

## ABSTRACT

*Chironomus matorus* Johannsen and *Chironomus whitseii* n. sp. Sublette and Sublette are described in larval, pupal, and adult stages. *Chironomus whitseii* is presently known only from California, but *Chironomus matorus* is widely distributed in North America.

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## A Review of the Genus *Chironomus* (Diptera, Chironomidae) V. The matorus-complex<sup>1</sup>

by

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## INTRODUCTION

In 1945 Townes reviewed the species *Chironomus* (as *Tendipes*) *decorus* Johannsen and synonymized with it *Chironomus matorus* Johannsen. In 1959 he further synonymized *C. decorus* with *Chironomus attenuatus* Walker.

A review of the chromosomal morphology of reared specimens from several localities clearly indicates several species all of which would be included as adults in the species *Chironomus attenuatus* Walker as recognized by Townes (1945). In the complex treated here the two species are distinct cytologically (Wülker and Martin 1974) but morphologically extremely similar as adult males and indistinguishable as females. Both species are distinct from *C. decorus*. Females in the genus are virtually indistinguishable. Townes' synonymy of *C. decorus* with *C. attenuatus* is clearly unwarranted for the type of the latter species is a poorly preserved female.

The senior author has recently reviewed the types of these species with the following conclusions:

- (1) *Chironomus decorus*—valid species
- (2) *Chironomus matorus*—valid species
- (3) *Chironomus attenuatus*—*nomen dubium*

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*Chironomus decorus* is a paler species with saddle-shaped dark markings near the center of terga II to V; the genitalia are similar to those illustrated by Townes (1945, Fig. 136A); the superior appendage is pale.

*Chironomus maturus* is a darker species with a broad dark fascia covering the basal 1/3-1/2 of terga II-V; the genitalia are similar to those in Fig. 136C of Townes (1945); the superior appendage is dark.

The type of *C. attenuatus* which is somewhat fragmented has dark abdominal fascia similar to *C. maturus*. However, because females cannot be separated in this complex the species can only be treated as a *nomen dubium*.

Materials and methods as employed here have been described by Wülker *et al.* (1971), Martin and Sublette (1972), and Sublette and Sublette (1973).

Abbreviations used: Lex, larval exuviae; P, pupa; Pex, pupal exuviae; CDPH, California Department of Public Health; UCR, University of California, Riverside; Cal. Ins. Surv., California Insect Survey; Cal. Acad. Sci., California Academy of Science.

#### *Chironomus maturus* Johannsen

*Chironomus maturus* Johannsen, 1908, p. 279, adult.

*Tendipes (Tendipes) decorus* (Johannsen); in part, Townes, 1945, p. 120, adult.

*Tendipes (Tendipes) attenuatus* (Walker); in part, Sublette, 1960, p. 212, adult.

*Chironomus sp.*; Grodhaus, 1967, larva, pupa, and adult.

Holotype Male. No. 2466, Ithaca, New York, 26 March, OAJ Lot 2310 subslide (genitalia and antenna) (Cornell University).

**Coloration.** Head, extensive markings on thorax and basal vittae of abdomen dark, shining brown; narrow humeral area with an indication of paler ground color; abdominal terga I-V with approximately the apical 1/4 paler infuscate yellow; forelegs including coxa, middle, and hind tibiae infuscate yellow; middle and hind tarsi becoming darkened apically; halteres pale.

**Head.** Antennal ratio, 3.00; palpi shriveled on dry mount, 4 segmented, apparently of normal proportions. Length of frontal

tubercles 0.0246 mm. Dorsal extension of eye long and parallel sided, about 6 facets wide near apex. Clypeus about 0.6 as wide as the antennal pedicel; with at least 14 setae. Temporal setae multiserial, reaching a point medial to the dorsal apex of the eyes.

**Thorax.** Anteprepronotum apically tapered then slightly widened near the apex with the two halves contiguous along a suture, anteriorly with a broad notch. Mesoscutum with a slight hump but without a discernible median tubercle. Dorsolateral setae in a single row posteriorly which becomes slightly staggered anteriorly, then doubled. Dorsomedial setae in 2 staggered rows. Prealar setae not evident on dry mount. Scutellum with a posterior transverse row of about 12 long erect setae; anterior to the main row about six scattered setae.

