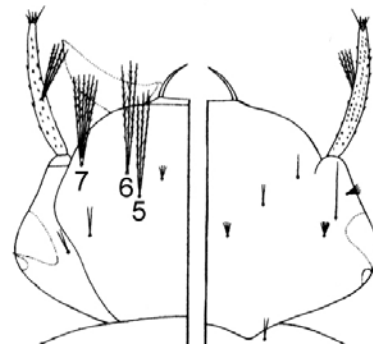


Fig. 59

14. Saddle not incised on ventral margin; branches of siphonal seta 1 rarely more than half the length of basal diameter of siphon; comb scales (CS) usually twelve or fewer (Fig. 60) *Aedes vexans*

Saddle deeply incised on ventral margin; branches of siphonal seta 1 approximately equal to length of basal diameter of siphon; comb scales usually twelve to sixteen (Fig. 61) *Ochlerotatus intrudens*

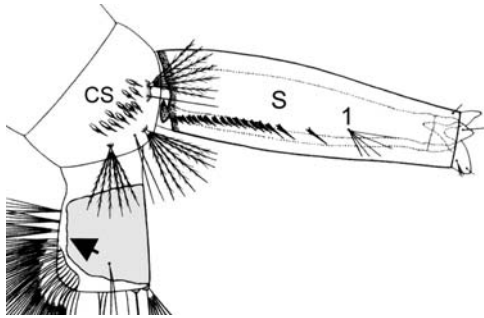


Fig. 60

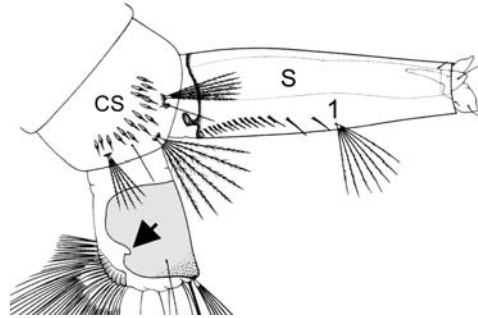


Fig. 61

15. Antennal seta 1-A usually single, rarely double; antenna usually smooth or with very small spinules (Fig. 62) 16

Antennal seta 1-A with four or more branches; antenna with distinct, coarse spinules (Fig. 63) 18

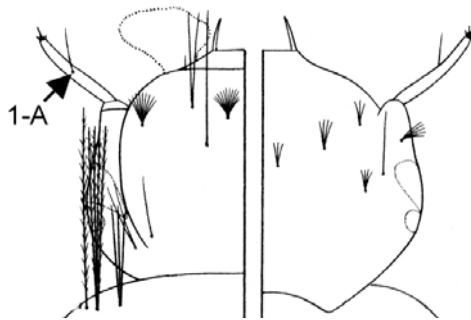


Fig. 62

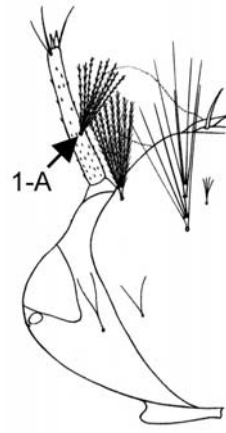


Fig. 63

16. Comb scales with long, pointed, unfringed median spine (Fig. 64), arranged in a straight single row; anal saddle nearly complete; ventral brush of anal segment with four pairs of setae (Fig. 65) *Aedes albopictus*

Comb scales with long, blunt median spine evenly fringed with short spinules (Fig. 66), arranged in an irregular single row; anal saddle short, extending about three-

quarters or less around anal segment; ventral brush with five or six pairs of fanlike setae (Fig. 67) 17



Fig. 64



Fig. 66

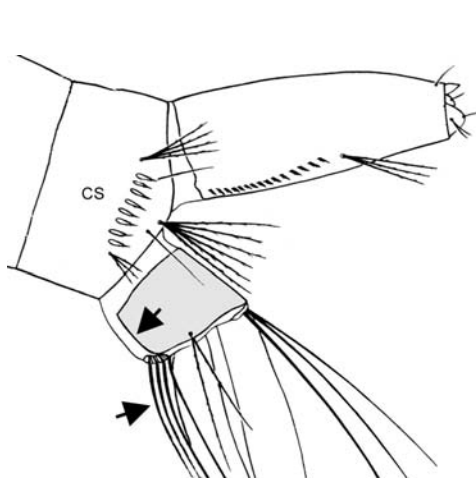


Fig. 65

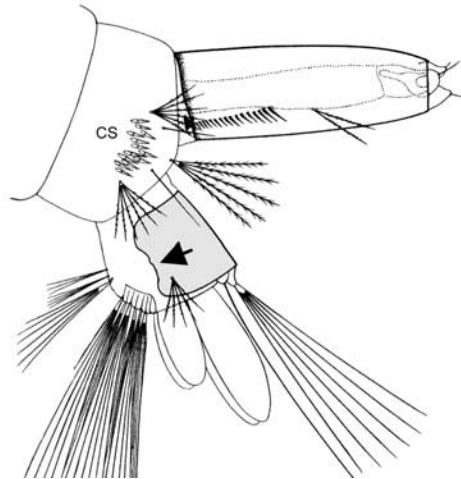


Fig. 67

17. Siphonal tuft with three branches; ventral brush with five pairs of setae; ventral and dorsal pairs of anal gills about same length; acus (SA) detached from siphon (Fig. 68) *Ochlerotatus hendersoni*

Siphonal tuft with two branches; ventral brush with six pairs of setae; dorsal pair of anal gills longer than ventral pair; acus usually attached to siphon (Fig. 69) *Ochlerotatus triseriatus*

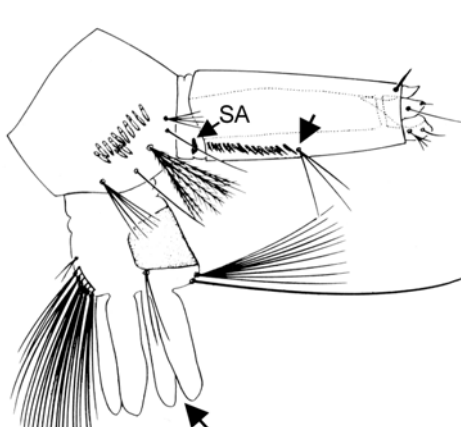


Fig. 68

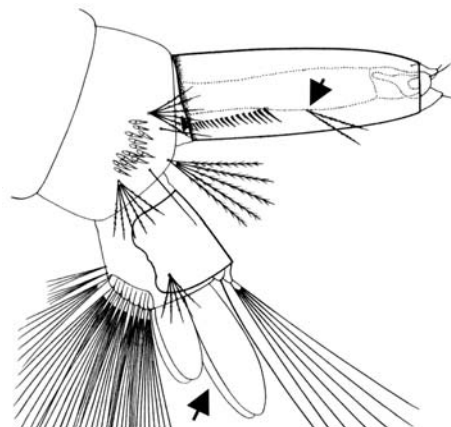


Fig. 69

18. Comb scale with median spine one and one-half times or more the length of subapical spinules (Fig. 70) 19

Comb scale fringed with subequal spinules or with median spine less than one and one-half times the length of subapical spinules (Fig. 71) 21



Fig. 70

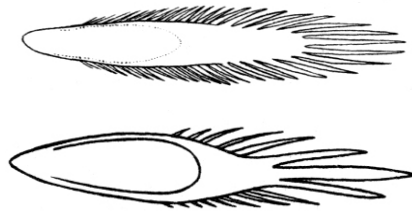


Fig. 71

19. Siphon slender, four to five times as long as wide (measured at base); distal pecten tooth about equal to apical diameter of siphon (Fig. 72) *Ochlerotatus fitchii*

Siphon usually less than four times as long as wide; distal pecten tooth not more than half the apical diameter of siphon (Fig. 73) 20

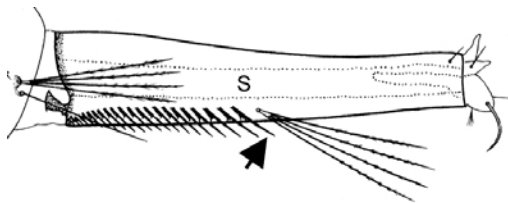


Fig. 72

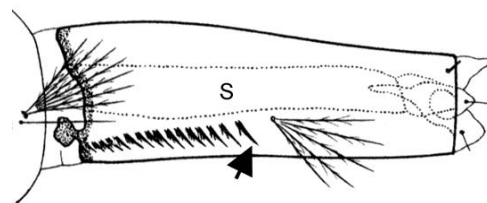


Fig. 73

20. Head hairs 5 and 6 single, rarely double (Fig. 74); comb scale with median spine about one and one-half times the length of subapical spinules (Fig. 75)
 *Ochlerotatus stimulans*

Head hair 5 with two to four branches, head hair 6 usually double (Fig. 76); comb scale with median spine at least four times the length of subapical spinules (Fig. 77) .
 *Ochlerotatus sticticus*

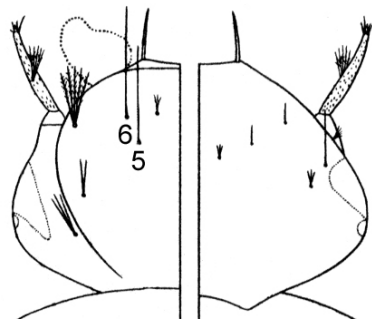


Fig. 74

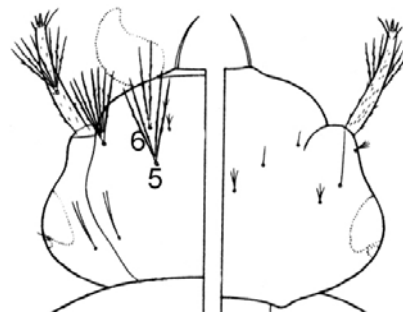


Fig. 76



Fig. 75



Fig. 77

21. Head hair 5 with four or more branches, head hair 6 with three or more branches (Fig. 78) 22

Head hair 5 with one to three branches, rarely four branched, head hair 6 single or double, rarely triple (Fig. 79) 24

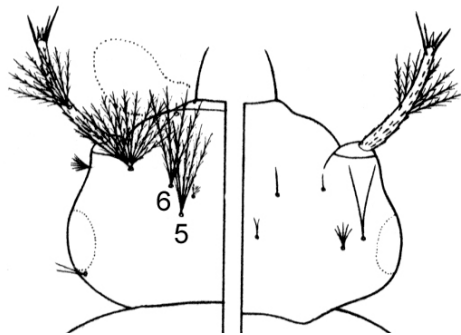


Fig. 78

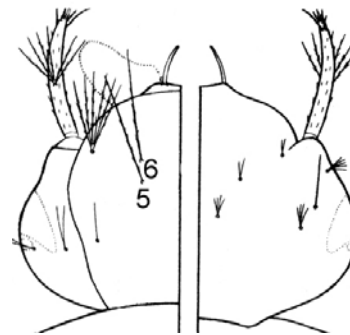


Fig. 79

22. Mesothoracic seta 1-M about equal to length of antenna or longer (Fig. 80); anal gills usually shorter than saddle and bud like (Fig. 81) *Ochlerotatus cantator*

Mesothoracic seta 1-M much shorter than antenna (Fig. 82); anal gills as long or longer than saddle, pointed (Fig. 83) 23

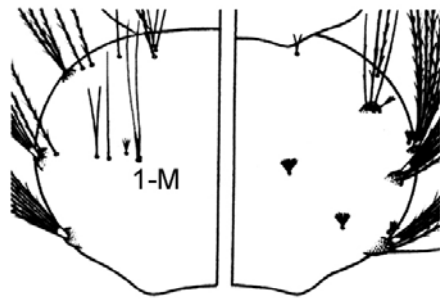


Fig. 80

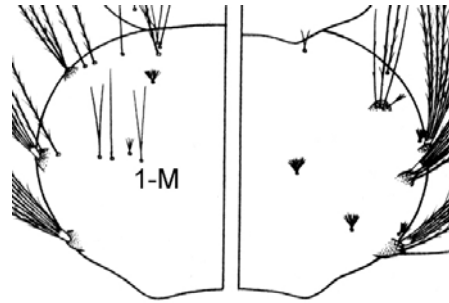


Fig. 82

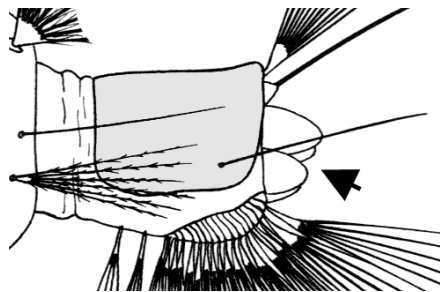


Fig. 81

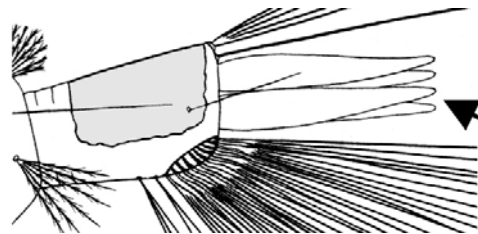


Fig. 83

23. Lateral setae on abdominal segments I-II double (Fig. 84); comb scale fringed apically with subequal spinules (Fig. 85); antenna much shorter than head

Ochlerotatus canadensis

Lateral setae on abdominal segments I-II with three or four branches (Fig. 86); comb scale with apical and subapical spines much stouter than lateral spinules (Fig. 87); antenna nearly as long as head *Ochlerotatus thibaulti*

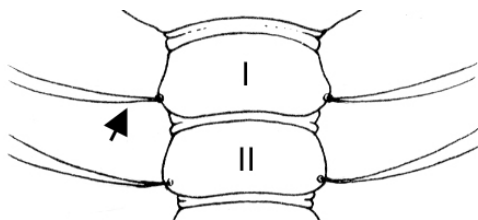


Fig. 84

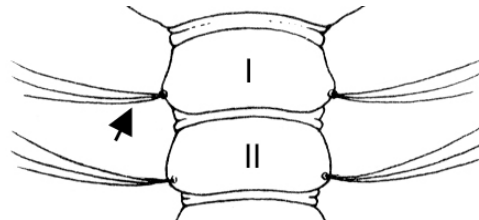


Fig. 86



Fig. 85



Fig. 87

24. Mesothoracic seta 1-M shorter than antenna (Fig. 88) *Ochlerotatus communis*

Mesothoracic seta 1-M about equal to length of antenna or longer (Fig. 89) 25

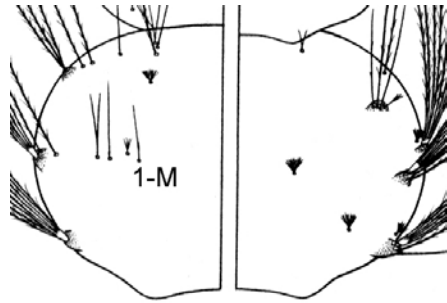


Fig. 88

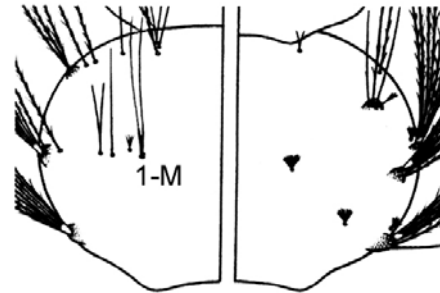


Fig. 89

25. Anal segment seta 1 about one-half the length of saddle (Fig. 90); head hairs 5 and 6 usually single, rarely branched (Fig. 91) *Ochlerotatus dorsalis*

Anal segment seta 1 nearly as long as length of saddle (Fig. 92); head hairs 5 and 6 usually branched (Fig. 93) *Ochlerotatus grossbecki*

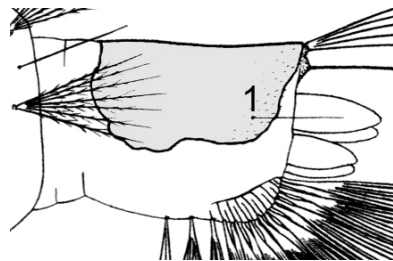


Fig. 90

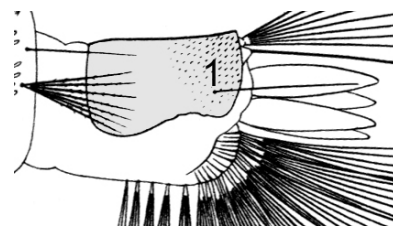


Fig. 92

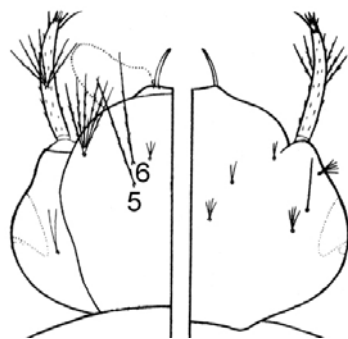


Fig. 91

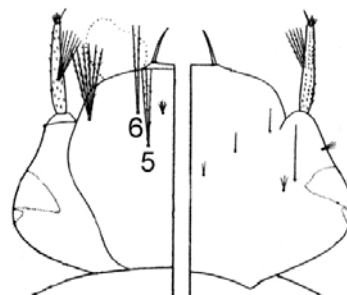


Fig. 93

ANOPHELES

1. Head hairs 5, 6, and 7 short, single or double (Fig. 94); lateral setae on abdominal segments I-VI long and plumose (Fig. 95) *Anopheles barberi*

Head hairs 5, 6, and 7 long, multibranched and plumose (Fig. 96); lateral setae on abdominal segments IV-VI not plumose (Fig. 97) 2

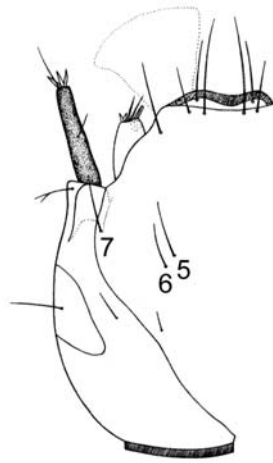


Fig. 94

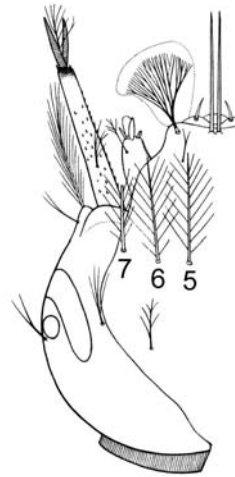


Fig. 96

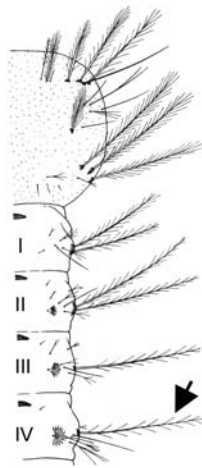


Fig. 95



Fig. 97

2. Seta 0 on abdominal segments IV-V well developed, with four or more branches about equal in size to seta 2 (Fig. 98) *Anopheles crucians*

Seta 0 on abdominal segments IV-V very small, either single or with two to three branches, much smaller than seta 2 (Fig. 99) 3

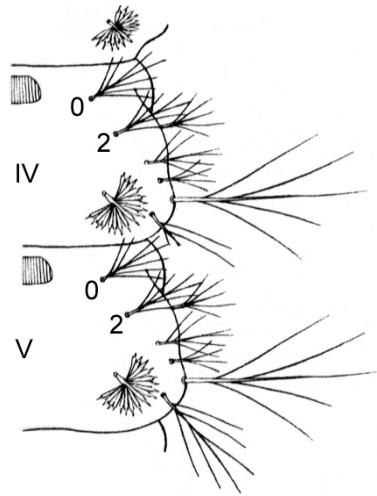


Fig. 98

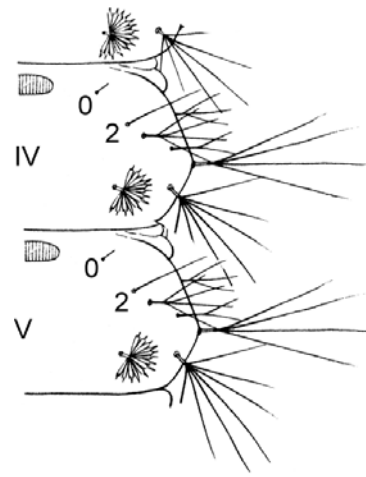


Fig. 99

3. Inner clypeal setae with sparse, minute feathering toward tip (Fig. 100); seta 1 on thorax branched from base (Fig. 101) *Anopheles walkeri*

Inner clypeal setae simple, without minute feathering (Fig. 102); seta 1 on thorax single or weakly branched at tip only (outer half) (Fig. 103) 4

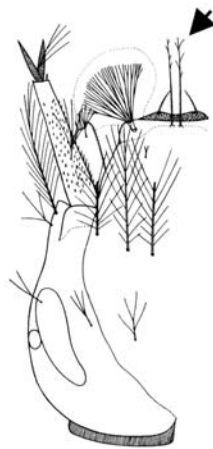


Fig. 100

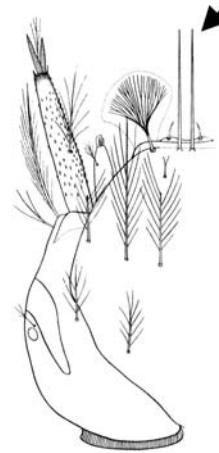


Fig. 102



Fig. 101



Fig. 103

4. Basal tubercles of inner clypeal setae separated by at least the diameter of one tubercle; head hairs 8 and 9 large, usually with eight to ten branches (Fig. 104)
 *Anopheles quadrimaculatus*

Basal tubercles of inner clypeal setae closer together than diameter of one tubercle;
 head hairs 8 and 9 smaller, usually with five to seven branches (Fig. 105)
 *Anopheles punctipennis*

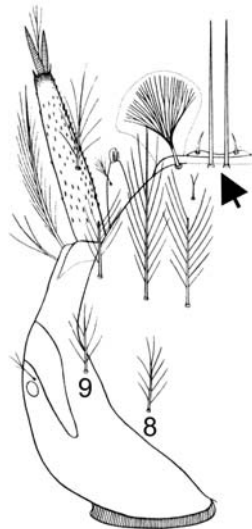


Fig. 104

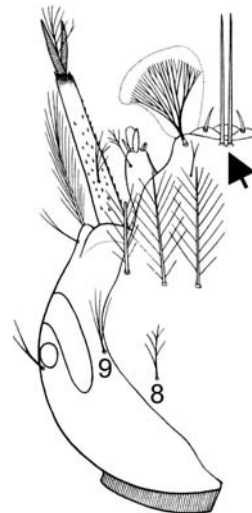


Fig. 105

CULEX

1. Siphon (S) with three or more long, single, irregularly placed setae (Fig. 106); antenna nearly uniform in shape with seta 1-A attached near middle of shaft (Fig. 107) *Culex restuans*

- Siphon with three or more pairs of branched setae (Fig. 108); antenna constricted distally with seta 1-A attached near outer third of shaft (Fig. 109) 2

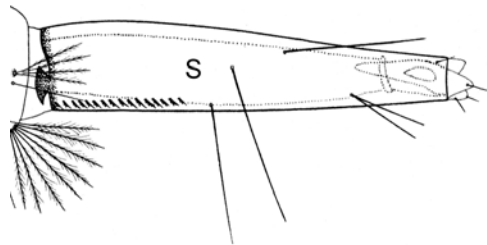


Fig. 106

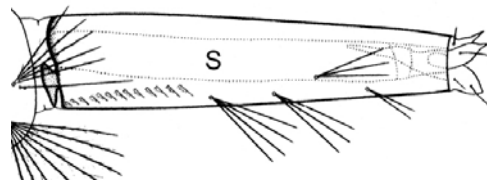


Fig. 108

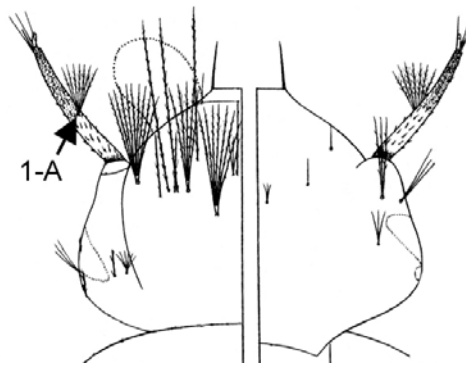


Fig. 107

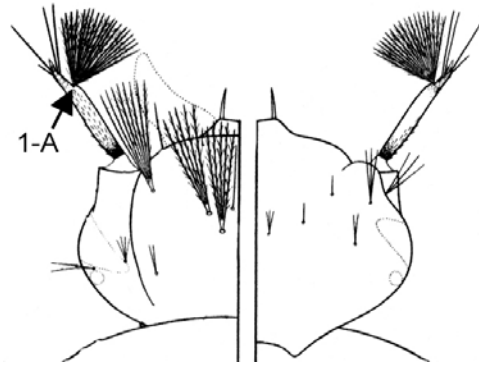


Fig. 109

2. Head hair 6 single or double (Fig. 110) 3

- Head hair 6 with three or more branches (Fig. 111) 4

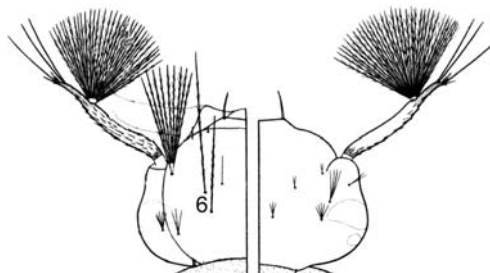


Fig. 110

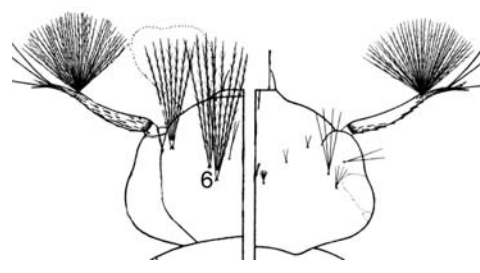


Fig. 111

3. Head hairs 5 and 6 long and about equal in length (Fig. 112); comb scale without long median spine (Fig. 113) *Culex territans*

Head hair 5 at most half the length of 6, multibranched (Fig. 114); comb scale with long median spine (Fig. 115) *Culex erraticus*

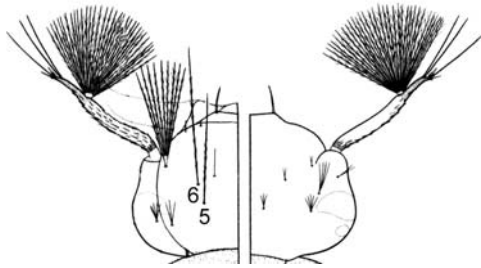


Fig. 112

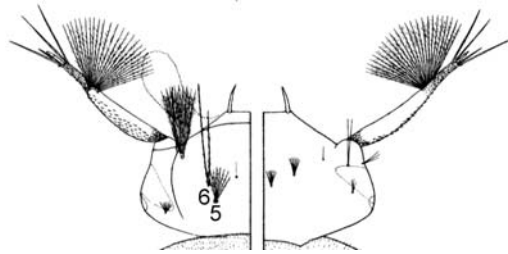


Fig. 114



Fig. 113



Fig. 115

4. Siphon (S) short and slightly convex, less than six times as long as wide (measured at base) (Fig. 116) *Culex pipiens*

Siphon narrow, seven to eight times as long as wide (Fig. 117) *Culex salinarius*

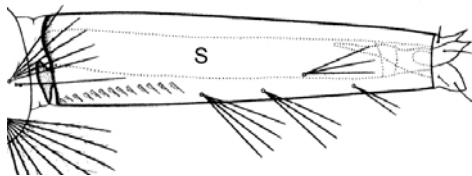


Fig. 116

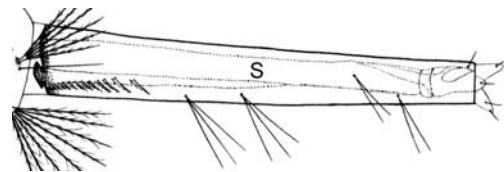


Fig. 117

CULISETA

1. Siphon (S) with midventral row of eight to fourteen multiple setal tufts (Fig. 118) . . .
 *Culiseta melanura*

Siphon without midventral row of setae, or if present, pecten teeth followed by row of long, single setae (Fig. 119) 2

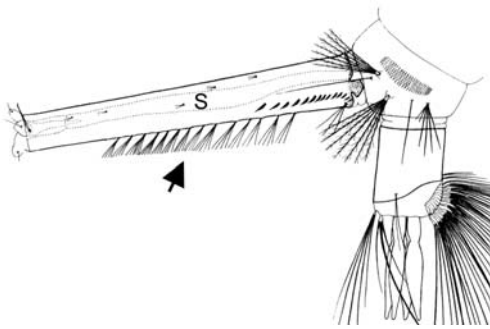


Fig. 118

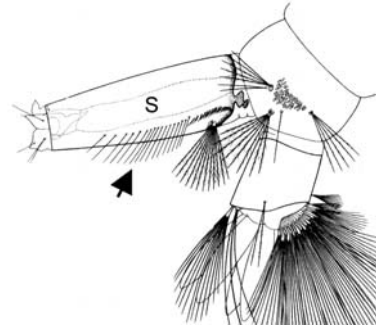


Fig. 119

2. Siphon with row of single setae attached distally to pecten teeth (Fig. 120); antenna about half as long as head; antennal seta 1-A attached near middle of shaft (Fig. 121) .
 3

Siphon without single row of setae distal to pecten teeth (Fig. 122); antenna longer than head; antennal seta 1-A inserted near apical third of shaft (Fig. 123) 4

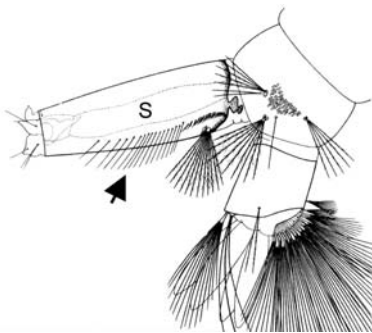


Fig. 120

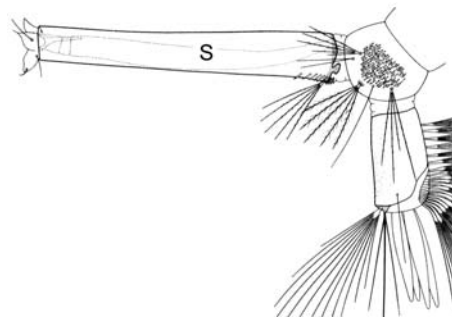


Fig. 122

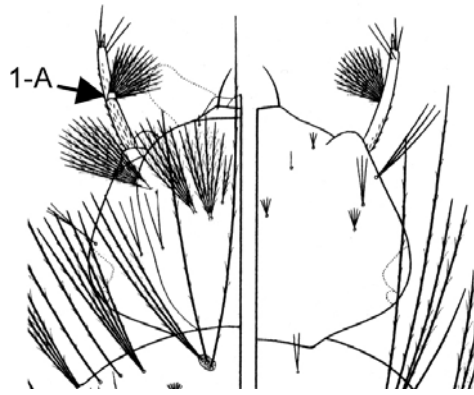


Fig. 121

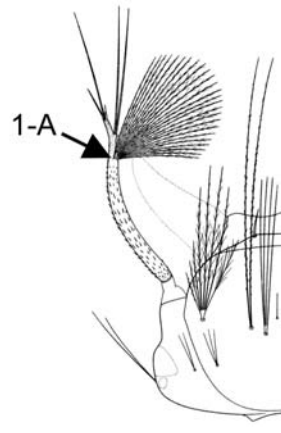


Fig. 123

3. Anal segment seta 1 as long as saddle or longer (Fig. 124); head hair 6 longer and with fewer branches than head hair 5 (Fig. 125) *Culiseta inornata*

Anal segment seta 1 shorter than saddle (Fig. 126); head hairs 5 and 6 similar in size and number of branches (Fig. 127) *Culiseta impatiens*

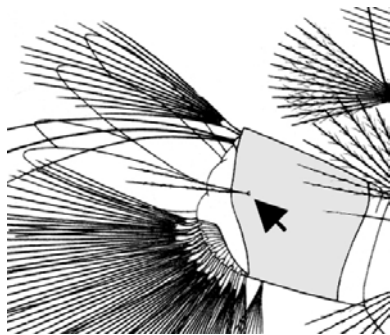


Fig. 124

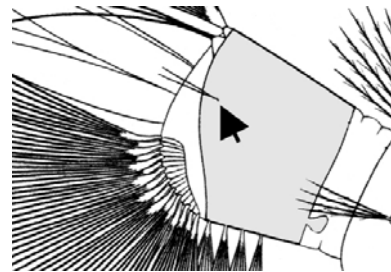


Fig. 126

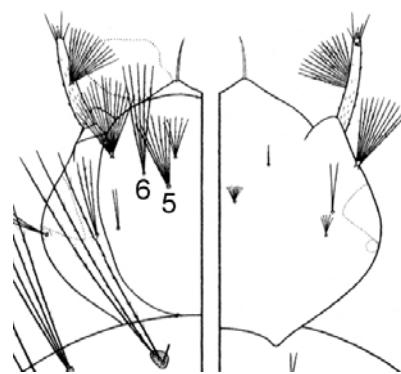


Fig. 125

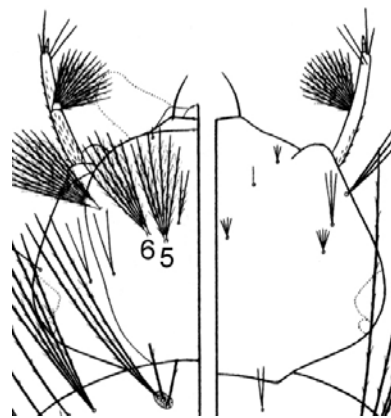


Fig. 127

4. Head hair 5 usually with seven or more branches, head hair 7 usually with nine or more branches (Fig. 128); ventral brush of anal segment with eighteen or fewer fanlike setae (Fig. 129) *Culiseta minnesotae*

Head hair 5 usually with five or fewer branches, head hair 7 usually with eight or fewer branches (Fig. 130); ventral brush of anal segment with nineteen or more fanlike setae (Fig. 131) *Culiseta morsitans*

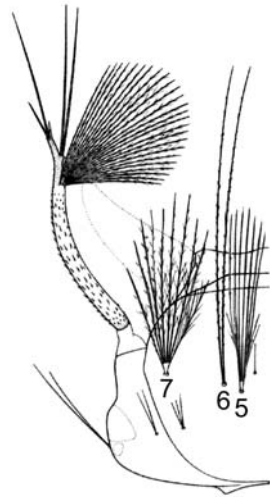


Fig. 128

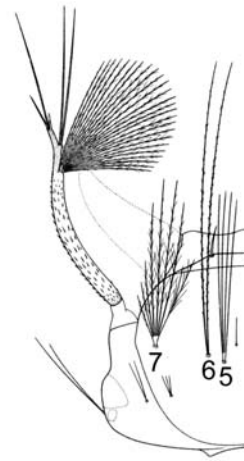


Fig. 130

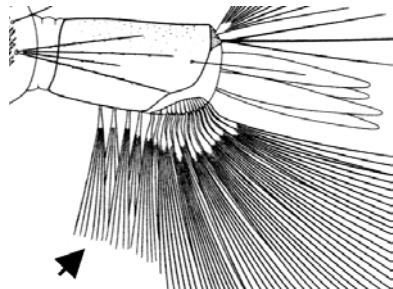


Fig. 129

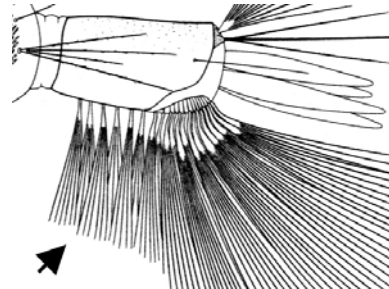


Fig. 131

PSOROPHORA

1. Head truncate anteriorly; antenna (A) short, barely reaching anterior margin of head (Fig. 132); siphon (S) with eighteen or more filamentous pecten teeth (PT) (Fig. 133) *Psorophora ciliata*

Head rounded anteriorly; antenna long, extending well beyond anterior margin of head (Fig. 134); siphon with fewer than ten nonfilamentous pecten teeth (Fig. 135) ..
..... 2

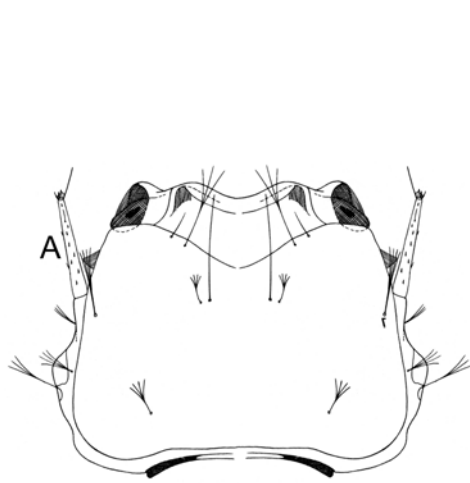


Fig. 132

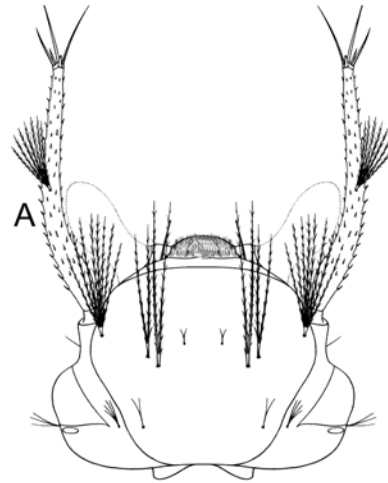


Fig. 134

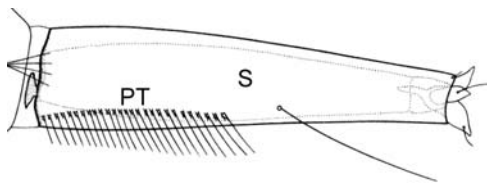


Fig. 133

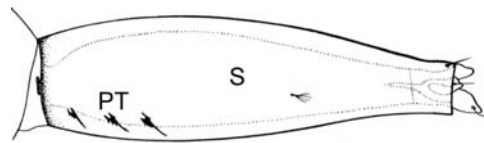


Fig. 135

2. Antenna shorter than median length of head; head hairs 5 and 6 with four or more branches (Fig. 136) *Psorophora columbiae*

Antenna distinctly longer than median length of head; head hairs 5 and 6 long, usually double (Fig. 137) *Psorophora ferox*

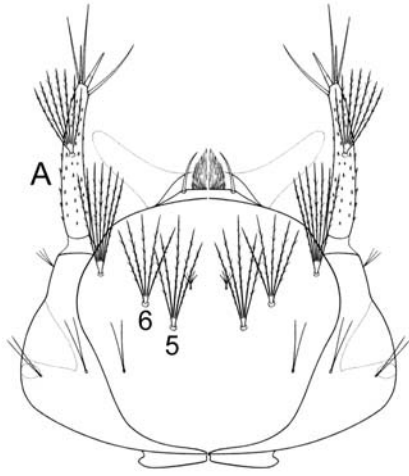


Fig. 136

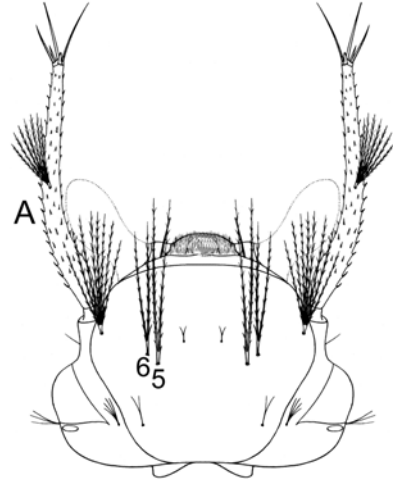
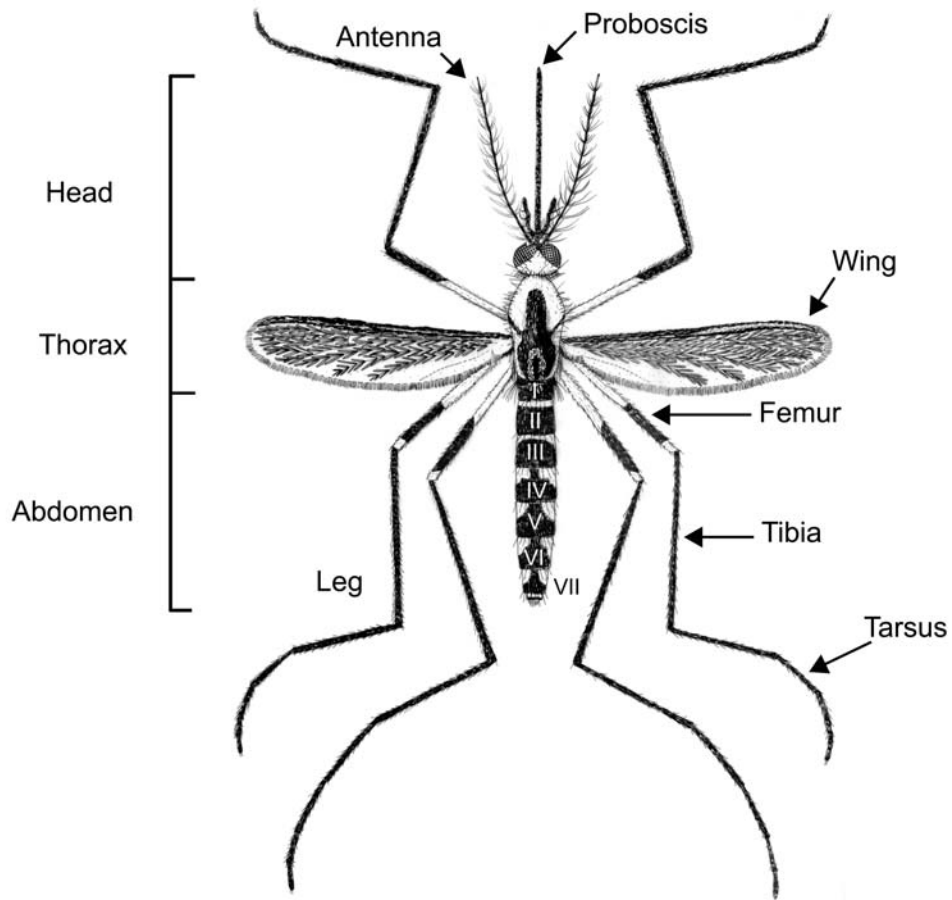
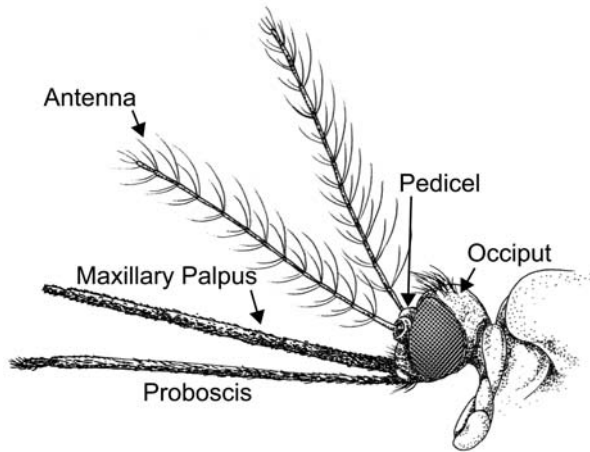


Fig. 137

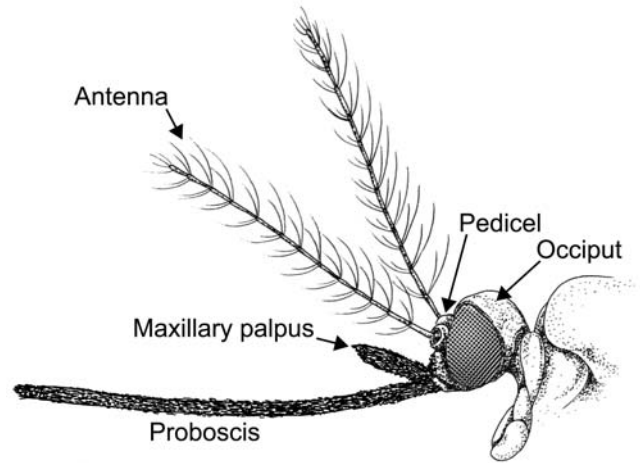
Adult Morphology



A

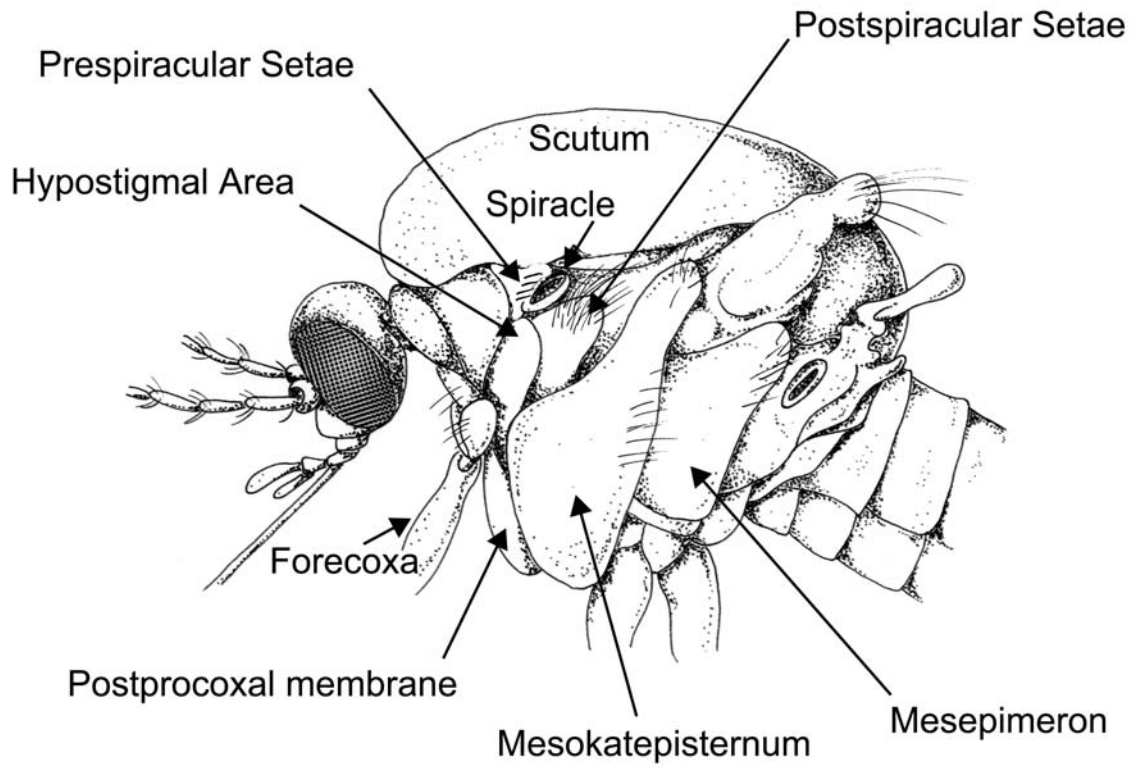


B

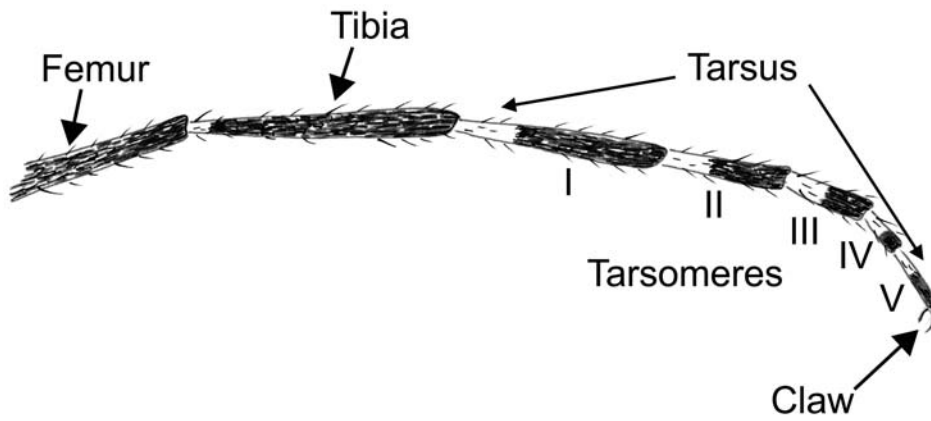


C

Plate 3. A. Adult; B. Anopheline head; C. Culicine head



A



B

Plate 4. A. Lateral view of thorax; B. Leg

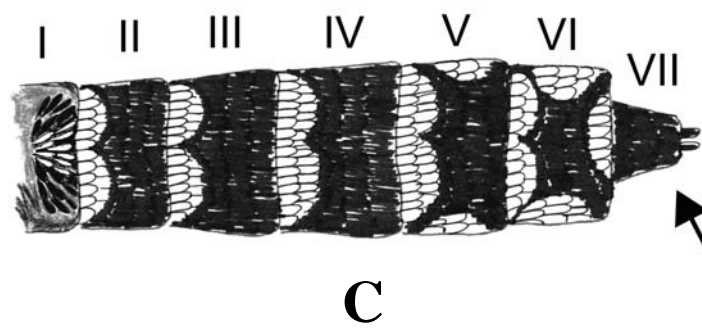
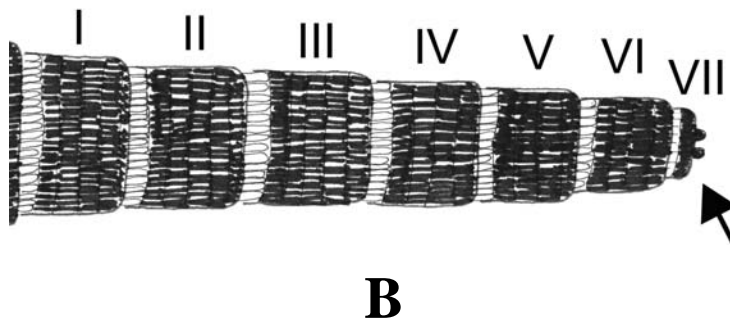
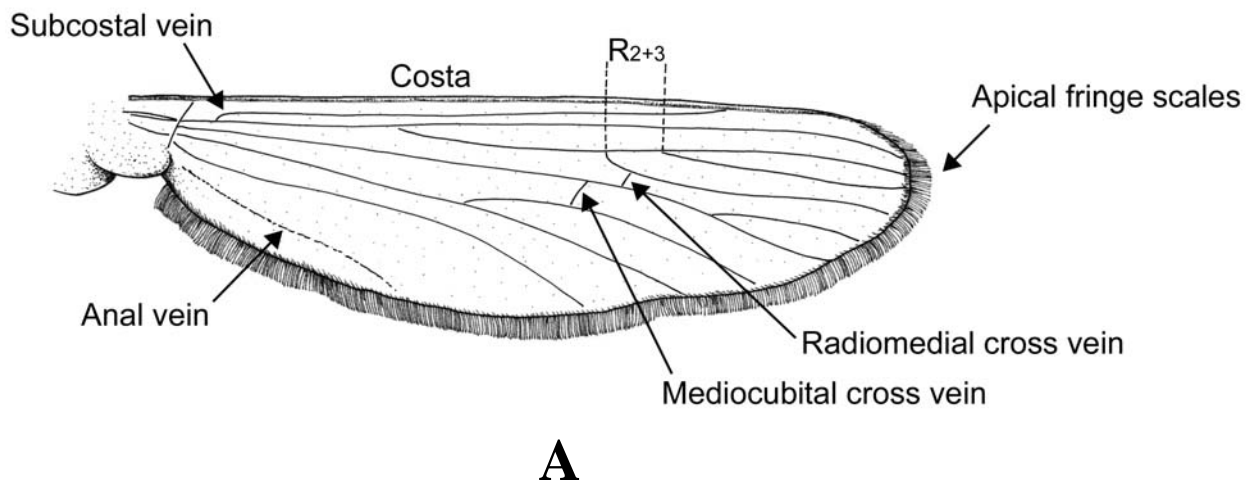