**Wings.** Wing veins darkened especially on anterior veins; membrane entirely pale, except for slight infuscation along veins.  $R_{4+5}$  ends slightly proximal to M at 0.9 of the distance between the apex of  $Cu_1$  and M.  $R_{2+3}$  paler than adjacent veins ending at 0.23 of the distance between the apex of  $R_1$  and  $R_{4+5}$ . 1st A ends distal to f-Cu, at 0.63 of the distance between f-Cu and apex of  $Cu_2$ . Venarum ratio, 1.06; wing length, 3.64 mm; wing width, 0.83 mm.

**Legs.** Foretarsus bearded, length of setae 5 x the tarsal diameter. Foretibia with a low rounded scale.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	Ta <sub>2</sub>	Ta <sub>3</sub>	Ta <sub>4</sub>	Ta <sub>5</sub>	L. R.
Fore	75	76	100	55	41	16	-	1.32
Mid	85	78	48	28	20	14	9	0.62
Hind	98	102	75	45	32	20	10	0.73

Other material examined—Males—Antennal ratio, 2.64-3.64 (n=35). Foreleg ratio, 1.40-1.66 (n=32); middle leg ratio, 0.56-0.65 (n=21); hind leg ratio, 0.71-0.79 (n=21). Wing length, 2.49-3.95 mm (n=32). Beard length, 3.0-5.0 times the diameter of the 2nd tarsomere (n=26).

**Genitalia,** Figs. 1, 3, and 4, variation in superior appendage, Fig. 5. Abdominal color pattern, Fig. 2.

**Larva.** Ventral head length, 0.273-0.304 mm (n=9). Antenna, Fig. 6. Pecten epipharyngis usually with rather uniform teeth, Fig. 8; occasionally with a smaller tooth interspersed between larger

teeth; with 10-19 teeth (n=10). Labial plate and paralabial plate, Fig. 9. Mandible, Fig. 7.

**Pupa.** General color dark with lateral abdominal markings blackish. Total length, 6.30-8.88 mm (n=11). Frontal tubercles, Fig. 10. Recurved hooks of tergum VIII, similar to other members of the genus. Usually with a single spine in the posterolateral spur of Segment VII, Figs. 11, 12, and 13; frequency of spur spines (left and right): 1-1 (n=24); 1-2 (n=11); 1-2 (n=1); 2-2 (n=5); 2-3 (n=8). Swim fin with 64-96 (n=11) broad flattened setae.

**Diagnosis.** *Chironomus maturus* most closely resembles *Chironomus whitseii* n. sp., but differs in having a darker and slightly different shaped superior appendage. This species will key in Townes (1945) to *Tendipes (=Chironomus) decorus*. That species has saddle-shaped abdominal fascia near the center of the terga instead of basal dark fascia and has pale superior appendages instead of dark ones.

## MATERIAL EXAMINED

### CALIFORNIA

#### Alameda Co.

3 ♂, 5 ♀, Progeny of ♀ collected at Berkeley, 1-II-58, TE58-2, G. Grodhaus (CDPH). 1 ♂ Berkley, 11-3-27, (Cal. Acad. Sci.). 1 Lex, Pex ♂, 2 Leg, Pex, ♀ (reared), Hayward, 20-X-69, G. Grodhaus (CDPH). 1 ♂ Oakland, 9-VI-58, W. Quesnoy (Cal. Ins. Surv.). 1 ♂, Strawberry Canyon, Berkeley Hills, 24-III-56 (Cal. Ins. Surv.). 1 ♂, Strawberry Canyon, Berkeley Hills, 1-VI-48; 1 ♂, II-49, W.W. Wirth (USNM).