Plate 5. A. Wing; B. Blunt abdomen; C. Pointed abdomen

Key to the Adult Female Mosquitoes of Connecticut

GENERA

1. Maxillary palpus (MPip) nearly as long as proboscis (P) (Fig. 1); scutellum (Stm) rounded (Fig. 2) *Anopheles*

Maxillary palpus much shorter than proboscis (Fig. 3); scutellum trilobed (Fig. 4) . . 2

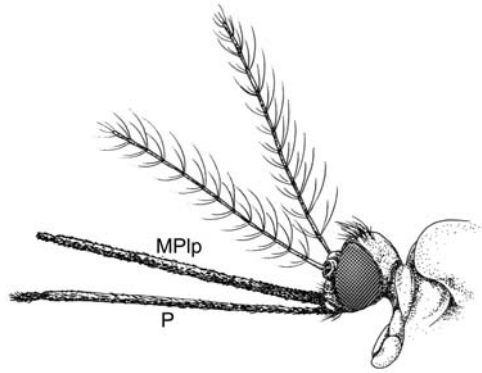


Fig. 1

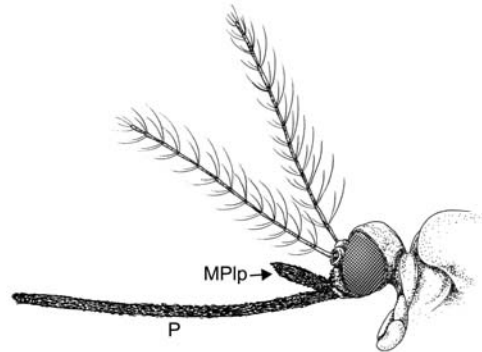


Fig. 3

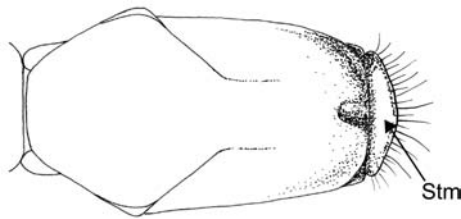


Fig. 2

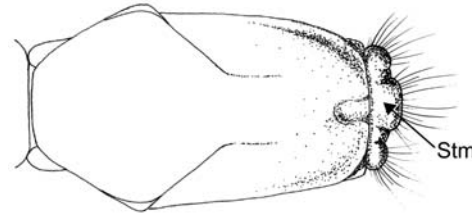


Fig. 4

2. Proboscis (P) long and strongly recurved (Fig. 5)
 *Toxorhynchites rutilus septentrionalis*

Proboscis straight or only slightly recurved (Fig. 6) 3

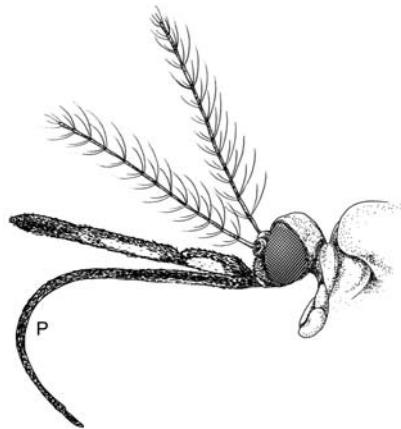


Fig. 5

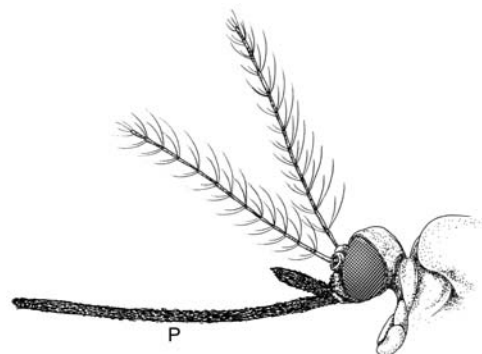


Fig. 6

3. Mesopostnotum (Mpn) of thorax with setae (Fig. 7) *Wyeomyia smithii*
 Mesopostnotum lacking setae (Fig. 8) 4

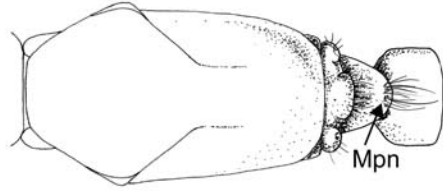


Fig. 7

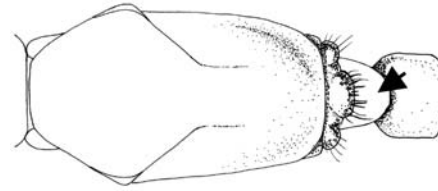


Fig. 8

4. Thorax and wings with iridescent blue scales (Fig. 9); second marginal cell (R_2) of wing shorter than vein R_{2+3} (Fig. 10) *Uranotaenia sapphirina*
 Iridescent blue scales absent on thorax and wings; second marginal cell (R_2) as long, or longer than vein R_{2+3} (Fig. 11) 5

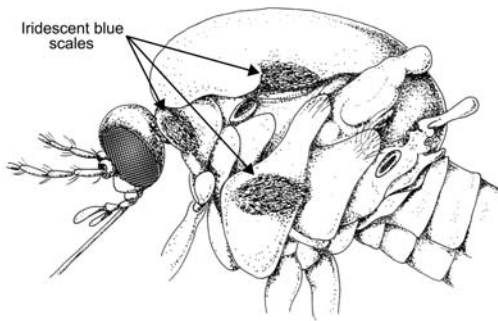


Fig. 9

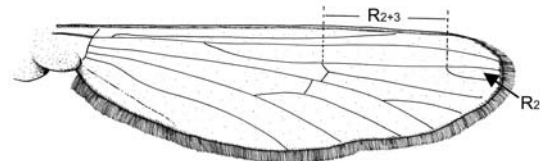


Fig. 10

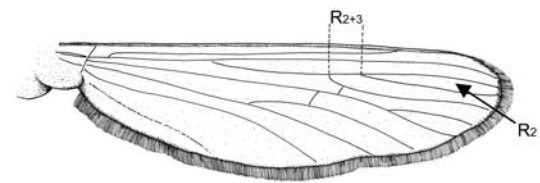


Fig. 11

5. Apex of abdomen pointed in dorsal view (Fig. 12); postspiracular setae (PS) present (Fig. 13) 6
 Apex of abdomen bluntly rounded in dorsal view (Fig. 14); postspiracular setae absent (PA) (Fig. 15) 7

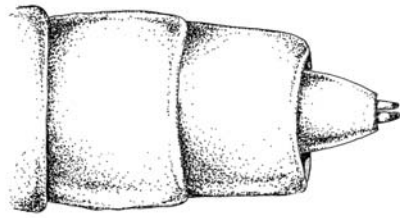


Fig. 12

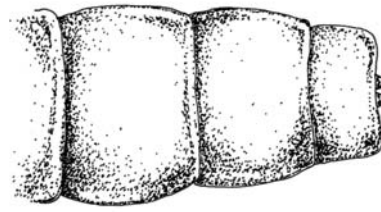


Fig. 14

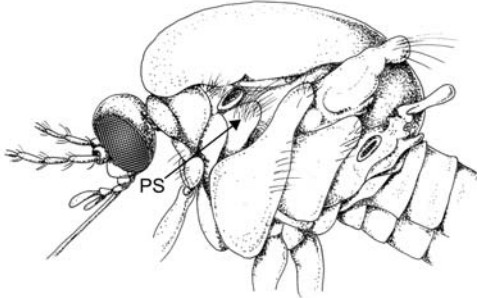


Fig. 13

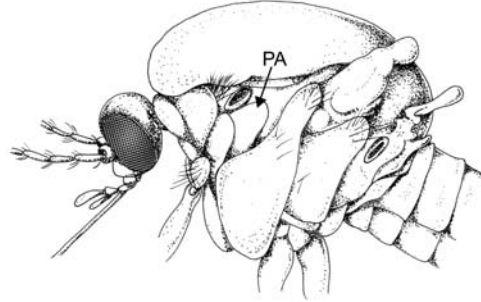


Fig. 15

6. Prespiracular setae (PsS) present (Fig. 16) *Psorophora*

Prespiracular setae (PsA) absent (Fig. 17) *Aedes & Ochlerotatus*

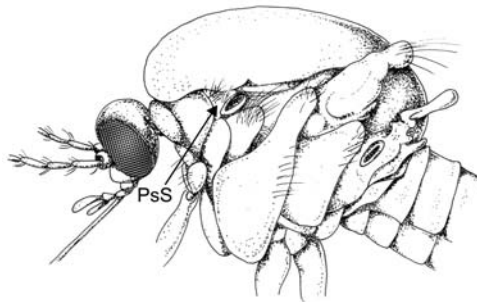


Fig. 16

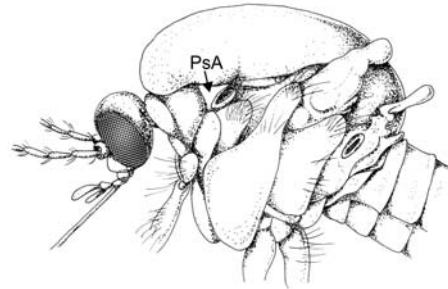


Fig. 17

7. Scutum with thin longitudinal lines of white scales (Fig. 18)

..... *Orthopodomyia signifera*

Scutum without thin longitudinal lines of white scales (Fig. 19) 8

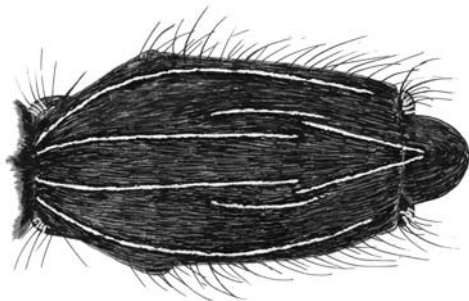


Fig. 18

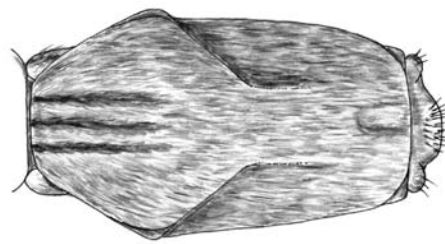


Fig. 19

8. Wing scales broad with pale and dark scales intermixed (Fig. 20)
 *Coquillettidia perturbans*

Wing scales narrow and mostly dark (Fig. 21) 9



Fig. 20



Fig. 21

9. Prespiracular setae (PsS) present (Fig. 22); subcosta (Sc) of wing with tuft of setae (Fig. 23) *Culiseta*

Prespiracular setae (PsA) absent (Fig. 24); subcosta of wing without tuft of setae (Fig. 25) *Culex*

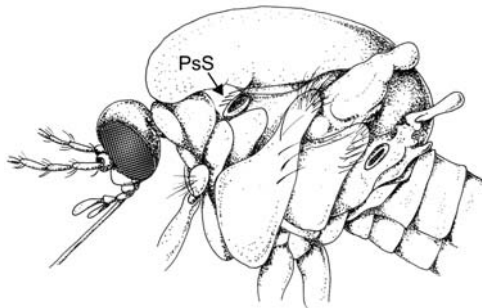


Fig. 22

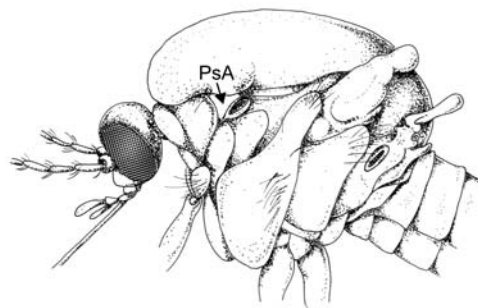


Fig. 24

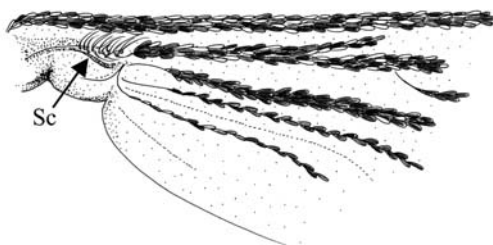


Fig. 23

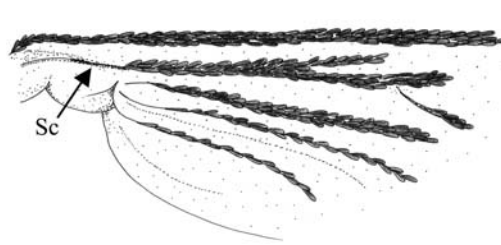


Fig. 25

AEDES & OCHLEROTATUS

1. Hindtarsomeres with pale bands (Fig. 26) 2

Hindtarsomeres without pale bands (Fig. 27) 14

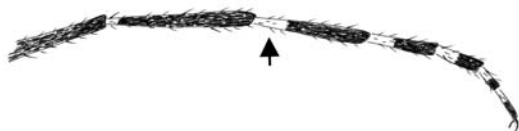


Fig. 26



Fig. 27

2. Hindtarsomeres with pale bands both basally and apically (Fig. 28) 3

Hindtarsomeres with pale bands at base of segments only (Fig. 29) 5

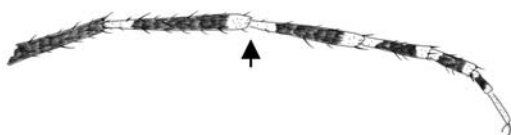


Fig. 28



Fig. 29

3. Wing with dark and pale scales intermixed, costa (C) mostly pale-scaled (Fig. 30);
postprocoxal scale patch (PSc) present (Fig. 31) *Ochlerotatus dorsalis*

Wing scales all dark, or with patch of white scales at base of costa (Fig. 32);
postprocoxal scale patch (PM) absent (Fig. 33) 4



Fig. 30

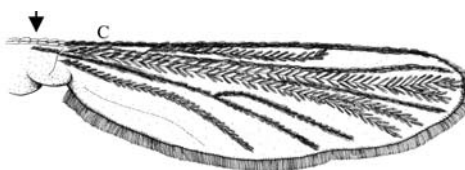


Fig. 32

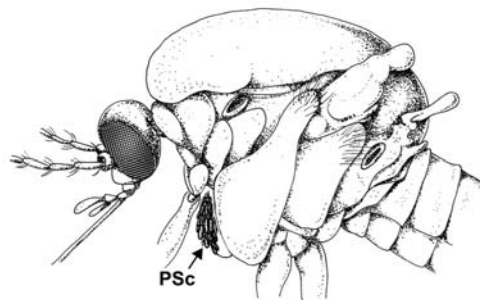


Fig. 31

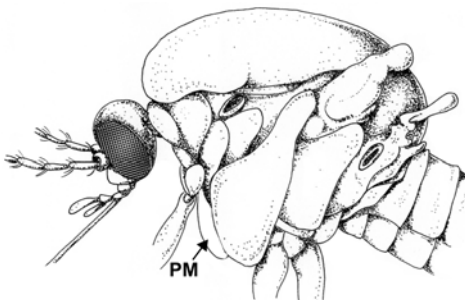


Fig. 33

4. Wing with distinct patch of white scales at base of costa (Fig. 34); scutum with dark median stripe (Fig. 35) *Ochlerotatus atropalpus*

Wing, including base of costa, entirely dark-scaled (Fig. 36); scutum evenly golden-brown, without dark median stripe (Fig. 37) *Ochlerotatus canadensis*

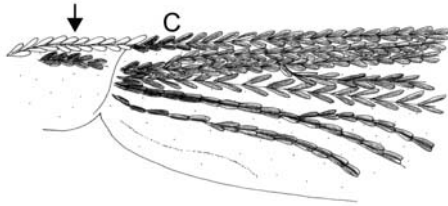


Fig. 34

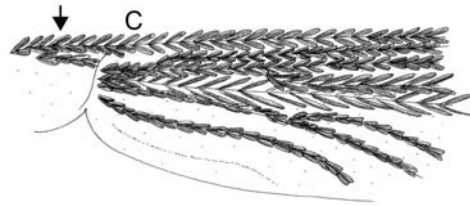


Fig. 36

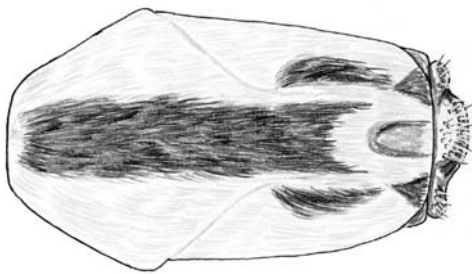


Fig. 35

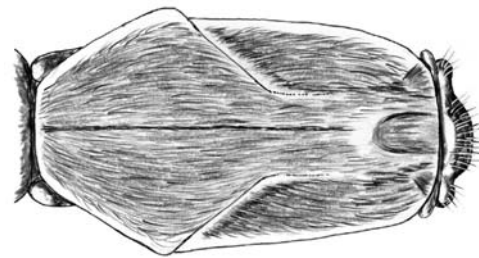


Fig. 37

5. Proboscis (P) with distinct pale-scaled band near middle (Fig. 38) 6

Proboscis unbanded (Fig. 39) 7

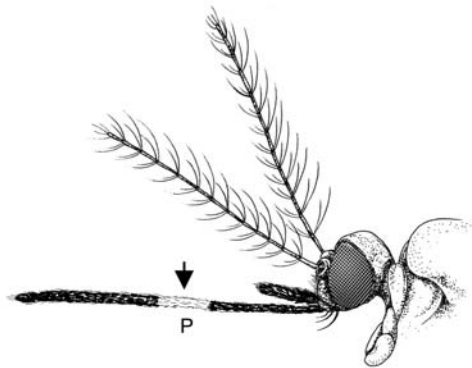


Fig. 38

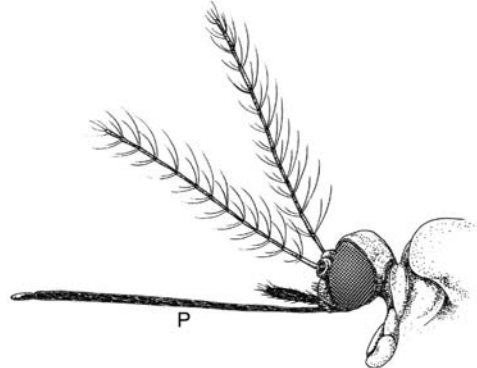


Fig. 39

6. Dorsum of abdomen with median longitudinal stripe or row of disconnected spots (Fig. 40); wing with dark and pale scales intermixed (Fig. 41)
 *Ochlerotatus sollicitans*

Abdomen without median longitudinal stripe or row of disconnected spots (Fig. 42);
 wing entirely dark-scaled (Fig. 43) *Ochlerotatus taeniorhynchus*

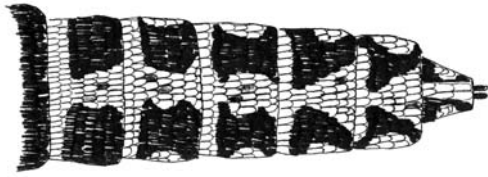


Fig. 40



Fig. 42

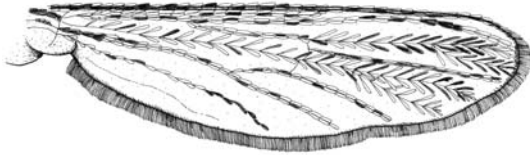


Fig. 41

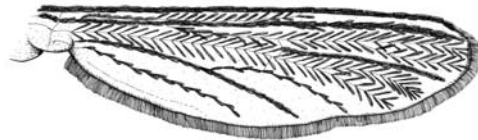


Fig. 43

7. Basal bands on hindtarsomeres narrow, usually less than 0.25 times the length of the tarsal segment (Fig. 44) 8

Basal bands on hindtarsomeres broad, more than 0.3 times the length of the tarsal segment (Fig. 45) 9



Fig. 44

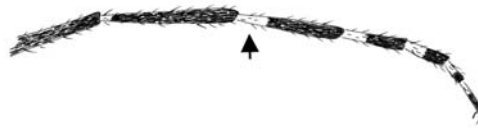


Fig. 45

8. Basal pale bands on abdominal terga II-IV distinctly bilobed; last abdominal segment predominantly dark-scaled (Fig. 46); lower mesepimeral setae absent (Mam) (Fig. 47) *Aedes vexans*

Basal pale bands gradually widening laterally and not bilobed, last two segments, or more, mostly covered with pale scales (Fig. 48); lower mesepimeral setae (MeSL) present (Fig. 49) *Ochlerotatus cantator*



Fig. 46



Fig. 48

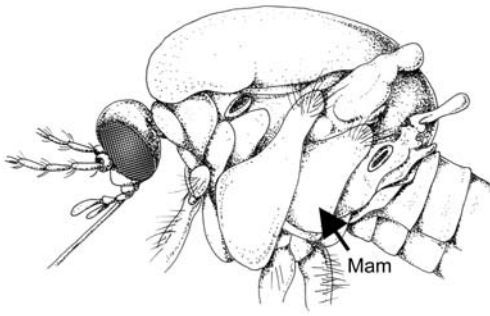


Fig. 47

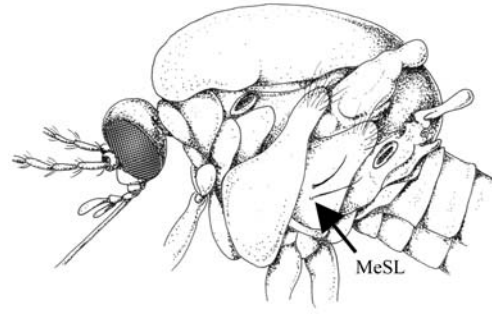


Fig. 49

9. Wing scales broad and distinctly triangular-shaped (Fig. 50)
 *Ochlerotatus grossbecki*

Wing scales mostly narrow (Fig. 51) 10

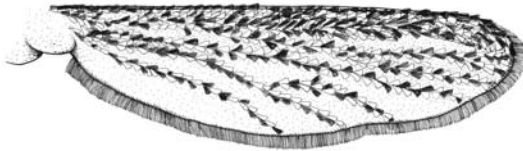


Fig. 50

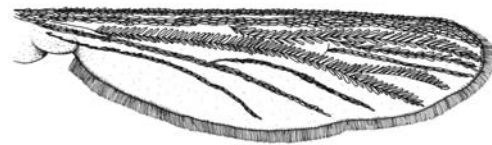


Fig. 51

10. Dorsum of head and scutum with conspicuous, silvery-white median stripe (Fig. 52) .
 *Aedes albopictus*

Dorsum of head and scutum without silvery-white median stripe (Fig. 53) 11

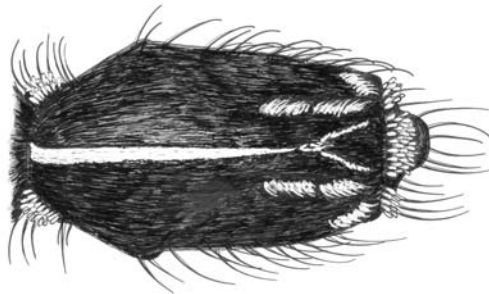


Fig. 52

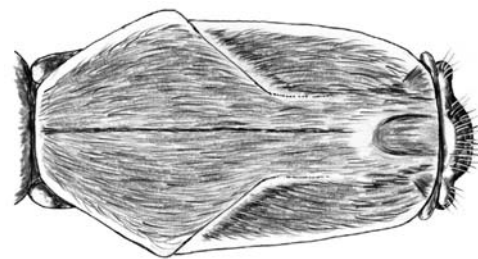


Fig. 53

11. Lower tooth of foreclaw long and subparallel to upper tooth (Fig. 54)
 *Ochlerotatus excrucians*

Lower tooth of foreclaw short and not parallel to upper tooth (Fig. 55) 12

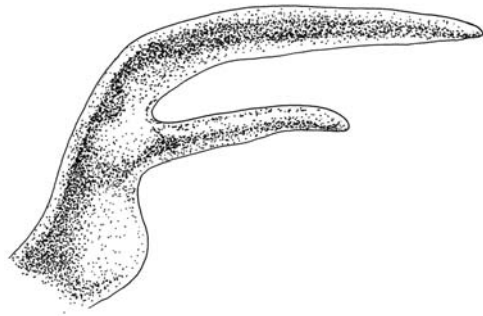


Fig. 54

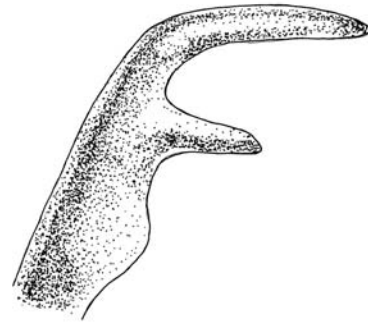


Fig. 55

12. Scutum with distinct lyre-shaped marking of golden scales (Fig. 56); lateral margins of abdominal segments with silvery-white transverse bands contrasting with black abdomen (Fig. 57) *Ochlerotatus japonicus*

Scutum without lyre-shaped marking of golden scales; abdominal segments lacking silvery-white transverse bands 13

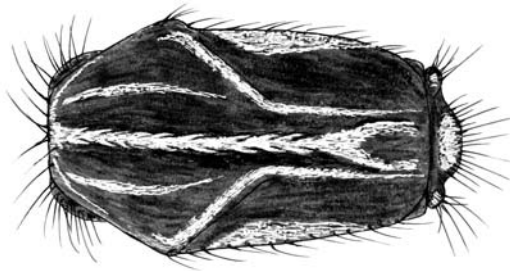


Fig. 56



Fig. 57

13. Scales on antennal pedicel (Pe) few, mostly dark (Fig. 58); lower mesepimeral setae (MeSL) usually three or more (Fig. 59) *Ochlerotatus stimulans*

Scales on antennal pedicel numerous, mostly pale (Fig. 60); lower mesepimeral setae zero to two *Ochlerotatus fitchii*

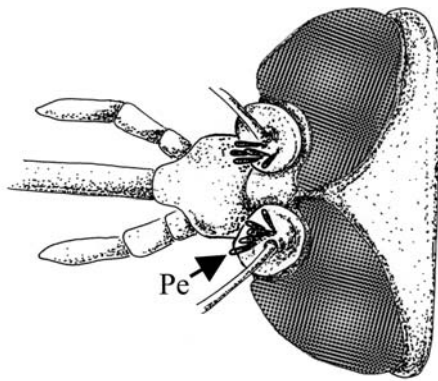


Fig. 58

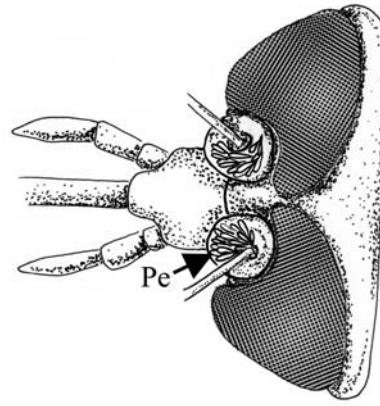


Fig. 60

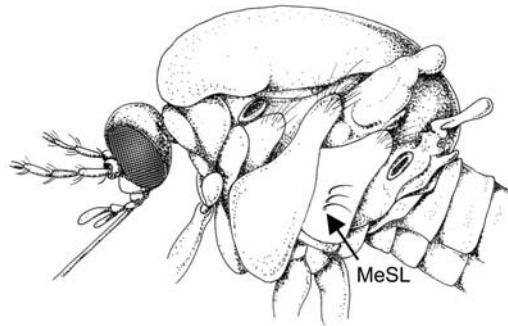


Fig. 59

14. Scutum (Scu) with two submedian, yellowish-white stripes separated by dark stripe of about same width (Fig. 61) *Ochlerotatus trivittatus*

Scutum without pair of submedian stripes (Figs. 62, 64) 15

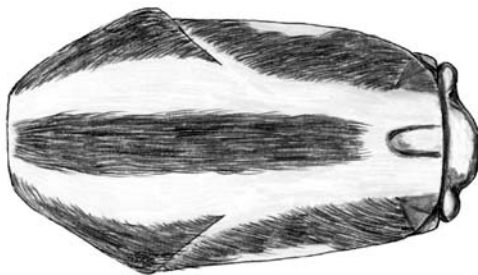


Fig. 61

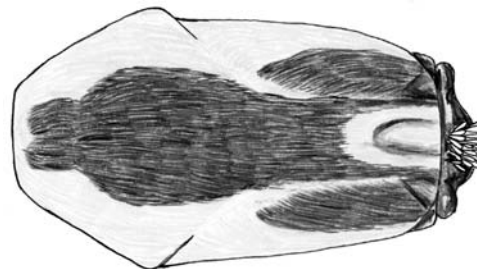


Fig. 62

15. Scutum with broad, silvery-white scales laterally (Fig. 63) 16

Scutum without silvery-white scales laterally (Fig. 64) 17

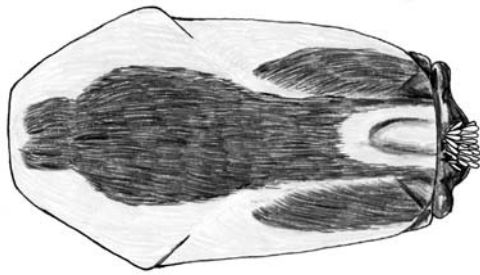


Fig. 63

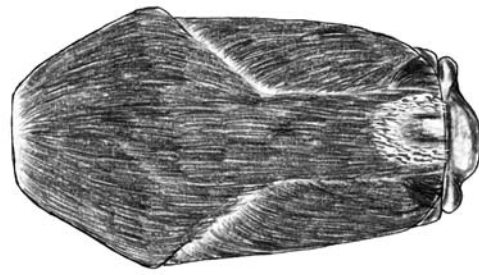


Fig. 64

16. Setae on anterior portion of scutum few and weakly developed; silver scaling of scutal fossa (SF) usually restricted to lateral and posterior portions (Fig. 65)

..... *Ochlerotatus triseriatus*

Setae on anterior portion of scutum numerous and well developed; silver scaling usually covering entire scutal fossa (Fig. 66) *Ochlerotatus hendersoni*

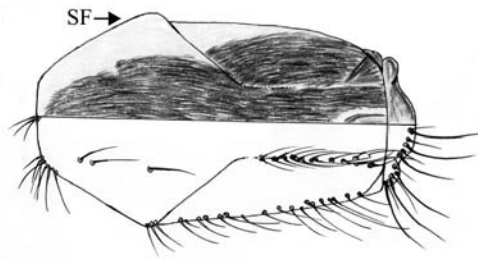


Fig. 65

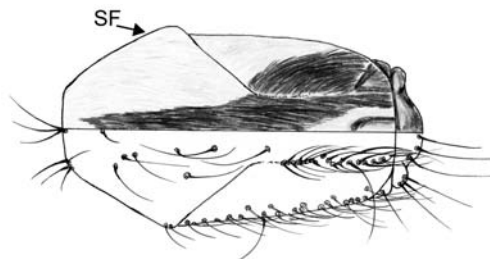


Fig. 66

17. Hypostigmal area (HyA) with scales (Fig. 67) 18

Hypostigmal area without scales (Fig. 68) 19

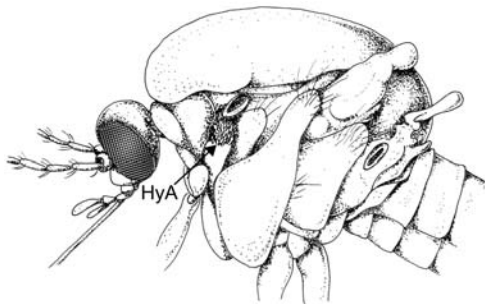


Fig. 67

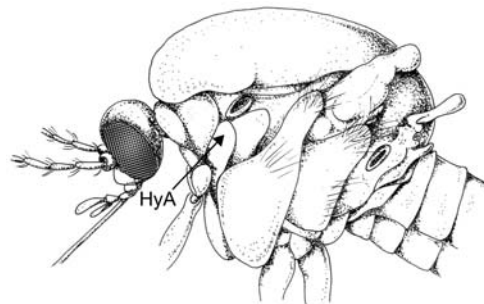


Fig. 68

18. Postprocoxal scale patch (PM) absent (Fig. 69); palpus (MPlp) usually with some pale scales (Fig. 70) *Ochlerotatus intrudens*

Postprocoxal scale patch (PSc) present (Fig. 71); palpus entirely dark-scaled (Fig. 72)
 *Ochlerotatus provocans*

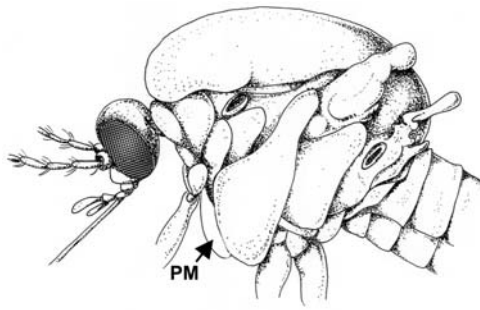


Fig. 69

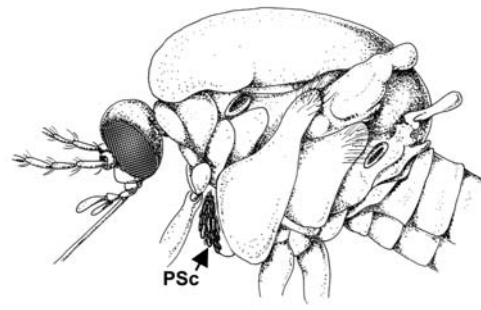


Fig. 71

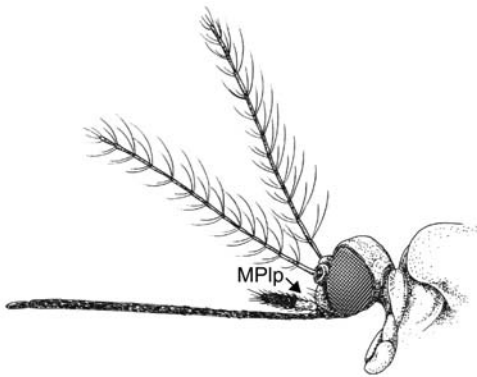


Fig. 70

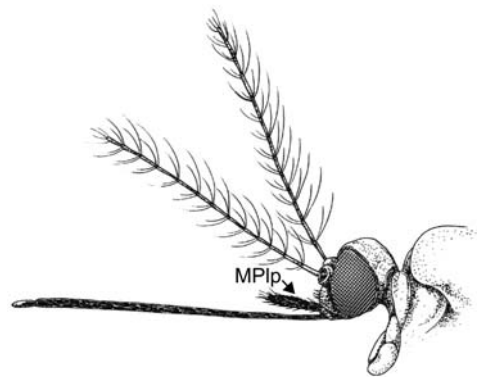


Fig. 72

19. Abdominal terga without basal pale bands, or if present, on fewer than half the segments (Fig. 73) 20

Abdominal terga with basal pale bands on more than half the segments (Fig. 74)
 22



Fig. 73



Fig. 74

20. Abdominal sterna entirely pale-scaled (Fig. 75); forecoxa scale patch (C-1) with some brown scales (Fig. 76) *Ochlerotatus aurifer*

Abdominal sterna with dark scales apically (Fig. 77); forecoxa scale patch entirely pale-scaled (Fig. 78) 21

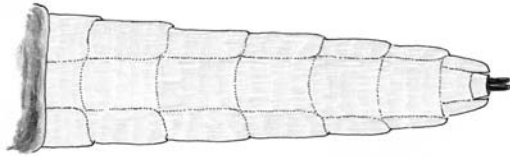


Fig. 75



Fig. 77

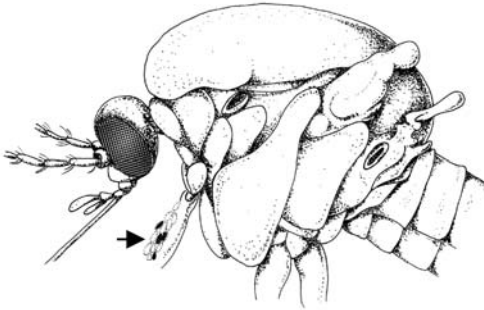


Fig. 76

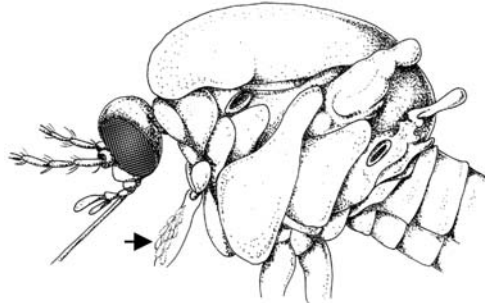


Fig. 78

21. Scutum with two median longitudinal stripes, sometimes fused into a single wider stripe that does not abruptly widen posteriorly (Fig. 79)
..... *Ochlerotatus diantaeus*

Scutum with broad, median longitudinal dark brown stripe abruptly widening posteriorly (Fig. 80) *Ochlerotatus thibaulti*

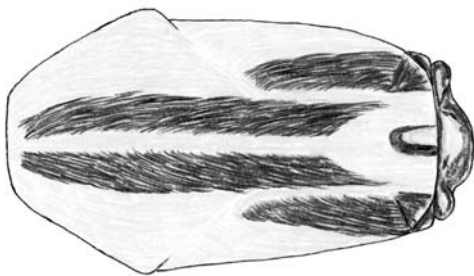


Fig. 79

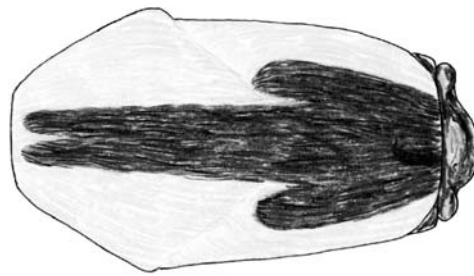


Fig. 80

22. Postprocoxal scale patch (PSc) present (Fig. 81) *Ochlerotatus abserratus*
..... *Ochlerotatus punctor*

Postprocoxal scale patch (PM) absent (Fig. 82) 23

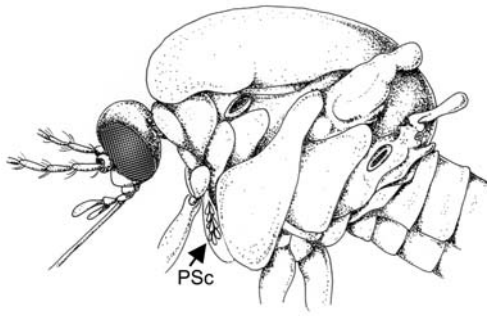


Fig. 81

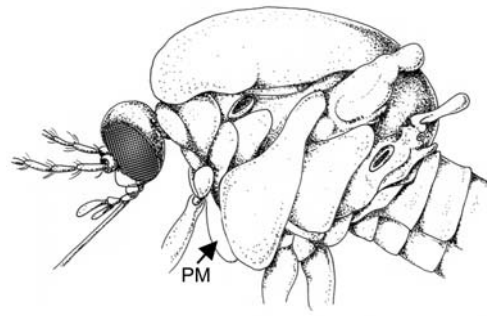


Fig. 82

23. Mesokatepisternum (Mks) with scales extending to near anterior angle (Fig. 83);
scutum with dark median longitudinal stripe (Fig. 84) 24

Mesokatepisternum with scales not extending to near anterior angle (Fig. 85); scutum
with unicolorous scales (Fig. 86) 25

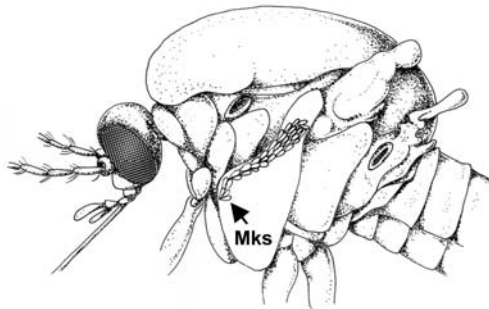


Fig. 83

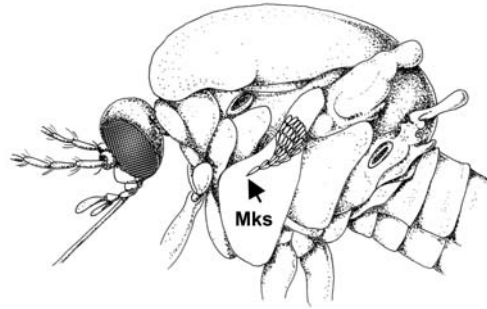


Fig. 85

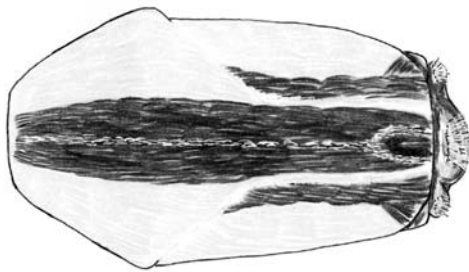


Fig. 84

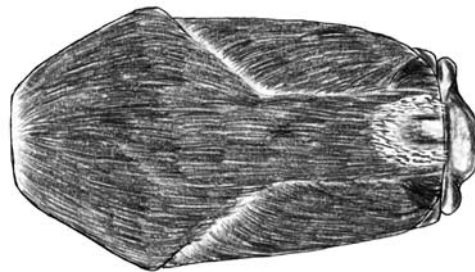


Fig. 86

24. Scutellar (MSS) and supraalar setae (SaS) yellowish (Fig. 87); lower mesepimeral
setae absent, scales devoid on lower 0.25 (Fig. 88) *Ochlerotatus sticticus*

Scutellar and supraalar setae brown or black (Fig. 89); lower mesepimeral setae
present, scales present on lower 0.25 (Fig. 90) *Ochlerotatus communis*

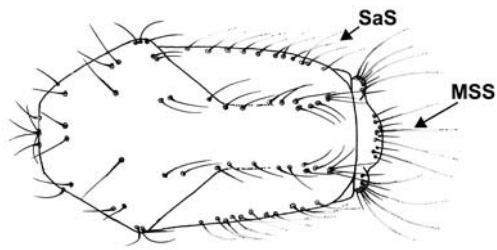


Fig. 87

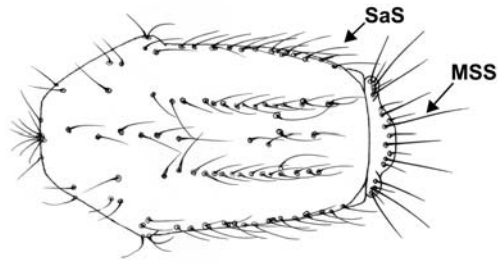


Fig. 89

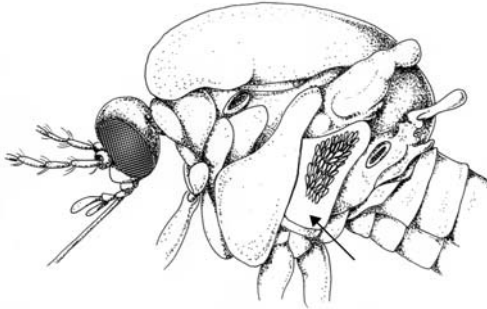


Fig. 88

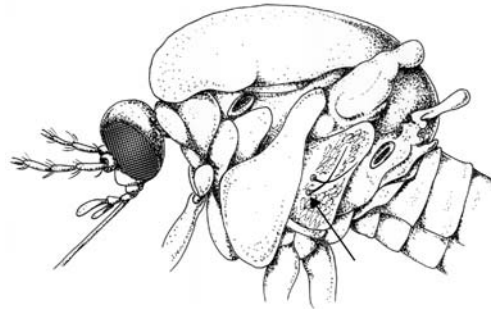


Fig. 90

25. Forecoxa (C-1) with patch of brown scales (Fig. 91); subspiracular area (SA) bare (Fig. 92) *Aedes cinereus*

Forecoxa with pale scales (Fig. 93); subspiracular area with scales (Fig. 94)
 *Ochlerotatus intrudens*

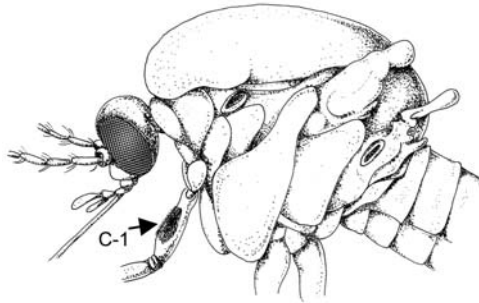


Fig. 91

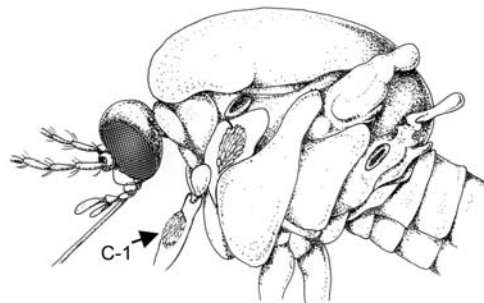


Fig. 93

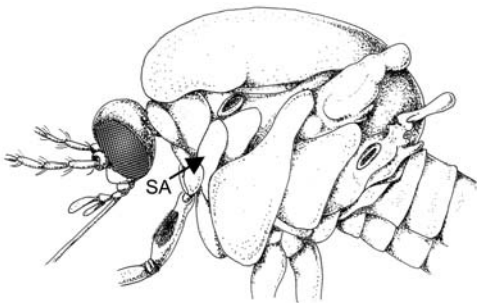


Fig. 92

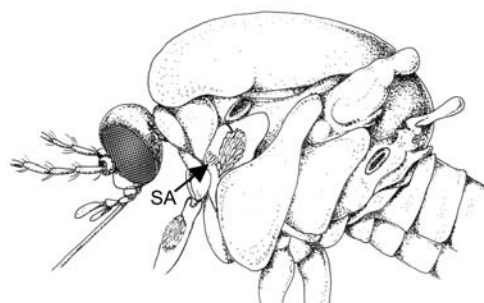


Fig. 94

ANOPHELES

1. Wing veins with distinct patches of pale scales (Fig. 95) 2
- Wing veins entirely dark-scaled, often with distinct patches of dark scales (Fig. 96) 3



Fig. 95

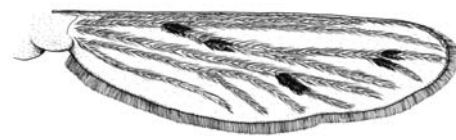


Fig. 96

2. Costa (C) of wing with apical (AP) and subcostal (SCP) light scale patches; vein A with one or two dark-scaled spots (Fig. 97); maxillary palpus (MPlp) entirely dark-scaled (Fig. 98) *Anopheles punctipennis*



Fig. 97

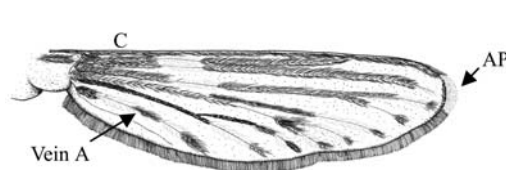


Fig. 99

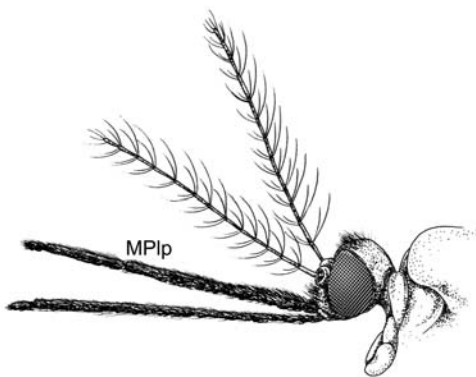


Fig. 98

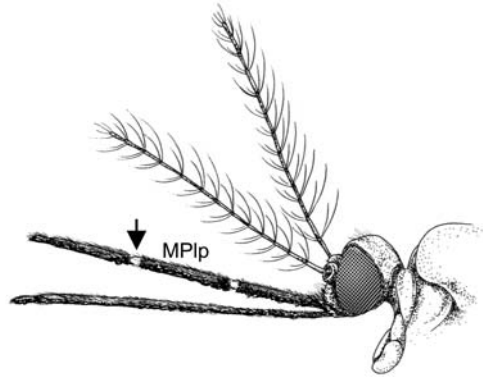


Fig. 100

3. Wing veins without dark spots, uniformly dark (Fig. 101); scutal bristles long, about half the width of scutum (Fig. 102); very small species *Anopheles barberi*

Wing veins spotted with patches of dark scales (Fig. 103); scutal bristles shorter than half the width of scutum; medium to large species (Fig. 104) 4

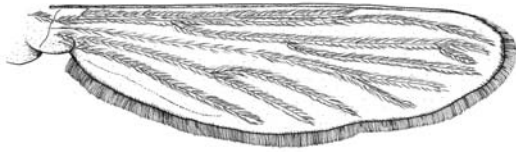


Fig. 101

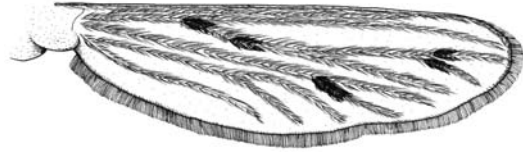


Fig. 103

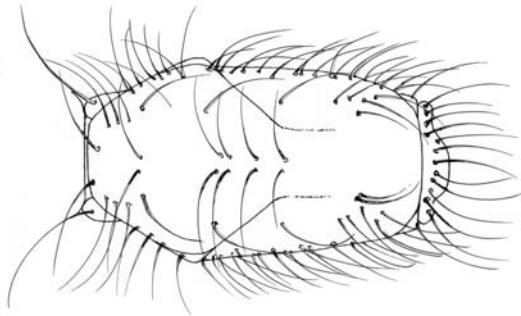


Fig. 102

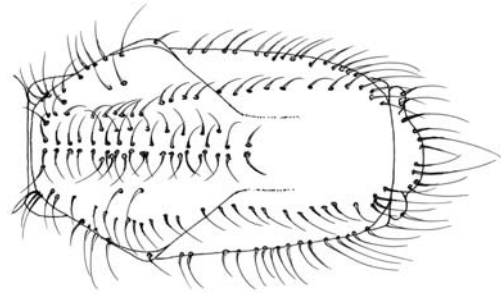


Fig. 104

4. Maxillary palpus (MP1p) with whitish apical bands on each segment (Fig. 105); interocular tuft (ISe) with entirely dark setae (Fig. 105) *Anopheles walkeri*

Maxillary palpus unbanded (Fig. 106); interocular tuft with some pale setae (Fig. 106) *Anopheles quadrimaculatus*

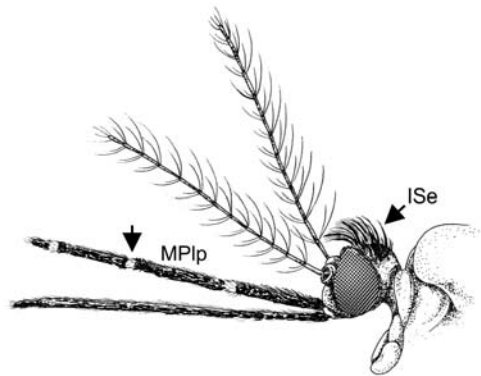


Fig. 105

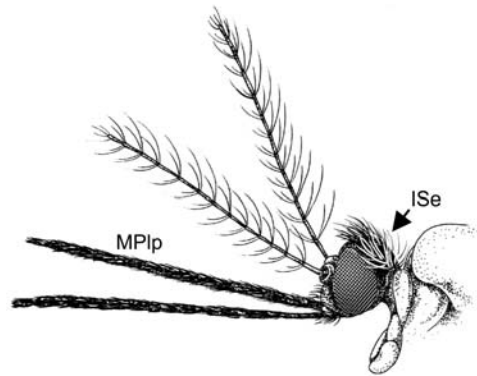


Fig. 106

CULEX

1. Abdominal terga with apical pale bands (Fig. 107) *Culex territans*

- Abdominal terga unbanded or with basal bands only (Fig. 108) 2



Fig. 107



Fig. 108

2. Occiput (Occ) with broad, appressed scales dorsally (Fig. 109); scutum (Scu) without middorsal line of setae (Fig. 110) *Culex erraticus*

- Occiput with narrow scales dorsally (Fig. 111); scutum with middorsal line of setae (AcS) (Fig. 112) 3

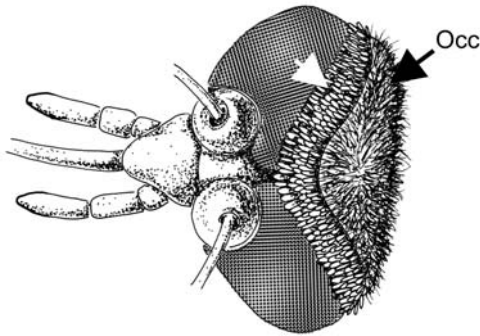


Fig. 109

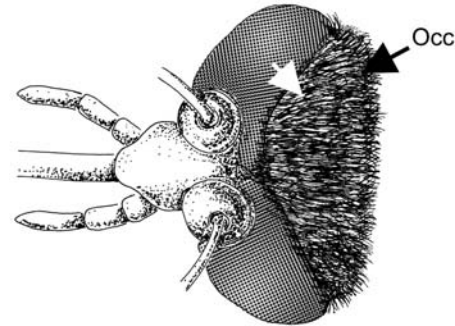


Fig. 111

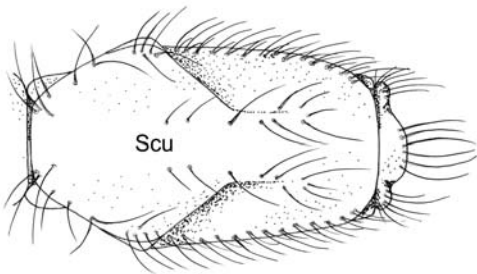


Fig. 110

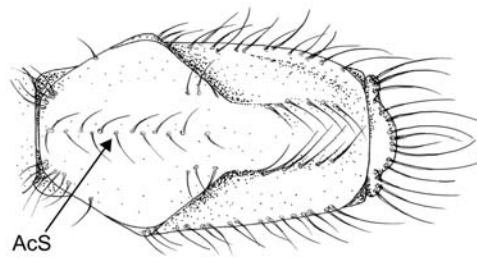


Fig. 112

3. Scutellum with short, dark brown scales (Fig. 113); abdominal terga with narrow, dingy yellow basal bands, sometimes inconspicuous or absent; segments VII and VIII often entirely covered with dingy yellow scales (Fig. 114) *Culex salinarius*

Scutellum with long, pale scales (Fig. 115); abdominal terga with distinct basal bands (Fig. 116) 4

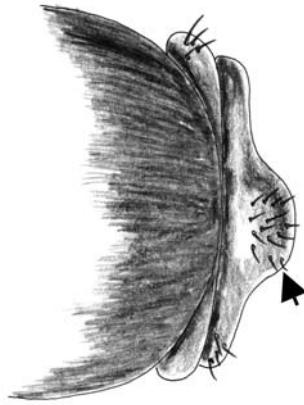


Fig. 113

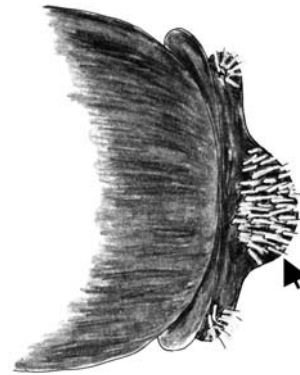


Fig. 115



Fig. 114



Fig. 116

4. Basal pale bands of abdominal terga concave on posterior margin and constricted laterally, forming distinct pale lateral patches (Fig. 117); scutum without pair of pale-scaled spots (Fig. 118) *Culex pipiens*

Basal pale bands of abdominal terga with posterior margin nearly straight across and joining lateral patches without constriction (Fig. 119); scutum with pair of pale-scaled spots near middle (Fig. 120) (often absent in worn individuals) *Culex restuans*



Fig. 117



Fig. 119

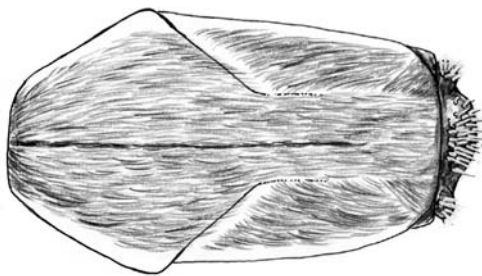


Fig. 118

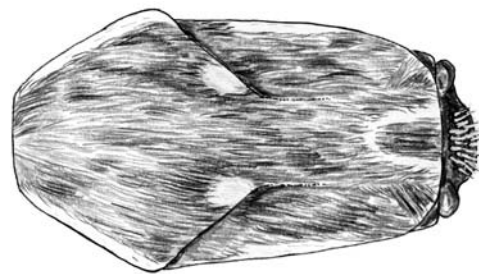


Fig. 120

CULISETA

1. Hindtarsomeres with pale, narrow bands on some segments (Fig. 121) 2

Hindtarsomeres without pale bands (Fig. 122) 3

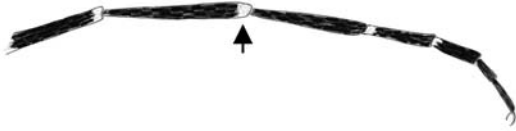


Fig. 121



Fig. 122

2. Abdominal terga with both basal and apical bands; pale scales brownish (Fig. 123) . .
 *Culiseta minnesotae*

Abdominal terga with basal bands only; pale scales whitish (Fig. 124)
 *Culiseta morsitans*



Fig. 123



Fig. 124

3. Wing (Fig. 125) and hindtarsomeres intermixed with light and dark scales (Fig. 126) .
 *Culiseta inornata*

Wing (Fig. 127) and hindtarsomeres dark-scaled (Fig. 128) 4

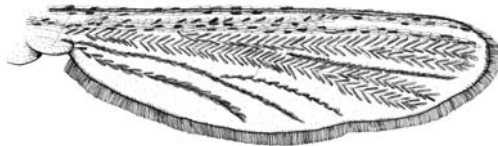


Fig. 125

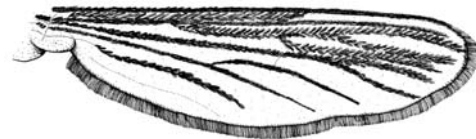


Fig. 127



Fig. 126



Fig. 128

4. Points of origin of mediocubital (m-cu) and radiomedial (r-m) cross veins separated by less than the length of either cross vein (Fig. 129); scutum with pair of yellow-scaled spots near middle (Fig. 130) *Culiseta impatiens*

Points of origin of mediocubital and radiomedial cross veins separated by more than the length of either cross vein (Fig. 131); scutum without pair of spots (Fig. 132) *Culiseta melanura*

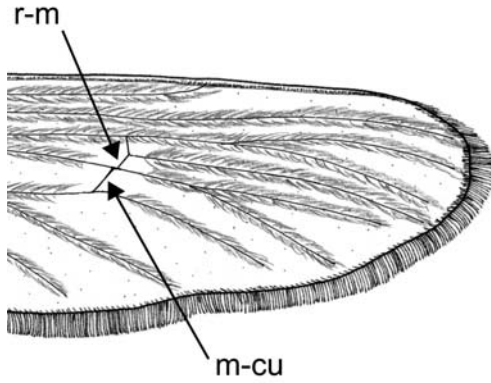


Fig. 129

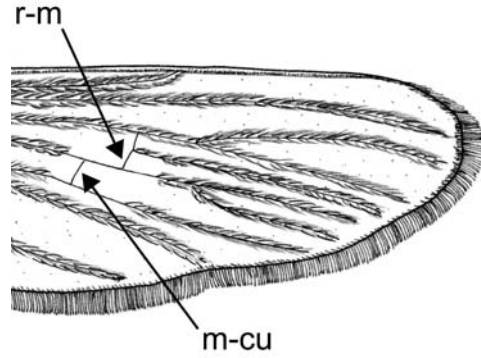


Fig. 131

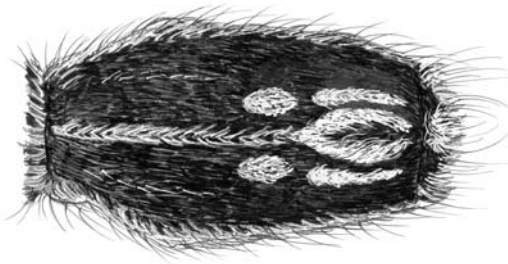


Fig. 130

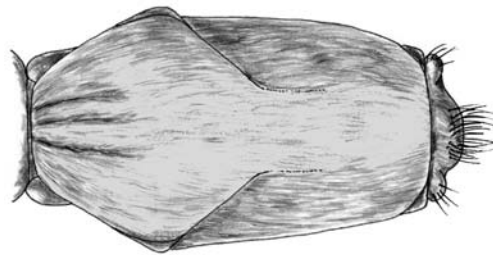


Fig. 132

PSOROPHORA

1. Wing intermixed with dark and pale scales (Fig. 133); hindfemur with narrow, subapical pale band (Fig. 134) *Psorophora columbiae*

Wing uniformly dark or with only a few pale scales on costa and subcosta (Fig. 135); hindfemur without subapical pale band (Fig. 136) 2

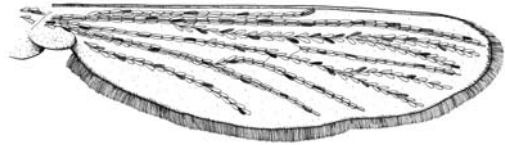


Fig. 133

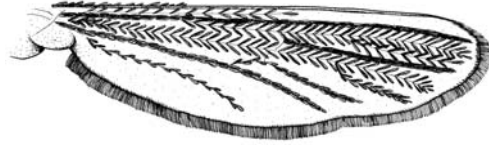


Fig. 135

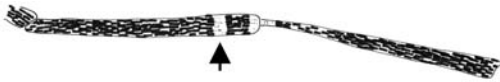


Fig. 134



Fig. 136

2. Scutum with narrow, median longitudinal stripe of golden scales (Fig. 137); abdominal terga covered with pale yellow to brown scales; hindtarsomere 5 not entirely pale-scaled (Fig. 138) *Psorophora ciliata*

Scutum with dark brown and golden-yellow scales mixed in no definite pattern (Fig. 139); abdominal terga dark-scaled with iridescent purplish sheen dorsally; hindtarsomere 5 entirely pale-scaled (Fig. 140) *Psorophora ferox*

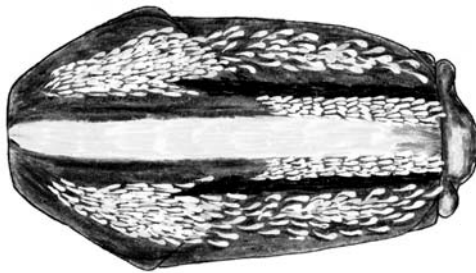


Fig. 137

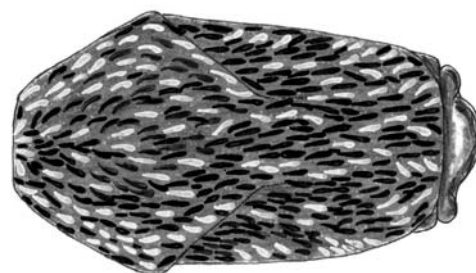


Fig. 139



Fig. 138



Fig. 140

SPECIES DESCRIPTIONS

Aedes albopictus (Skuse)

Larva: Head: Antenna shorter than head; antennal seta 1-A single; head hairs 5 and 6 single. **Abdomen:** Comb scales eight to twelve, arranged in a straight single row; each comb scale with a long, pointed, unfringed median spine. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth; siphon without acus. **Anal Segment:** Saddle incomplete, nearly reaching margin of anal segment; ventral brush with four pairs of setae.

Adult Female: Head: Proboscis unbanded; vertex of head with median stripe of silvery-white scales. **Thorax:** Scutum dark-scaled with conspicuous silvery-white median stripe narrowing posteriorly. **Abdomen:** Abdominal terga dark-scaled with large laterobasal patches and narrow basal bands of white scales. **Legs:** Hindtarsomeres with broad, white basal bands more than one-third times the length of the tarsal segment; hindtarsomere 5 usually entirely white-scaled. **Wings:** Wing scales dark and narrow.

County Records: Fairfield. A single female collected 26 August, 2003 in a CO₂ - baited light trap from Stratford represents the only collection record of this exotic species in Connecticut. Permanent establishment in the state is doubtful.

Larval Habitat: Natural and artificial containers (e.g., discarded tires).

Overwintering Stage: Egg.

Host Preference: Mammals. An aggressive, opportunistic day-biting species that feeds readily on humans.

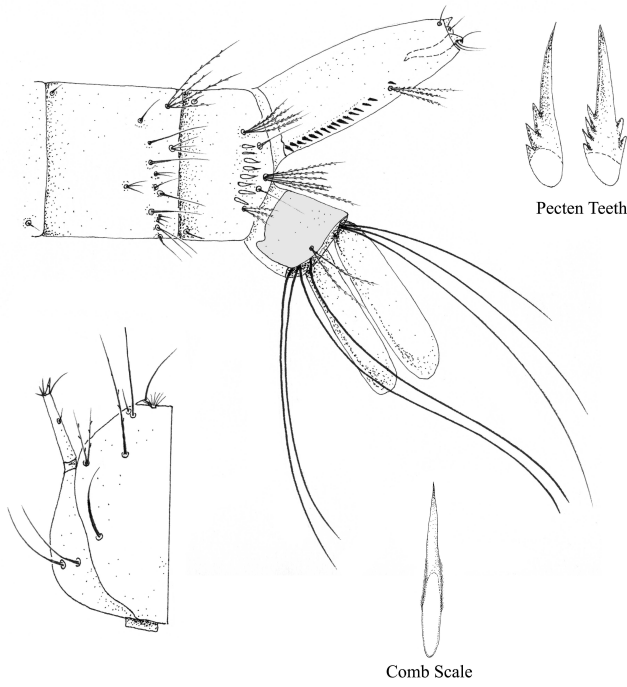
Virus Isolations: None.

Phenology: Reported to be multivoltine. **Larvae:** No collection data. **Adults:** A single collection from August.

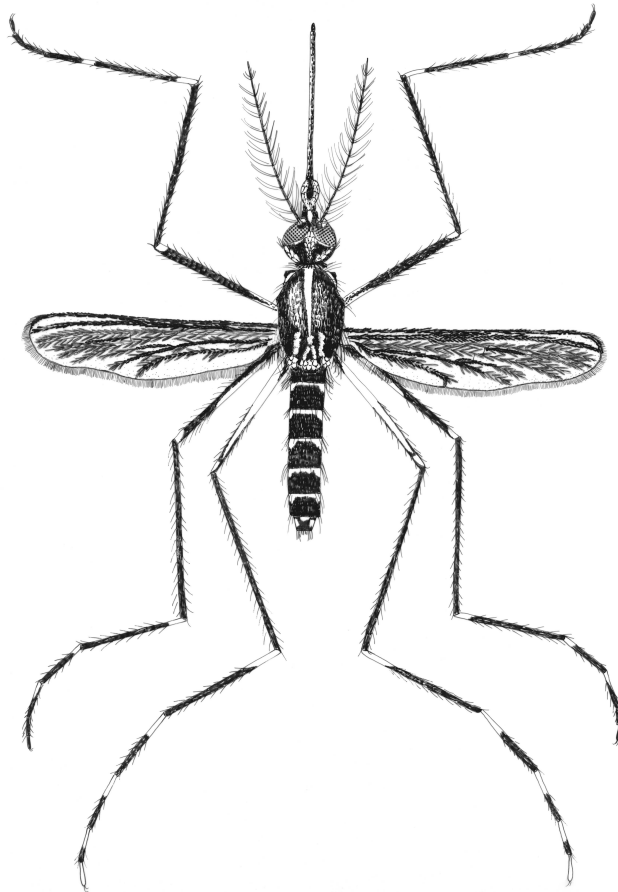
Seasonal Abundance: Insufficient collection data.

Taxonomic note: Recent taxonomic revisions by J. F. Reinert, R. E. Harbach and I. A. Kitching (*Phylogeny and classification of Aedini (Diptera: Culicidae), based on morphological characters of all life stages*, Zool. J. Linn. Soc. 142:289-368, 2004.) have proposed placing this species in the genus *Stegomyia*.

Aedes albopictus (Skuse)



Larva



Adult Female

Aedes cinereus Meigen

Larva: Head: Antenna shorter than head; antennal seta 1-A multiple; head hairs 5, 6, and 7 inserted nearly in a straight line; head hairs 5 and 6 with two or more branches. **Abdomen:** Comb scale thorn-like and fringed with subequal spinules, arranged in an irregular double row. **Siphon:** Small siphonal tuft inserted beyond distally detached pecten teeth. **Anal Segment:** Saddle incomplete.

Adult Female: Head: Proboscis covered with golden-brown scales, unbanded. **Thorax:** Scutum covered with short golden to reddish-brown scales; postprocoxal scale patch absent; hypostigmal area without scales; subspiracular area bare; scales on mesokatepisternum not extending to near anterior angle. **Abdomen:** Abdominal terga dark-scaled, usually with narrow, dingy white transverse basal bands; sterna covered with pale scales. **Legs:** Forecoxa with distinct dark brown scale patch on anterior surface; hindtarsomeres dark, unbanded. **Wings:** Entirely dark-scaled.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Temporary and semi-permanent woodland pools. Larvae have also been collected from sedge tussocks and boggy areas along the margins of ponds and swamps.

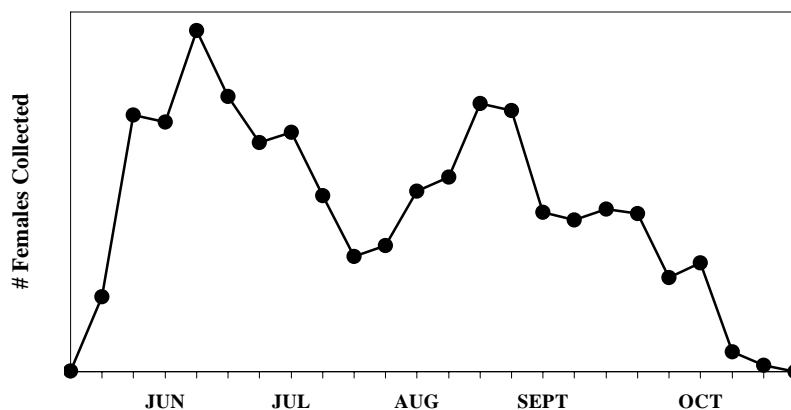
Overwintering Stage: Egg.

Host Preference: Mammals. A local pest species, especially in wooded areas.

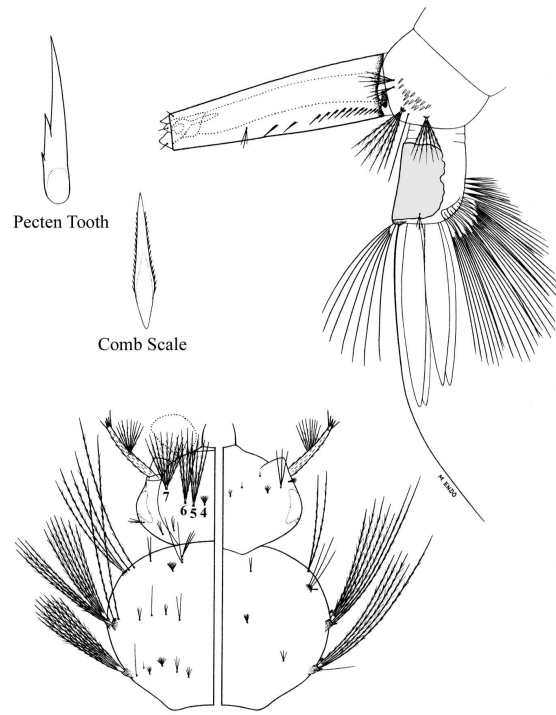
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Highlands J, Jamestown Canyon, West Nile.

Phenology: Although reported to be univoltine, with a delayed egg hatch later in the season, our data suggests at least two generations a year in Connecticut. **Larvae:** March – September. **Adults:** May – November.

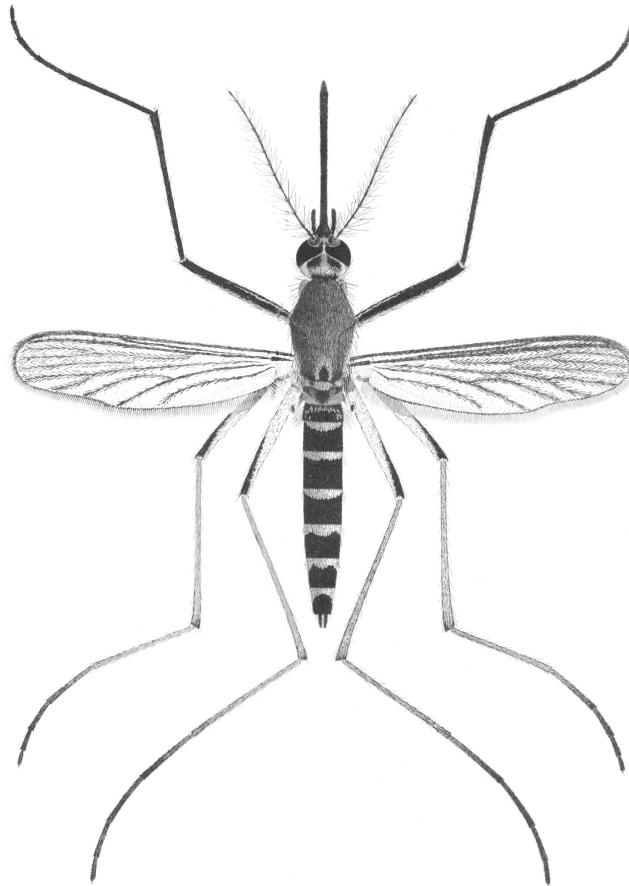
Seasonal Abundance:



Aedes cinereus Meigen



Larva



Adult Female

Aedes vexans (Meigen)

Larva: Head: Antenna shorter than head capsule; head hairs 5 and 6 with two or more branches; head hair 6 inserted anterior to line between head hairs 5 and 7. **Abdomen:** Comb scale thorn-like with long, apical, unfringed median spine; usually twelve or fewer comb scales arranged in an irregular single or double row. **Siphon:** Siphonal tuft about half the length of basal diameter of siphon and inserted beyond distally detached pecten teeth. **Anal Segment:** Saddle incomplete with smooth ventral margin.

Adult Female: Head: Proboscis unbanded, covered with dark brown scales. **Thorax:** Scutum covered with short golden-brown scales, becoming dingy white towards posterior portion; postprocoxal scale patch absent; hypostigmal area without scales; lower mesepimeral setae absent. **Abdomen:** Abdominal terga dark-scaled with distinct bilobed, dingy white basal bands; last abdominal segment predominantly dark-scaled with a narrow, pale apical band. **Legs:** Hindtarsomeres with narrow, pale basal bands; basal band on 2nd hindtarsomere less than one-quarter times the length of the tarsal segment. **Wings:** Veins covered with narrow, dark scales.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: A floodwater species found in a wide variety of temporary freshwater pools and depressions in open areas (e.g., flooded fields, retention ponds, roadside puddles, woodland pools).

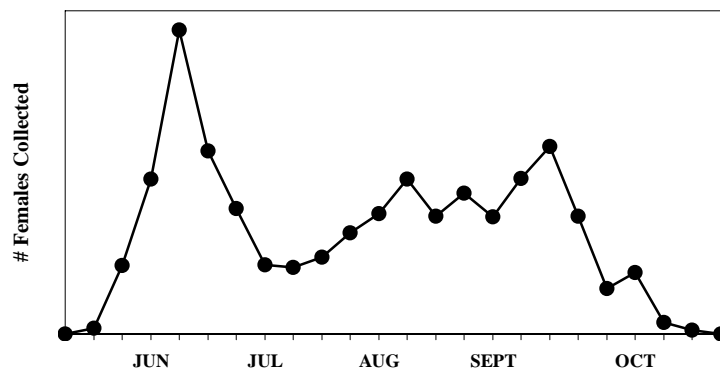
Overwintering Stage: Egg.

Host Preference: Mammals. Females are vicious human biters, often traveling considerable distances from their breeding sites.

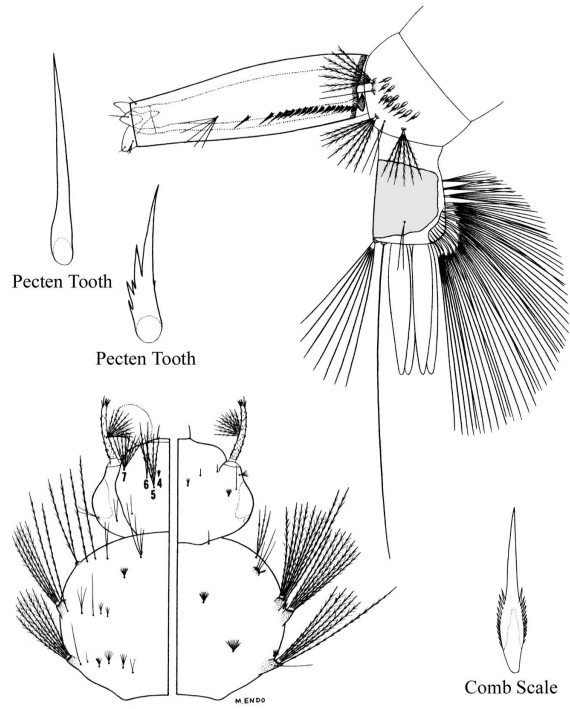
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Highlands J, Jamestown Canyon, West Nile.

Phenology: Multivoltine. **Larvae:** April – September. **Adults:** May – October.

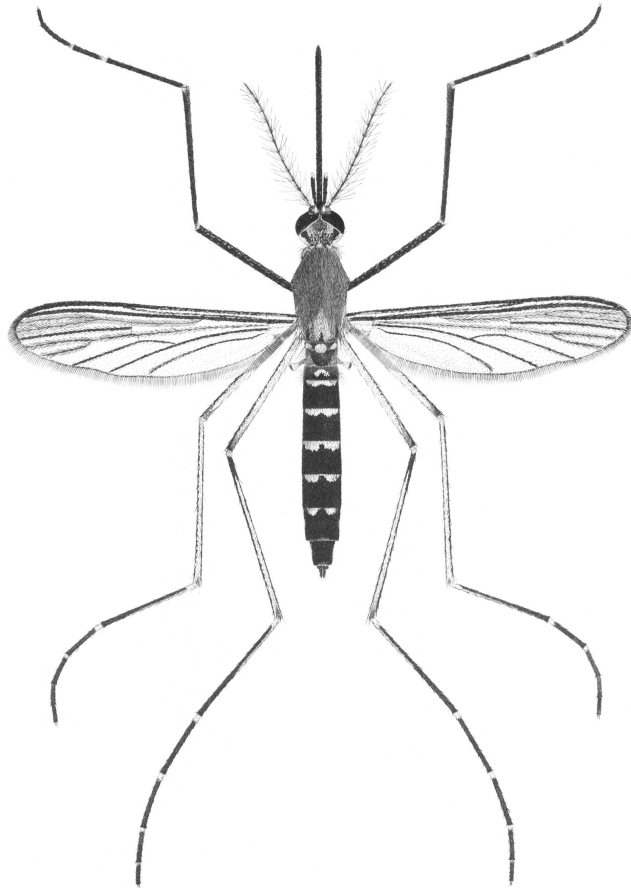
Seasonal Abundance:



Aedes vexans (Meigen)



Larva



Adult Female

Anopheles barberi Coquillett

Larva: Head: Head hairs 5, 6, and 7 short, single or double; inner clypeal setae simple and widely spaced. **Abdomen:** Lateral setae on abdominal segments IV-VI long and plumose.

Adult Female: Head: Proboscis and maxillary palpus covered with dark brown scales.

Thorax: Integument of scutum light to dark brown, smooth and shiny, with numerous long setae about one-half the width of scutum. **Abdomen:** Abdominal terga brown; dorsum covered with long setae, giving it an overall hairy appearance. **Legs:** Entirely dark-scaled. **Wings:** Wing veins uniformly covered with dark scales (without aggregations of dark-scaled spots).

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Windham.

Larval Habitat: Tree holes and artificial containers with organic matter (e.g., discarded tires). Larvae are predaceous on other mosquito larvae.

Overwintering Stage: Larva.

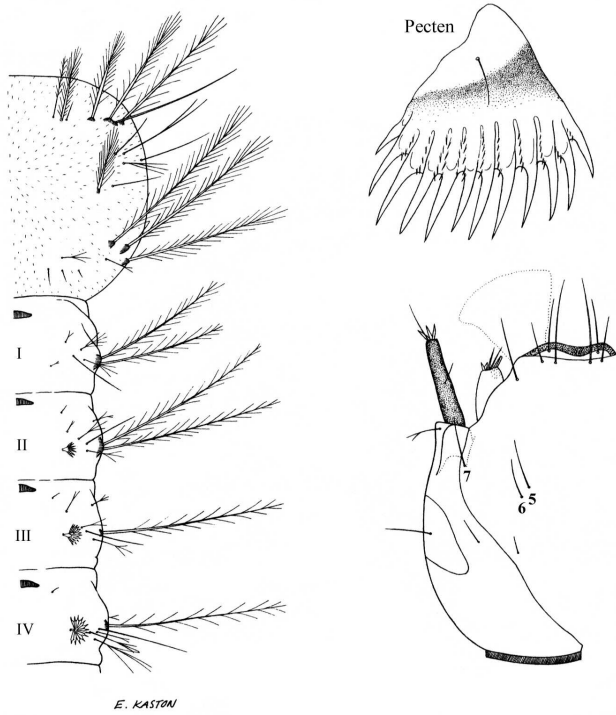
Host Preference: Mammals. Reported to be persistent nervous feeders that are usually found only in the vicinity of the larval site. Blood feed indoors and out.

Virus isolations: None.

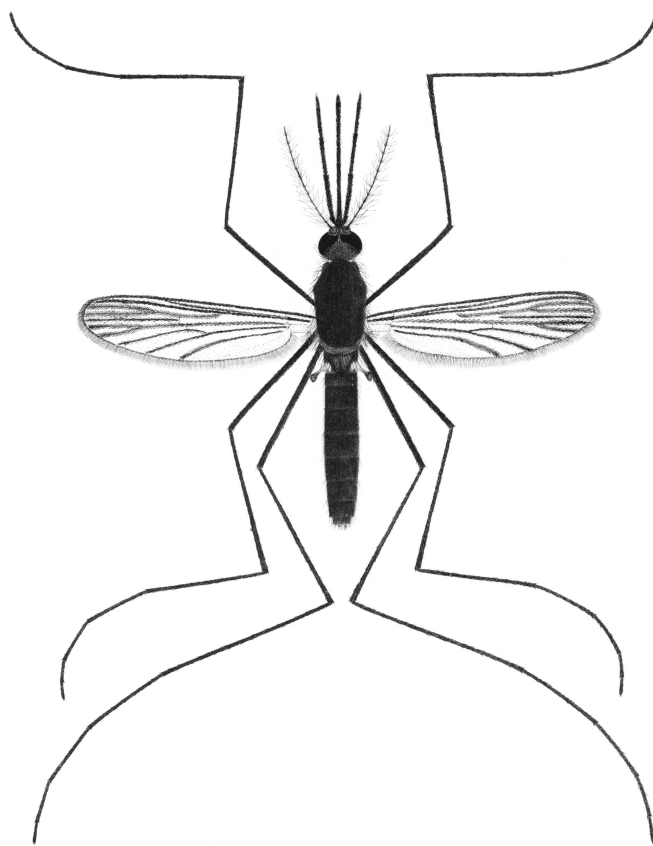
Phenology: Multivoltine. **Larvae:** No collection data. **Adults:** June – October.

Seasonal Abundance: Insufficient collection data. Rarely collected in gravid or CO₂ – baited CDC miniature light traps.

Anopheles barberi Coquillett



Larva



Adult Female

Anopheles crucians Wiedemann

Larva: Head: Head hairs 5, 6, and 7 long, multibranched and plumose; inner clypeal setae simple, with basal tubercles separated by less than diameter of one tubercle. **Abdomen:** Lateral seta on abdominal segments IV-VI not plumose; seta 0 on segments IV-V with four or more branches about equal in size to seta 2.

Adult Female: Head: Proboscis covered with dark scales; segments of maxillary palpus with pale apical rings, fifth segment entirely white. **Thorax:** Scutum with pair of median longitudinal dark stripes covered with yellowish setae. **Abdomen:** Abdominal terga dark brown with long yellowish-brown setae. **Legs:** Dark with small apical patch of light colored scales on femur and tibia. **Wings:** Costa dark-scaled except for small, light colored patch at apex of wing; wing veins intermixed with dark and light scales; vein A with three distinct dark spots.

County Records: Fairfield, Hartford, Middlesex, New Haven, New London, Windham.

Larval Habitat: Sphagnum bogs, acidic swamps, and ponds.

Overwintering Stage: Larva.

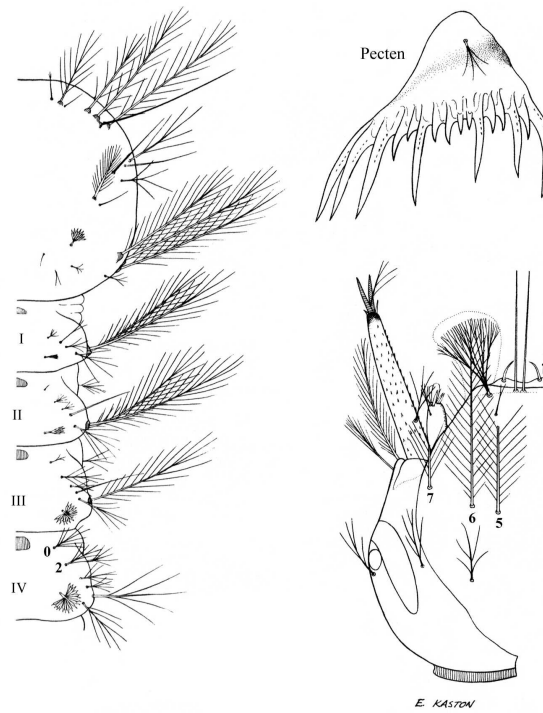
Host Preference: Mammals. Reported to be a persistent human biter both in houses and outdoors. Rarely encountered in Connecticut.

Virus Isolations: None.

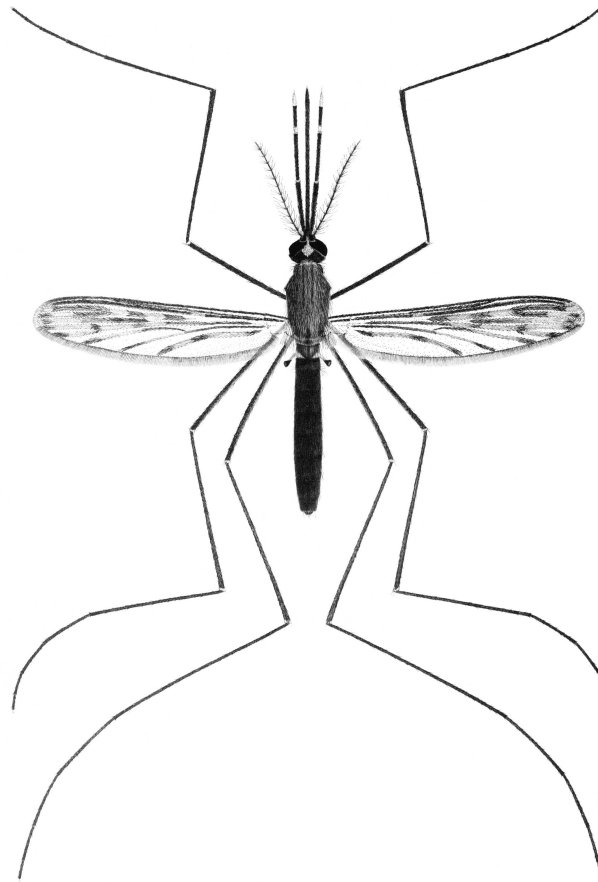
Phenology: Multivoltine. **Larvae:** No collection data. **Adults:** June – October.

Seasonal Abundance: Insufficient collection data. Rarely collected in gravid or in CO₂ – baited CDC miniature light traps.

Anopheles crucians Wiedemann



Larva



Adult Female

Anopheles punctipennis (Say)

Larva: Head: Head hairs 5, 6, and 7 long, multibranching and plumose; head hairs 8 and 9 usually with five to seven branches; inner clypeal setae simple, with basal tubercles closer together than diameter of one tubercle. **Abdomen:** Lateral setae on abdominal segments IV-VI not plumose; seta 0 on segments IV-V obsolete or very small, single.

Adult Female: Head: Proboscis dark-scaled; maxillary palpus unbanded with scales at base long and erect, giving it a shaggy appearance. **Thorax:** Scutum with broad median frosted stripe. **Abdomen:** Abdominal terga brown, covered with yellowish-brown setae. **Legs:** Dark-scaled except for pale scales at apices of femur and tibia. **Wings:** Costa with distinct apical and subcostal cream-colored scale patches; wing veins intermixed with dark and light scales.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Semi-permanent and permanent ponds, rock pools, and margins of slow moving streams with emergent vegetation; occasionally artificial containers.

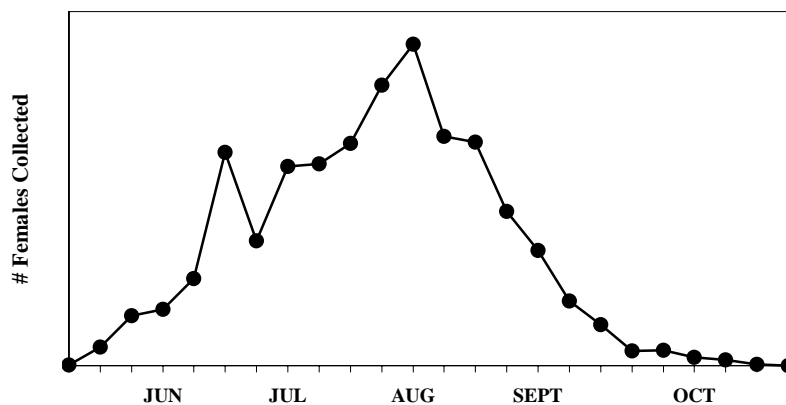
Overwintering Stage: Adult females overwinter in well-protected areas such as abandoned buildings, caves, hollow trees, animal burrows, and other similar habitats.

Host Preference: Mammals and birds. A persistent human biter, especially in the early evening, but will also bite during the day in shaded areas.

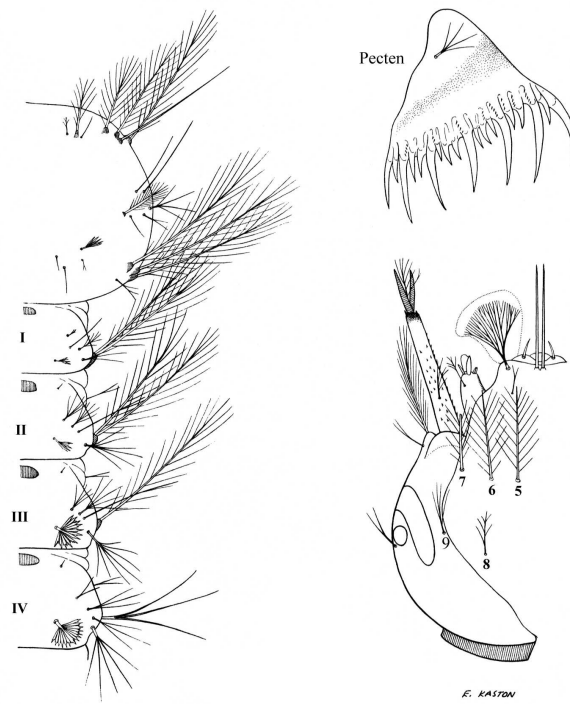
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Highlands J, Jamestown Canyon, Trivittatus, West Nile.

Phenology: Multivoltine. **Larvae:** May – September. **Adults:** Year round.

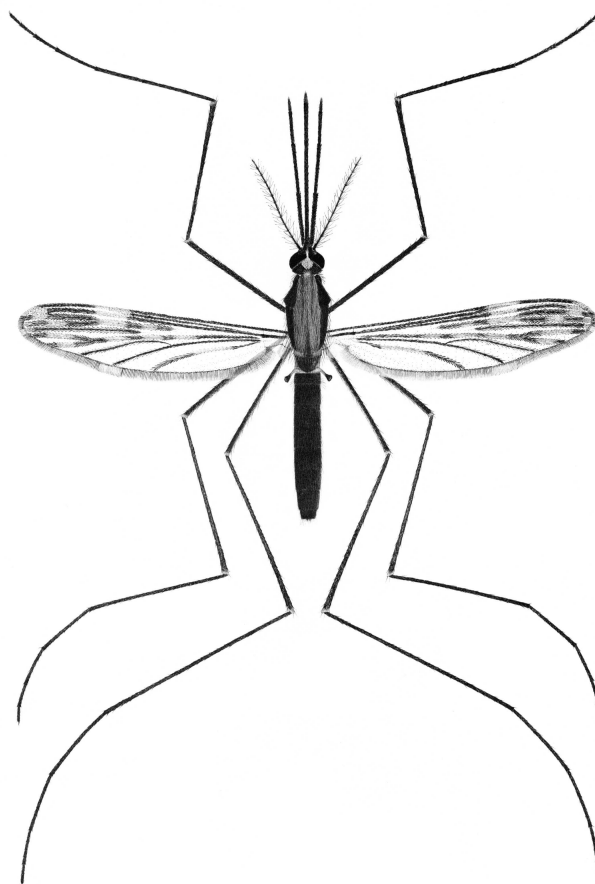
Seasonal Abundance:



Anopheles punctipennis (Say)



Larva



Adult Female

Anopheles quadrimaculatus Say

Larva: Head: Head hairs 5, 6, and 7 long, multibranched and plumose; head hairs 8 and 9 usually with eight to ten branches; inner clypeal setae simple, with basal tubercles separated by a distance equal to, or greater than, the diameter of one tubercle. **Abdomen:** Lateral setae on abdominal segments IV-VI not plumose; seta 0 on segments IV-V obsolete or very small, single.

Adult Female: Head: Proboscis dark-scaled; maxillary palpus unbanded; interocular tuft with dark and pale setae. **Thorax:** Integument of scutum brown, covered with numerous yellowish setae. **Abdomen:** Abdominal terga tan to dark brown, covered with fine yellowish setae. **Legs:** Dark-scaled, except for pale scales at apices of femur and tibia. **Wings:** Wing veins dark-scaled with scales aggregated into four distinct dark-scaled spots (usually more defined than in *Anopheles walkeri*).

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Marshes, ponds, and shallow margins of slow moving small streams with abundant emergent vegetation and floating debris.

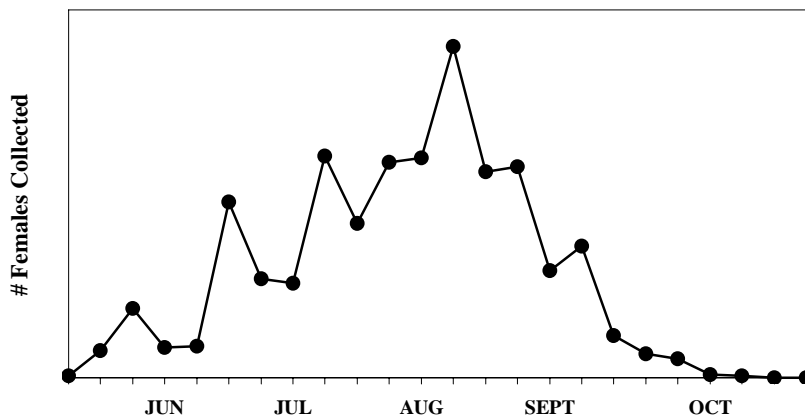
Overwintering Stage: Adult females overwinter in protected areas such as abandoned buildings, caves, hollow trees, animal burrows, and other protected habitats.

Host Preference: Mammals. Females readily bite humans indoors and outdoors, especially during evenings. The principle vector of human malaria (*Plasmodium vivax* and *Plasmodium falciparum*) in the northeastern United States.

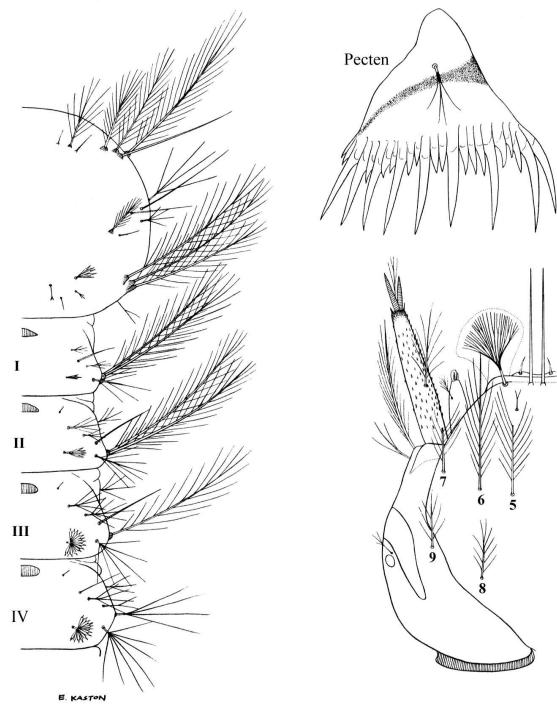
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Highlands J, West Nile.

Phenology: Multivoltine. **Larvae:** July – September. **Adults:** Year round.

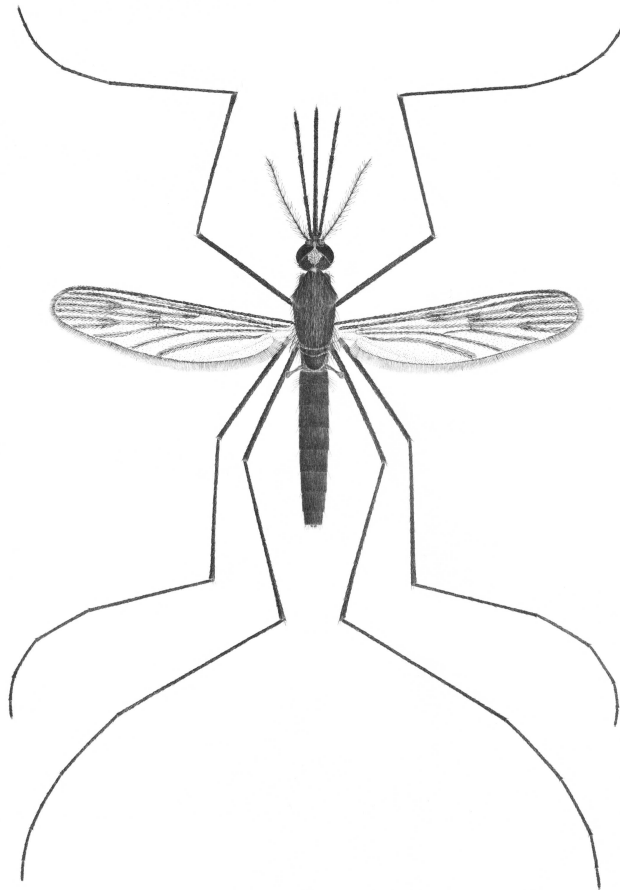
Seasonal Abundance:



Anopheles quadrimaculatus Say



Larva



Adult Female

Anopheles walkeri Theobald

Larva: Head: Head hairs 5, 6, and 7 long, multibranching and plumose; inner clypeal setae with sparse minute feathering toward tip, with basal tubercles separated by less than diameter of one tubercle. **Abdomen:** Lateral setae on abdominal segments IV-VI not plumose; seta 0 on segments IV-V multibranching and shorter than seta 2.