#### Contra Costa Co.

2 ♂, El Cerrito, 13-V-67, D.D. Linsdale (CDPH). 1 ♂, West Pittsburg, 1-III-58. 19 ♂, 4 ♀, 15 Pex, 6 Lex, Progeny of ♀ collected at Trout Farm, Concord, 26-IV-63, TE 63-4, G. Grodhaus (CDPH). 2 ♂, 1 ♀, 1L, Wildcat Cr., near El Cerrito, 9-VII-67, G. Grodhaus (CDPH). 1 ♂, Jewell Lake, Tilden Park, 21-XI-56, J.A. Powell (Cal. Ins. Surv.). 3 ♂, Antioch, 6-IV-56, M. Wasbauer (Cal. Ins. Surv.). 3 ♂, Antioch, 19-IV-49, L.W. Quate (Cal. Acad. Sci.).

#### El Dorado Co.

2 squashes, 2 Pex and ♂ (reared), 1 Lex and P (reared), 3 L, state line, 18-VII-67, G. Grodhaus (CDPH).

#### Humboldt Co.

1 ♂ Mad River Beach, 14-VIII-48, W.W. Wirth (USNM).

#### Lake Co.

1 ♂, 1 ♀, 1 Pex, 4 Lex (reared), Progeny of ♀ collected at Lakeport, 19-VI-62, TE 62-36, G. Grodhaus (CDPH). 2 Pex and ♂, 1 Pex and ♀ (reared), Clear Lake Park, 19-IV-68, Lot A, R.E. Doty and G. Grodhaus (CDPH).

#### Lassen Co.

1 ♂, 2 ♀, Susanville, 20-V-58, A.M. Barnes.

#### Los Angeles Co.

1 ♂, Rio Hondo, Montebello, 7-VI-61, E.C. Bay (UCR). 1 ♂, 1 ♀, Pasadena, 22-V-67, A. Stelzer (CDPH).

#### Marin Co.

2 ♂, Lily Lake, 30-III-56, J. Powell (Cal. Ins. Surv.).

#### Modoc Co.

1 ♂ 15 mi. NW Canby, 24-VI-60, E.I. Schlinger (UCR).

#### Napa Co.

11 ♂, 5 ♀, 3 mi. SW Napa, 23-VI-67, G. Grodhaus and E.G. Mezger (CDPH). 14 ♂, 4 ♀, 3 mi. SW Napa, 5-V-67, R.E. Doty (CDPH). 199 squashes, 2 Lex, Pex and ♂ (reared), 2 Lex, Pex and ♀ (reared), 1 Lex and P, 1 mi. S Napa, 16-V-68; 1-V-68; 10-IV-68, R.E. Doty.

#### Orange Co.

7 ♂, Huntington Beach, 24-VII-68, M.S. Mulla (UCR).

#### Plumas Co.

1 ♂, Lake Almanor, 16-V-48, W.W. Wirth (USNM). 97 squashes, 6 ♂, 6 Pex, 2 Lex (reared), Lake Davis, 1-V-68, G. Grodhaus (CDPH). 13 ♂, 1 ♀, Lot D, Lake Davis, 1-V-68, G. Grodhaus (CDPH). 12 squashes, 4 ♂, 3 Pex, TE 68-25, Lake Davis, 1-V-68, G. Grodhaus (CDPH).

#### Riverside Co.

1 ♂, Bergh Ranch, Coachella Valley, 1-7-V-70, light trap, S.I. Frommer, L. Moore (UCR). 1 ♂, Arlington, 29-VII-67; 8 ♂, 5-V-67, R.D. Sjogren (UCR). 7 ♂, Good Samaritan Retirement

Home, Corona, 9-VI-67; 15 ♂, 14-IV-67; 14 ♂, 12-29-IV-67, R. D. Sjogren (UCR). 2 ♂, 448 N. Orange St., Riverside, 28-IV-67; 1 ♂, 2-VI-67, R.D. Sjogren (UCR). 68 ♂, Experimental Ponds, UCR, Riverside, 8-28-VI-62; 4 ♂, 16-22-V-62; 1 ♂, 29-V-5-VI-62; 1 ♂, 2-9-VII-63; 4 ♂, 8-15-I-63; 1 ♂ 26-III-4-IV-63; 1 ♂, 3-IV-66, S.I. Frommer (UCR). 1 ♂, Palm Springs, 4-VI-64, Kent Hunter (UCR). 1 ♂, Hidden Lake, 3 mi. N Arlington, 28-IV-67; 20 ♂, 16-VI-67; 4 ♂, 5-V-67, R.D. Sjogren (UCR). 38 squashes, Priester Ranch, Norco, 16-III-71, S. Caton.