Adult Female: Head: Proboscis dark-scaled; maxillary palpus with pale apical ring on each segment; interocular tuft with entirely dark setae. **Thorax:** Integument of scutum dark brown, covered with short golden-brown setae. **Abdomen:** Abdominal terga tan to dark brown, with fine yellowish setae. **Legs:** Dark-scaled, with pale scales at apices of femur and tibia. **Wings:** Wing veins covered with dark scales; some scales aggregated into dark spots, however, usually not as well defined as in *An. quadrimaculatus*.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Marshes and edges of ponds with abundant emergent vegetation and floating debris.

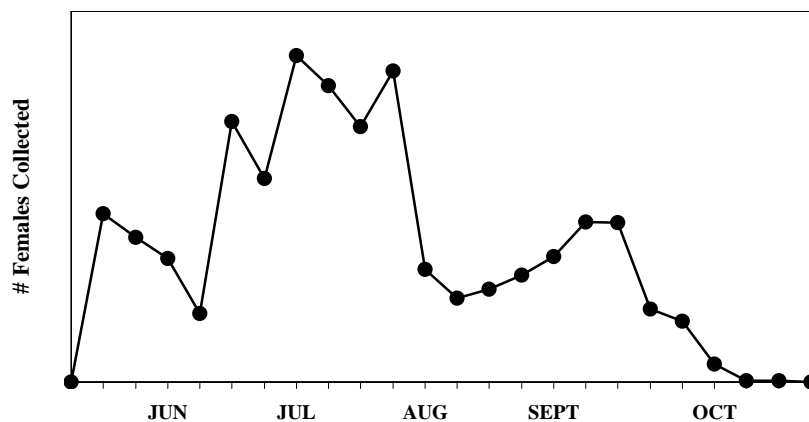
Overwintering Stage: The only *Anopheles* in the northeastern United States that overwinters in the egg stage.

Host Preference: Mammals. Not considered a major pest in Connecticut.

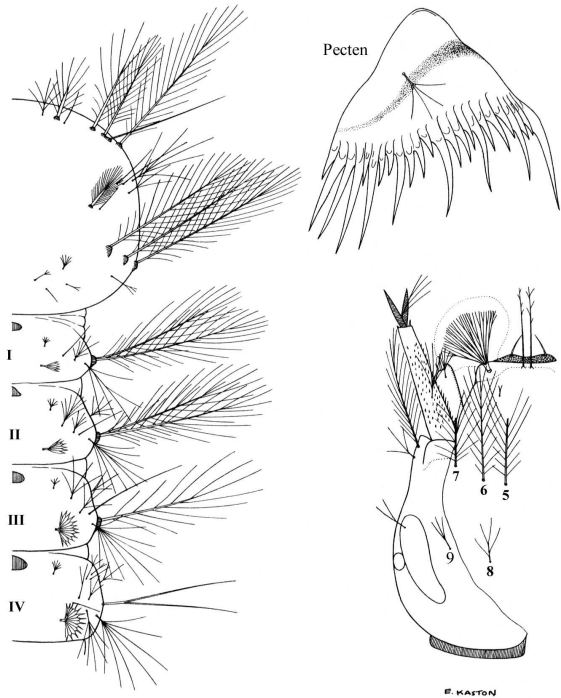
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Jamestown Canyon, West Nile.

Phenology: Multivoltine. **Larvae:** Reported from New York State in April. Limited collection data for July only in Connecticut. **Adults:** June – October.

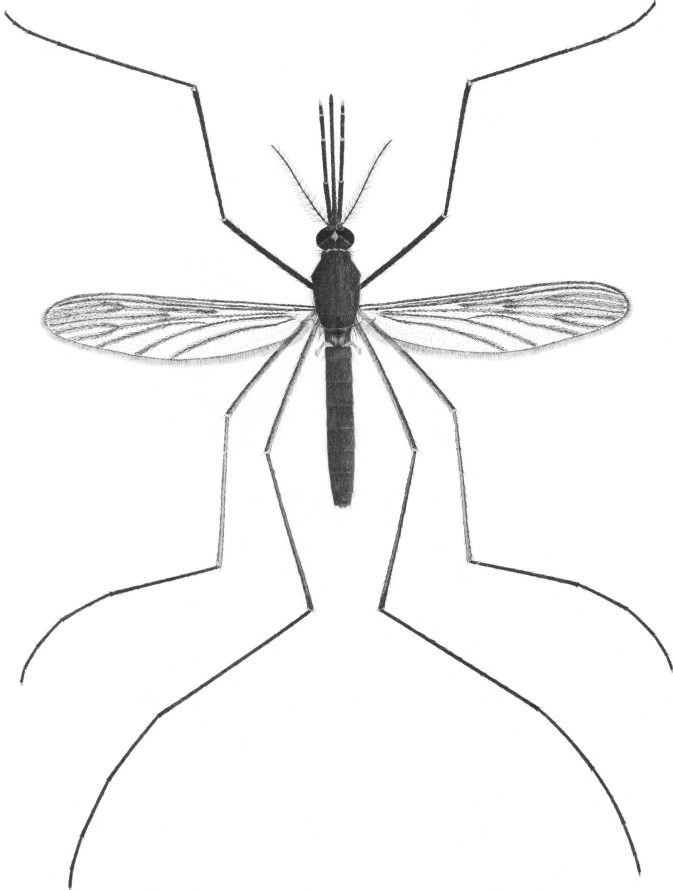
Seasonal Abundance:



Anopheles walkeri Theobald



Larva



Adult Female

Coquillettidia perturbans (Walker)

Larva: Head: Head wider than long; antenna about twice as long as head; head hairs 5 and 6 multiple. **Abdomen:** Comb scale with long median spine, fringed on basal half with short spinules; comb scales usually eight or more arranged in an irregular row. **Siphon:** Siphon short and without pecten teeth; distal end of siphon pointed with dorsal, saw-toothed projections adapted for piercing and attaching to aquatic plant tissue. **Anal Segment:** Saddle complete.

Adult Female: Head: Proboscis dark-scaled with broad median band of pale scales. **Thorax:** Scutum mostly covered with golden-brown scales; prespiracular and postspiracular setae absent. **Abdomen:** Apex of abdomen bluntly rounded; dorsum dark-scaled with narrow, irregular basal bands of yellowish scales; some terga with basolateral patch of pale scales. **Legs:** First tarsal segment of each leg with pale median band, other tarsal segments with broad, pale basal bands. **Wings:** Wing scales broad with pale and dark scales intermixed.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Permanent bodies of water with muddy substrates and abundant emergent vegetation (e.g., cattails). Larvae and pupae obtain air by attaching themselves to the roots and stems of emergent plants. When disturbed, they detach and burrow in the mud making them difficult to locate.

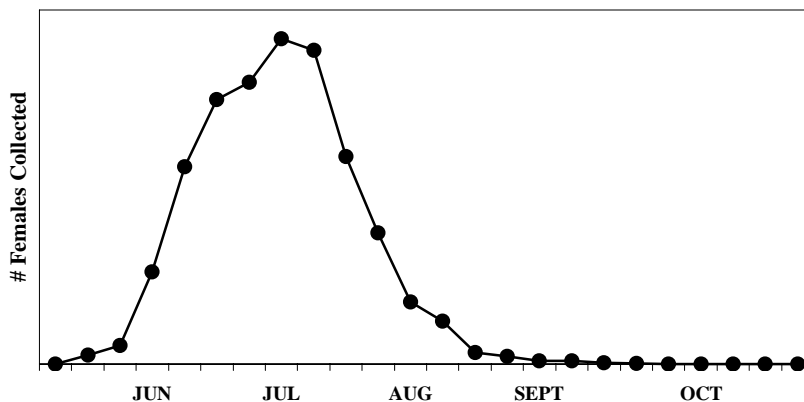
Overwintering Stage: Larva.

Host Preference: Birds and mammals. Females readily bite humans in the early morning, at dusk, in the evening, and during the day in densely shaded areas.

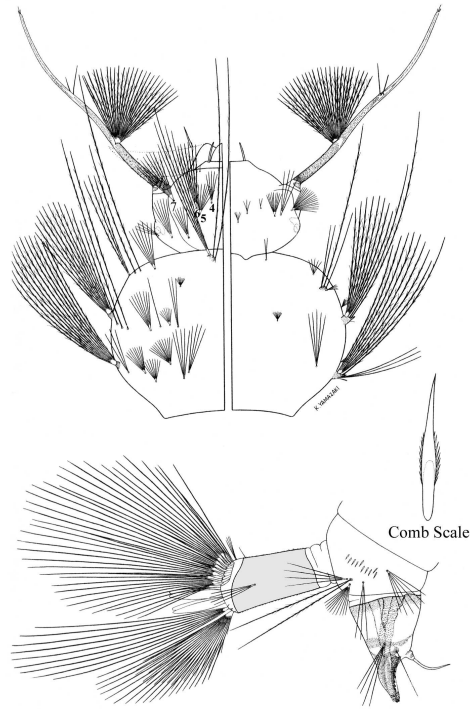
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Flanders, Highlands J, Jamestown Canyon, Trivittatus, West Nile.

Phenology: Univoltine. **Larvae:** Year round. **Adults:** May – September.

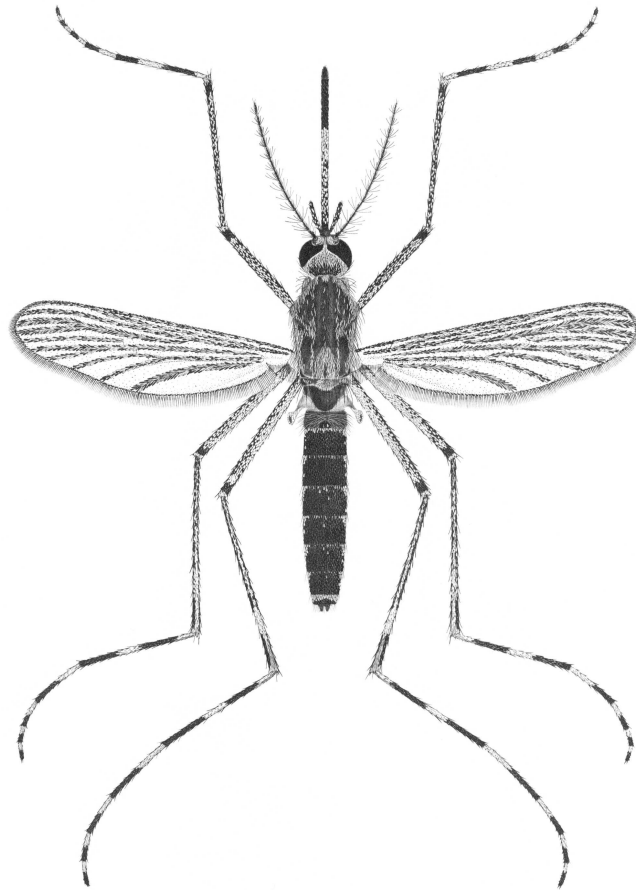
Adult Seasonal Abundance:



Coquillettidia perturbans (Walker)



Larva



Adult Female

Culex erraticus (Dyar & Knab)

Larva: Head: Antenna constricted distally with seta 1-A attached near outer third; head hair 5 short, multibranched; head hair 6 long, single. **Abdomen:** Comb scale thorn-like with long median spine and short lateral spinules, arranged in an irregular single or double row. **Siphon:** Siphon with four or more pairs of branched setae; siphon six to seven times as long as wide at base.

Adult Female: Head: Proboscis dark-scaled; occiput with broad, pale, appressed scales. **Thorax:** Scutum unicolorous, covered with golden-brown scales and lacking middorsal line of setae. **Abdomen:** Abdominal terga dark brown with narrow, pale basal bands and basolateral patches. **Legs:** Mostly dark-scaled, often with a metallic iridescence. **Wings:** Wing veins with narrow, dark scales.

County Records: Fairfield. The collection of four females from a CO₂ – baited light trap in September, and a single overwintering female from a hibernaculum in November of 1999, represent the only records of this species in the state.

Larval Habitat: Lakes, ponds, and slow moving sections of streams with abundant emergent vegetation (e.g., duckweed).

Overwintering Stage: Adult females overwinter in natural and manmade shelters.

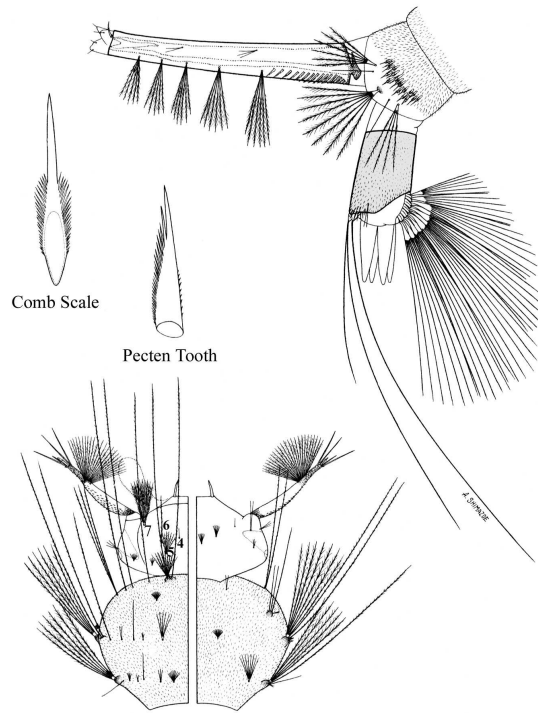
Host Preference: Birds. Reported to feed occasionally on humans, especially outdoors during dawn and dusk.

Virus isolations: None.

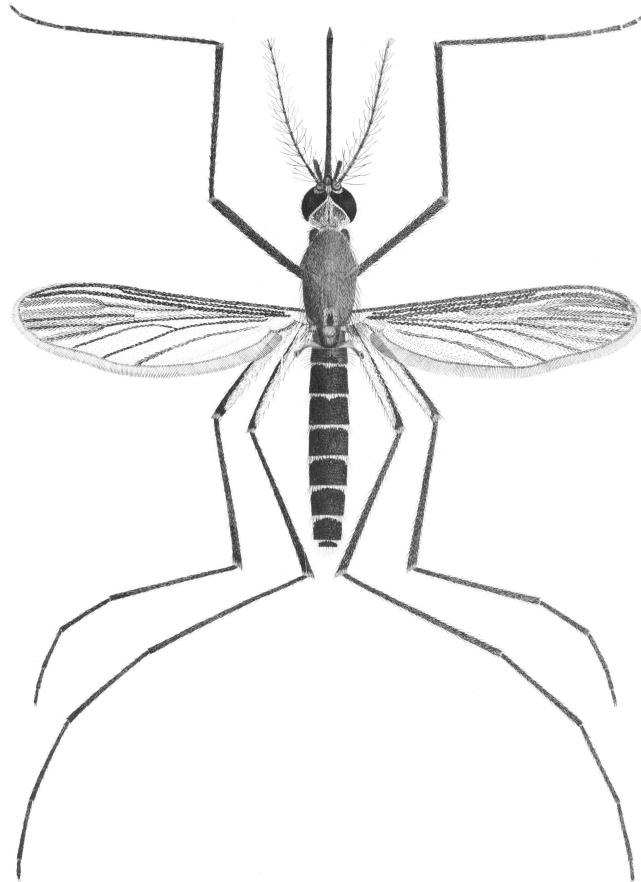
Phenology: Multivoltine. **Larvae:** No collection data. **Adults:** September – November.

Seasonal Abundance: Insufficient collection data.

Culex erraticus (Dyar & Knab)



Larva



Adult Female

Culex pipiens Linnaeus

Larva: Head: Antenna constricted distally with seta 1-A attached near outer third of shaft; head hairs 5 and 6 with five or more branches. **Abdomen:** Comb scale club-shaped and fringed with subequal spinules. **Siphon:** Siphon short and slightly convex, with three or more pairs of branched setae inserted beyond evenly spaced pecten teeth; siphon four to six times as long as wide at base.

Adult Female: Head: Proboscis with short, golden-brown scales; occiput with narrow scales dorsally. **Thorax:** Scutum covered with golden-brown scales, with middorsal line of setae; pair of middorsal pale spots on scutum absent; posterior margin of scutum and scutellum covered with long, pale scales. **Abdomen:** Abdominal terga with dingy-white basal bands becoming broadly concave on posterior margin and constricted laterally, forming distinct basolateral patches. **Legs:** Entirely dark-scaled. **Wings:** Wing veins uniformly covered with dark, narrow scales.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Artificial containers (e.g., catch basins, barrels, flower pots, discarded tires) and stagnant, temporary pools with a high organic content; highly tolerant of polluted waters.

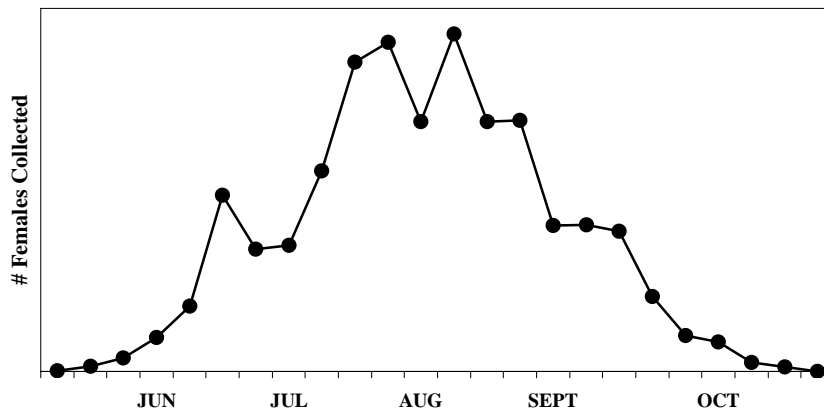
Overwintering Stage: Adult females overwinter in damp, well-protected man-made structures; especially unheated basements, cellars, and bunkers.

Host Preference: Birds and occasionally mammals. Primarily a bird feeder but will bite humans, especially during the evening. Readily enters houses.

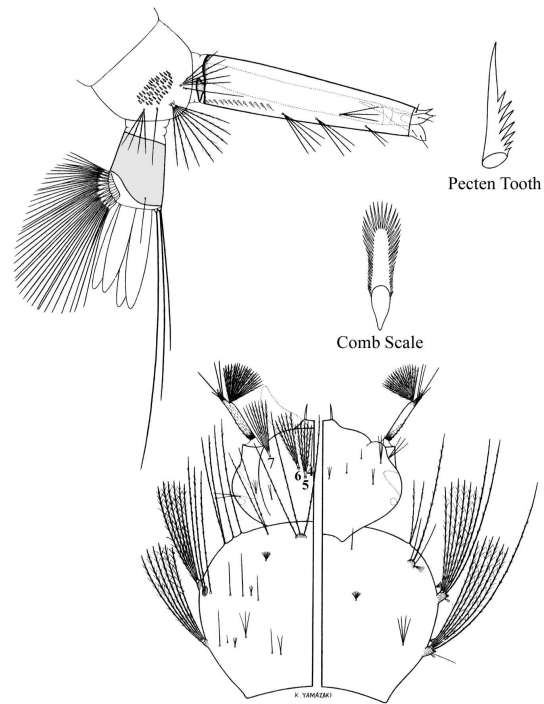
Virus Isolations: Eastern Equine Encephalitis, Flanders, Highlands J, West Nile.

Phenology: Multivoltine. **Larvae:** May – October. **Adults:** Year round.

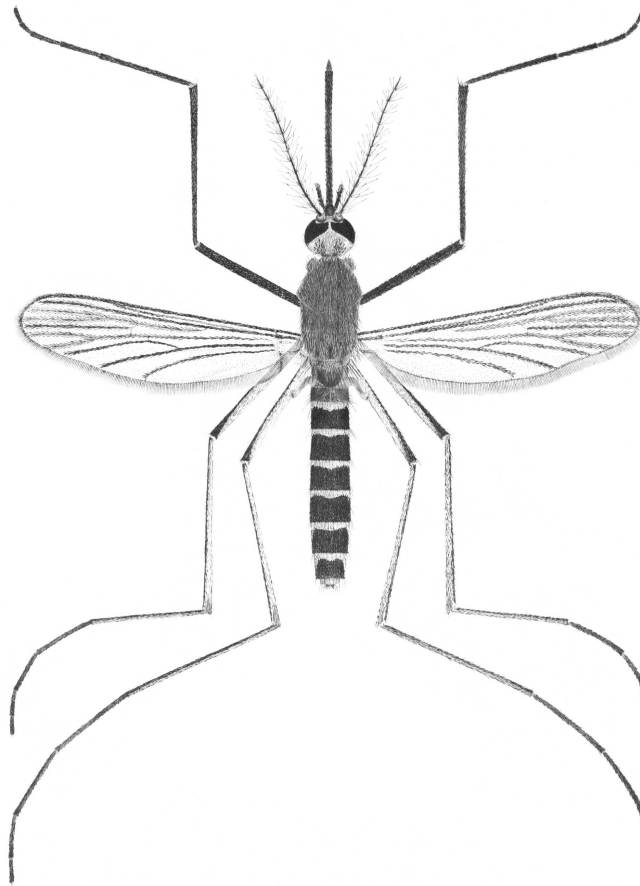
Seasonal Abundance:



Culex pipiens Linnaeus



Larva



Adult Female

Culex restuans Theobald

Larva: Head: Antenna nearly uniform in shape with seta 1-A attached near middle of shaft; head hairs 5 and 6 with four or more branches. **Abdomen:** Comb scale club-shaped and fringed apically with subequal spinules. **Siphon:** Siphon with three or more long, single, irregularly placed setae inserted beyond pecten teeth; siphon four to four and one-half times as long as wide at base.

Adult Female: Head: Proboscis predominantly brown-scaled, becoming darker towards apex. **Thorax:** Dorsum of scutum golden-brown, usually with distinct pair of middorsal pale spots (often absent in rubbed specimens) and middorsal line of setae; posterior margin of scutum and scutellum with long, pale scales. **Abdomen:** Abdominal terga with broad, whitish basal bands contrasting with dark brown scales of abdomen; posterior margin of bands straight across and not constricted on lateral margins. **Legs:** Entirely dark-scaled. **Wings:** Wing veins uniformly covered with dark, narrow scales.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Natural and artificial containers (e.g., catch basins), woodland and temporary pools; tolerant of polluted waters.

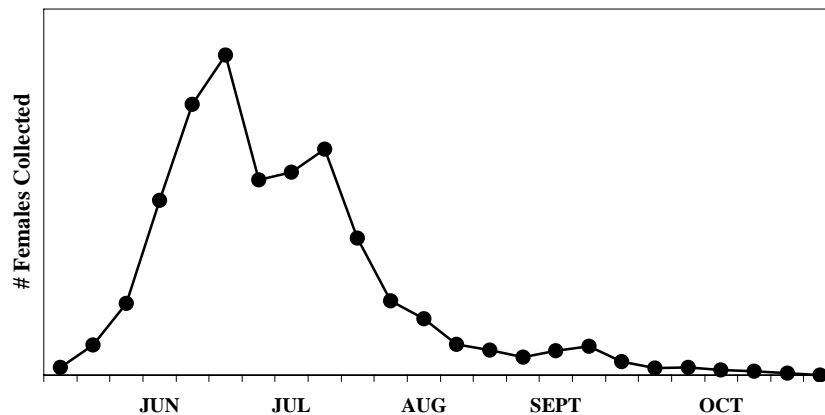
Overwintering Stage: Adult females overwinter in well-protected natural and manmade enclosures (e.g., basements, caves, animal burrows).

Host Preference: Birds. Primarily a bird feeder but is reported to bite humans when abundant and when emerging from hibernation in the spring.

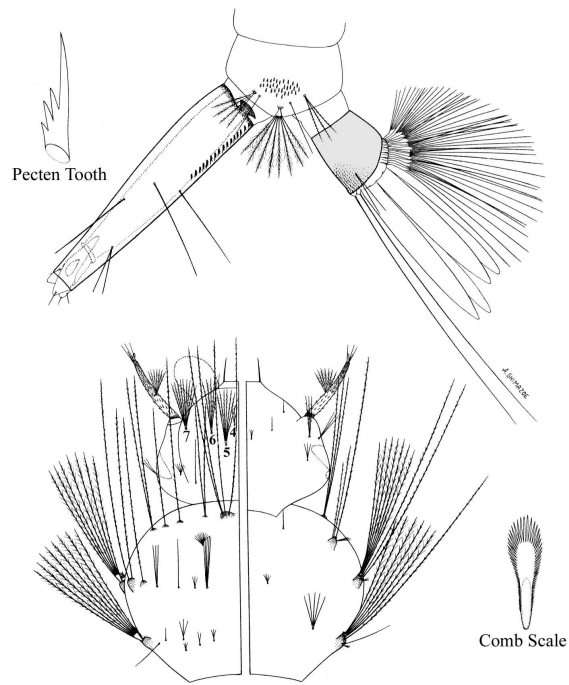
Virus Isolations: Eastern Equine Encephalitis, Flanders, Highlands J, Jamestown Canyon, West Nile.

Phenology: Multivoltine. **Larvae:** May – October. **Adults:** Year round.

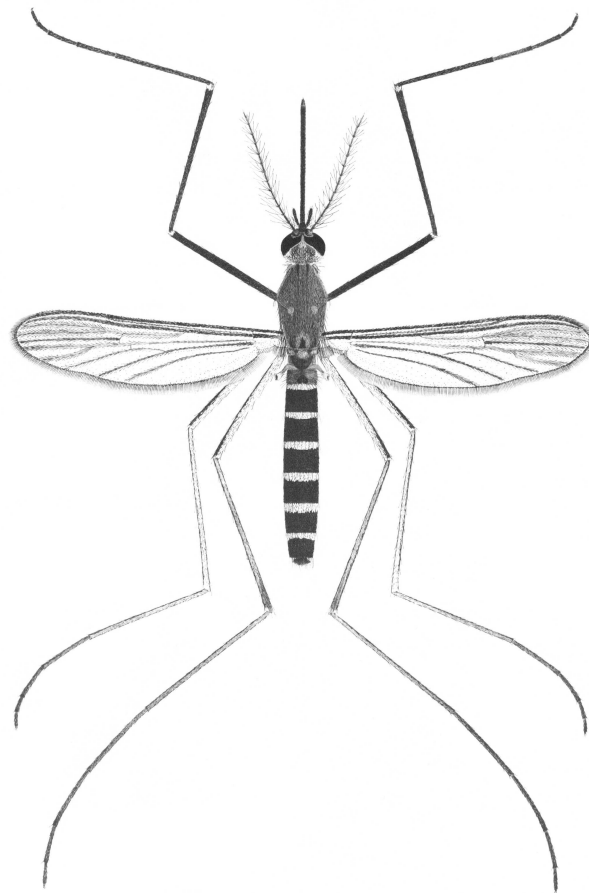
Seasonal Abundance:



Culex restuans Theobald



Larva



Adult Female

Culex salinarius Coquillett

Larva: Head: Antenna constricted distally with seta 1-A attached near outer third of shaft; head hairs 5 and 6 with three or more branches. **Abdomen:** Comb scale bluntly rounded and fringed with fine spinules. **Siphon:** Siphon long and narrow, with three or more pairs of branched setae inserted beyond pecten teeth; siphon seven to eight times as long as wide at base. Accurate measurement of the siphonal index is the most reliable method of separating this species from *Culex pipiens*.

Adult Female: Head: Proboscis dark-scaled. **Thorax:** Integument reddish-orange; scutum unicolorous, covered with golden-brown scales and middorsal line of setae; scutellum with short, dark brown scales. **Abdomen:** Basal bands highly variable; some individuals possess well defined, dingy yellow basal bands (approx. one to two scales wide); in others, the basal banding is indistinct or entirely lacking on some terga; terga with dingy yellow to copper colored basolateral patches; 7th and 8th terga mostly covered with dingy yellow scales. **Legs:** Entirely dark-scaled. **Wings:** Veins with narrow, dark scales.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Brackish and freshwater wetlands, often associated with *Phragmites*; occasionally collected from artificial containers (e.g., catch basins, discarded tires).

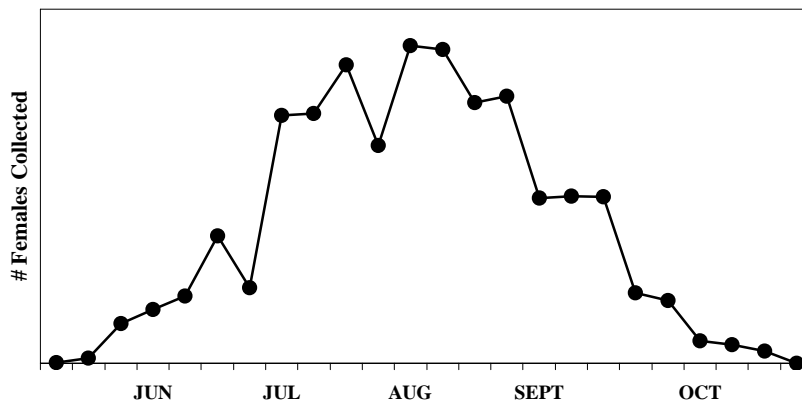
Overwintering Stage: Adult female.

Host Preference: Birds, mammals, reptiles, and amphibians. Adult females readily attack humans, often entering houses. Feed from dusk to dawn.

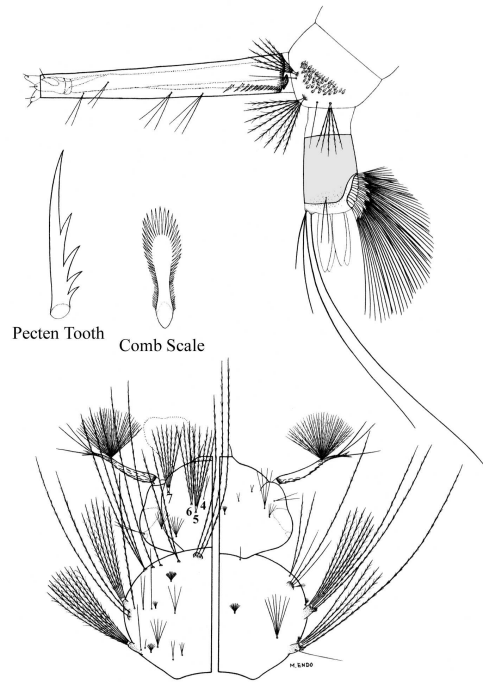
Virus Isolations: Eastern Equine Encephalitis, Flanders, Highlands J, West Nile.

Phenology: Multivoltine. **Larvae:** May – November. **Adults:** Year round.

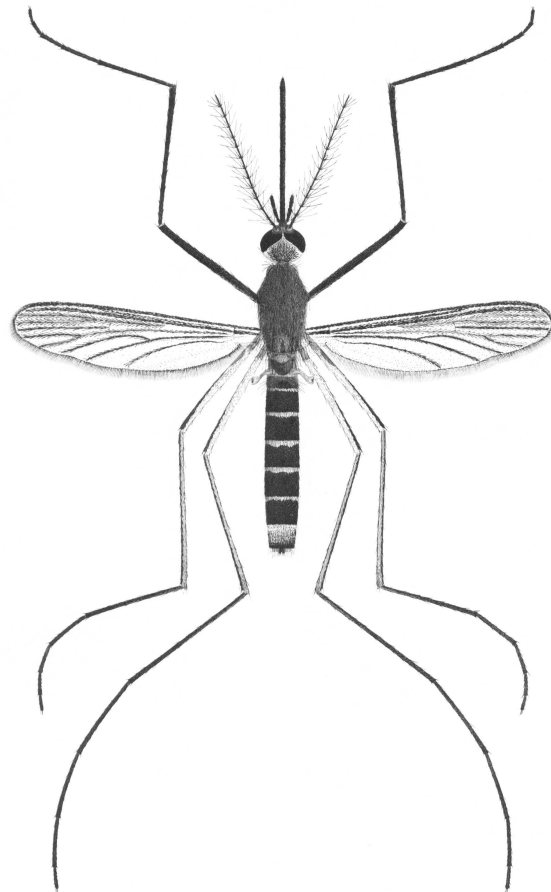
Seasonal Abundance:



Culex salinarius Coquillett



Larva



Adult Female

Culex territans Walker

Larva: Head: Antenna constricted distally with seta 1-A attached near outer third of shaft; head hairs 5 and 6 usually single, occasionally double, long, and about equal in length.

Abdomen: Comb scale bluntly rounded and fringed with fine spinules. **Siphon:** Siphon long, with four to five multibranching tufts arranged in a single row and inserted beyond evenly spaced pecten teeth; siphon about six to seven times as long as wide at base.

Adult Female: Head: Proboscis dark-scaled. **Thorax:** Dorsum of scutum unicolorous, covered with golden-brown scales. **Abdomen:** Presence of distinct, narrow, whitish apical bands on terga distinguishes it from other northeastern *Culex* species; remaining scales dark brown with metallic sheen. **Legs:** Dark-scaled, except for pale scales at apex of tibia. **Wings:** Wing veins uniformly covered with dark brown scales.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Clean permanent and semi-permanent ponds, marshes, and swamps; often associated with sedge tussocks and duckweed.

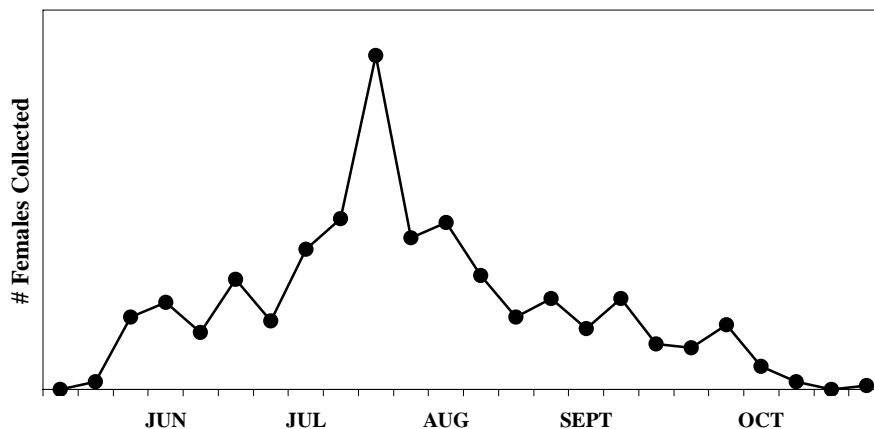
Overwintering Stage: Adult females hibernate in protected, moist subterranean enclosures.

Host Preference: Amphibians and reptiles. Females rarely, if ever, feed on humans.

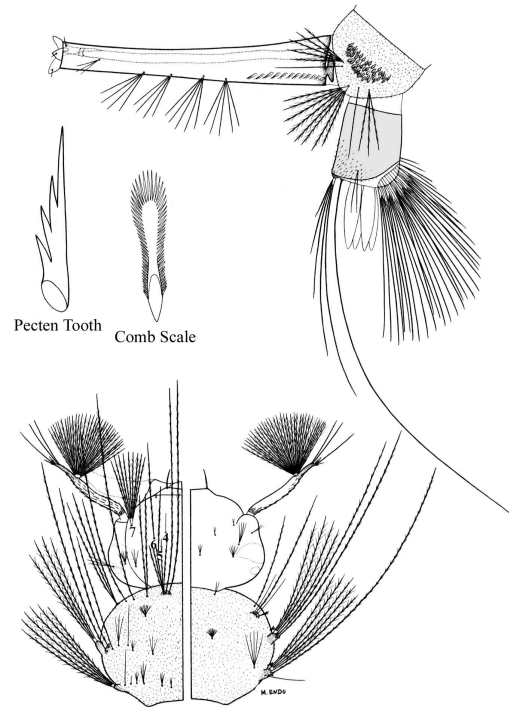
Virus Isolations: Eastern Equine Encephalitis.

Phenology: Multivoltine. **Larvae:** May – October. **Adults:** Year round.

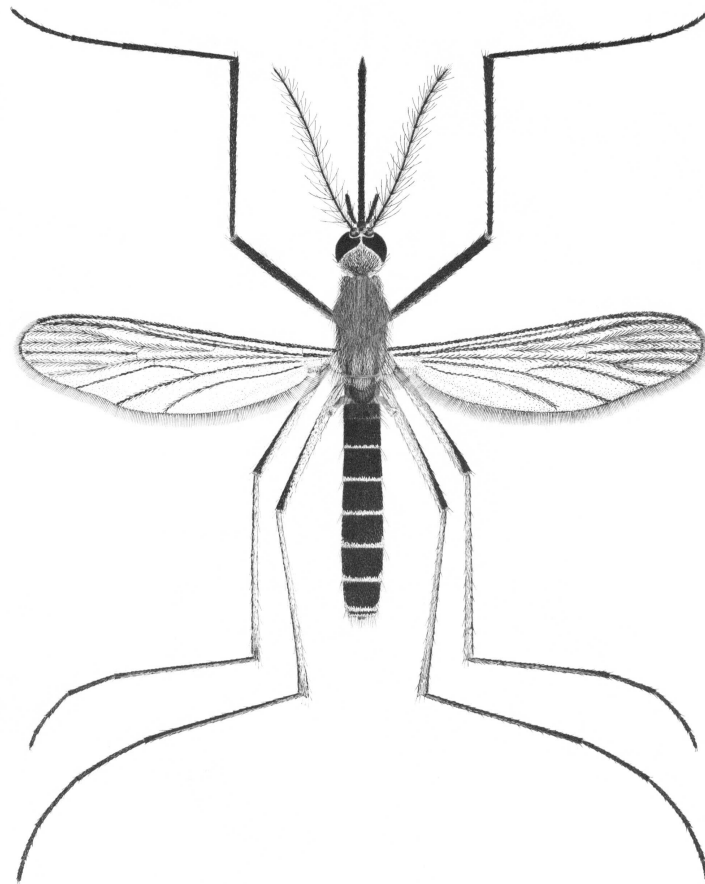
Seasonal Abundance:



Culex territans Walker



Larva



Adult Female

Culiseta impatiens (Walker)

Larva: Head: Antenna about half as long as head, with coarse spicules; antennal seta 1-A multiple, attached near middle of shaft; head hairs 5 and 6 multibranched and similar in size and number of branches. **Abdomen:** Comb scale rounded apically and fringed with subequal spinules. **Siphon:** Siphon with an even row of single setae attached distally to pecten teeth. **Anal Segment:** Saddle complete; anal segment seta 1 shorter than saddle.

Adult Female Identification: Proboscis long and weakly recurved, dark-scaled, with scattered pale scales. **Thorax:** Scutum covered with mostly reddish-brown scales, except for prominent pair of yellow-scaled median spots. **Abdomen:** Abdominal terga bronze-brown with basal white bands. **Legs:** Hindtarsomeres entirely dark-scaled. **Wings:** Dark-scaled; origin of mediocubital and radiomedial cross veins separated by less than the length of either cross vein.

County Records: Hartford.

Larval Habitat: Permanent and semi-permanent woodland pools.

Overwintering Stage: Adult females.

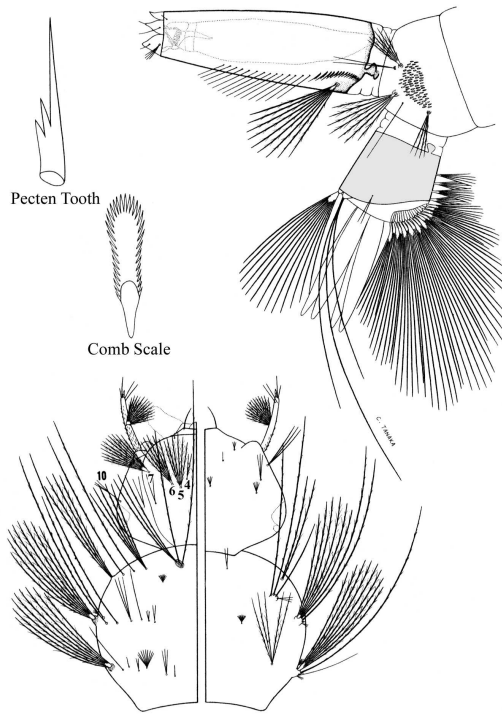
Host Preference: Mammals. Females rarely bite humans except in spring when emerging from hibernation.

Virus Isolations: None.

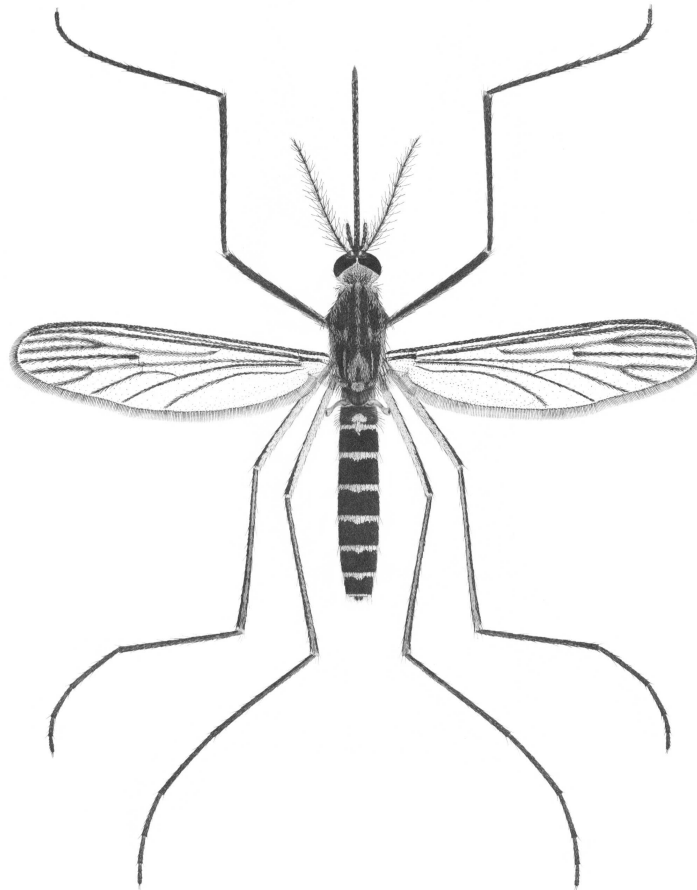
Phenology: Multivoltine. **Larvae:** Limited collections in May. **Adults:** Limited collections from resting sites in September.

Seasonal Abundance: Insufficient collection data. Rare.

Culiseta impatiens (Walker)



Larva



Adult Female

Culiseta inornata (Williston)

Larva: Head: Antenna about half as long as head, with fine spicules; antennal seta 1-A multiple, attached near middle of shaft; head hairs 5 and 6 multibranched, head hair 6 with fewer but distinctly longer branches than head hair 5. **Abdomen:** Comb scale rounded apically and fringed with subequal spinules. **Siphon:** Siphon with an even row of single setae attached distally to pecten teeth. **Anal Segment:** Saddle complete; anal segment seta 1 as long as or longer than saddle.

Adult Female Identification: Proboscis long and weakly recurved, dark-scaled, with scattered pale scales. **Thorax:** Scutum covered with mostly narrow, golden-brown and pale yellowish scales. **Abdomen:** Abdominal terga dark brown with yellowish-white basal bands, widening laterally to width of segment; eighth tergum mostly pale-scaled. **Legs:** Hindtarsomeres intermixed with light and dark scales, unbanded. **Wings:** Costa, subcosta, and radius intermixed with light and dark scales, otherwise wing veins sparsely and evenly dark-scaled; origin of mediocubital and radiomedial cross veins separated by less than the length of either cross vein.

County Records: Fairfield, Hartford, New Haven, New London.

Larval Habitat: Temporary and semi-permanent woodland pools, marshes, and edges of ponds with emergent vegetation.

Overwintering Stage: Adult female.

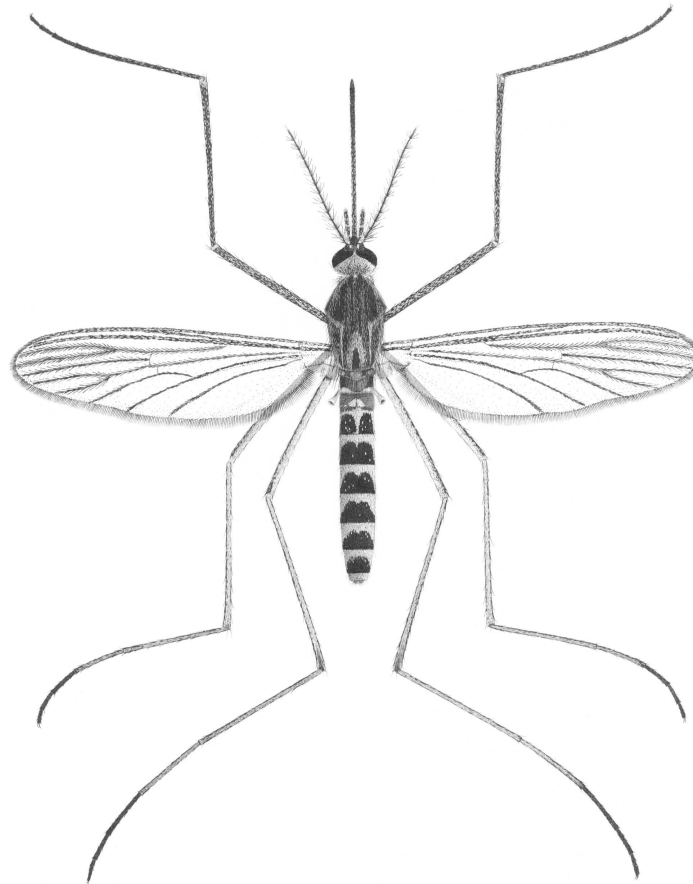
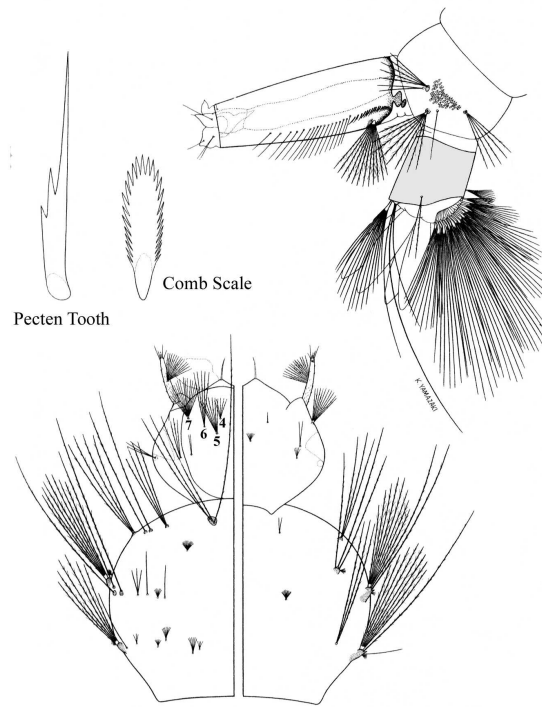
Host Preference: Mammals. Females do not readily bite humans.

Virus Isolations: None

Phenology: Multivoltine. **Larvae:** No collection data. **Adults:** Year round.

Seasonal Abundance: Insufficient collection data. Rare.

Culiseta inornata (Williston)



Culiseta melanura (Coquillett)

Larva: Head: Antenna as long as head; antennal seta 1-A multibranching and extending beyond tip of shaft; head hair 5 multiple, smooth, head hair 6 single, sparsely barbed and about twice as long as 5. **Abdomen:** Comb scales arranged in single row of about twenty-five long scales fringed apically with spinules, pointed basally. **Siphon:** Siphon six to seven times as long as wide at base, with midventral row of eight to fourteen multiple setal tufts; basal pair of tufts small and easily overlooked. **Anal Segment:** Saddle complete.

Adult Female: Head: Proboscis long and weakly recurved, dark-scaled. **Thorax:** Scutum clothed with dark brown to golden-brown scales. **Abdomen:** Abdominal terga entirely dark-scaled or golden-brown with narrow basal bands of pale scales on some segments. **Legs:** Hindtarsomeres dark-scaled. **Wings:** Dark-scaled; origin of mediocubital and radiomedial cross veins separated by more than the length of either cross vein.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Tree root and sphagnum mat cavities in acidic Red Maple and Atlantic White Cedar swamps.

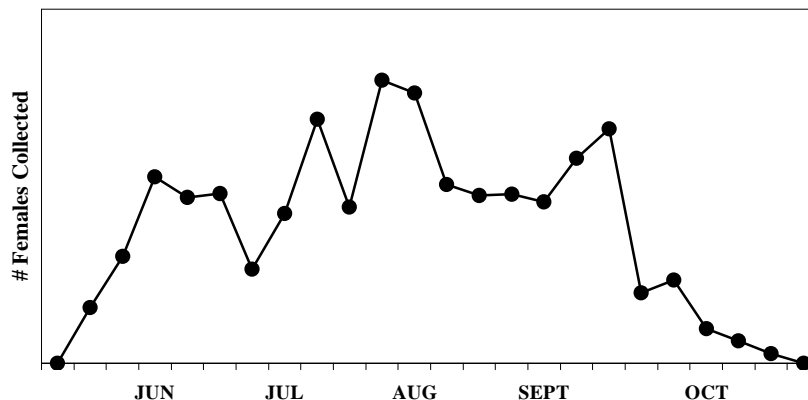
Overwintering Stage: Larva.

Host Preference: Almost exclusively birds, rarely mammals. Human derived blood meals have been identified from females collected in New Jersey indicating that this species may occasionally bite humans.

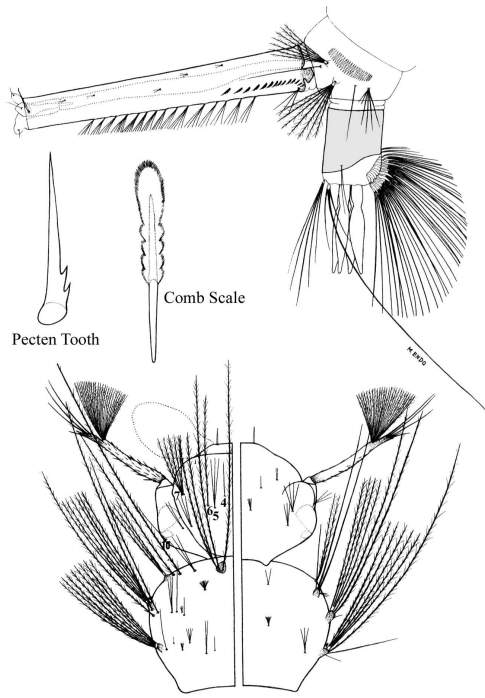
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Flanders, Highlands J, Western Equine Encephalitis, West Nile.

Phenology: Multivoltine. **Larvae:** Year round. **Adults:** May – December.

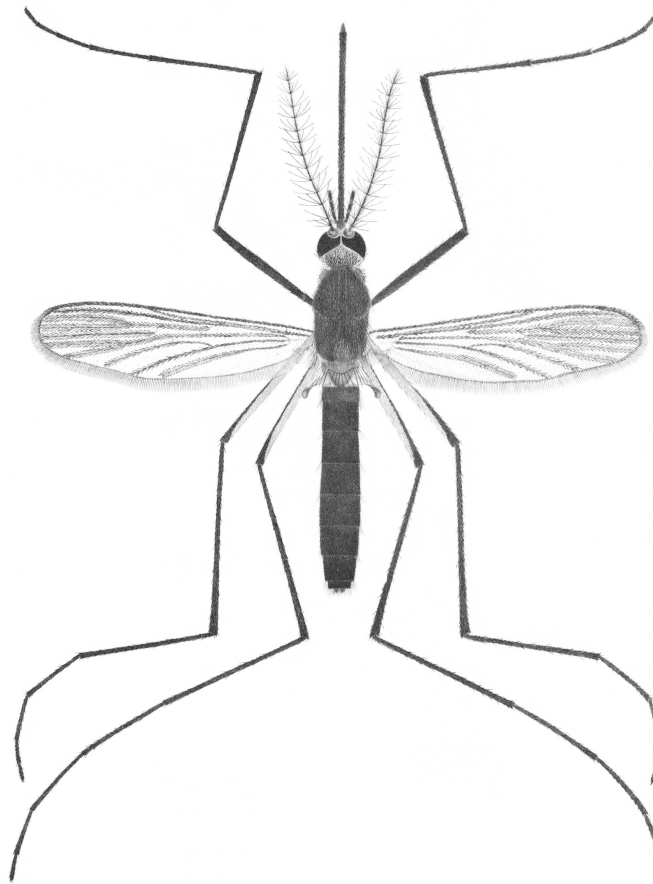
Seasonal Abundance:



Culiseta melanura (Coquillett)



Larva



Adult Female

Culiseta minnesotae Barr

Larva: Head: Antenna as long as head; antennal seta 1-A multibranched, inserted near apical third of shaft; head hair 5 usually with seven or more branches, head hair 6 double, head hair 7 with nine or more branches. **Abdomen:** Comb scale club-shaped and fringed with subequal spinules. **Siphon:** Siphon without midventral row of setae. **Anal Segment:** Saddle complete; ventral brush with eighteen or fewer fanlike setae.

Adult Female: Head: Proboscis long and weakly recurved, mostly dark-scaled. **Thorax:** Integument reddish-brown; scutum with two, broad, light brown stripes and coppery-brown scales laterally. **Abdomen:** Abdominal terga dark-scaled with both apical and basal bands of yellowish-brown scales. **Legs:** Mostly dark-scaled with pale basal and apical bands on some tarsal segments. **Wings:** Dark-scaled; origin of mediocubital and radiomedial cross veins separated by more than the length of either cross vein.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland.

Larval Habitat: Permanent, stagnant swampy water caused by flooding from slow moving rivers with abundant vegetation, and permanent and semi-permanent marshes with emergent vegetation (e.g., sedges, cattails).

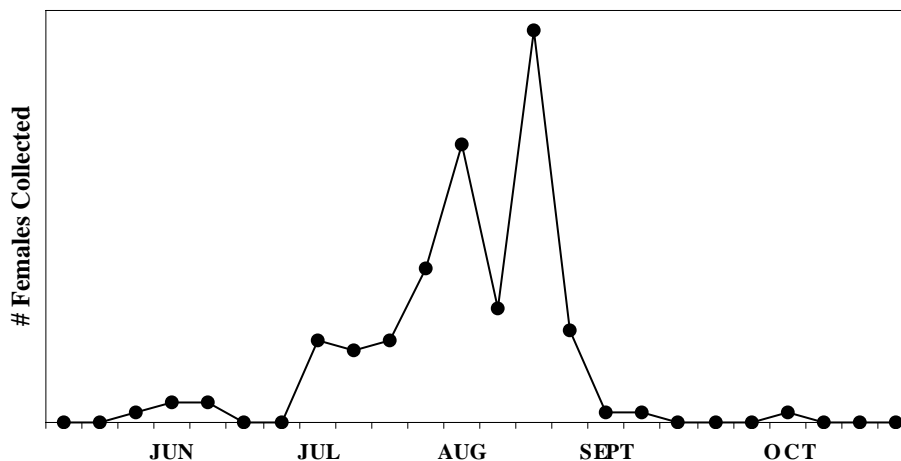
Overwintering Stage: Adult female.

Host Preference: Birds, rarely mammals. Not known to feed on humans.

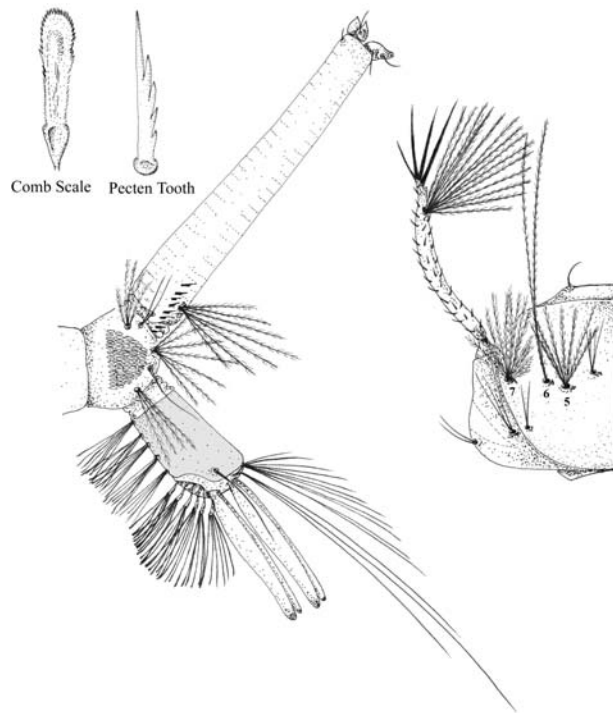
Virus Isolations: None.

Phenology: Univoltine. **Larvae:** Limited collections from July – September. **Adults:** Year round.

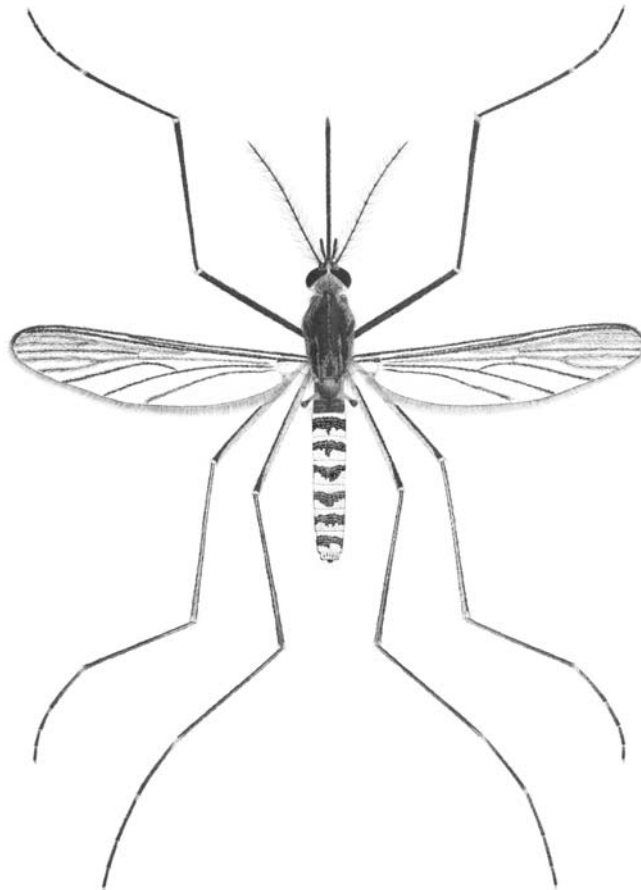
Seasonal Abundance:



Culiseta minnesotae Barr



Larva



Adult Female

Culiseta morsitans (Theobald)

Larva: Head: Antenna about length of head and distinctly curved; antennal seta 1-A multibranching and extending beyond tip of shaft; head hair 5 usually with five or fewer branches, head hair 6 double, head hair 7 usually with eight or fewer branches. **Abdomen:** Comb scale club-shaped and fringed with subequal spinules. **Siphon:** Siphon without midventral row of setae distal to pecten teeth; basal tuft large and conspicuous. **Anal Segment:** Saddle complete; ventral brush with nineteen or more fanlike setae.

Adult Female: Head: Proboscis long and weakly recurved, dark-scaled. **Thorax:** Scutum covered with dark brown to golden-brown scales. **Abdomen:** Abdominal terga dark-scaled with basal bands of dingy white scales. **Legs:** Hindtarsomeres with narrow, pale basal bands on some segments. **Wings:** Dark scaled; origin of mediocubital and radiomedial cross veins separated by more than the length of either cross vein.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Permanent and semi-permanent bogs, swamps, tree root cavities, and boggy margins of lakes; larvae are often found under sedge tussocks.

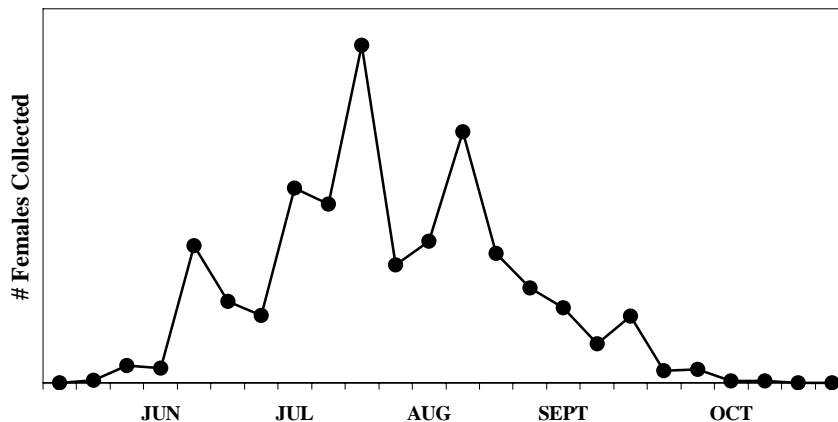
Overwintering Stage: Egg.

Host Preference: Birds.

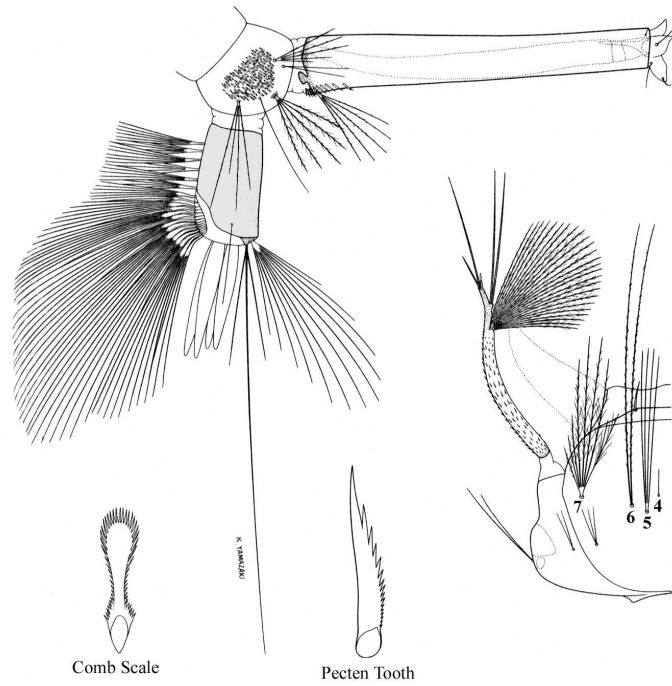
Virus Isolations: Eastern Equine Encephalitis, Highlands J, Jamestown Canyon.

Phenology: Univoltine. **Larvae:** April – June. **Adults:** June – October.

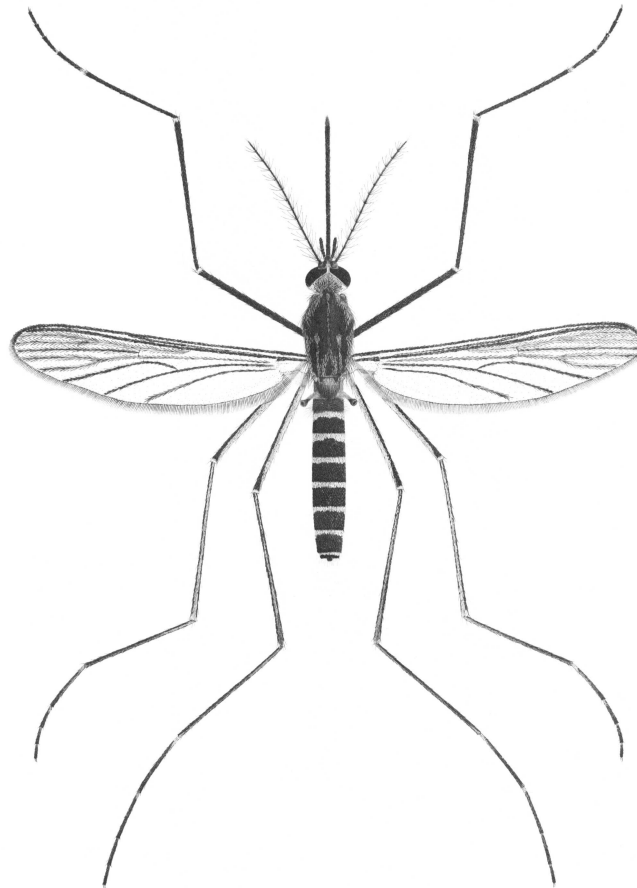
Seasonal Abundance:



Culiseta morsitans (Theobald)



Larva



Adult Female

Ochlerotatus abserratus (Felt & Young)

Larva: Head: Antenna shorter than head; antennal seta 1-A multibranching; head hairs 5 and 6 usually single, coarse, about equal in diameter. **Abdomen:** Comb scales usually seven or fewer arranged in a single row; each comb scale thorn-like, with median spine at least four times the length of subapical spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond pecten teeth, the last one to three teeth frequently detached. **Anal Segment:** Saddle complete; anal segment setae 2 and 3 single.

Adult Female: Females cannot be reliably separated from *Ochlerotatus punctor*.

Head: Proboscis dark-scaled, unbanded. **Thorax:** Scutum unicolorous, covered with golden-brown scales, sometimes with faint middorsal stripe of reddish-brown scales; sides of thorax clothed with large, pale scales; postprocoxal scale patch present; hypostigmal area without scales. **Abdomen:** Abdominal terga dark-scaled with pale basal bands. **Legs:** Hindtarsomeres dark-scaled, unbanded. **Wings:** Veins covered with narrow, dark scales.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Sphagnum bogs and boggy margins of lakes and swamps, often in association with sedge tussocks.

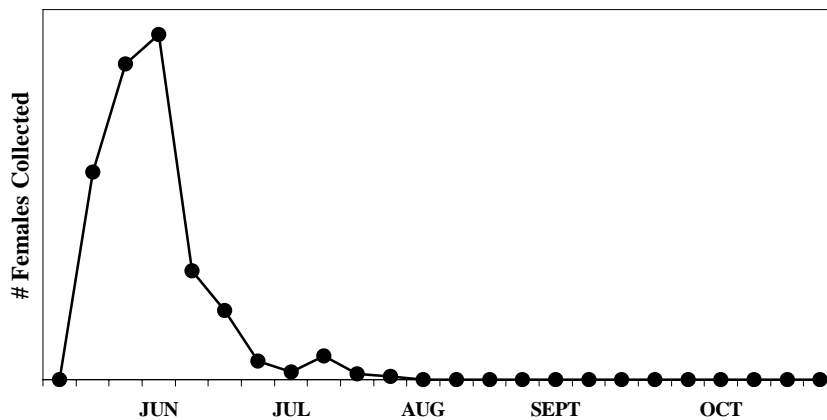
Overwintering Stage: Egg.

Host Preference: Mammals. Persistent human biters.

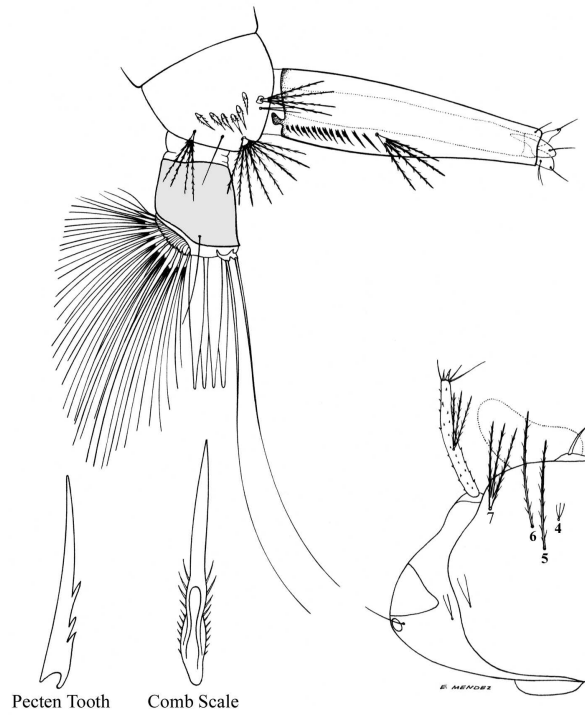
Virus Isolations: Jamestown Canyon.

Phenology: Univoltine. **Larvae:** March – May. **Adults:** May – July.

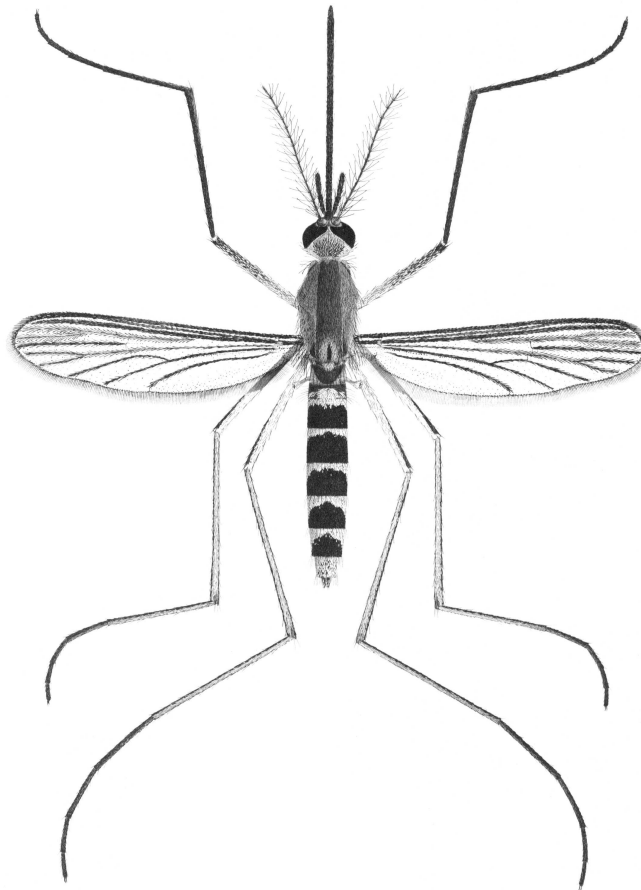
Seasonal Abundance:



Ochlerotatus abserratus (Felt & Young)



Larva



Adult Female

Ochlerotatus atropalpus (Coquillett)

Larva: Head: Antenna about half as long as head; antennal seta 1-A double or triple; head hairs 5 and 6 single. **Abdomen:** Comb scales arranged in patch; comb scale blunt and fringed apically with subequal spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted within pecten teeth; pecten teeth extending nearly to apex of siphon, with last two to four teeth detached. **Anal Segment:** Saddle incomplete, greatly reduced; anal gills longer than saddle.

Adult Female: Head: Proboscis unbanded, covered with black scales; occiput with patch of yellowish-white scales. **Thorax:** Median stripe of scutum dark brown, lateral margin with long, yellowish scales; sides of thorax with patches of silvery-white scales; postprocoxal scale patch absent; hypostigmal area without scales. **Abdomen:** Abdominal terga black-scaled with narrow, white basal bands. **Legs:** Hindtarsomeres with pale basal and apical bands; last hindtarsomere entirely pale-scaled. **Wings:** Basal portion of costa with prominent patch of white scales; remaining wing veins dark-scaled.

County Records: Fairfield, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Natural and artificial containers, especially rock pools along streams (preferred site) and discarded tires.

Overwintering Stage: Egg.

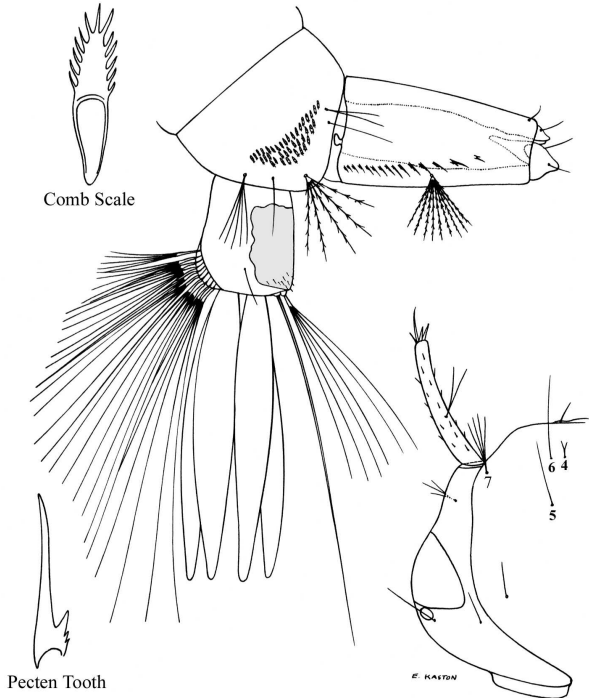
Host Preference: Mammals. Females readily attack humans during day and night in immediate vicinity of breeding areas.

Virus Isolations: None.

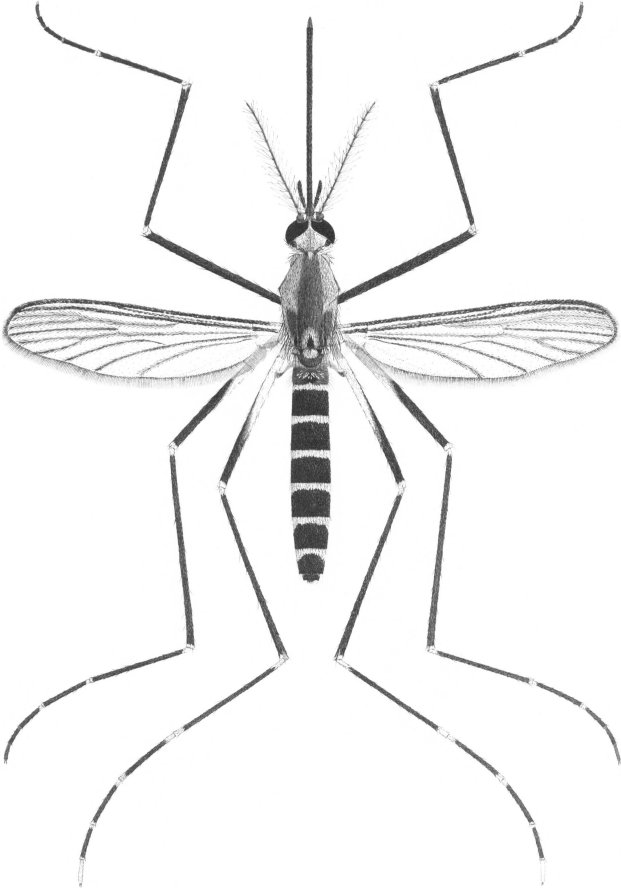
Phenology: Multivoltine. **Larvae:** May – November. **Adults:** August – September.

Seasonal Abundance: Insufficient collection data. Not readily collected in gravid or CO₂-baited CDC miniature light traps.

Ochlerotatus atropalpus (Coquillett)



Larva



Adult Female

Ochlerotatus aurifer (Coquillett)

Larva: Head: Antenna about length of head, dark at tip; antennal seta 1-A multiple, attached beyond middle of shaft; head hairs 5 and 6 usually double, arranged in nearly a straight line with head hair 7. **Abdomen:** Comb scales in patch of twenty or more; median spine of comb scale distinctly longer and broader than subapical spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond distally detached pecten teeth. **Anal Segment:** Saddle incomplete, apical margin with distinct spicules.

Adult Female: Head: Proboscis dark-scaled, unbanded. **Thorax:** Scutum with broad median dark brown stripe, contrasting with golden-brown scales laterally; postprocoxal scale patch absent; hypostigmal area without scales. **Abdomen:** Abdominal terga dark-scaled and lacking transverse basal bands; long yellowish setae present between segments; sterna entirely pale-scaled. **Legs:** Forecoxa scale patch with some dark brown scales; legs dark-scaled, unbanded. **Wings:** Scales narrow, dark-scaled.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Woodland pools, swamps, and bogs.

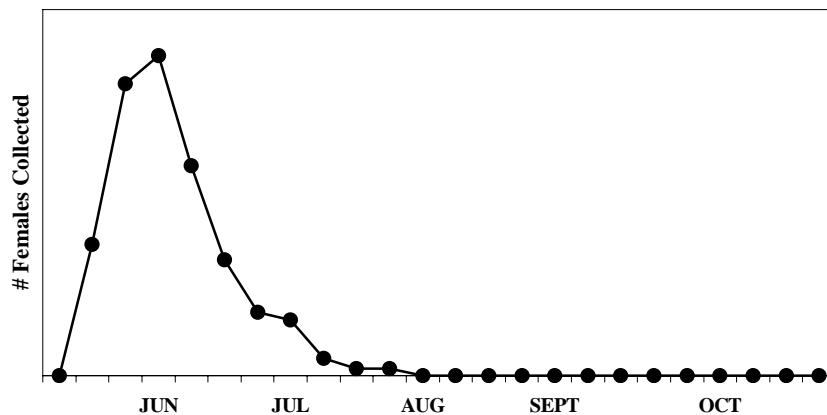
Overwintering Stage: Egg.

Host Preference: Mammals. Females are persistent human biters but generally remain near the larval habitat.

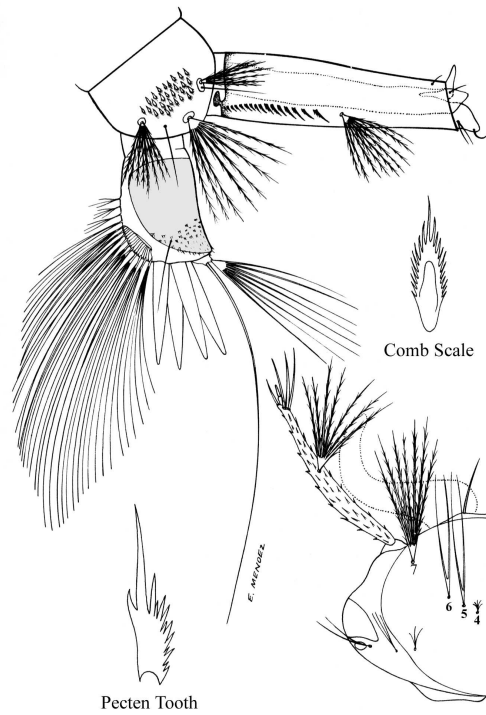
Virus Isolations: Jamestown Canyon.

Phenology: Univoltine. **Larvae:** March – May. **Adults:** May – August.

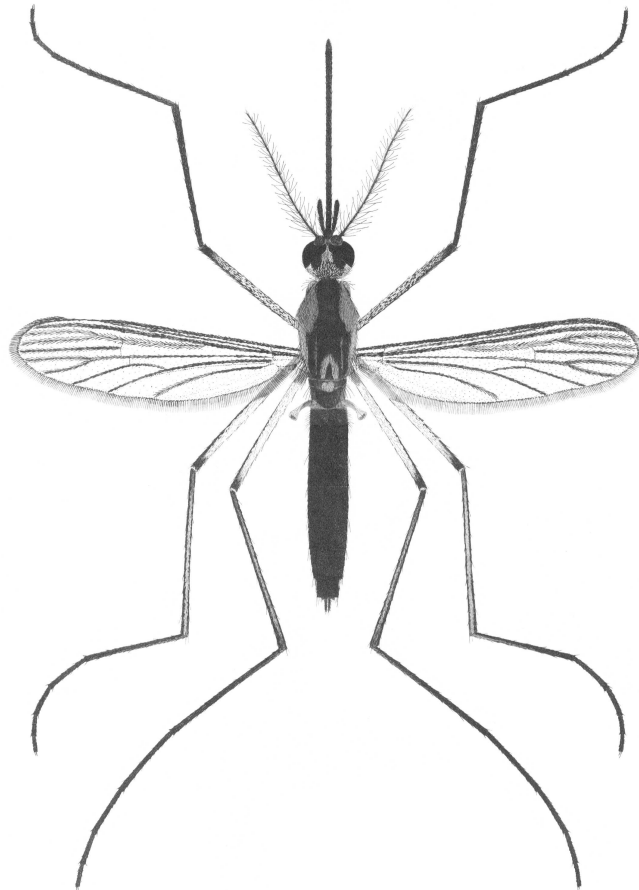
Seasonal Abundance:



Ochlerotatus aurifer (Coquillett)



Larva



Adult Female

Ochlerotatus canadensis (Theobald)

Larva: Head: Antenna about half as long as head, with coarse spinules; antennal seta 1-A with four or more branches; head hairs 5 and 6 with four or more branches. **Thorax:** Mesothoracic seta 1-M much shorter than antenna. **Abdomen:** Lateral setae on abdominal segments I-II double; comb scale fringed apically with subequal spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth. **Anal Segment:** Saddle incomplete; anal gills as long as or longer than saddle.

Adult Female: Head: Proboscis dark-scaled, unbanded. **Thorax:** Scutum evenly golden-brown, without dark median stripe; postprocoxal scale patch absent; hypostigmal area without scales. **Abdomen:** Abdominal terga predominantly dark-scaled, usually with narrow pale basal bands and prominent basolateral triangular scale patches; sterna pale-scaled. **Legs:** Hindtarsomeres with basal and apical pale bands. **Wings:** Entirely dark-scaled, without patch of white scales at base of costa.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Temporary (vernal) leaf-lined woodland pools.

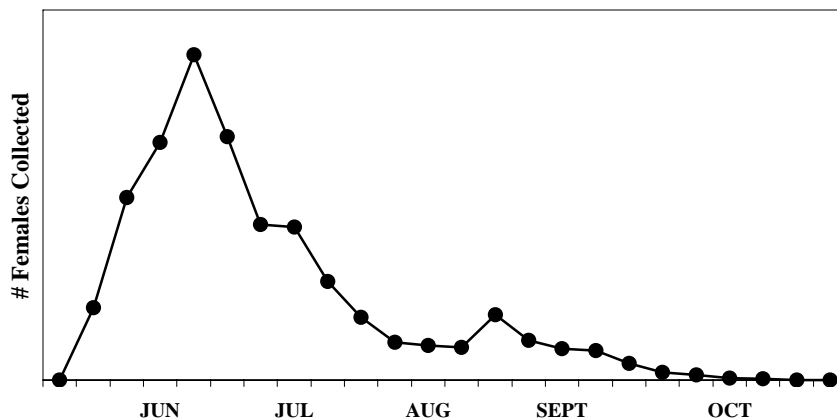
Overwintering Stage: Egg.

Host Preference: Mammals, birds, reptiles, and amphibians. Females readily bite humans and can be a serious pest, especially in wooded areas near the breeding site.

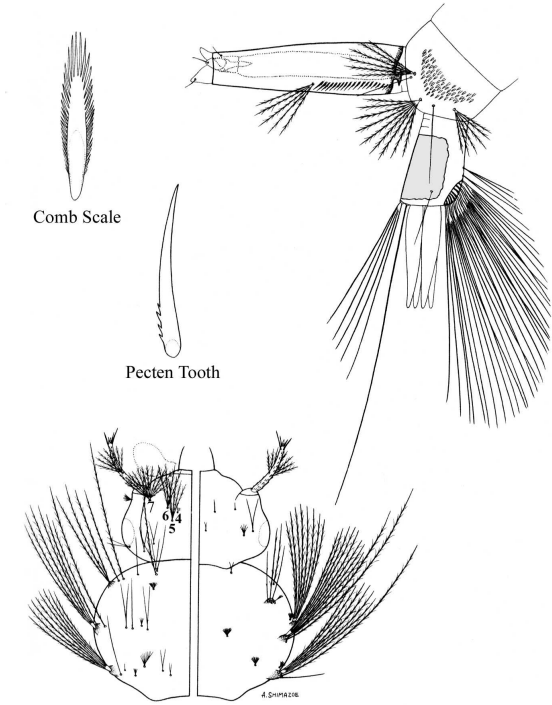
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Highlands J, Jamestown Canyon, West Nile.

Phenology: Although reported to be univoltine, with a delayed egg hatch later in the season, our data suggests two generations a year in Connecticut. **Larvae:** March – June and September – October. **Adults:** May – October.

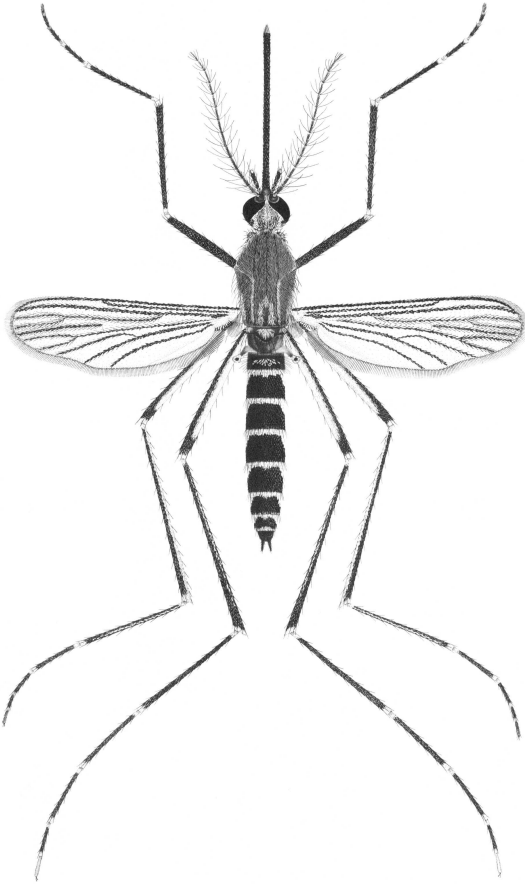
Seasonal Abundance:



Ochlerotatus canadensis (Theobald)



Larva



Adult Female

Ochlerotatus cantator (Coquillett)

Larva: Head: Antenna about half as long as head, spiculate; antennal seta 1-A multibranching; head hair 5 with four or more branches, head hair 6 with three or more branches. **Thorax:** Mesothoracic seta 1-M about equal to length of antenna, or longer. **Abdomen:** Median spine of comb scale less than one and one-half times the length of subapical spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth. **Anal Segment:** Saddle incomplete; anal gills usually shorter than saddle and bud-like (more elongate in freshwater).

Adult Female: Head: Proboscis dark-scaled, unbanded. **Thorax:** Integument light brown; scutum covered with golden-brown scales contrasting with patch of long, pale scales on posterior margin; postprocoxal scale patch absent; hypostigmal area without scales; lower mesepimeral setae present. **Abdomen:** Abdominal terga dark-scaled with whitish-yellow basal bands gradually widening laterally and not bilobed; last two segments, or more, mostly covered with pale scales. **Legs:** Hindtarsomeres with narrow, pale basal bands one-quarter times or less, the length of the tarsal segment. **Wings:** Scales narrow, dark-scaled.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Temporary brackish and freshwater pools in the upland edges of coastal salt marshes.

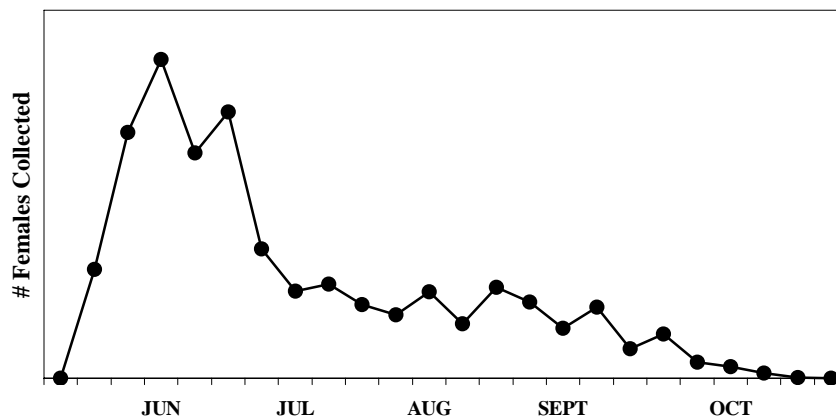
Overwintering Stage: Egg.

Host Preference: Mammals and birds. A pest species, especially in coastal areas.

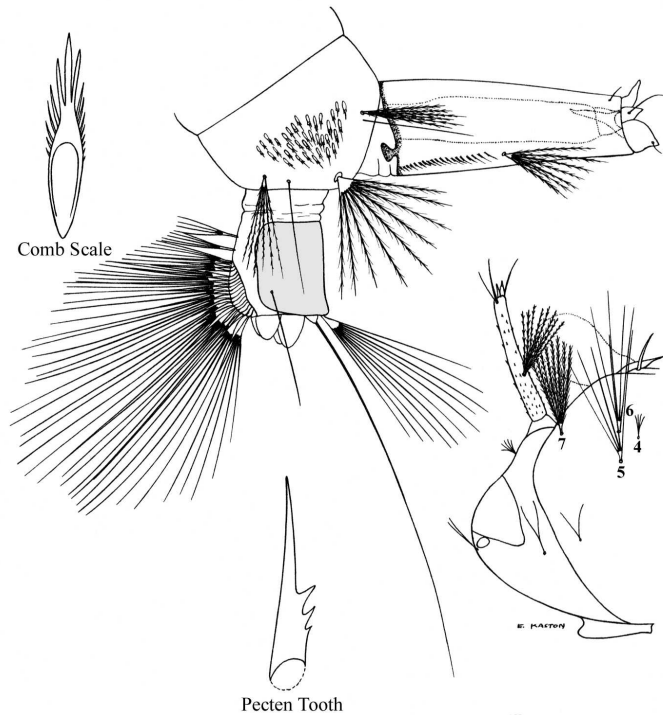
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Highlands J, Jamestown Canyon, West Nile.

Phenology: Multivoltine. **Larvae:** March – November. **Adults:** May – October.

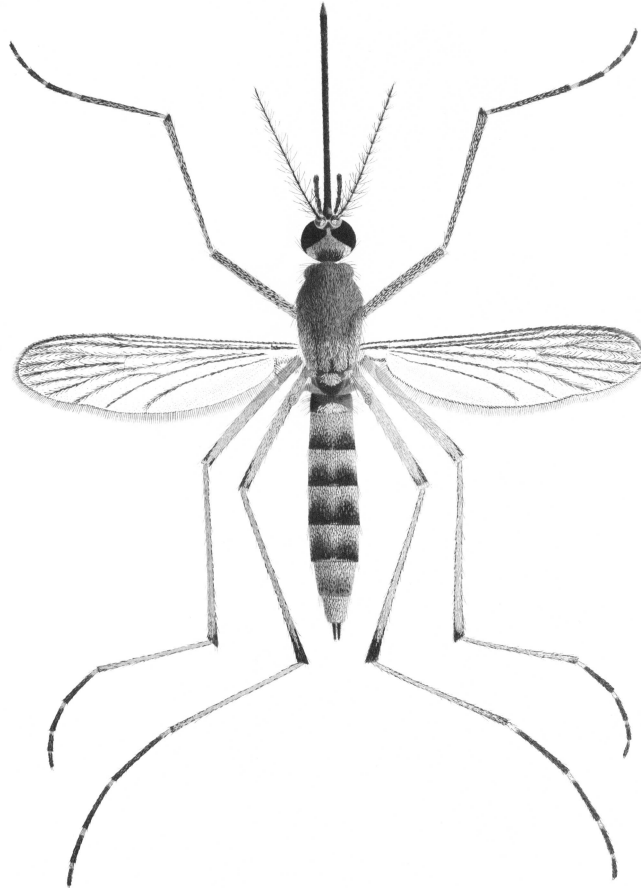
Seasonal Abundance:



Ochlerotatus cantator (Coquillett)



Larva



Adult Female

Ochlerotatus communis (De Geer)

Larva: Head: Antenna shorter than head, with coarse spinules; antennal seta 1-A with four or more branches; head hairs 5 and 6 usually single, occasionally double. **Thorax:** Mesothoracic seta 1-M much shorter than antenna. **Abdomen:** Comb scale fringed apically with four to seven stout, subequal spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth. **Anal Segment:** Saddle incomplete, posterior margin smooth.

Adult Female: Head: Proboscis dark-scaled, unbanded. **Thorax:** Side of thorax covered with cream-colored scales contrasting with golden-brown scales of scutum; scutellar and supraalar setae brownish-black; mesokatepisternum with scales extending to near anterior angle; postprocoxal scale patch absent; hypostigmal area without scales; lower mesepimeron with setae. **Abdomen:** Abdominal terga dark-scaled with broad, cream-colored basal bands. **Legs:** Femur intermixed with pale and dark brown scales, apices with patch of pale scales; hindtarsomeres dark brown, unbanded. **Wings:** Scales narrow, dark-scaled.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland.

Larval Habitat: Vernal (snowmelt) pools in coniferous forests.

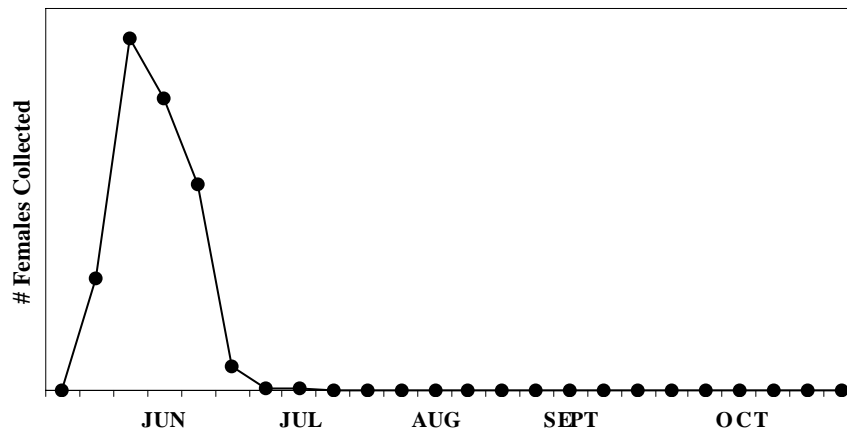
Overwintering Stage: Egg.

Host Preference: Mammals. An early season pest species with a limited flight range. Most active at dawn and dusk but will also attack during the day in forested areas.

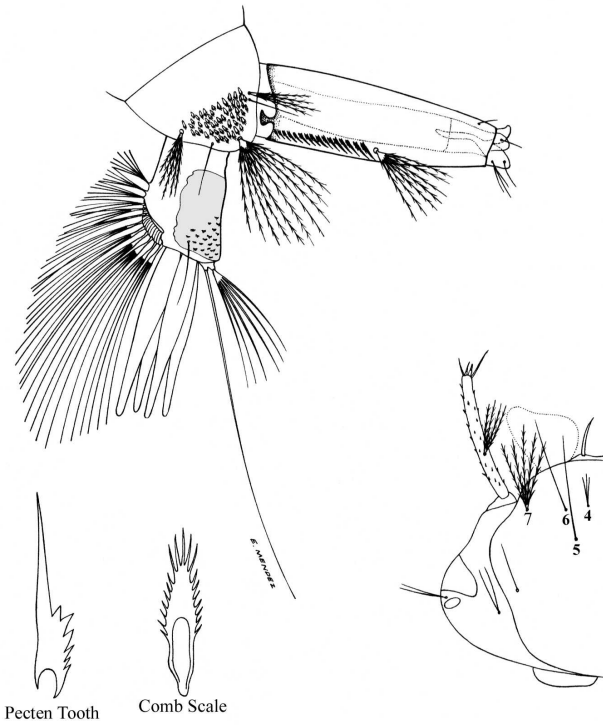
Virus Isolations: Jamestown Canyon.

Phenology: Univoltine. **Larvae:** March – May. **Adults:** May – June.

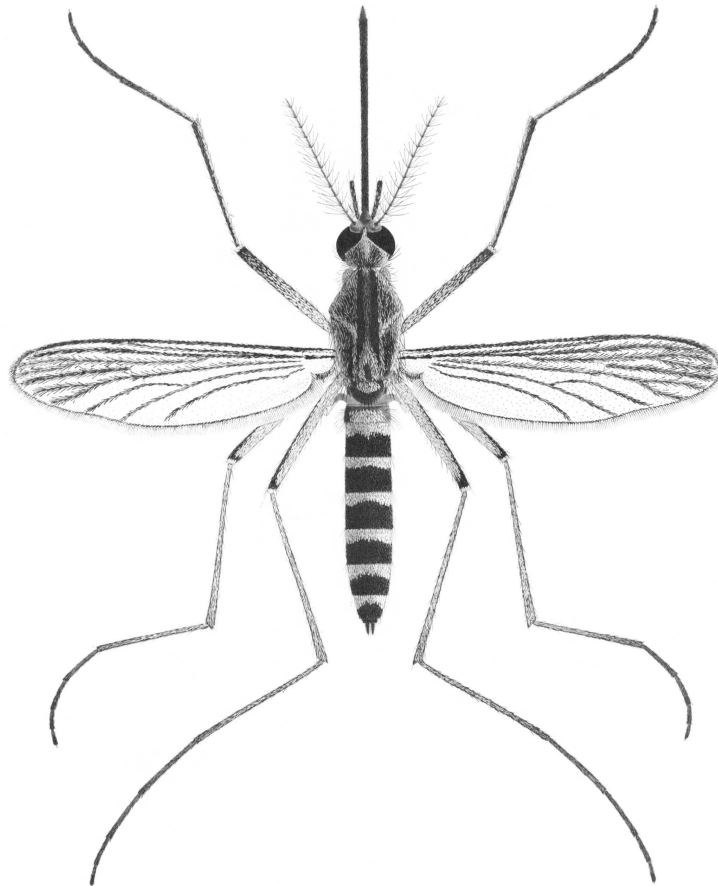
Seasonal Abundance:



Ochlerotatus communis (De Geer)



Larva



Adult Female

Ochlerotatus diantaeus (Howard, Dyar & Knab)

Larva: Head: Antenna longer than head, spiculate; antennal seta 1-A multibranched, attached near middle of shaft; head hair 5 usually with three or four branches, head hair 6 double or triple. **Abdomen:** Comb scales usually fifteen or fewer, arranged in an irregular single or double row; comb scale thorn-like with long median spine, subspinules absent on basal half. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond distally detached pecten teeth. **Anal Segment:** Saddle incomplete.

Adult Female: Head: Proboscis dark-scaled, unbanded. **Thorax:** Scutum with two median longitudinal stripes, sometimes fused into a single wider stripe that does not abruptly widen posteriorly; otherwise scutum covered with pale golden scales; postprocoxal scale patch absent; hypostigmal area without scales. **Abdomen:** Abdominal terga purplish-brown with basolateral triangular patches of white scales and occasionally with narrow white basal bands; abdominal sterna white-scaled with dark bands apically. **Legs:** Forecoxa scale patch entirely pale-scaled; legs dark-scaled, unbanded. **Wings:** Scales narrow and entirely dark-scaled.

County Records: Litchfield.

Larval Habitat: Permanent and semi-permanent woodland pools.

Overwintering Stage: Egg.

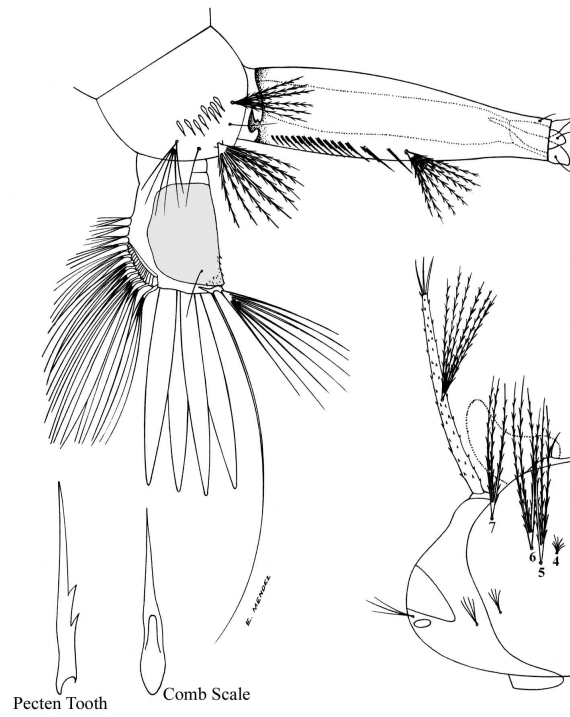
Host Preference: Mammals. Females are reported to bite humans, but the species is rarely encountered in Connecticut.

Virus Isolations: None.

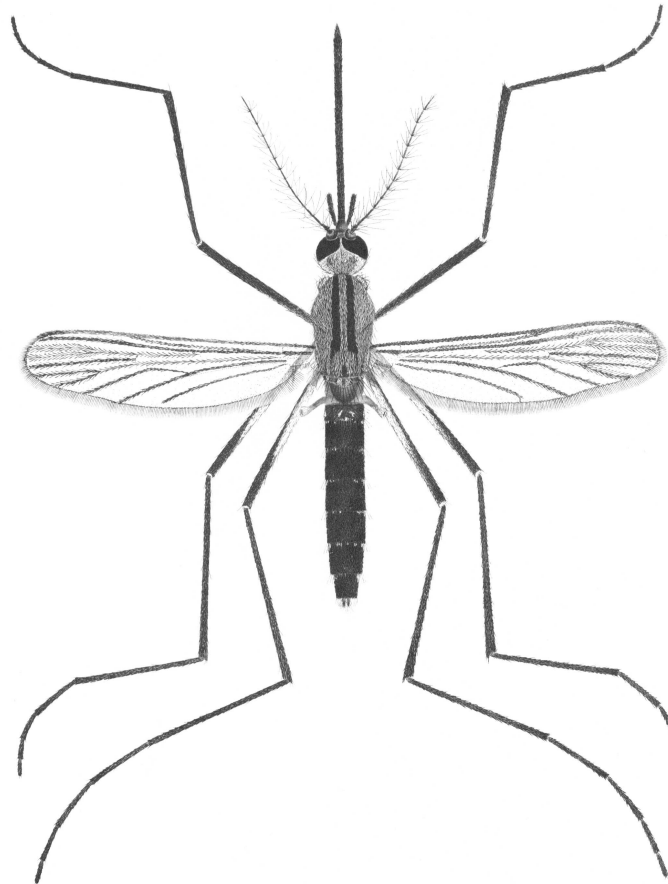
Phenology: Univoltine. **Larvae:** Limited collections in May. **Adults:** May – June.

Seasonal Abundance: Insufficient collection data.

Ochlerotatus diantaeus (Howard, Dyar & Knab)



Larva



Adult Female

Ochlerotatus dorsalis (Meigen)

Larva: Head: Antenna shorter than head, with coarse spinules; antennal seta 1-A multibranching, inserted near middle of shaft; head hairs 5 and 6 usually single, rarely branched. **Thorax:** Mesothoracic seta 1-M subequal to length of antenna or longer. **Abdomen:** Comb scale rounded and fringed with long, subequal spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth. **Anal Segment:** Saddle incomplete; anal segment seta 1 about one-half the length of saddle.

Adult Female: Head: Proboscis dark-scaled with pale scales intermixed, especially on basal portion. **Thorax:** Scutum with median longitudinal brown stripe and yellowish-white scales laterally and posteriorly; postprocoxal scale patch present; hypostigmal area with scales. **Abdomen:** Abdominal terga mostly pale-scaled with pair of submedian dark spots; last two terga often entirely pale-scaled. **Legs:** Legs speckled with dark and pale scales; hindtarsomeres with pale apical and basal bands, last segment mostly white-scaled. **Wings:** Wing with dark and pale scales intermixed; costa mostly pale-scaled.

County Records: New Haven.

Larval Habitat: Temporary brackish and freshwater pools and depressions (e.g., tidal marshes, roadside ditches).

Overwintering Stage: Egg.

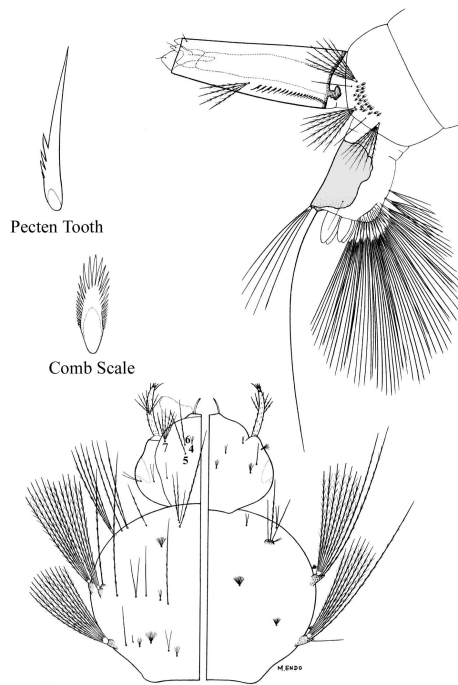
Host Preference: Mammals. Females are aggressive human biters that attack during the day and night. Rare (marginal) species in Connecticut.

Virus Isolations: None.

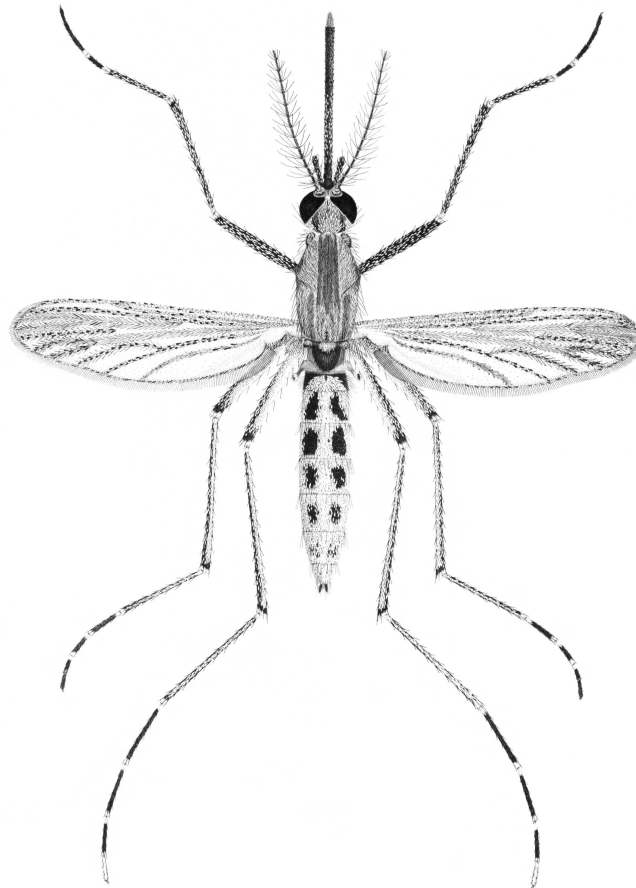
Phenolgy: Univoltine. **Larvae:** No collection data. **Adults:** Historical collection in June 1904.

Seasonal Abundance: No collection data.

Ochlerotatus dorsalis (Meigen)



Larva



Adult Female

Ochlerotatus excrucians (Walker)

Larva: Head: Antenna shorter than head with coarse spinules; antennal seta 1-A with three or more branches; head hair 5 double, head hair 6 usually double, occasionally triple. **Abdomen:** Comb scales in patch of eighteen or more; comb scale thorn-like, with median spine two or more times the length of subapical spinules. **Siphon:** Siphon long and slender, about five times as long as wide at base, with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond distally detached pecten teeth. **Anal Segment:** Saddle incomplete.

Adult Female: Head: Proboscis unbanded, intermixed with dark and pale scales. **Thorax:** Scutum covered with reddish to yellowish-brown scales, pattern variable; postprocoxal scale patch present; hypostigmal area bare; lower mesepimeral setae usually absent. **Abdomen:** Abdominal terga with broad, dingy white basal bands, otherwise segments covered with dark and pale scales. **Legs:** Leg intermixed with dark and pale scales; pale basal bands on hindtarsomeres broad, more than one-third times the length of the tarsal segment; lower tooth of foreclaw long and subparallel to upper tooth. **Wings:** Scales predominantly dark, narrow, with pale scales intermixed, especially along costa and subcosta.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Permanent and semi-permanent woodland pools.

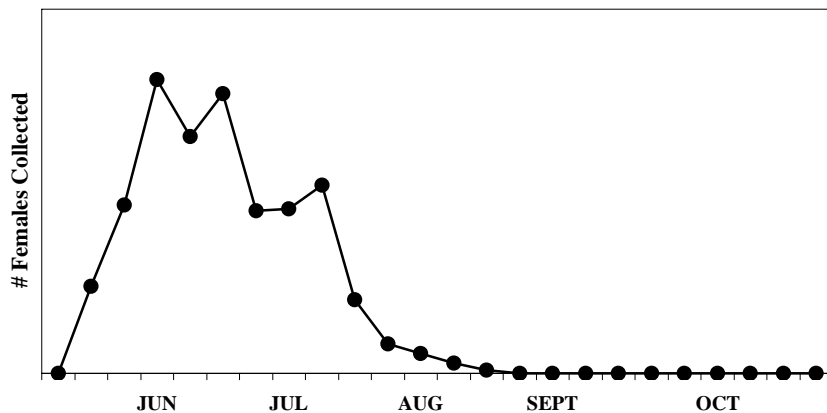
Overwintering Stage: Egg.

Host Preference: Mammals and birds. Females stay close to breeding sites but will bite humans anytime during day and night in wooded or shaded areas.

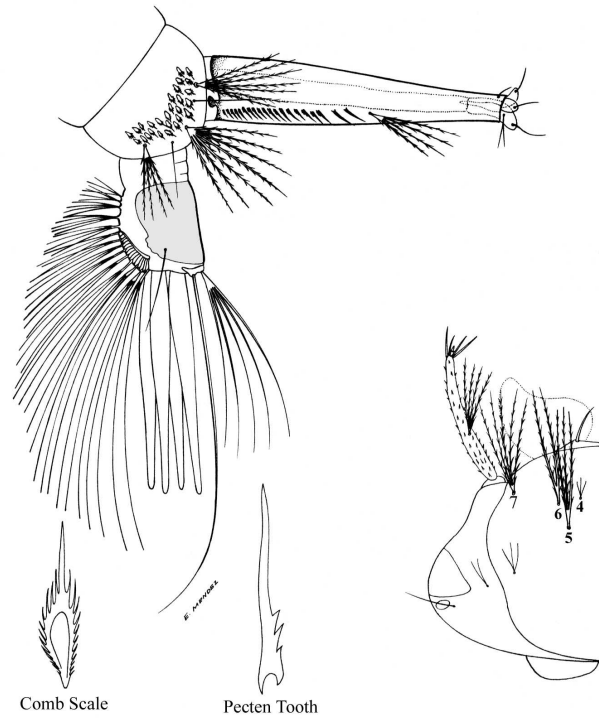
Virus Isolations: Jamestown Canyon.

Phenology: Univoltine. **Larvae:** March – May. **Adults:** May – August.

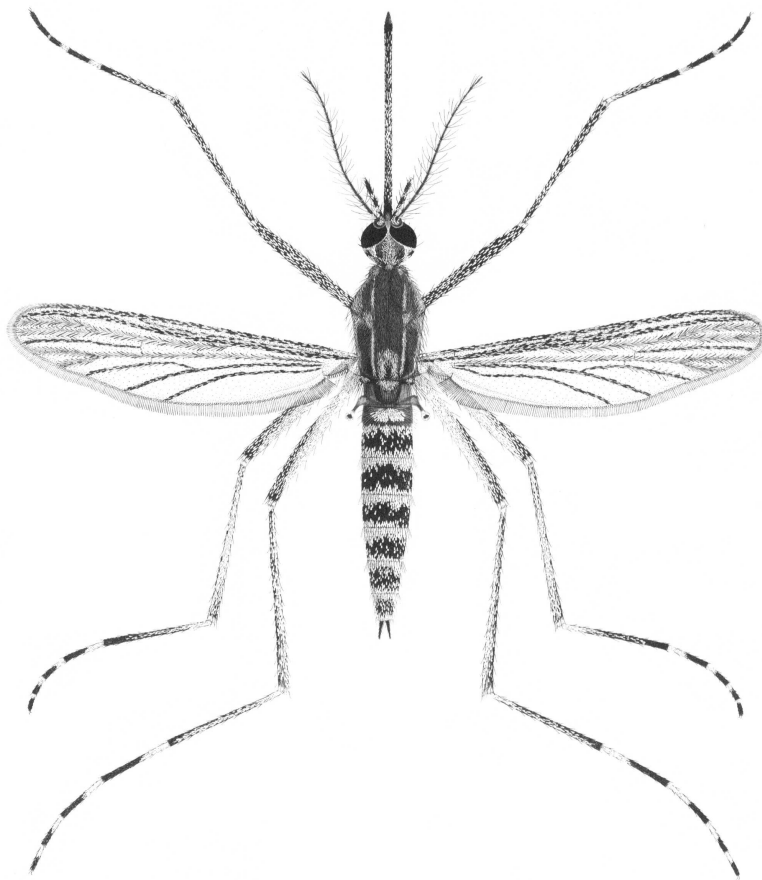
Seasonal Abundance:



Ochlerotatus excrucians (Walker)



Larva



Adult Female

Ochlerotatus fitchii (Felt & Young)

Larva: Head: Antenna about half as long as head, with coarse spinules; antennal seta 1-A with four or more branches; head hairs 5 and 6 variable, usually two to four branched. **Abdomen:** Comb scale with median spine about twice the length of subapical spinules. **Siphon:** Siphon slender, about four to five times as long as wide at base, with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth; distal pecten tooth about equal to apical diameter of siphon. **Anal Segment:** Saddle incomplete, with spicules on posterior margin.

Adult Female: Head: Proboscis unbanded, intermixed with dark brown and yellowish scales; scales on antennal pedicel numerous, mostly pale. **Thorax:** Scutum with broad, median reddish-brown stripe and yellowish-white scales laterally; postprocoxal scale patch present; hypostigmal area bare; lower mesepimeral setae usually zero to two. **Abdomen:** Abdominal terga with broad, dingy white basal bands; otherwise segments variable with dark and pale scales often intermixed. **Legs:** Pale basal bands on hindtarsomeres broad, more than one-third times the length of the tarsal segment; lower tooth of foreclaw shorter than in *Oc. excrucians* and not parallel to upper tooth. **Wings:** Veins intermixed with pale and dark scales, especially on anterior veins; scales both narrow and broad.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland.

Larval Habitat: Temporary and semi-permanent woodland pools, bogs, cattail marshes, and open grassy ditches.

Overwintering Stage: Egg.

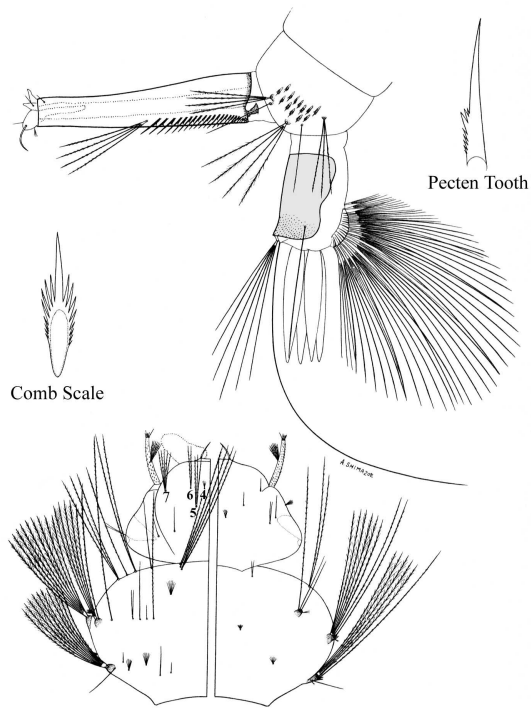
Host Preference: Mammals and birds. Females readily attack humans during the day and night, but the species is rare in Connecticut.

Virus Isolations: None.

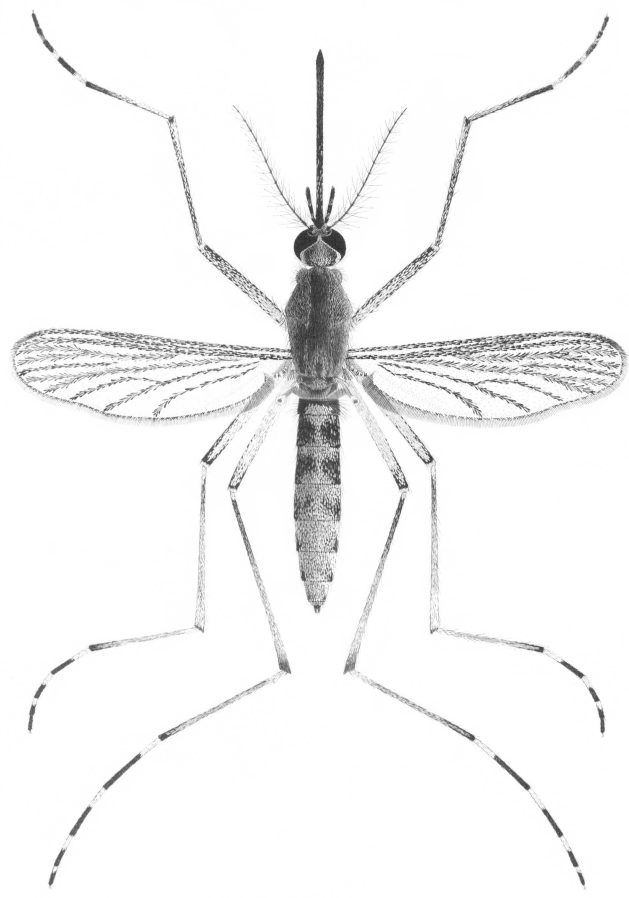
Phenology: Univoltine. **Larvae:** Limited collection in April. **Adults:** May – August.

Seasonal Abundance: No collection data.

Ochlerotatus fitchii (Felt & Young)



Larva



Adult Female

Ochlerotatus grossbecki (Dyar & Knab)

Larva: Head: Antenna shorter than head, with coarse spinules; antennal seta 1-A multibranched; head hair 5 with two to four branches, head hair 6 two to three branched. **Thorax:** Mesothoracic seta 1-M about equal to length of antenna or longer. **Abdomen:** Comb scale with median spine less than one and one-half times the length of subapical spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth. **Anal Segment:** Saddle incomplete, with distinct spicules along posterior margin; anal segment seta 1 nearly as long as length of saddle.

Adult Female: Head: Proboscis dark-scaled, unbanded, with a few pale scales on basal half. **Thorax:** Scutum with broad, median dark brown stripe, becoming golden-brown on anterior half; postprocoxal scale patch present; hypostigmal area without scales. **Abdomen:** Abdominal terga mostly black-scaled with yellowish-white transverse basal bands. **Legs:** Hindtarsomeres with broad, pale basal bands more than one-third the length of the tarsal segment. **Wings:** Wing scales broad and distinctly triangular-shaped, intermixed dark and white.

County Records: Fairfield, New Haven.

Larval Habitat: Leaf-lined woodland pools and bogs in the early spring.

Overwintering Stage: Egg.

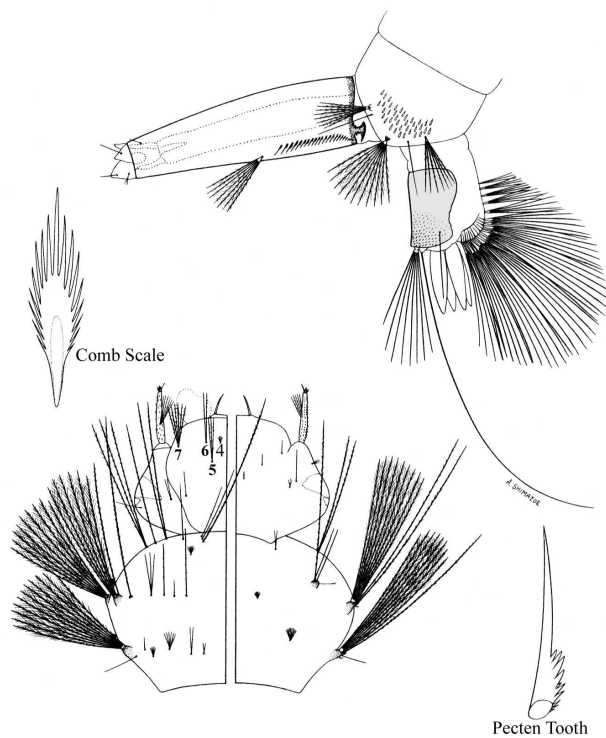
Host Preference: Mammals. Females are aggressive human biters that attack readily during day or night, but the species is rare in Connecticut.

Virus Isolations: None.

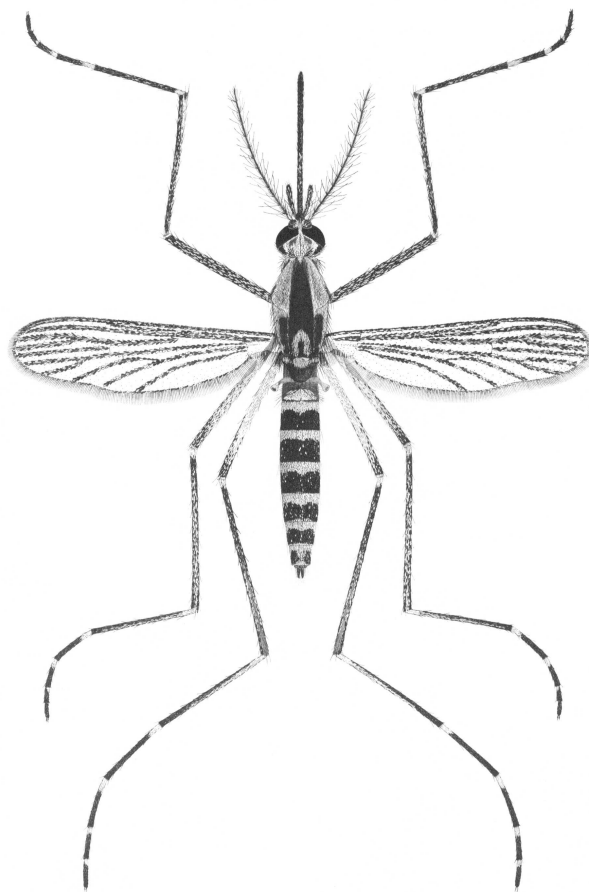
Phenology: Univoltine. **Larvae:** No collection data. **Adults:** Limited collection in June.

Seasonal Abundance: Insufficient collection data.

Ochlerotatus grossbecki (Dyar & Knab)



Larva



Adult Female

Ochlerotatus hendersoni Cockerell

Larva: Head: Antenna about half as long as head, smooth; antennal seta 1-A usually single, rarely double; head hair 5 usually single, head hair 6 with three or four branches. **Abdomen:** Comb scale with long, blunt median spine evenly fringed with short spinules; comb scales arranged in an irregular or single row. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft with three branches, inserted beyond evenly spaced pecten teeth; acus detached from siphon. **Anal Segment:** Saddle incomplete; ventral brush with five pairs of setae; ventral and dorsal pairs of anal gills about equal in length.

Adult Female: Head: Proboscis dark-scaled, unbanded; vertex with white scales. **Thorax:** Scutum with median stripe of dark brown scales contrasting with silvery-white scales laterally; silver scaling usually covering entire scutal fossa; setae on anterior portion of scutum numerous and well developed; postprocoxal scale patch absent; hypostigmal area without scales.

Abdomen: Anteriolateral margins of abdominal segments with silvery-white triangular scale patches, otherwise terga dark-scaled. **Legs:** Dark-scaled, unbanded. **Wings:** Scales entirely dark, narrow.

County Records: Fairfield, Hartford, New Haven.

Larval Habitat: Water-filled rot holes in the forest canopy.

Overwintering Stage: Egg.

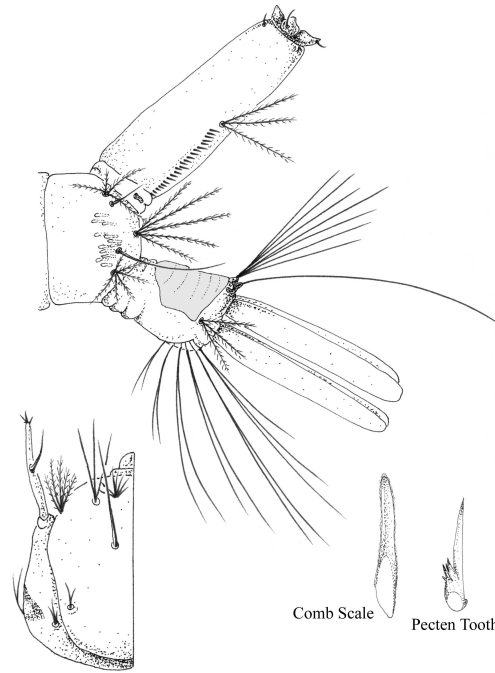
Host Preference: Mammals. Little is known about the biology of this rarely collected species in Connecticut.

Virus Isolations: None.

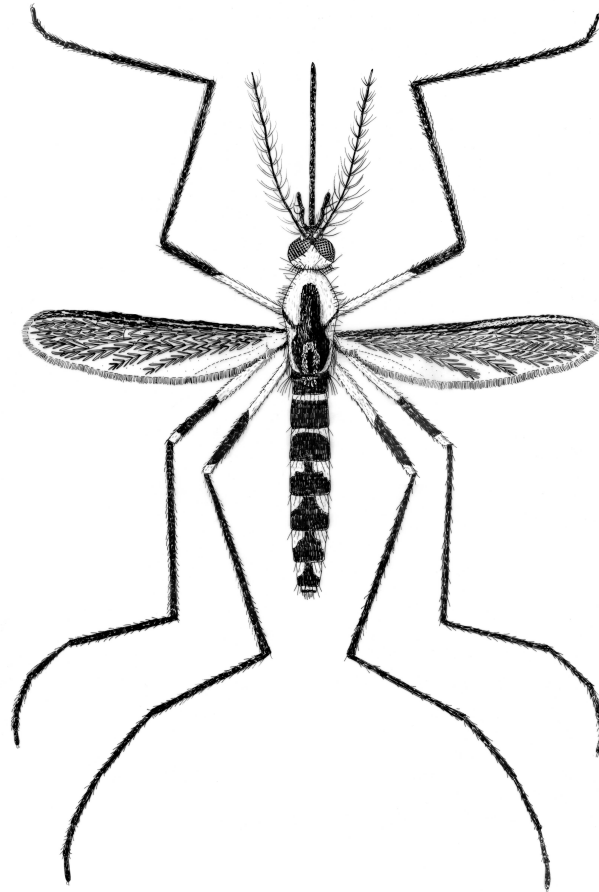
Phenology: Multivoltine. **Larvae:** No collection data. **Adults:** June – August.

Seasonal Abundance: Insufficient collection data.

Ochlerotatus hendersoni Cockerell



Larva



Adult Female

Ochlerotatus intrudens Dyar

Larva: Head: Antenna shorter than head capsule; antennal seta 1-A multiple; head hairs 5 and 6 multibranching; head hair 6 inserted anterior to line between head hairs 5 and 7. **Abdomen:** Comb scales usually twelve to sixteen in an irregular double row; comb scale thorn-like with long median spine and short subequal spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond distally detached pecten teeth; branches of siphonal seta 1 about equal to length of basal diameter of siphon. **Anal Segment:** Saddle incomplete, deeply incised on ventral margin.

Adult Female: Head: Proboscis dark-scaled, unbanded; maxillary palpus dark, usually with a few pale scales. **Thorax:** Scutum uniformly covered with golden-brown scales, occasionally with faint median narrow stripes; postprocoxal scale patch absent; hypostigmal area with or without scales; scales on mesokatepisternum not extending to near anterior angle. **Abdomen:** Abdominal terga dark-scaled with broad, white basal bands. **Legs:** Forecoxa with pale scales on anterior surface; hindtarsomeres dark-scaled, unbanded. **Wings:** Wings dark-scaled, occasionally with a few pale scales at base of costa.

County Records: Fairfield, Hartford, Litchfield, New Haven, New London.

Larval Habitat: Temporary and semi-permanent woodland pools, marshes, bogs, and grassy drainage ditches.

Overwintering Stage: Egg.

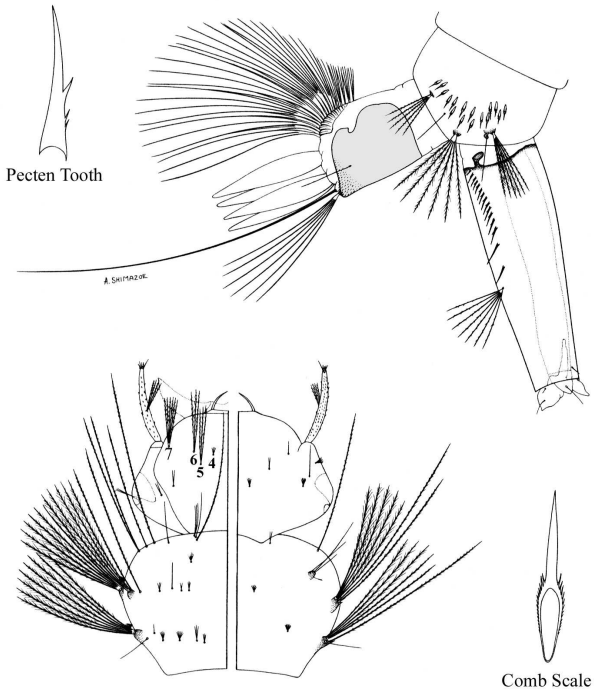
Host Preference: Mammals. Females are persistent human biters that attack during the day and night, but the species is rare in Connecticut.

Virus Isolations: None.

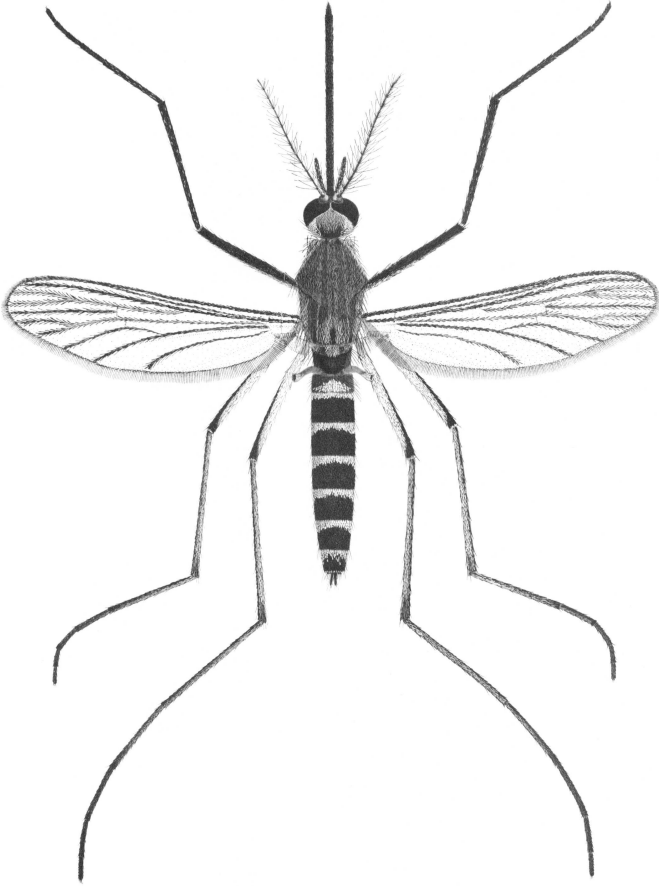
Phenology: Univoltine. **Larvae:** No collection data. **Adults:** May – August.

Seasonal Abundance: Insufficient collection data.

Ochlerotatus intrudens Dyar



Larva



Adult Female

Ochlerotatus japonicus (Theobald)

Larva: Head: Antenna shorter than head; antennal seta 1-A multiple and inserted at middle of shaft; head hairs 5 and 6 multibranching, forming a straight line on the anterior margin of the head capsule. **Thorax:** Mesothoracic seta 1-M much shorter than antenna. **Abdomen:** Comb scale fringed apically with subequal spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted within distally detached pecten teeth. **Anal Segment:** Saddle incomplete, with transverse row of spicules on posterior margin.

Adult Female: Head: Proboscis dark-scaled, unbanded; vertex with silvery-white scales. **Thorax:** Scutum with distinct lyre-shaped pattern of golden scales; lateral sides of thorax with broad, silvery-white scales; postprocoxal scale patch absent; hypostigmal area without scales; lower mesepimeral setae absent. **Abdomen:** Abdominal terga purplish-brown to black; lateral margins of segments with prominent, silvery-white scale patches; sterna with transverse white bands. **Legs:** Hindtarsomeres with broad, white basal bands more than one-third times the length of the tarsal segment. **Wings:** Wing scales narrow, dark.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham. Exotic; introduced species detected in 1998.

Larval Habitat: Natural and artificial containers including rock holes along stream beds, tree holes, catch basins, bird baths, and discarded tire casings.

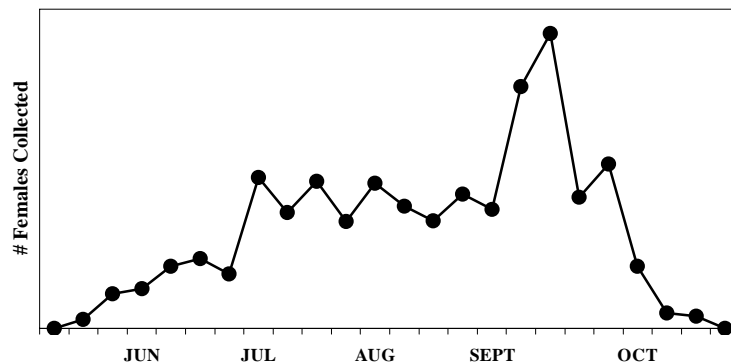
Overwintering Stage: Egg.

Host Preference: Mammal. Females are aggressive biters that attack humans during the day, early evening, and after dark.

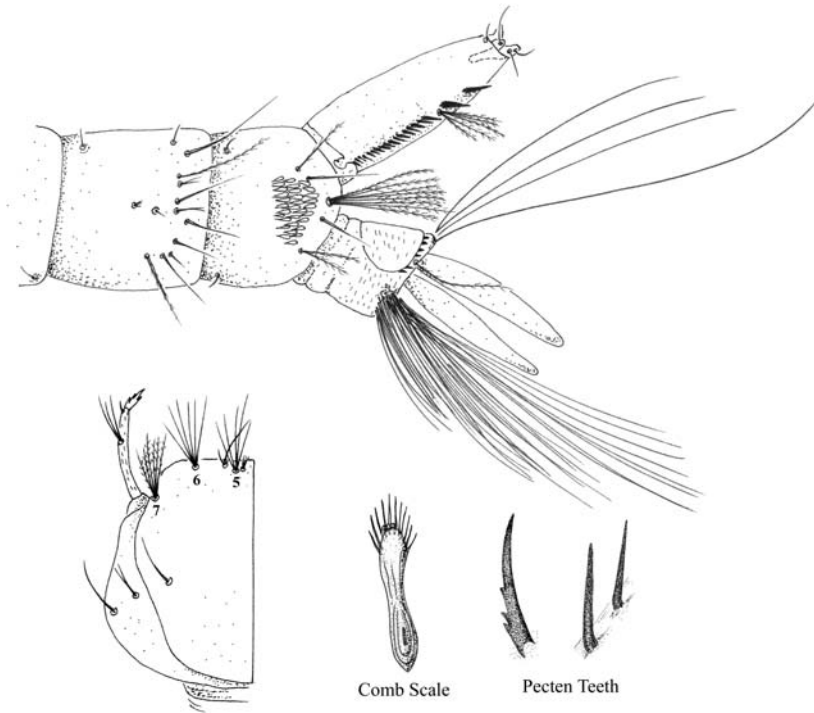
Virus Isolations: None.

Phenology: Multivoltine. **Larvae:** March – November. **Adults:** June – October.

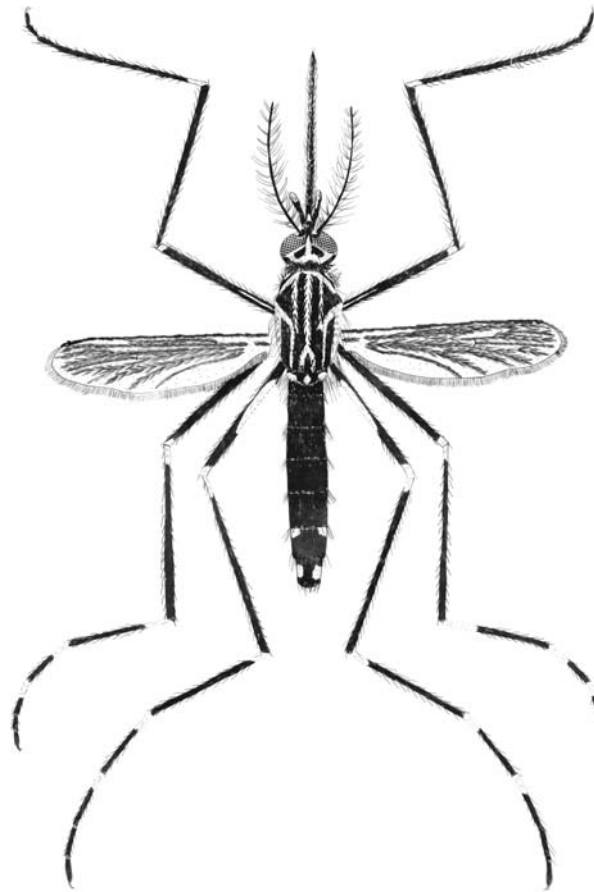
Seasonal Abundance:



Ochlerotatus japonicus (Theobald)



Larva



Adult Female

Ochlerotatus provocans (Walker)

Larva: Head: Antenna shorter than head; antennal seta 1-A multibranching; head hair 5 double or triple, head hair 6 usually single. **Abdomen:** Comb scale thorn-like with median spine more than four times the length of subapical spinules. **Siphon:** Siphon with more than one pair of setae in addition to siphonal seta 2-S, arranged in a dorsolateral row; siphonal tuft inserted within distally detached pecten teeth. **Anal Segment:** Saddle incomplete, nearly reaching ventral margin.

Adult Female: Head: Proboscis dark-scaled, unbanded; maxillary palpus entirely dark-scaled. **Thorax:** Scutum usually with a broad, median stripe of brown scales widening posteriorly; anterior and lateral margins of scutum covered with grayish-white scales; postprocoxal scale patch present; hypostigmal area with pale scales; mesokatepisternum with scales extending to anterior angle. **Abdomen:** Abdominal terga dark brown with white basal bands. **Legs:** Hindtarsomeres dark-scaled, unbanded. **Wings:** Wing veins dark-scaled except for small patch of whitish scales at base of costa.

County Records: Hartford, Litchfield, Tolland.

Larval Habitat: Temporary woodland snowmelt pools and roadside ditches.

Overwintering Stage: Egg.

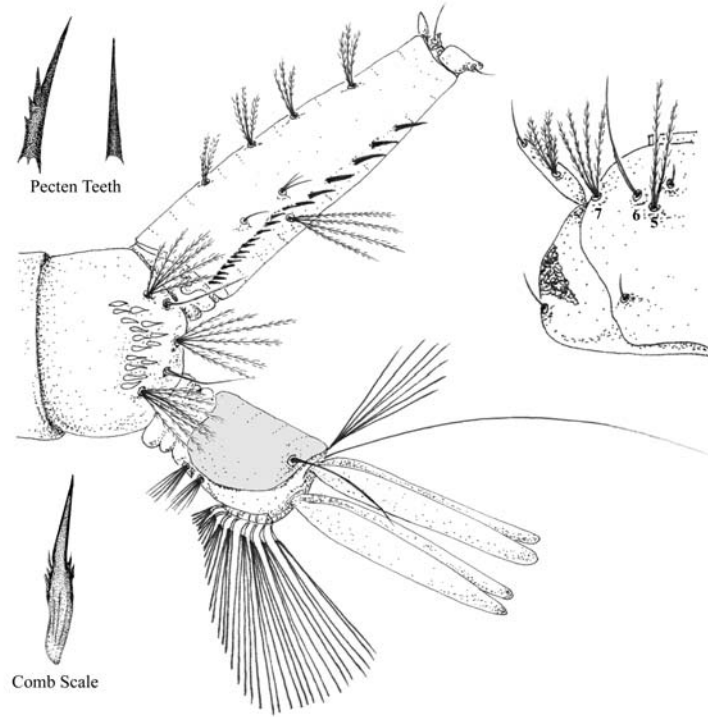
Host Preference: Mammals. Females bite humans readily during the day in shaded areas and in the evening in open areas.

Virus Isolations: Jamestown Canyon.

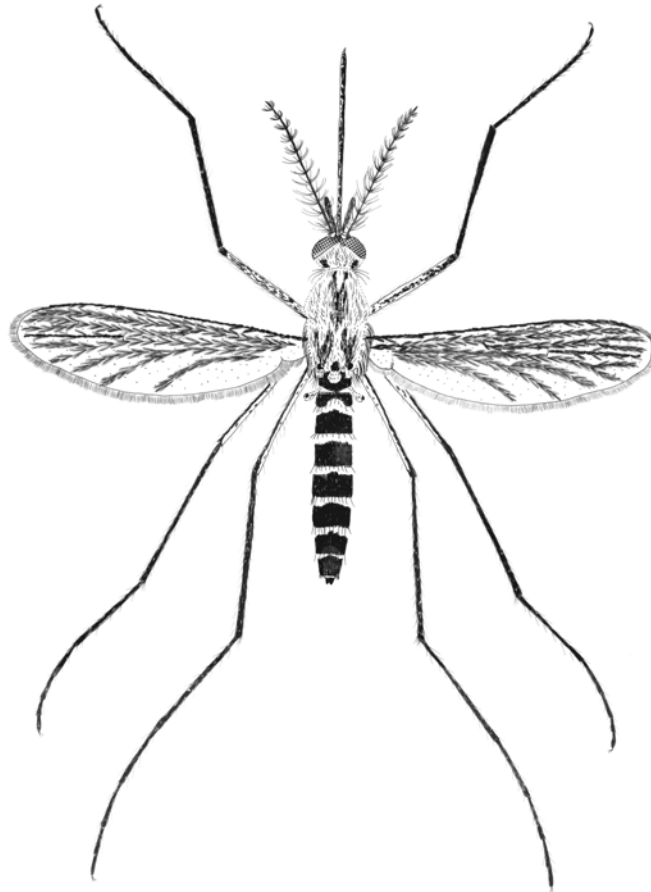
Phenology: Univoltine. **Larvae:** Limited collections in May. **Adults:** May – July.

Seasonal Abundance: Insufficient collection data.

Ochlerotatus provocans (Walker)



Larva



Adult Female

Ochlerotatus punctor (Kirby)

Larva: Head: Antenna shorter than head; antennal seta 1-A multibranched; head hairs 5 and 6 single or double, slender, and gradually tapering distally. **Abdomen:** Comb scales usually ten or more arranged in an irregular single or double row; comb scale thorn-like, with median spine at least four times the length of subapical spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth; siphonal seta 2-S much shorter than distal pecten tooth. **Anal Segment:** Saddle complete; anal segment seta 1 about equal in length to saddle, seta 2 multibranched, seta 3 single.

Adult Female: Females cannot be reliably separated from *Ochlerotatus abserratus*. **Head:** Proboscis dark-scaled, unbanded. **Thorax:** Scutum covered with golden-brown scales, usually with a broad, median dark brown stripe or pair of stripes; sides of thorax clothed with large pale scales; postprocoxal scale patch present; hypostigmal area without scales. **Abdomen:** Abdominal terga dark-scaled with pale basal bands. **Legs:** Hindtarsomeres dark-scaled, unbanded. **Wings:** Veins covered with narrow, dark scales.

County Records: Litchfield.

Larval Habitat: Temporary woodland pools and sphagnum bogs in densely wooded mixed and coniferous forests in high elevations.

Overwintering Stage: Egg.

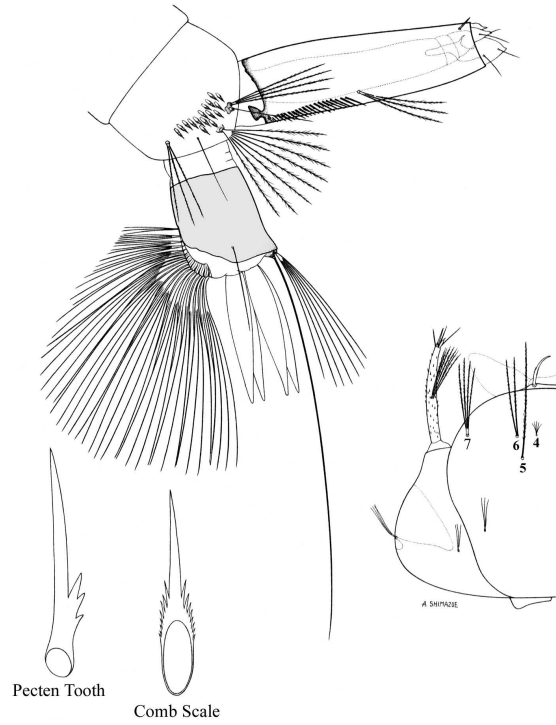
Host Preference: Mammals. Females are persistent human biters that mostly attack at dawn, dusk and early evening. They also bite during the day in wooded areas and enter houses after dark. Rare in Connecticut.

Virus Isolations: None.

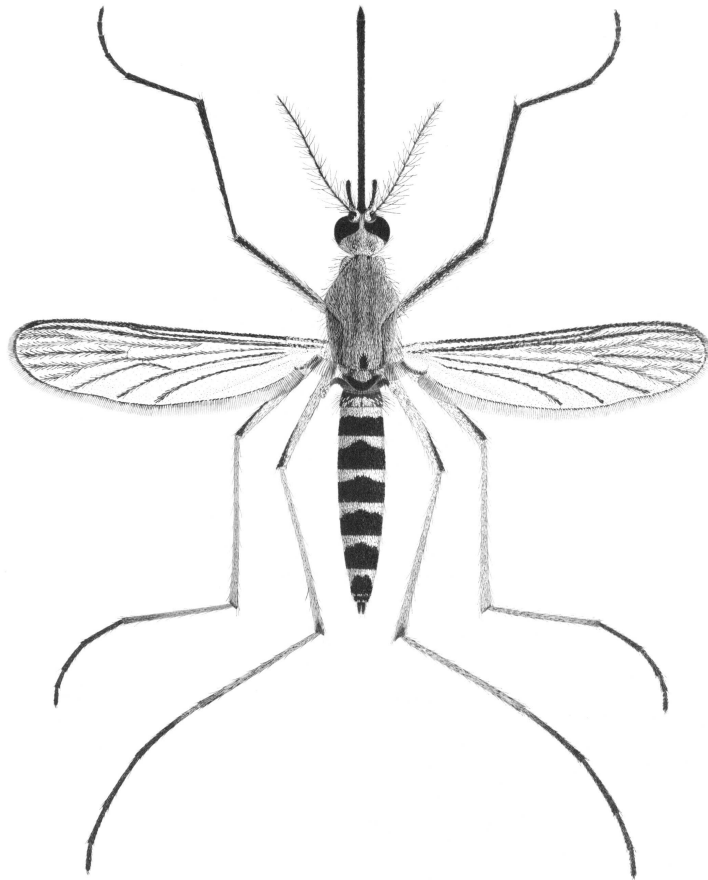
Phenology: Univoltine. **Larvae:** April – May. **Adults:** No collection data.

Seasonal Abundance: No collection data.

Ochlerotatus punctor (Kirby)



Larva



Adult Female

Ochlerotatus sollicitans (Walker)

Larva: Head: Antenna about half as long as head; antennal seta 1-A multibranching; head hairs 5 and 6 single, slender, and gradually tapering distally. **Abdomen:** Median spine of comb scale at least four times the length of subapical spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth; seta 2-S subequal to length of distal pecten tooth. **Anal Segment:** Saddle complete; anal segment seta 1 shorter than saddle, seta 2 multibranching, seta 3 single; anal gills usually short and budlike.

Adult Female: Head: Proboscis dark-scaled with distinct pale band near middle. **Thorax:** Scutum clothed with golden-brown scales medially, becoming darker laterally; sides of thorax with long, whitish scales; postprocoxal scale patch present; hypostigmal area with scales. **Abdomen:** Yellowish basal bands on abdominal terga intersected by yellowish, median, longitudinal stripe or row of disconnected spots. **Legs:** First hindtarsomere with distinct, pale yellow median band; remaining hindtarsomeres with broad, white basal bands contrasting sharply with dark scales. **Wings:** Veins intermixed with dark and pale scales.

County Records: Fairfield, Middlesex, New Haven, New London.

Larval Habitat: Temporary saline pools in coastal salt marshes.

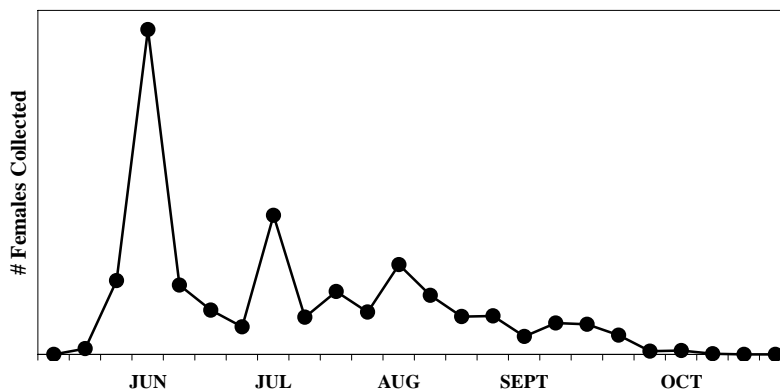
Overwintering Stage: Egg.

Host Preference: Mammals and birds. Females are aggressive human biters that will attack in full sunlight and fly considerable distances inland. One of the most important pest species in coastal Connecticut, but it is not readily collected in CO₂-baited CDC light traps.

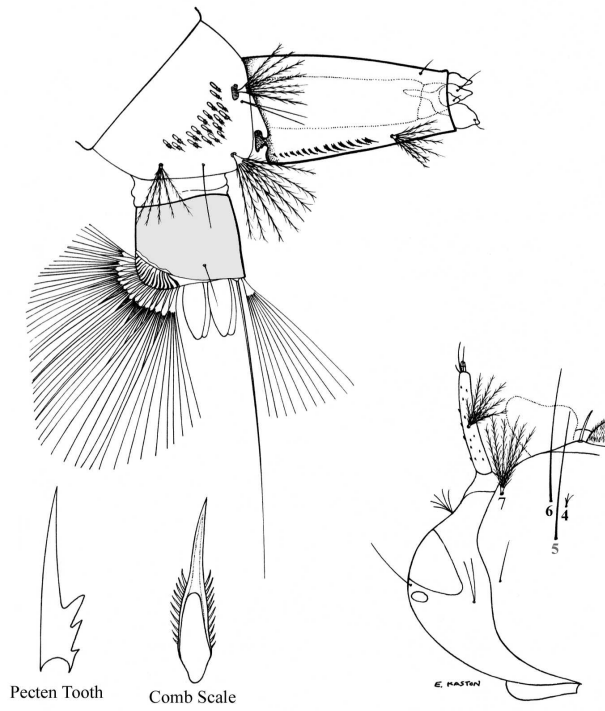
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Jamestown Canyon, West Nile.

Phenology: Multivoltine. **Larvae:** May – October. **Adults:** June – October.

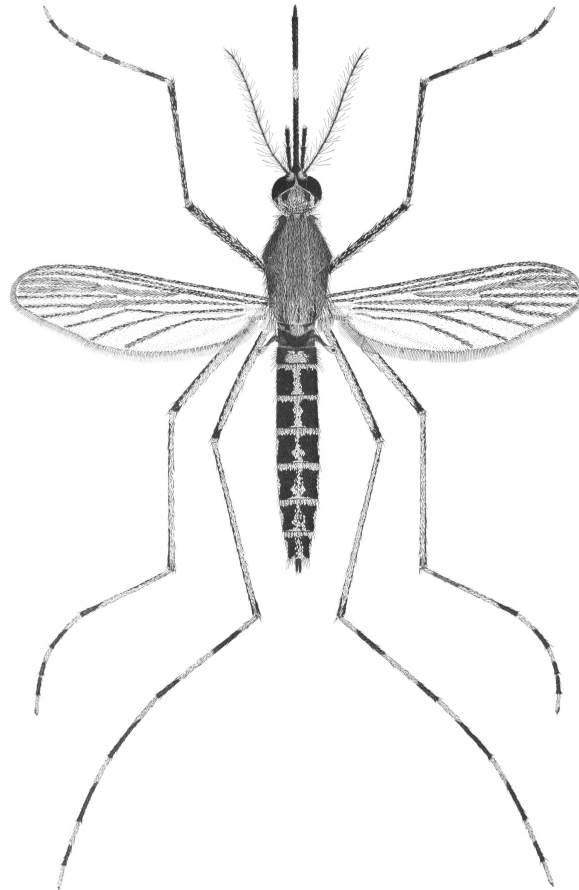
Seasonal Abundance:



Ochlerotatus sollicitans (Walker)



Larva



Adult Female

Ochlerotatus sticticus (Meigen)

Larva: Head: Antenna about half as long as head, with coarse spinules; antennal seta 1-A with four or more branches; head hair 5 with two to four branches, head hair 6 usually double.

Abdomen: Comb scale thorn-like, with median spine at least four times the length of subapical spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth; distal pecten tooth not more than one-half the apical diameter of the siphon; siphon usually less than four times as long as wide at base. **Anal Segment:** Saddle incomplete.

Adult Female: Head: Proboscis dark-scaled, unbanded. **Thorax:** Scutum covered with pale golden scales, with a median longitudinal dark brown stripe or pair of stripes; scutellar and supraalar setae yellowish; postprocoxal scale patch absent; hypostigmal area without scales; mesokatepisternum with scales extending to near anterior angle; lower quarter of mesepimeron devoid of scales and without setae. **Abdomen:** Abdominal terga dark-scaled with complete, dingy white basal bands and basolateral triangular scale patches. **Legs:** Dark-scaled, unbanded. **Wings:** Wing scales narrow and entirely dark.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Temporary woodland pools in floodplains of rivers and large streams.

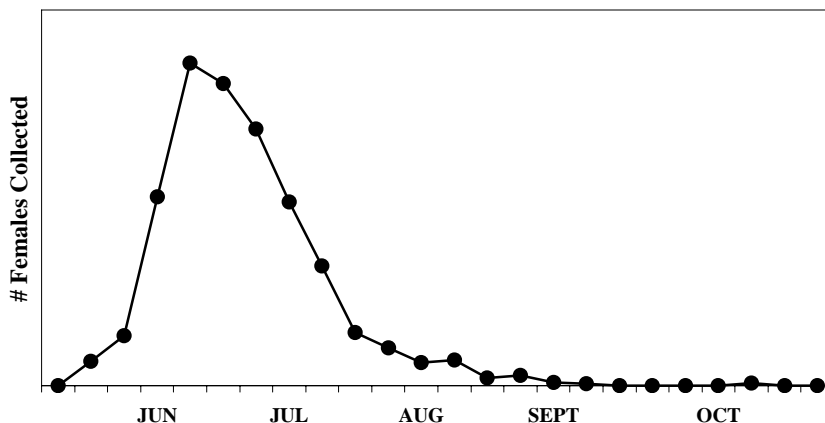
Overwintering Stage: Egg.

Host Preference: Mammals, birds, and reptiles. Females are aggressive human biters that attack during daylight hours.

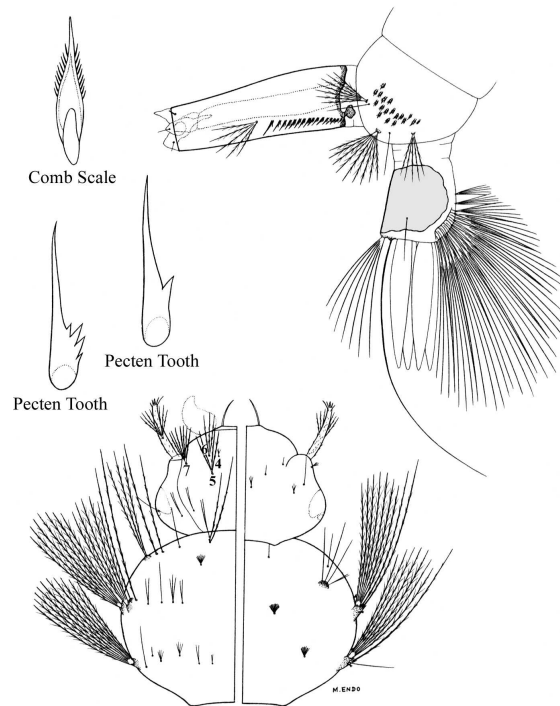
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Jamestown Canyon, Trivittatus, West Nile.

Phenology: Univoltine. **Larvae:** May – August. **Adults:** May – October.

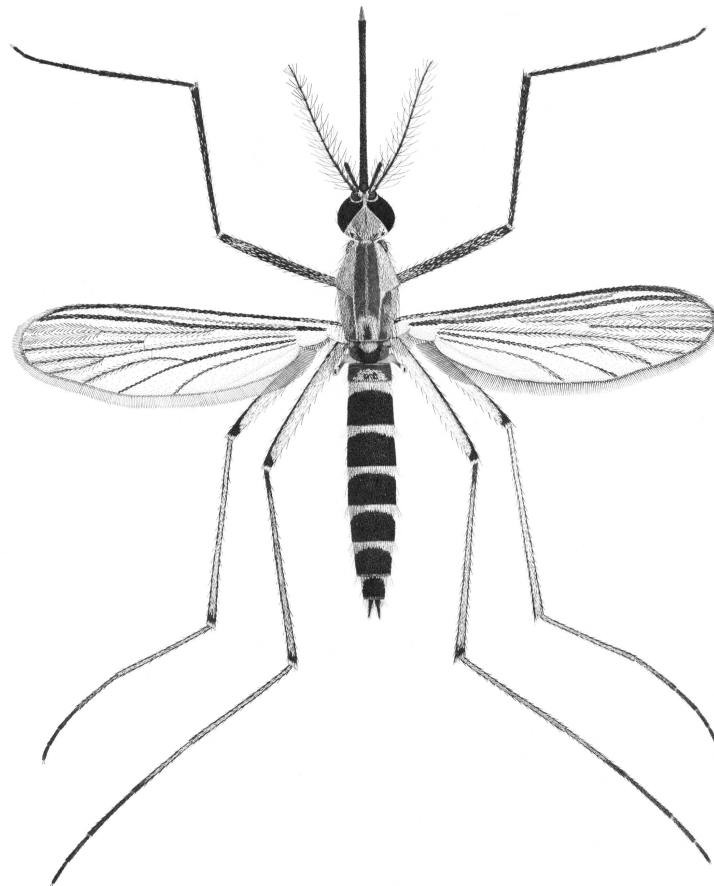
Seasonal Abundance:



Ochlerotatus sticticus (Meigen)

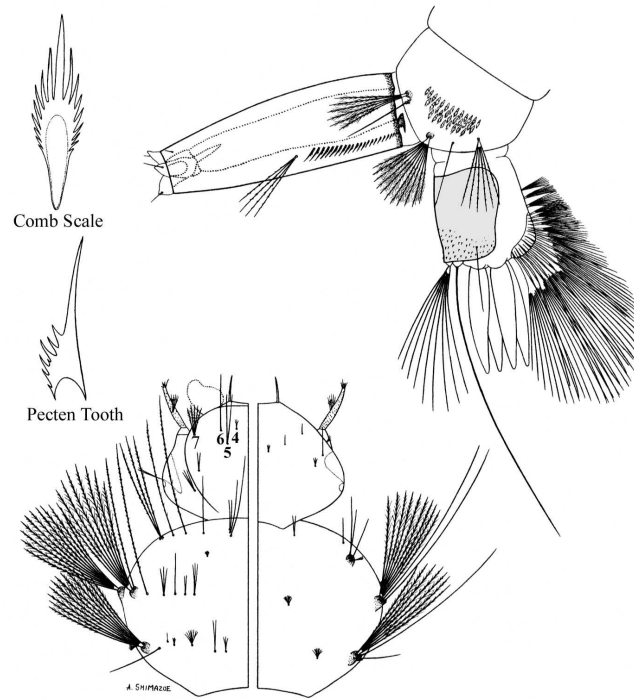


Larva

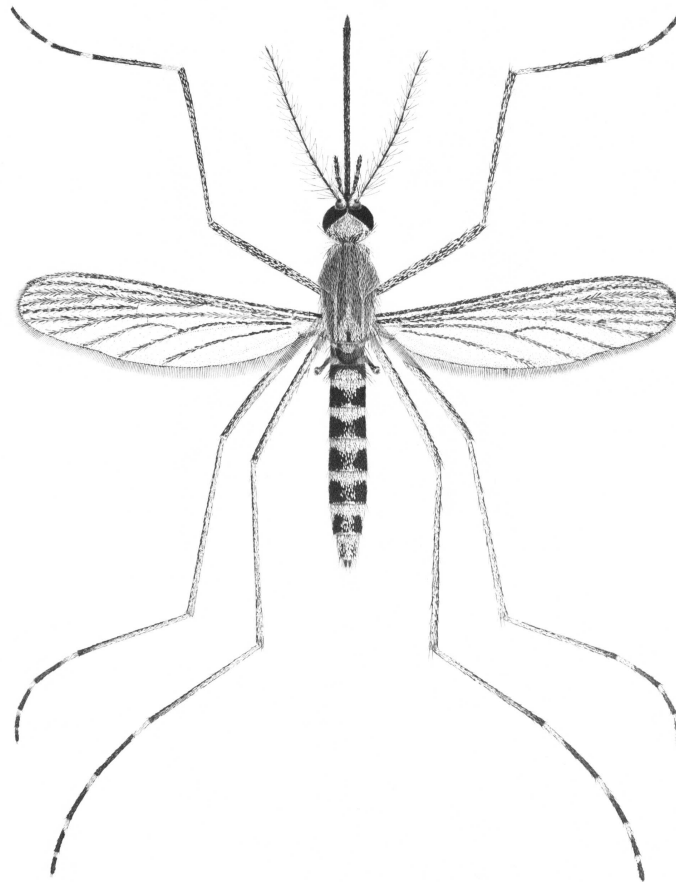


Adult Female

Ochlerotatus stimulans (Walker)



Larva



Adult Female

Ochlerotatus taeniorhynchus (Wiedemann)

Larva: Head: Antenna less than half as long as head; antennal seta 1-A with two or three branches; head hairs 5 and 6 single. **Abdomen:** Comb scale rounded apically and fringed with subequal spinules. **Siphon:** Siphon short, about two times as long as wide, with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth. **Anal Segment:** Saddle complete, with spicules along posterior margin.

Adult Female: Head: Proboscis dark-scaled with well-defined whitish band near middle; maxillary palpus dark with a few white scales apically. **Thorax:** Integument dark brown; scutum covered mostly with golden-brown scales; postprocoxal scale patch absent; hypostigmal area bare. **Abdomen:** Abdominal terga dark-scaled with narrow, white basal bands and prominent lateral scale patches of bright white scales, often forming pair of spots on dorsum of last two abdominal segments; sterna intermixed with white and dark scales. **Legs:** Hindtarsomeres dark-scaled with broad, bright white basal bands; last hindtarsomere mostly white. **Wings:** Wing scales narrow and entirely dark-scaled.

County Records: Fairfield, Middlesex, New Haven, New London.

Larval Habitat: High-tide salt marsh pools in coastal regions.

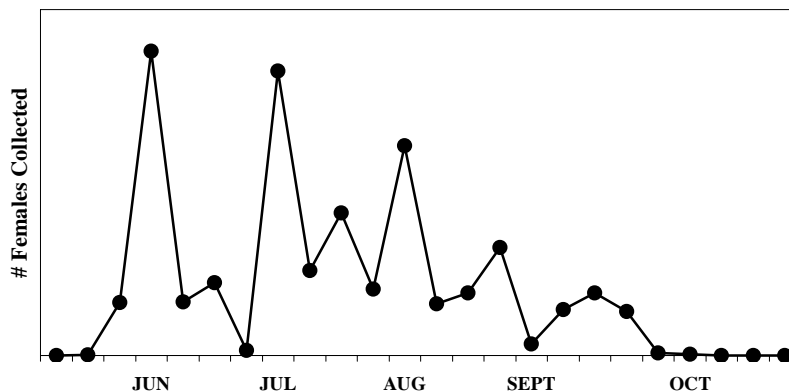
Overwintering Stage: Egg.

Host Preference: Mammals. Females are aggressive human biters that attack anytime of the day in shaded places and at night.

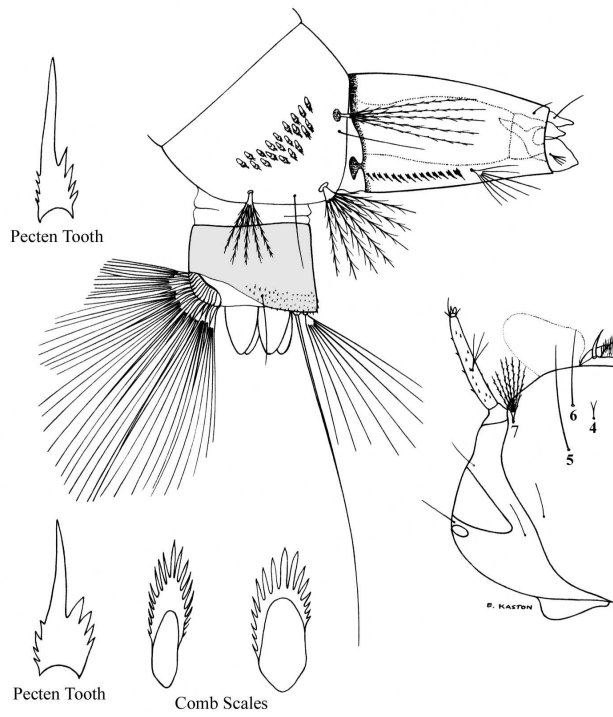
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Jamestown Canyon, West Nile.

Phenology: Multivoltine. **Larvae:** Limited collections, June – July. **Adults:** June – October.

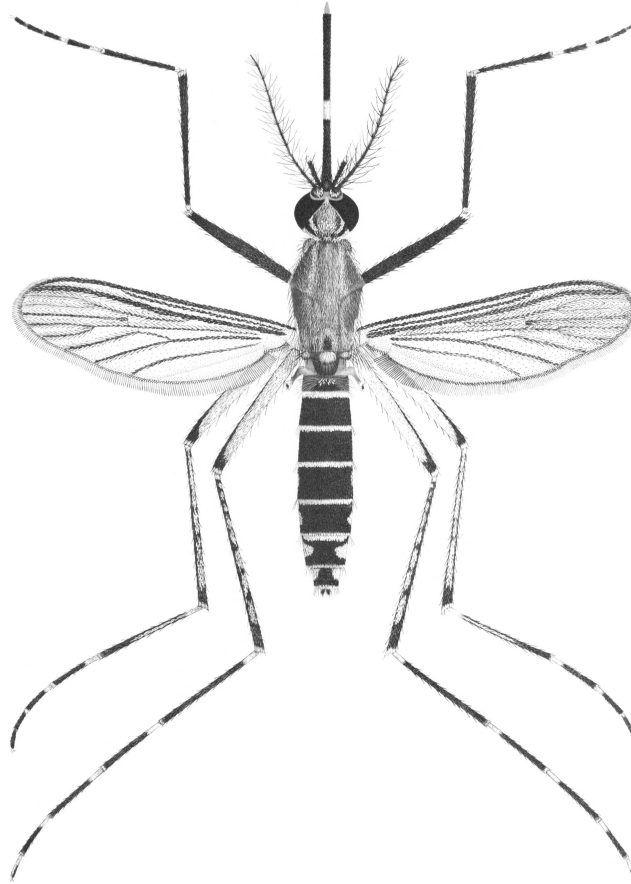
Seasonal Abundance:



Ochlerotatus taeniorhynchus (Wiedemann)



Larva



Adult Female

Ochlerotatus thibaulti Dyar & Knab

Larva: Head: Antenna about as long as head; antennal seta 1-A multibranching; head hairs 5, 6, and 7 inserted in nearly a straight line; head hair 5 with five or more branches, head hair 6 usually with three or more branches. **Thorax:** Mesothoracic seta 1-M single, much shorter than antenna. **Abdomen:** Lateral setae on abdominal segments I-II with three or four branches; comb scale fringed with stout subequal spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth; siphon usually four to five times as long as wide at base. **Anal Segment:** Saddle incomplete, with spicules along posterior margin; anal gills as long or longer than saddle.

Adult Female: Head: Proboscis dark-scaled, unbanded. **Thorax:** Scutum with broad median stripe of dark brown scales contrasting with bright golden scales laterally; postprocoxal scale patch absent; hypostigmal area without scales; mesokatepisternum with scales not extending to anterior angle; lower one-quarter of mesepimeron devoid of scales and usually without setae. **Abdomen:** Abdominal terga bluish-black with distinct basolateral patches of whitish scales; some segments often with incomplete, dingy white basal bands; sterna white-scaled with dark apical bands. **Legs:** Dark-scaled, unbanded. **Wings:** Wing scales narrow and entirely dark.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Subterranean crypts of up-rooted trees in red maple swamps.

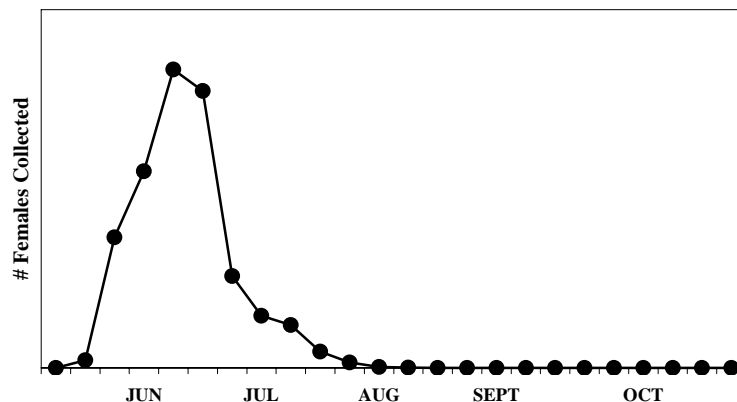
Overwintering Stage: Egg.

Host Preference: Mammals. Females bite humans but little is known about its feeding behavior.

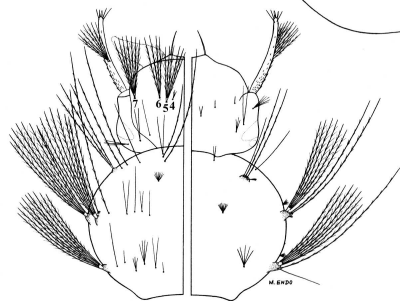
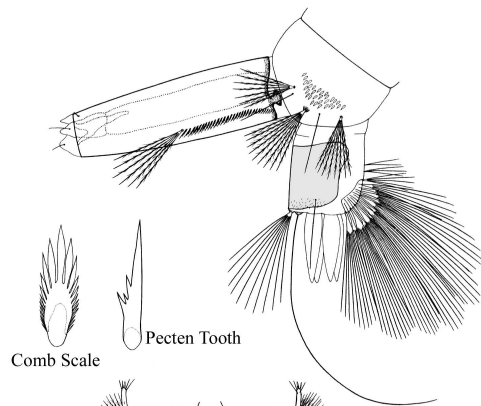
Virus Isolations: None.

Phenology: Univoltine. **Larvae:** No collection data. **Adults:** May – August.

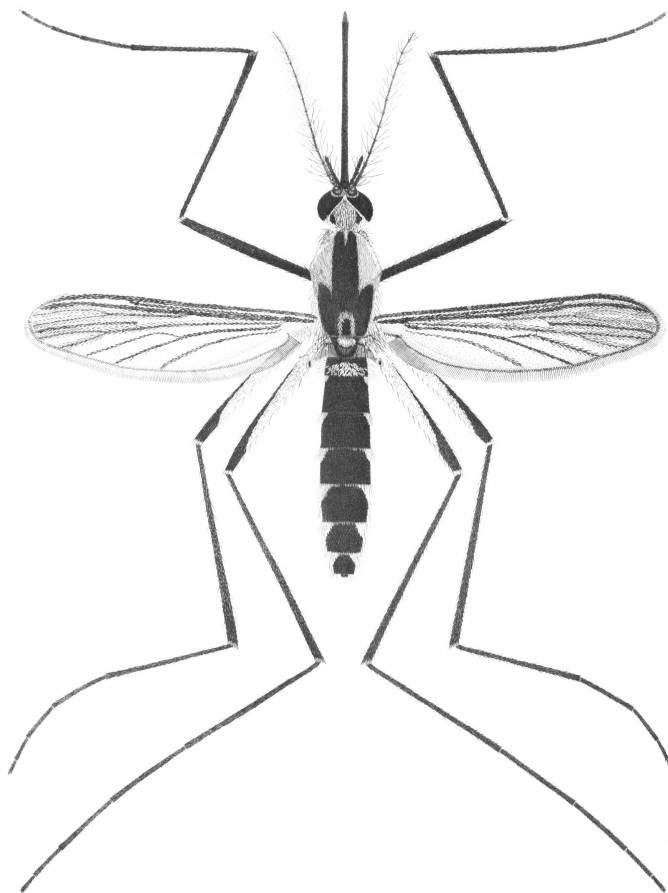
Seasonal Abundance:



Ochlerotatus thibaulti Dyar & Knab



Larva



Adult Female

Ochlerotatus triseriatus (Coquillett)

Larva: Head: Antenna about half as long as head, smooth; antennal seta 1-A single; head hair 5 usually single, head hair 6 usually double, sometimes with three or four branches. **Abdomen:** Comb scales arranged in a single irregular row; comb scale with long, blunt median spine evenly fringed with short spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft with two branches, inserted beyond evenly spaced pecten teeth; acus usually attached to siphon. **Anal Segment:** Saddle incomplete, extending about three-quarters or less around anal segment; ventral brush with six pairs of setae; dorsal pair of anal gills longer than ventral pair.

Adult Female: Head: Proboscis dark-scaled, unbanded; vertex with white scales. **Thorax:** Scutum with median stripe of dark brown scales contrasting with silvery-white scales laterally; silver scaling usually restricted to lateral and posterior portions of scutal fossa; setae on anterior portion of scutum few and weakly developed; postprocoxal scale patch absent; hypostigmal area without scales. **Abdomen:** Anteriolateral margins of abdominal segments with silvery-white triangular scale patches, otherwise abdominal terga dark-scaled. **Legs:** Dark-scaled, unbanded. **Wings:** Scales entirely dark, narrow.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Natural tree holes and artificial containers (e.g., discarded tires, rain barrels, cans).

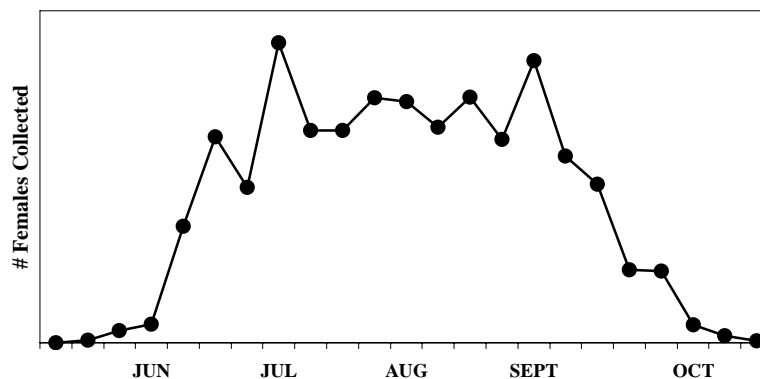
Overwintering Stage: Egg.

Host Preference: Mammals, birds, reptiles, and amphibians. Females are aggressive human biters that primarily feed at dawn and dusk, but will also bite during the day in wooded areas.

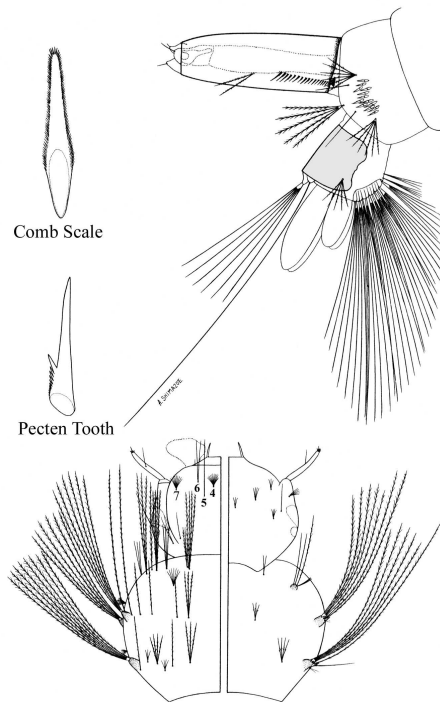
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Highlands J, Jamestown Canyon, West Nile.

Phenology: Multivoltine. **Larvae:** May – September. **Adults:** June – October.

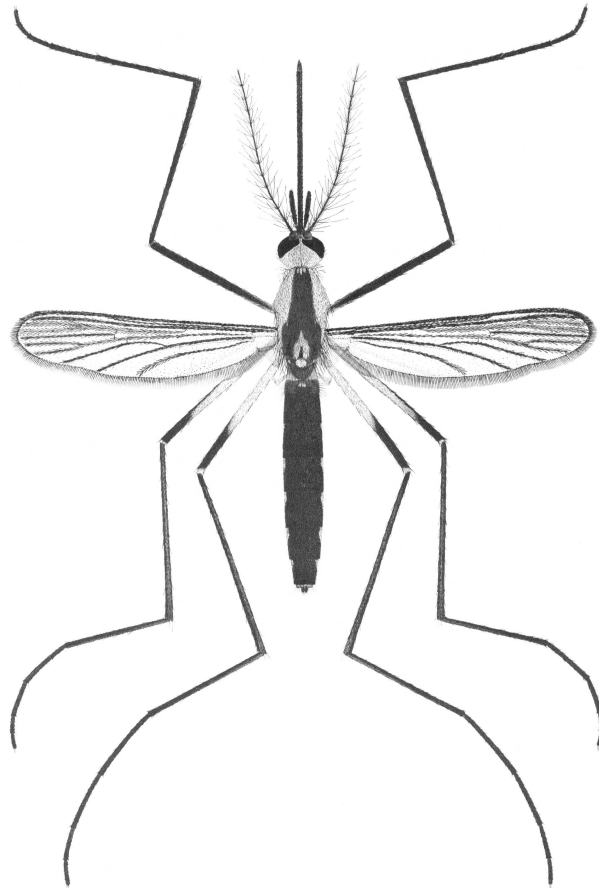
Seasonal Abundance:



Ochlerotatus triseriatus (Coquillett)



Larva



Adult Female

Ochlerotatus trivittatus (Coquillett)

Larva: Head: Antenna about half as long as head; antennal seta 1-A multibranching, inserted near middle of shaft; head hairs 5 and 6 single. **Abdomen:** Median spine of comb scale stout, not more than one and one-half times the length of the subapical spinules. **Siphon:** Siphon with only one pair of setae in addition to siphonal seta 2-S; siphonal tuft inserted beyond evenly spaced pecten teeth. **Anal Segment:** Saddle complete.

Adult Female: Head: Proboscis dark-scaled, unbanded. **Thorax:** Scutum with two distinct submedian yellowish-white stripes separated by dark stripe of about equal width; postprocoxal scale patch absent; hypostigmal area without scales; lower mesepimeral setae absent.

Abdomen: Abdominal terga predominantly dark-scaled with, or without, complete basal bands of white scales; sides of segments with prominent basolateral white scale patches; sterna white-scaled. **Legs:** Posterior side of femur and tibia pale-scaled; hindtarsomeres dark-scaled, unbanded. **Wings:** Veins covered with narrow, dark scales.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Temporary woodland pools and floodwater depressions.

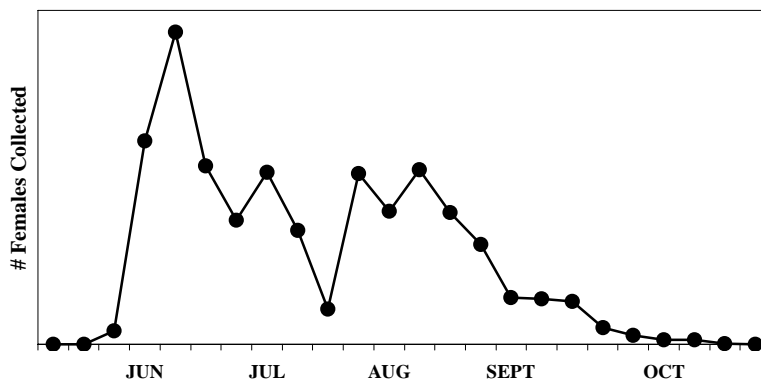
Overwintering Stage: Egg.

Host Preference: Mammals. Females are aggressive human biters that will attack anytime of the day or night and do not fly far from the breeding site.

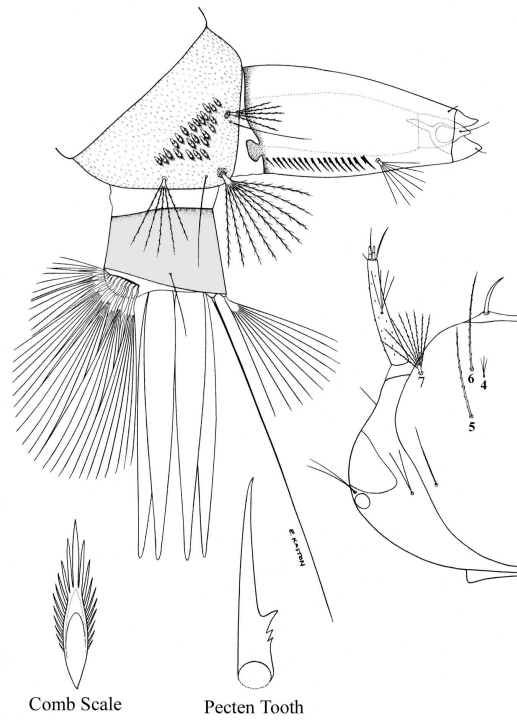
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Jamestown Canyon, Trivittatus, West Nile.

Phenology: Multivoltine. **Larvae:** May – August. **Adults:** June – October.

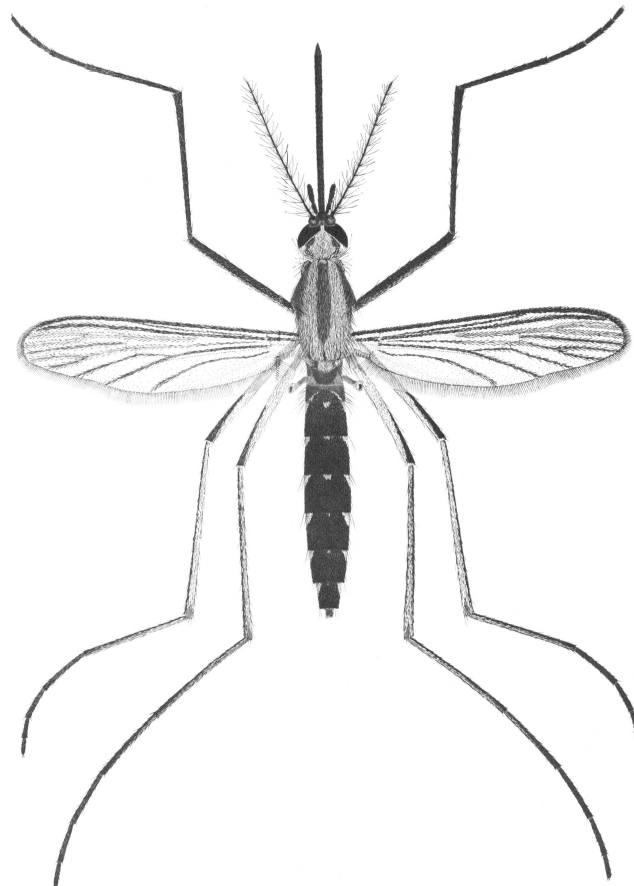
Seasonal Abundance:



Ochlerotatus trivittatus (Coquillett)



Larva



Adult Female

Orthopodomyia signifera (Coquillett)

Larva: Head: Antenna about half the length of head; head hairs 5 and 6 long, multibranched and barbed; lateral mouth brush composed of numerous fine filaments. **Abdomen:** Comb scales on eighth segment in two transverse rows; comb scales on posterior row long and thorn-like, fringed basally with small spinules. **Siphon:** Siphon with one pair of ventrally located setal tufts; pecten teeth absent. **Anal Segment:** Saddle complete; ventral brush well developed.

Adult Female: Head: Proboscis dark-scaled with narrow, white longitudinal lines dorsally. **Thorax:** Scutum dark-scaled with conspicuous, thin longitudinal lines of silver-white scales; prespiracular and postspiracular setae absent. **Abdomen:** Apex of abdomen bluntly rounded; abdominal terga dark-scaled with narrow, pale basal bands. **Legs:** Hindtarsomeres with basal and apical pale bands. **Wings:** Wing scales mostly dark with patch of white scales in center of wing.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London.

Larval Habitat: Tree holes and occasionally artificial containers (e.g., discarded tires).

Overwintering Stage: Reported to be egg or larva.

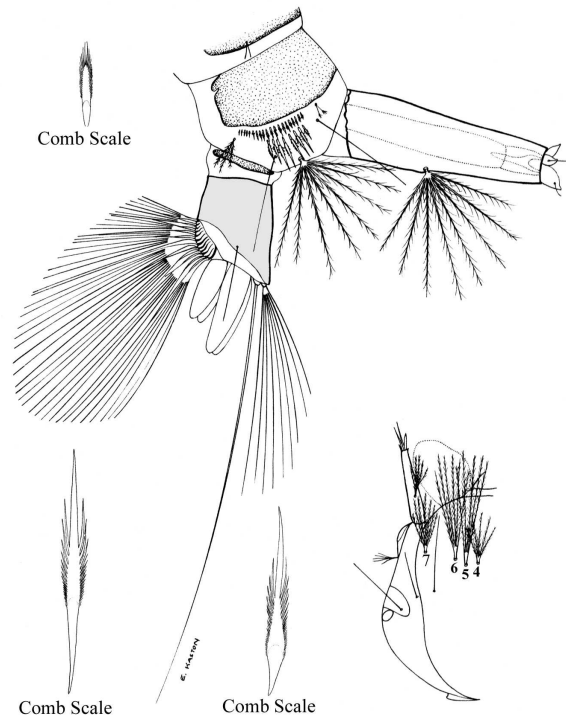
Host Preference: Birds. Adult females are rarely collected in CO₂ – baited CDC light traps.

Virus Isolations: None.

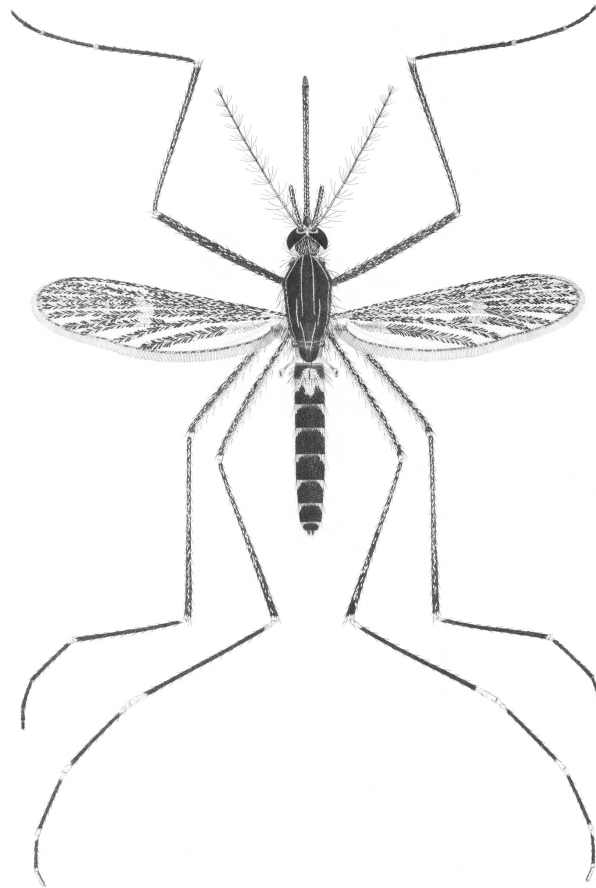
Phenology: Multivoltine. **Larvae:** Limited historical collections in November (Main et al. 1976). **Adults:** June – September.

Seasonal Abundance: Insufficient collection data.

Orthopodomyia signifera (Coquillett)



Larva



Adult Female

Psorophora ciliata (Fabricius)

Larva: Head: Head truncate anteriorly; antenna short, barely reaching anterior margin of head; head hairs 5 and 6 single, branched distally. **Abdomen:** Comb scale thorn-shaped with basal spinules about one-third as long as median spine. **Siphon:** Siphon gradually tapered, with eighteen or more filamentous pecten teeth. **Anal Segment:** Saddle complete.

Adult Female: Head: Proboscis with suberect dark scales on basal half and dark brown and yellowish scales intermixed medially. **Thorax:** Integument of scutum dark brown with narrow median longitudinal stripe of pale golden scales. **Abdomen:** Abdominal terga mostly covered with yellowish-brown scales; sterna pale-scaled. **Legs:** Tibia and hindtarsal segments with pale basal bands, contrasting with long dark scales. **Wings:** Wing veins dark-scaled.

County Records: Hartford, New Haven, New London.

Larval Habitat: Temporary grassy pools and roadside ditches in sunlit areas. Larvae are predaceous and cannibalistic.

Overwintering Stage: Egg.

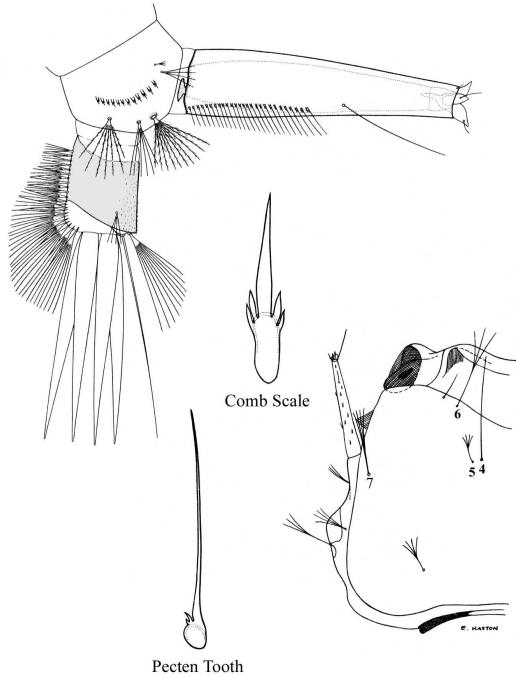
Host Preference: Mammals. Females are aggressive and persistent human biters that will attack anytime of the day or night. This species is not attracted to CDC CO₂ – light traps.

Virus Isolations: None.

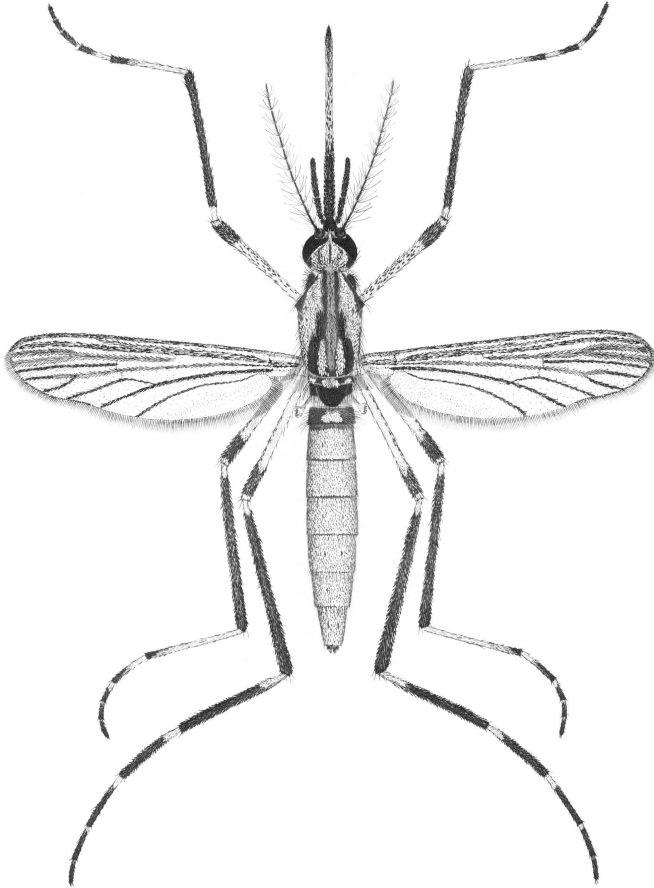
Phenology: Multivoltine. **Larvae:** No collection data. **Adults:** June – September.

Seasonal Abundance: No collection data.

Psorophora ciliata (Fabricius)



Larva



Adult Female

Psorophora columbiae (Dyar & Knab)

Larva: Head: Head rounded anteriorly; antenna shorter than median length of head; head hairs 5 and 6 with four or more branches. **Abdomen:** Comb scale thorn-shaped with basal spinules about one-third as long as median spine. **Siphon:** Siphon slightly inflated with three to six widely spaced pecten teeth on basal half. **Anal Segment:** Saddle complete.

Adult Female: Head: Proboscis dark-scaled with a wide, yellowish-white median band. **Thorax:** Scutum with narrow bronze to black scales and pale submedian spots. **Abdomen:** Abdominal terga dark-scaled above with apical triangle or paired submedian patches of pale yellow scales; sterna with pale and dark scales intermixed. **Legs:** Hind tibia with narrow basal band and a median white band on first tarsomere. **Wings:** Wing veins with pale and dark scales intermixed in no definite pattern.

County Records: Fairfield; a single female collected in a CDC CO₂ – light trap on 19 August, 2003 from Pine Creek, Fairfield represents the first and only record of this species in Connecticut. Permanent establishment in Connecticut is doubtful.

Larval Habitat: Temporary pools and ditches in sunlit areas.

Overwintering Stage: Egg.

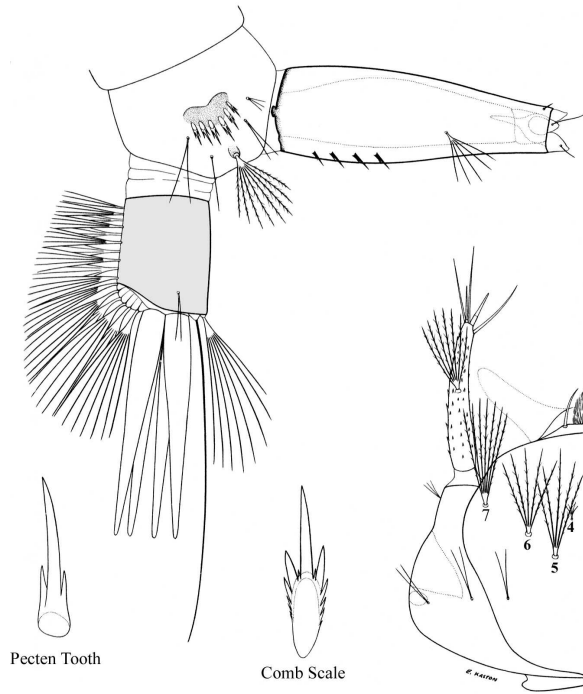
Host Preference: Mammals. Females are reported to bite humans.

Virus Isolations: None.

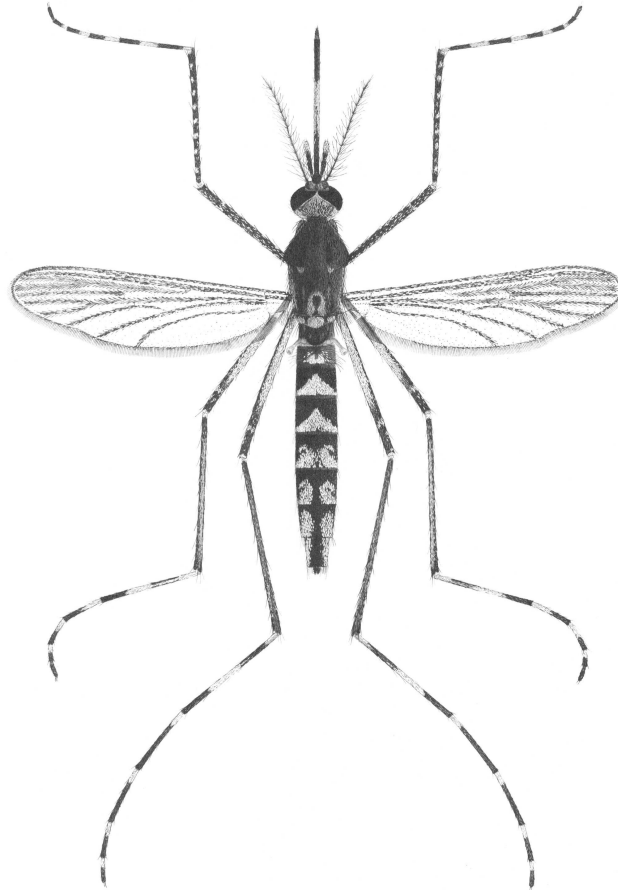
Phenology: Multivoltine. **Larvae:** No collection data. **Adults:** A single collection in August.

Seasonal Abundance: Insufficient collection data.

Psorophora columbiae (Dyar & Knab)



Larva



Adult Female

Psorophora ferox (von Humboldt)

Larva: Head: Head rounded anteriorly; antenna distinctly longer than median length of head; head hairs 5 and 6 long, usually double. **Abdomen:** Comb scale thorn-shaped with basal spinules about one-third as long as median spine. **Siphon:** Siphon strongly inflated near middle, with three to five widely spaced pecten teeth. **Anal Segment:** Saddle complete.

Adult Female: Head: Proboscis dark-scaled. **Thorax:** Scutum uniformly covered with golden-yellow and dark brown scales. **Abdomen:** Abdominal terga dark-scaled with metallic purplish sheen; sterna mostly pale-scaled. **Legs:** Hind tibia dark-scaled with long, shaggy, iridescent purple scales on apical margin; segments 4 and 5 of hindtarsus entirely white-scaled. **Wings:** Wing scales dark and narrow.

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Temporary woodland pools and depressions in shaded floodplains.

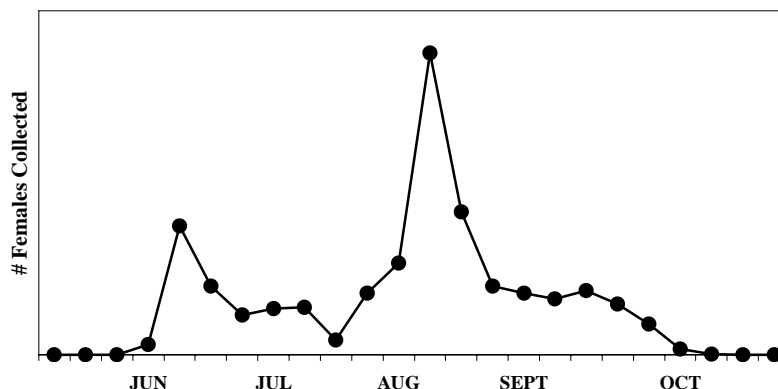
Overwintering Stage: Egg.

Host Preference: Mammals. Females are aggressive human biters that attack anytime of the day or night when disturbed in the vicinity of their sylvan breeding sites.

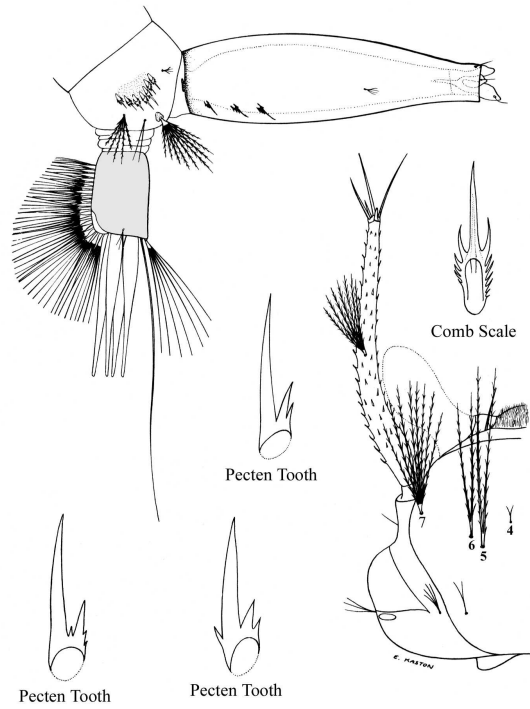
Virus Isolations: Cache Valley, Eastern Equine Encephalitis, Highlands J, Jamestown Canyon, Trivittatus, West Nile.

Phenology: Multivoltine. **Larvae:** Limited collections in July and August. **Adults:** June – October.

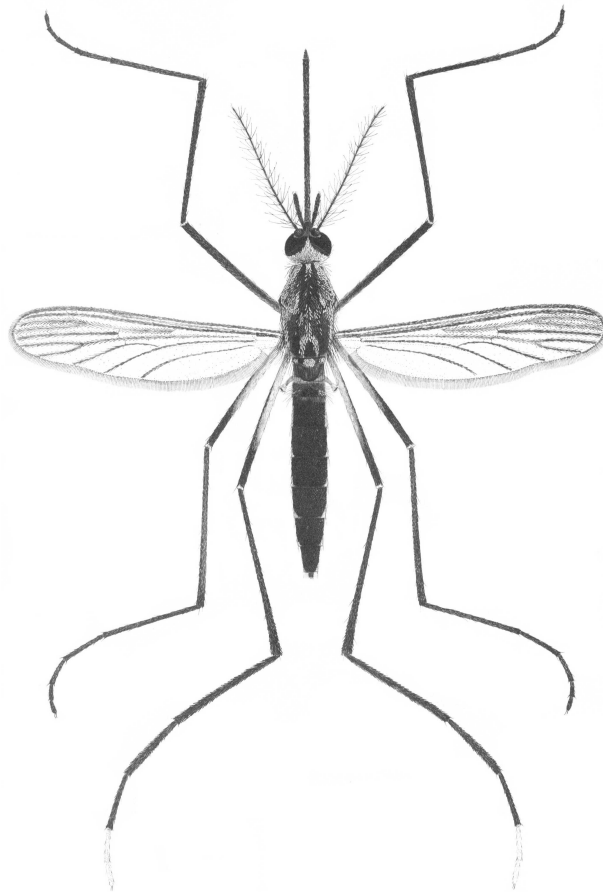
Seasonal Abundance:



Psorophora ferox (von Humboldt)



Larva



Adult Female

***Toxorhynchites rutilus septentrionalis* (Dyar & Knab)**

Larva Characters: **Head:** Lateral mouth brush composed of a few stout, strongly curved rods; head hairs 5 and 6 single. **Abdomen:** Comb scales absent on eighth abdominal segment. **Siphon:** Siphon without pecten teeth. **Anal Segment:** Saddle complete.

Adult Female: **Head:** Proboscis iridescent purple, long and strongly recurved. **Thorax:** Scutum covered with metallic purple scales bisected by median metallic gold stripe that tapers apically; lateral margins of scutum golden-scaled. **Abdomen:** Abdominal terga covered with metallic purple scales contrasting with golden scales laterally. **Legs:** Femur predominantly dark-scaled with purplish sheen; tarsomeres mostly white-scaled. **Wings:** Costa and subcosta with metallic purple scales, otherwise wing veins sparsely scaled.

County Records: Middlesex, New Haven, New London.

Larval Habitat: Tree holes and artificial containers, especially discarded tires. Larvae are predaceous and cannibalistic.

Overwintering Stage: Mature larva.

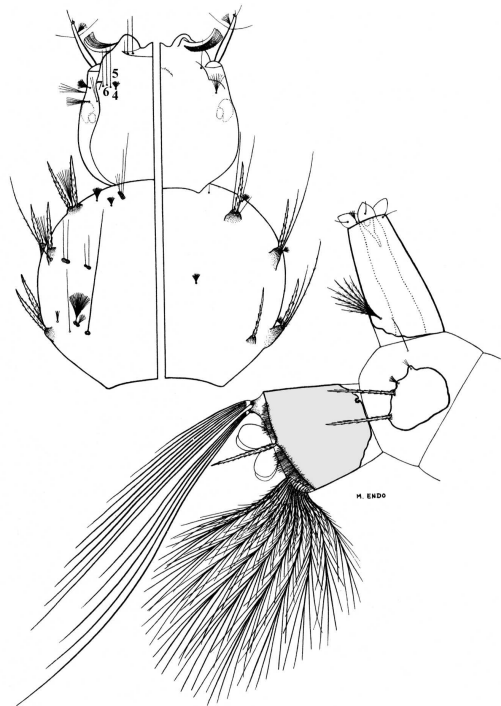
Host Preference: None; females feed on plant nectar and do not bite humans or animals.

Virus Isolations: None.

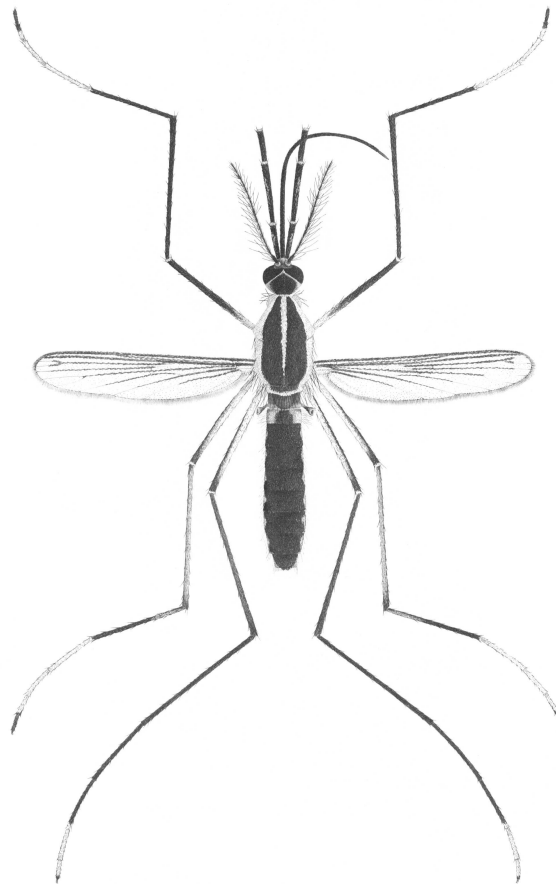
Phenology: Multivoltine. **Larvae:** Limited collections in July and September. **Adults:** July – September.

Seasonal Abundance: Insufficient collection data.

Toxorhynchites rutilus septentrionalis
(Dyar & Knab)



Larva



Adult Female

Uranotaenia sapphirina (Osten Sacken)

Larva: Head: Head longer than wide; antenna short, seta 1-A single and inserted on basal third of shaft; head hairs 5 and 6 single, stout. **Abdomen:** Abdominal segment VIII with large sclerotized plate bearing row of comb scales along posterior margin. **Siphon:** Siphon with evenly spaced pecten teeth. **Anal Segment:** Saddle complete.

Adult Female: Head: Proboscis long, recurved, and swollen at apex; vertex, especially along margin of eye, covered with iridescent blue scales. **Thorax:** Scutum dark brown with median longitudinal stripe of iridescent blue scales extending to, and covering, the scutellum; side of thorax with distinct patches of iridescent blue scales. **Abdomen:** Abdominal terga covered with dark brown scales, often with metallic sheen. **Legs:** Dark-scaled; ventral apices of femur with patch of whitish scales. **Wings:** Veins at base of wing covered with iridescent blue scales, otherwise veins intermixed with broad and narrow dark brown scales; cell R_2 shorter than vein R_{2+3} .

County Records: Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham.

Larval Habitat: Permanent and semi-permanent ponds and swamps with abundant emergent and floating vegetation (e.g., cattails, duckweed).

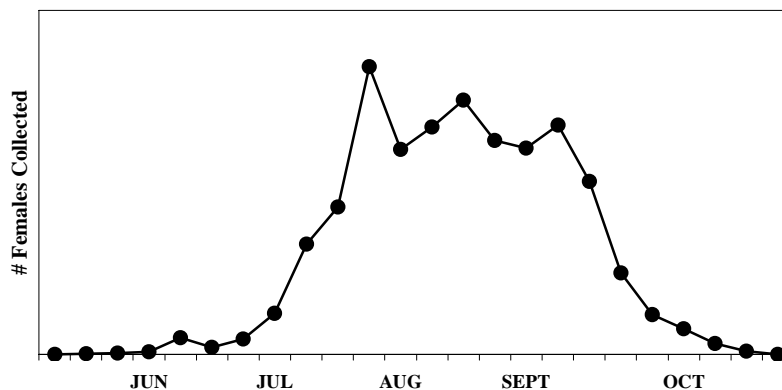
Overwintering Stage: Adults overwinter in protected sheltered areas such as caves, hollow trees, and underground manmade structures (e.g., bunkers, basements).

Host Preference: Amphibians. Females rarely, if ever, bite humans.

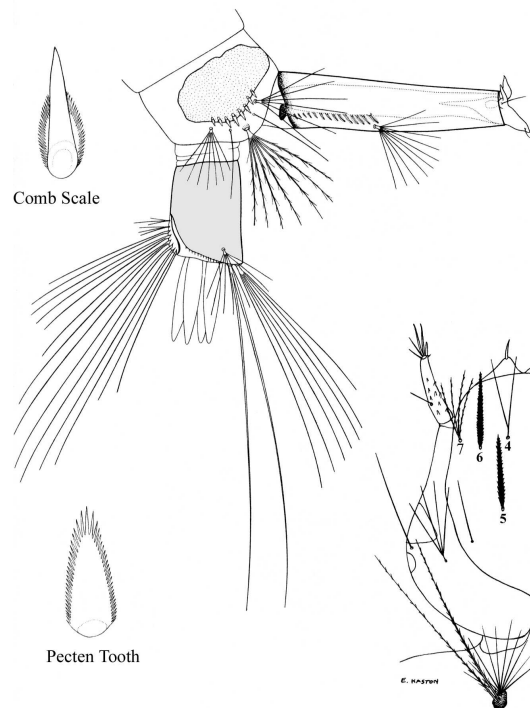
Virus Isolations: Eastern Equine Encephalitis, Highlands J, West Nile.

Phenology: Multivoltine. **Larvae:** Limited collections in May. **Adults:** May – October.

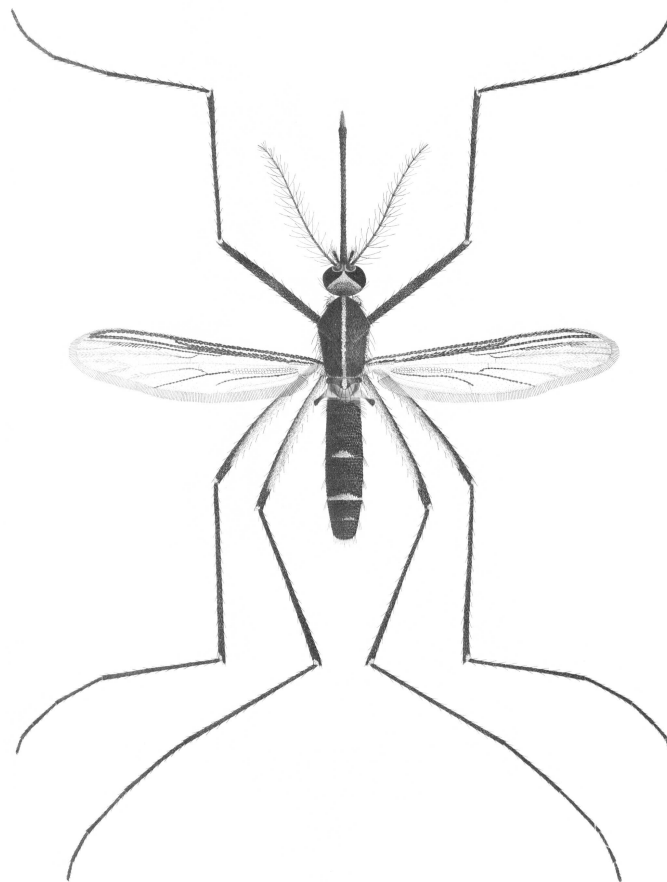
Seasonal Abundance:



Uranotaenia sapphirina (Osten Sacken)



Larva



Adult Female

Wyeomyia smithii (Coquillett)

Larva: Head: Antennal seta 1-A single, inserted near outer end of shaft; head hairs 5 and 6 single. **Abdomen:** Comb scale fringed with subequal spinules, arranged in a single row.

Siphon: Siphon with numerous, long, single setae over entire length; pecten teeth absent. **Anal**

Segment: Saddle incomplete; anal segment without median ventral brush.

Adult Female: Head: Proboscis dark-scaled, unbanded. **Thorax:** Scutum covered with dark brownish-gray metallic scales; mesopostnotum with setae. **Abdomen:** Abdominal terga entirely dark brown to black with a metallic sheen; sides of sterna pale-scaled, forming a distinct longitudinal line. **Legs:** Femur and tibia dark-scaled on anterior surface, contrasting with pale scales on posterior side; hindtarsomeres dark-scaled, unbanded. **Wings:** Scales narrow and dark.

County Records: Hartford, Litchfield, New Haven, Tolland.

Larval Habitat: Water-filled leaves of northern pitcher plants (*Sarracenia purpurea*); distribution restricted to acidic sphagnum bogs and fens with pitcher plants. Larvae feed on decaying insect fragments and detritus collected on bottom of pitcher plant leaf.

Overwintering Stage: Larvae overwinter frozen in ice within the pitcher plant.

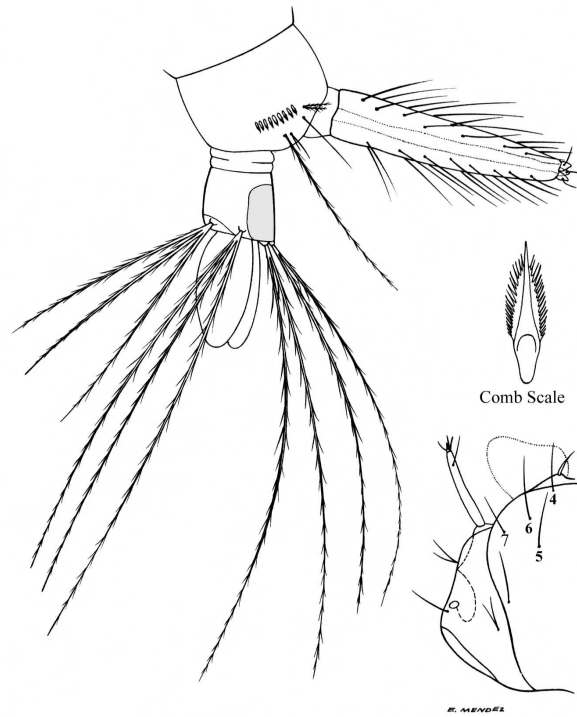
Host Preference: None. Females are autogenous and are not known to bite humans or animals.

Virus Isolations: None.

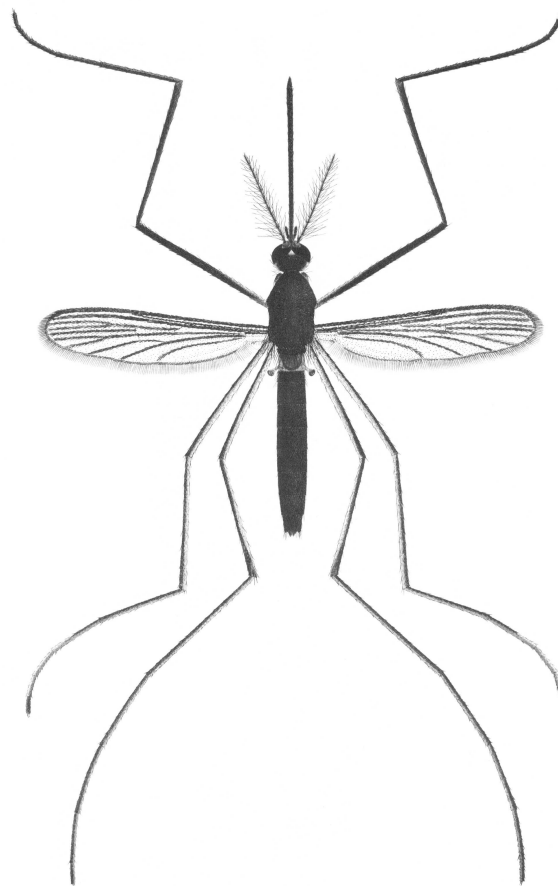
Phenology: Multivoltine. **Larvae:** Year round. **Adults:** No collection data.

Seasonal Abundance: No collection data.

Wyeomyia smithii (Coquillett)



Larva



Adult Female

**SELECTED LITERATURE REFERENCES TO MOSQUITOES AND
MOSQUITO-BORNE DISEASES IN CONNECTICUT**

ANATOMY, MORPHOLOGY, AND PHYSIOLOGY

- Anderson, J. F. 1966. Anomalous development of the cuticle of mosquitoes induced by griseofulvin. *J. Econ. Entomol.* 59: 1476-1482.
- Anderson, J. F. 1967. Histopathology of intersexuality in mosquitoes. *J. Exp. Zool.* 165: 475-495.
- Anderson, J. F. 1978. Influence of photoperiod and temperature on the induction of diapause in *Aedes atropalpus* (Coquillett) (Diptera: Culicidae). *Entomologia Experimentalis et Applicata.* 11: 321-330.
- Anderson, J. F. 1970. Induction and termination of embryonic diapause in the salt marsh mosquito, *Aedes sollicitans* (Diptera: Culicidae). *Conn. Agric. Exp. Stn. Bull.* 711: 1-22.
- Magnarelli, L. A. 1977. Physiological age of mosquitoes (Diptera: Culicidae) and observations on partial blood feeding. *J. Med. Entomol.* 13: 445-450.
- Magnarelli, L. A. 1983. Nectar sugars and caloric reserves in natural populations of *Aedes canadensis* and *Aedes stimulans* (Diptera: Culicidae). *Environ. Entomol.* 12: 1482-1486.
- Magnarelli, L. A. 1983. Resorption of retained eggs and follicular degeneration in mosquitoes (Diptera: Culicidae). *J. Med. Entomol.* 20: 106-7.
- Magnarelli, L. A. 1986. Energy reserves in natural populations of *Aedes triseriatus* (Diptera: Culicidae). *Ann. Entomol. Soc. Am.* 79: 829-832.
- Magnarelli, L. A. 1990. Total available carbohydrates in *Aedes stimulans* (Diptera: Culicidae). *Can. J. Zool.* 68: 603-606.
- Magnarelli, L. A. and Andreadis, T. G. 1984. Caloric reserves in *Aedes cantator* (Diptera: Culicidae). *J. Med. Entomol.* 21: 263-267.
- Magnarelli, L. A. and Andreadis, T. G. 1987. Energy reserves in *Aedes canadensis*, *Aedes stimulans*, *Aedes provocans* (Diptera: Culicidae), and *Mochlonyx cinctipes* (Diptera: Chaobridae) in Connecticut. *J. Med. Entomol.* 24: 315-318.

ARBOVIRUSES

- Anderson, J. F., Andreadis, T. G., Main, A. J., and Kline, D. L. 2004. Prevalence of West Nile virus in tree-canopy inhabiting *Culex pipiens* and associated mosquitoes. *J. Trop. Med Hyg.* 71: 112-119.
- Anderson, J. F., Andreadis, T. G., Vossbrinck, C. R., Tirrell, S., Wakem, E. M., French R. A., Garmendia, A. E. and Van Kruiningen, H. J. 1999. Isolation of West Nile Virus from mosquitoes, crows, and a Cooper's hawk in Connecticut. *Science*, 286:2331-2333.
- Anderson, J. F., Main, A. J., Andreadis, T. G., Wikel, S. K. and Vossbrinck, C. R. 2003. Transstadial transfer of West Nile virus by four species of ixodid ticks (Acari: Ixodidae). *J. Med. Entomol.* 40:528-533.
- Anderson, J. F., Vossbrinck, C. F., Andreadis, T. G., Iton, A. Beckwith, W. H. and Mayo, D. R. 2001. A phylogenetic approach to following West Nile virus in Connecticut. *Proc. Nat. Acad. Sci.* 98: 12885-12889.
- Anderson, J. F., Vossbrinck, C. F., Andreadis, T. G., Iton, A. Beckwith, W. H. and Mayo, D. R. 2001. Characterization of West Nile virus from five species of mosquitoes, nine species of birds, and one mammal. *Ann. NY Acad. Sci.* 951:328-331.
- Andreadis, T. G. 1993. Epidemiology of eastern equine encephalitis in Connecticut. *J. Fla. Mosq. Control Assoc.* 64: 97-103.
- Andreadis, T. G. 1998. Mosquitoes and eastern equine encephalitis in Connecticut. *Frontiers of Plant Science.* 50:4-6.
- Andreadis, T. G. and Anderson, J. F. 1998. Mosquito arbovirus surveillance in Connecticut, 1998. *Proc. Ann. Meet. Northeastern Mosq. Control Assoc.* 44: 14-20.
- Andreadis, T. G., Anderson, J. F. and Tirrell-Peck, S. J. 1998. Multiple isolations of Eastern equine encephalitis and Highlands J viruses from mosquitoes (Diptera: Culicidae) during a 1996 epizootic in southeastern Connecticut. *J. Med. Entomol.* 35:296-302.
- Andreadis, T. G., Anderson, J. F., and Vossbrinck, C. R. 1999. Mosquito arbovirus surveillance in Connecticut, 1999: isolation and identification of West Nile virus. *Proc. Northeastern Mosq. Control Assoc.* 45:57-67.
- Andreadis, T. G., Anderson, J. F. and Vossbrinck, C. F. 2001. Mosquito surveillance for West Nile virus in Connecticut, 2000: isolation from *Culex pipiens*, *Culex restuans*, *Culex salinarius* and *Culiseta melanura*. *Emerg. Infect. Dis.* 7: 670-674.

- Andreadis, T. G., Anderson, J. F., Vossbrinck, C. R. and Main, A. J. 2004. Epidemiology of West Nile virus in Connecticut, USA: a five year analysis of mosquito data 1999-2003. *Vector-Borne and Zoonotic Dis.* 4: 360-378.
- Andreadis, T. G., Capotosto, P. M., Shope, R. E., and Tirrell, S. J. 1992. Arbovirus surveillance in Connecticut 1991-1992. *Proc. Ann. Mtg. Northeastern Mosq. Control Assoc.* 38: 6.
- Andreadis, T. G., Capotosto, P. M., Shope, R. E., and Tirrell, S. J. 1994. Mosquito and arbovirus surveillance in Connecticut 1991-1992. *J. Am. Mosq. Control Assoc.* 10: 556-564.
- Beckwith, W. H., Sirpenski, S., French R. A., Nelson, R. and Mayo, D. R. 2002. Isolation of eastern equine encephalitis virus and West Nile virus from crows during increased arbovirus surveillance in Connecticut. *Am. J. Trop. Med. Hyg.* 66: 422-426.
- Beckwith, W. H., Sirpenski, S. and Mayo, D. R. 2001. Surveillance for avian-borne arboviruses in Connecticut. *Ann. NY Acad. Sci.* 951:336-337.
- Booss, J., Mayo, D. R. and Markowski, M. A. 1984. Arboviral encephalitis: the need for clinical suspicion in Connecticut. *Conn. Med.* 48: 288-289.
- Bryant, E. S., Anderson, C. R. and van der Heide, L. 1973. An epizootic of eastern equine encephalomyelitis in Connecticut. *Avian Dis.* 17: 861-867.
- Centers for Disease Control and Prevention. 2001. Serosurveys for West Nile virus infection – New York and Connecticut Counties, 2000. *MMWR.* 50: 37-39.
- Centers for Disease Control and Prevention. 2001. Human West Nile virus surveillance – Connecticut, New Jersey, and New York, 2000. *MMWR.* 50: 265-268.
- Centers for Disease Control and Prevention. 2003. Knowledge, attitudes, and behaviors about West Nile virus--Connecticut, 2002. *MMWR.* 52: 886-888.
- Eidson, M. and the West Nile Avian Mortality Surveillance Group [Andreadis, T., Anderson, J., Vossbrinck, C.]. 2001. Crow deaths as a sentinel surveillance system for West Nile virus in the northeastern United States, 1999. *Emerg. Infect. Dis.* 7:615-620.
- Garmendia, A. E. Van Kruiningen, H. J., French, R. A., Anderson, J. F., Andreadis, T. G., Kumor, A and West, A. B. 2000. Recovery and identification of West Nile virus from a hawk in winter. *J. Clinical Microbiol.* 38:3110-3111.

- Hadler, J., Nelson, R., McCarthy, T., Andreadis, T., Lis, M. J., French, R., Beckwith, W., Mayo, D., Archambault, G. and Cartter, M. 2001. West Nile virus surveillance in Connecticut, 2000: evidence that an intense epizootic can occur without humans being at high risk for severe disease. *Emerg. Infect. Dis.* 7:636-642.
- Hart, J. C. 1957. Eastern equine encephalitis in Connecticut. *Conn. Health Bull.* 71: 8pp.
- Howard, J. J. and Wallis, R. C. 1974. Infection and transmission of eastern equine encephalomyelitis virus with colonized *Culiseta melanura* (Coquillett). *Am. J. Trop. Med. Hyg.* 23: 522-525.
- Jaynes, H. A., Parente, L. and Wallis, R. C. 1962. Potential encephalitis vectors in Hamden, Connecticut. *Mosq. News* 22: 357-360.
- Jungherr, E. R. and Wallis, R. C. 1958. Investigations of eastern equine encephalomyelitis I. General aspects. *Am. J. Hyg.* 67: 1-3.
- Liano, S. J. 1955. Eastern equine encephalomyelitis in Connecticut: a serological survey of pheasant farmers. *Yale J. Biol. Med.* 27: 287-296.
- Lloyd, D. S. 1983. Eastern equine encephalomyelitis - 1983. *Conn. Epidemiol.* 2:37-39.
- Luginbuhl, R. E., Satriano, S. F., Helmboldt, C. F., Lamson, A. L. and Jungherr, E. R. 1958. Investigations of eastern equine encephalomyelitis II. Outbreaks in Connecticut pheasants. *Am. J. Hyg.* 67: 4-9.
- Main, A. J. 1979. Eastern equine encephalomyelitis virus in experimentally infected bats. *J. Wildl. Dis.* 15: 467-477.
- Main, A. J. 1979. Virologic and serologic survey for eastern equine encephalomyelitis and certain other viruses in colonial bats in New England. *J. Wildl. Dis.* 15: 455-466.
- Main, A. J. 1981. Arbovirus surveillance in Connecticut IV. Bunyamwera Group. *Mosq. News* 41: 490-494.
- Main, A. J. 1981. Field evidence against transovarial transmission of Flanders virus in Connecticut USA. *Mosq. News* 41: 561-563.
- Main, A. J., Brown, S. E., Wallis, R. C. and Elston, J. 1979. Arbovirus surveillance in Connecticut II. California serogroup. *Mosq. News* 39: 552-559.
- Main, A. J., Hildreth, S. W. and Wallis, R. C. 1979. Arbovirus surveillance in Connecticut III. Flanders virus. *Mosq. News* 39: 560-565.
- Main, A. J., Smith, A. L. and Wallis, R. C. 1979. Arbovirus surveillance in Connecticut I. group A viruses. *Mosq. News* 39: 544-551.

- Marfin, A.A. and the ArboNET Cooperative Surveillance Group [Andreadis, T.]. 2001. Widespread West Nile virus activity, eastern United States, 2000. *Emerg. Infect. Dis.* 7:730-735.
- Mayo, D., Karabatsos, N., Scarano, F. J., Brennan, T., Buck, D., Fiorentino, F. J., Mennone, J. and Tran, S. 2001. Jamestown Canyon virus: seroprevalence in Connecticut. *Emerg. Inf. Dis.* 7: 911-912.
- McCarthy, T. A., Hadler, J. L., Julian, K., Walsh, S. J., Biggerstaff, B. J., Hinten, S. R., Baisley, C., Iton, A. Brennan, T., Nelson, R. S., Achambault, G., Marfin, A. A., and Peterson, L. R. 2001. West Nile virus serosurvey and assessment of personal prevention efforts in an area with intense epizootic activity. *Ann. NY Acad. Sci.* 951: 307-316.
- Satriano, S. F., Luginbuhl, R. E., Wallis, R. C., Jungherr, E. R. and Williamson, L. A. 1958. Investigations of eastern equine encephalomyelitis IV. Susceptibility and transmission studies with virus of pheasant origin. *Am. J. Hyg.* 67: 21-34.
- Sellers, R. F. 1989. Eastern equine encephalitis in Quebec Canada and Connecticut USA 1972 introduction by infected mosquitoes on the wind? *Can. J. Vet. Res.* 53: 76-79.
- Sprance, H. E., Main, A. J. Wallis, R. C. and Elston, J. 1978. Jamestown Canyon virus in Connecticut. *Mosq. News* 38: 392-395.
- Turell, M., Dohm, D. J., Sardelis, M. R., O'Guinn, M. L., Andreadis, T. G. and Blow, J. A. 2005. An update on the potential of North American mosquitoes (Diptera: Culicidae) to transmit West Nile virus. *J. Med. Entomol.* 42: 57-62.
- Tyzzar, E. E., Sellards, A. W. and B. L. Bennett. 1938. The occurrence in nature of equine encephalomyelitis in the ring-necked pheasant. *Science* 88: 505-506.
- Wallis, R. C. 1959. *Culiseta melanura* (Coquillett) and eastern equine encephalitis in Connecticut. *Mosq. News* 19: 157-158.
- Wallis, R. C. and Main, A. J. Jr. 1974. Eastern equine encephalitis in Connecticut: progress and problems. *Mem. Conn. Entomol. Soc.* 117-144.
- Wallis, R. C., Jungherr, E. R., Luginbuhl, R. E., Helmboldt, C. F. , Satriano, S. F., Williamson, L. A. and Lamson, A. L. 1958. Investigations of eastern equine encephalomyelitis V. Entomologic and ecologic field studies. *Am. J. Hyg.* 67: 35-45.
- Wallis, R. C., Howard, J. J., Main, A. J. Jr., Frazier, C. and Hayes, C. 1974. An increase in *Culiseta melanura* coinciding with an epizootic of eastern equine encephalitis in Connecticut. *Mosq. News* 34:63-65.

- Wallis, R. C., Taylor, R. M. and Henderson, J. R. 1960. Isolation of eastern equine encephalomyelitis virus from *Aedes vexans* in Connecticut. Proc. Soc. Exp. Biol. Med. 103: 442-444.
- Wallis, R. C., Taylor, R. M., McCollum, R. W. and Riordan, J. T. 1958. Study of hibernating mosquitoes in eastern equine encephalomyelitis epidemic areas in Connecticut. Mosq. News 18: 1-4.
- Whitman, L., Wallis, R. C. and Leventhal, E. A. 1968. Isolation of California group arbovirus from *Aedes abserratus* (Felt and Young) in Simsbury, Connecticut. Am. J. Trop. Med. Hyg. 17: 449-450.
- Zamparo, J. M., Andreadis, T. G., Shope, R. E., and Tirrell, S. J. 1997. Serological evidence of Jamestown Canyon virus infection in white-tailed deer populations in Connecticut. J. Wildl. Dis. 33:623-627.

BEHAVIOR, BIOLOGY, AND ECOLOGY

- Anderson, J. F. 1968. Day length governs seasonal cycle of mosquitoes. Frontiers of Plant Science 20: 6-7.
- Andreadis, T. G. 1990. Observations on installment egg hatching in the brown saltmarsh mosquito, *Aedes cantator*. J. Am. Mosq. Control Assoc. 6: 727-729.
- Magnarelli, L. A. 1977. Host feeding patterns of Connecticut mosquitoes. Am. J. Trop. Med. Hyg. 26:547-552.
- Magnarelli, L. A. 1977. Nectar feeding by *Aedes sollicitans* and its relation to gonotrophic activity. Environ. Entomol. 6: 237-242.
- Magnarelli, L. A. 1977. Role of mosquito feeding patterns in longevity, disease spread. Frontiers of Plant Science 29: 4-5.
- Magnarelli, L. A. 1977. Nectar feeding by female mosquitoes and its relationship to follicular development and parity. J. Med. Entomol. 14: 527-530.
- Magnarelli, L. A. 1977. Biological studies on mosquito nectar-feeding habits may provide new insight for control. Proc. NJ Mosq. Control Assoc. 64: 169-173.
- Magnarelli, L. A. 1978. Bionomics of the salt-marsh mosquito, *Aedes cantator* (Diptera: Culicidae). Environ. Entomol. 7: 512-517.
- Magnarelli, L. A. 1978. Blood-feeding and gonotrophic association in *Anopheles punctipennis* (Diptera: Culicidae) prior to hibernation in Connecticut. J. Med. Entomol. 15: 278-281.

- Magnarelli, L. A. 1979. Feeding behavior of mosquitoes (Diptera: Culicidae) on man, raccoons, and white-footed mice. *Ann. Entomol. Soc. Am.* 72: 162-166.
- Magnarelli, L. A. 1979. Diurnal nectar-feeding of *Aedes cantator* and *Aedes sollicitans* (Diptera: Culicidae). *Environ. Entomol.* 8: 949-955.
- Magnarelli, L. A. 1979. Bionomics of *Psorophora ferox* (Diptera: Culicidae): seasonal occurrence and acquisition of sugars. *J. Med. Entomol.* 17: 328-332.
- Maloney, J. M. and Wallis, R. C. 1976. Response of colonized *Culiseta melanura* to photoperiod and temperature. *Mosq. News* 36: 190-196.
- Morrison, A. and Andreadis, T. G. 1992. Larval population dynamics in a community of Nearctic *Aedes* inhabiting a temporary vernal pool. *J. Am. Mosq. Control Assoc.* 8: 52-57.
- Wallis, R. C. 1953. Notes on the biology of *Culiseta melanura* (Coquillett). *Mosq. News* 14: 33-34.
- Wallis, R. C. 1957. Host feeding of *Culiseta morsitans*. *Proc. Entomol. Soc. Wash.* 59: 199-200.
- Wallis, R. C. 1959. Diapuse and fat body formation by *Culex restuans* Theobald (Diptera: Culicidae). *Proc. Entomol. Soc. Wash.* 61: 219-222.
- Wallis, R. C. 1960. Mosquitoes in Connecticut. *Conn. Agric. Exp. Stn. Bull.* 632: 1-30.
- Wallis, R. C. 1962. Overwintering *Culiseta melanura* larvae. *Proc. Ent. Soc. Wash.* 64: 119-122.

BIOLOGICAL CONTROL AND NATURAL ENEMIES

- Anderson, J. F. 1968. Microsporidia parasitizing mosquitoes collected in Connecticut. *J. Invertebr. Pathol.* 11: 440-455.
- Anderson, J. F. 1970. An iridescent virus infecting the mosquito *Aedes stimulans* (Walker). *J. Invertebr. Pathol.* 15: 219-224.
- Anderson, J. F. and Ringo, S. L. 1969. *Entomophthora aquatica* sp. n. infecting larvae and pupae of floodwater mosquitoes. *J. Invertebr. Pathol.* 13: 386-393.
- Andreadis, T. G. 1981. A new cytoplasmic polyhedrosis virus from the salt-marsh mosquito, *Aedes cantator* (Diptera: Culicidae). *J. Invertebr. Pathol.* 37: 160-167.

- Andreadis, T. G. 1982. Life cycles and pathology of some microsporidian pathogens of mosquitoes. Proc. IIIrd Intl. Colloq. Invertebr. Pathol., Brighton 387-392.
- Andreadis, T. G. 1983. Life cycle and epizootiology of *Amblyospora* sp. (Microspora: Amblyosporidae) in the mosquito, *Aedes cantator*. J. Protozool. 30: 509-518.
- Andreadis, T. G. 1983. An epizootic *Amblyospora* sp. (Microspora: Amblyosporidae) in field populations of the mosquito, *Aedes cantator*. J. Invertebr. Pathol. 42: 427-430.
- Andreadis, T. G. 1985. Experimental transmission of a microsporidian pathogen from mosquitoes to an alternate copepod host. Proc. Nat. Acad. Sci. USA 82: 5574-5577.
- Andreadis, T. G. 1985. Life cycle, epizootiology and horizontal transmission of *Amblyospora* (Microspora: Amblyosporidae) in a univoltine mosquito, *Aedes stimulans*. J. Invertebr. Pathol. 46: 31-46.
- Andreadis, T. G. 1985. Microsporidian parasites regulate mosquito populations. Frontiers of Plant Science 37: 6-8.
- Andreadis, T. G. 1986. Characterization of a cytoplasmic polyhedrosis virus affecting the mosquito *Culex restuans*. J. Invertebr. Pathol. 47: 194-202.
- Andreadis, T. G. 1986. Life cycle and epizootiological investigations of *Amblyospora* (Microsporida) in the mosquito *Aedes cantator* and in the intermediate copepod host. p. 344. In: R. A. Samson, J. M. Vlask, and D. Peters (eds.) Fundamental and Applied Aspects of Invertebrate Pathology. Proc. IVth Intl. Colloq. Invertebr. Pathol., Veldhoven, Netherlands.
- Andreadis, T. G. 1988. Comparative susceptibility of the copepod, *Acanthocyclops vernalis* to a microsporidian parasite, *Amblyospora connecticus* from the mosquito, *Aedes cantator*. J. Invertebr. Pathol. 52: 73-77.
- Andreadis, T. G. 1988. *Amblyospora connecticus* sp. nov. (Microsporida: Amblyosporidae): Horizontal transmission studies in the mosquito, *Aedes cantator* and formal description. J. Invertebr. Pathol. 52: 90-101.
- Andreadis, T. G. 1989. Infection of a field population of *Aedes cantator* with a polymorphic microsporidium, *Amblyospora connecticus* via release of the intermediate copepod host, *Acanthocyclops vernalis*. J. Am. Mosq. Control Assoc. 5: 81-85.
- Andreadis, T. G. 1989. Host specificity of *Amblyospora connecticus* (Microsporida: Amblyosporidae), a polymorphic microsporidian parasite of the brown saltmarsh mosquito, *Aedes cantator* (Diptera: Culicidae). J. Med. Entomol. 26: 140-145.

- Andreadis, T. G. 1989. Author's reply re: "Infection of a field population of *Aedes cantator* with a polymorphic microsporidium, *Amblyospora connecticus* via release of the intermediate copepod host, *Acanthocyclops vernalis*." J. Am. Mosq. Control Assoc. 5: 618-619.
- Andreadis, T. G. 1990. Polymorphic microsporidia of mosquitoes: potential for biological control. pp. 175-188. In: R. Baker and P. Dunn (eds.) New Directions in Biological Control. UCLA Symposia on Molecular and Cellular Biology, New Series, vol. 112. Alan R. Liss, Inc., New York.
- Andreadis, T. G. 1990. Epizootiology of *Amblyospora connecticus* (Microsporida) in field populations of the saltmarsh mosquito, *Aedes cantator*, and the cyclopoid copepod, *Acanthocyclops vernalis*. J. Protozool. 37: 174-182.
- Andreadis, T. G. 1990. Natural ecology and epizootiology of *Amblyospora connecticus* (Microsporida) in coastal salt marsh habitats of *Aedes cantator* (Diptera: Culicidae) and *Acanthocyclops vernalis* (Copepoda: Cyclopidae). Proc. Vth Intl. Colloq. Invertebr. Pathol. Adelaide, Australia. 61-65.
- Andreadis, T. G. 1991. Experimental observations on meiospore longevity in *Amblyospora connecticus* (Microsporida). J. Invertebr. Pathol. 58: 458-460.
- Andreadis, T. G. 1993. Concurrent epizootics of *Amblyospora* spp. (Microsporida) in two northern *Aedes* mosquitoes. J. Invertebr. Pathol. 62: 316-317.
- Andreadis, T. G. 1994. Ultrastructural characterization of meiospores of six new species of *Amblyospora* (Microsporida: Amblyosporidae) from northern *Aedes* (Diptera: Culicidae) mosquitoes. J. Euk. Microbiol. 41: 147-154.
- Andreadis, T. G. 1994. Host range tests with *Edhazardia aedis* (Microsporida: Culicosporidae) against northern Nearctic mosquitoes. J. Invertebr. Pathol. 64: 46-51.
- Andreadis, T. G. 1994. Preliminary studies on the life cycle and epizootiology of *Hyalinocysta chapmani*, a microsporidian parasite of the mosquito, *Culiseta melanura*. Proc. VIth Intl. Colloq. Invertebr. Pathol. Montpellier, France. 2: 194-195.
- Andreadis, T. G. 1997. Mosquito arbovirus surveillance in Connecticut, 1997. Proc. 43rd Ann. Meet. Northeastern Mosq. Control Assoc. pp. 10-12.
- Andreadis, T. G. 1999. Epizootiology *Amblyospora stimuli* (Microspora: Amblyosporidae) infections in field populations of a univoltine mosquito, *Aedes stimulans* (Diptera: Culicidae) inhabiting a temporary vernal pool J. Invertebr. Pathol. 74:198-205.

- Andreadis, T. G. 2002. Epizootiology of *Hyalinocysta chapmani* (Microsporidia: Thelohaniidae) infections in field populations of *Culiseta melanura* (Diptera: Culicidae) and *Orthocyclops modestus* (Copepoda: Cyclopidae): a three-year investigation. *J. Invertebr. Pathol.* 81: 114-121.
- Andreadis, T. G. and Gere, M. A. 1992. Laboratory evaluation of *Acanthocyclops vernalis* and *Diacyclops bicuspidatus thomasi* (Copepoda: Cyclopidae) as predators of *Aedes canadensis* and *Aedes stimulans* (Diptera: Culicidae). *J. Med. Entomol.* 29: 974-979.
- Andreadis, T. G. and Magnarelli, L. A. 1983. *Erynia* (= *Entomophthora*) *aquatica* in a salt-marsh mosquito, *Aedes cantator*. *J. Invertebr. Pathol.* 42: 277-279.
- Andreadis, T. G. and Magnarelli, L. A. 1984. New variants of the *Coelomomyces psorophorae* "complex" (Chytridiomycetes: Blastocladales) from the salt-marsh mosquitoes *Aedes cantator* and *Aedes sollicitans* (Diptera: Culicidae). *J. Med. Entomol.* 21: 379-383.
- Andreadis, T. G. and Vossbrinck, C. F. 2002. Life cycle, ultrastructure and molecular phylogeny of *Hyalinocysta chapmani* (Microsporidia: Thelohaniidae) a parasite of *Culiseta melanura* (Diptera: Culicidae) and *Orthocyclops modestus* (Copepoda: Cyclopidae). *J. Euk. Microbiol.* 49:350-364.
- Andreadis, T. G., Becnel, J. J., and White, S. E. 2003. Infectivity and pathogenicity of a novel baculovirus, CuniNPV from *Culex nigripalpus* (Diptera: Culicidae) for thirteen species and four genera of mosquitoes. *J. Med. Entomol.* 40:512-517.
- Baker, M. D., Vossbrinck, C. R., Becnel, J. J. and Andreadis, T. G. 1998. Phylogeny of *Amblyospora* (Microsporida: Amblyosporidae) and related genera based on small subunit ribosomal DNA data: a possible example of host parasite cospeciation. *J. Invertebr. Pathol.* 71:199-206.
- Lucarotti, C. J. and Andreadis, T. G. 1995. Reproductive strategies and adaptations for survival among obligatory microsporidian and fungal parasites of mosquitoes: a comparative analysis of *Coelomomyces* and *Amblyospora*. *J. Am. Mosq. Control Assoc.* 11: 111-121.
- Vossbrinck, C. R., Andreadis, T. G. and Debrunner-Vossbrinck, B. A. 1998. Verification of intermediate hosts in the life cycles of microsporidia by small subunit rDNA sequencing. *J. Euk. Microbiol.* 45:290-292.
- Vossbrinck, C. R., Andreadis, T. G., Vavra, J. and Becnel, J. J. 2004. Molecular phylogeny and evolution of mosquito parasitic Microsporidia (Microsporidia: Amblyosporidae). *J. Euk. Microbiol.* 51:88-95.

CHEMICAL AND PHYSICAL CONTROL

- Britton, W. E. 1912. The mosquito plague of the Connecticut coast region and how to control it. Conn. Agric. Exp. Stn. Bull. 173: 1-14.
- Capotosto, P. 1994. From mosquito control to marsh restoration. Proc. Ann. Mtg. NJ Mosq. Control Assoc. 81:44-47.
- Capotosto, P. 1995. Wildlife habitat restoration in a cattail swamp Proc. Ann. Mtg. NJ Mosq. Control Assoc. 82: 92-93.
- Capotosto, P. and Wolfe, R. 2000. Connecticut's wetland habitat and mosquito management program. Conn. Dept. Environ. Protect. Wildl. Div. Bull. 8/00: 6pp.
- Elston, J. 1959. Mosquito control in Connecticut. Conn. Health Bull. 73: 6pp.
- Kneen, F. 1968. Connecticut program has punch mosquito control limnology. Pest Control. 36: 32-34.
- McKnight, S. 2003. Evaluation of the efficacy of linalool candles as spatial repellents against natural populations of mosquitoes. Proc. Ann. Meet. Northeastern Mosq. Control Assoc. 49: 67-74.
- Wolfe, R. 1999. Ground zero: operational control in Connecticut during the West Nile virus outbreak. Proc. Ann. Meet. Northeastern Mosq. Control Assoc. 45: 47-55.
- Wolfe, R. 2000. West Nile virus response activities in Connecticut: 2000. Proc. Ann. Meet. Northeastern Mosq. Control Assoc. 46: 8-10.

GENETICS

- Andreadis, T. G. and Munstermann, L. E. 1997. Intraspecific variation in key morphologic characters of *Culiseta melanura* (Diptera: Culicidae). J. Am. Mosq. Control Assoc. 13:127-133.
- Fonseca, D. M., Campbell, S., Crans, W. J., Mogi, M., Miyagi, I., Toma, T., Bullians, M., Andreadis, T. G., Berry, R. L., Pajac, B., Sardelis, M. and Wilkerson, R. C. 2001. *Aedes (Finlaya) japonicus* (Diptera: Culicidae) a newly recognized mosquito in the USA: first analyses of genetic variation in the US and putative source populations. J. Med. Entomol. 38:133-146.

NON VIRAL PATHOGENS

- Magnarelli, L. A. 1978. Presumed *Dirofilaria immitis* infections in natural mosquito populations of Connecticut. *J. Med. Entomol.* 15: 84-85.
- Magnarelli, L. A. and Anderson, J. F. 1988. Ticks and biting insects infected with the etiologic agent of Lyme disease, *Borrelia burgdorferi*. *J. Clin. Microbiol.* 26: 1482-1486.
- Magnarelli, L. A., Anderson, J. F. and Barbour, A. G. 1986. The etiologic agent of Lyme disease in deer flies, horse flies, and mosquitoes. *J. Infect. Dis.* 154: 355-358.
- Magnarelli L. A., Freier, J. E. and Anderson, J. F. 1987. Experimental infections of mosquitoes with *Borrelia burgdorferi*, the etiologic agent of Lyme disease. *J. Infect. Dis.* 156: 694-695.

TAXONOMY AND DISTRIBUTION

- Andreadis, T. G. 1986. New state records for *Aedes communis* and *Aedes punctor* in Connecticut. *J. Am. Mosq. Control Assoc.* 2: 378-379.
- Andreadis, T. G. 1988. A survey of mosquitoes breeding in used tire stockpiles in Connecticut. *J. Am. Mosq. Control Assoc.* 4: 256-260.
- Andreadis, T. G. 2003. A checklist of the mosquitoes of Connecticut with new state records. *J. Am. Mosq. Control Assoc.* 19: 79-81.
- Andreadis, T. G., Anderson, J. F., Munstermann, L. E., Wolfe, R. J. and Florin, D. A. 2001. Discovery, distribution and abundance of a newly introduced mosquito, *Ochlerotatus japonicus* (Diptera: Culicidae) in Connecticut, USA. *J. Med. Entomol.* 38: 774-779.
- Britton, W. E. and Viereck, H. L. 1904. Report on mosquito investigations. 28th Ann. Report The Conn. Agric. Exp. Stn. 253-310.
- Carpenter, S. J, LaCasse, W. J. 1955. Mosquitoes of North America (North of Mexico) Berkeley: Univ. Calif. Press.
- Darsie, R. F. Jr. and Ward, R. A. 1981. Identification and geographic distribution of mosquitoes of North America, north of Mexico. *Mosq Syst;* 1(Suppl): 1-313.
- Felton, H. I., Barnes, R. C. and Wilson, C. A. 1950. New distribution records for the mosquitoes of New England. *Mosq. News* 10: 84-91.

- Main, A. J., Sprance, H. E. and Wallis, R. C. 1976. New distribution records for *Toxorhynchites* and *Orthopodomyia* in the northeastern USA. Mosq. News. 36: 197.
- Mallia, M. J. 1964. A new distribution record for *Culiseata (Culicella) minnesotae* Barr. Mosq. News 24: 338-339.
- Matheson, R. 1945. Guide to the insects of Connecticut. Part VI. The Diptera or true flies of Connecticut. Second Fascicle. Family Culicidae, the mosquitoes. Bull. Conn. Geol. Nat. Hist. Survey. 68: 1-48.
- Wallis, R. C. 1971. 1st report of *Aedes thibaulti* in Connecticut and New York. Mosq. News. 31: 111.

TECHNIQUES

- Wallis, R. C. and Whitman, L. 1969. Colonization of *Culiseta melanura* Coquillett in the laboratory. Mosq. News 29: 255-258.



The Connecticut Agricultural Experiment Station

Putting Science to Work for Society

Founded 1875

This guide is available in electronic format at www.caes.state.ct.us

The Connecticut Agricultural Experiment Station (CAES) prohibits discrimination in all its programs and activities on the basis of race, color, ancestry, national origin, sex, religious creed, age, political beliefs, sexual orientation, criminal conviction record, genetic information, learning disability, present or past history of mental disorder, mental retardation or physical disability including but not limited to blindness, or marital or family status. To file a complaint of discrimination, write Director, The Connecticut Agricultural Experiment Station, P.O. Box 1106, New Haven, CT 06504, or call (203) 974-8440. CAES is an equal opportunity provider and employer. Persons with disabilities who require alternate means of communication of program information should contact the Chief of Services at (203) 974-8442 (voice); (203) 974-8502 (FAX).