San Bernardino Co.

17 ♂, Ontario, 15-21-VI-62, S.I. Frommer (UCR). 5 ♂, Spring Valley Lake, near Hesperia, Apple Valley, 13-V-71, E.C. Bay (UCR).

San Luis Obispo Co.

10 ♂, San Luis Obispo, 7-VI-67, G. Grodhaus (CDPH). 1 ♂, Black Lake Canyon, 22-VIII-48, W.W. Wirth (USNM).

San Mateo Co.

2 ♂, 23-III-60; 4-XI-59, C.A. Vickery, Jr. (CDPH). 5 ♂, Redwood City, 11-III-51, Paul H. Arnaud (Arnaud). 11 squashes, 2 P, Laurel Creek, 13-X-64, R. Whitsel (CDPH). 1 ♂, 1 ♀, 2 Pex, 1 Lex (reared), marshland pond, Millbrae, 16-III-60, R. Whitsel (CDPH). 1 Pex and ♂, 19th and Bayshore, marshland, San Mateo, 27-I-60, R. Whitsel (CDPH). 1 ♂, 16th Ave. ditch, Hayward Park, San Mateo, 27-X-59, R. Whitsel (CDPH). 1 ♂, Atherton, marshland pond, 19-XI-59, R. Whitsel (CDPH).

Santa Clara Co.

1 ♂, Stanford University, Palo Alto, 25-XI-53, P.H. Arnaud (Arnaud). 20 ♂, Palo Alto, 15-V-67, D.H. Ecke (CDPH). 1 ♂, Mountain View, 6-II-41, Kenneth Frick (Cal. Acad. Sci.).

Shasta Co.

1 ♂, Hat Creek, Fall River Mills, 8-III-69, C. Apperson.

Solano Co.

10 ♂, Vallejo, 28-IV-67, E.G. Mezger (CDPH). 4 ♂, 3 ♀, Dixon, 28-IV-67, E.G. Mezger (CDPH). 7 ♂, 4 ♀, Rio Vista, 28-IV-67, E.G. Mezger (CDPH). 12 ♂, Rio Vista, 30-III-49, E.G. Linsey (Cal. Acad. Sci.).

Sonoma Co.

8 ♂, 2 ♀, sewage treatment plant, Cotati, 21-V-64, G. Grodhaus (CDPH).

INDIANA

Kosciusko Co.

1 Lex and P (reared), Ridinger Lake, 28-VI-65, J.E. Sublette.

LOUISIANA

Natchitoches Ph.

1 ♂, U.S. Fish Hatchery, Natchitoches, 15-II-57, J.E. Sublette. 2 Lex, Pex and ♂ (reared), Chaplain's Lake, Natchitoches, 5-II-57, J.E. Sublette.

NEW MEXICO

Lincoln Co.

8 ♂, 3 ♀, 2 mi. below Bonito Dam, 15-IX-70, E.J. Fittkau.

ONTARIO

1 Lex, Pex, ♂, Dunrobin, 25-IV-66, J. Martin (CNC). 1 ♂, 1 ♀, Neatby Building, Ottawa, 29-IV-67, J. Martin (CNC). 1 Lex, Pex, ♂, 1 Lex, Pex, ♀, (reared), Pond W Ottawa, 11-12-III-69, H.V. Danks (CNC). 1 squash, Copanspin Farm, Dunrobin, Ontario, 0.23.7, 7-VI-66, Jon Martin. 1 squash, Hogs Back, Ottawa, Ontario, 0.18.15, 21-XI-66, Jon Martin. 5 squashes, 1 Lex, Pex and ♂ (reared), 1 Lex, Pex, and ♀ (reared), 1 Lex and P (reared), mile 14.3, Highway 60, Algonquin Provincial Park, Ontario, 0.33.1, 1-VI-66, Jon Martin.

SOUTH DAKOTA

58 squashes, 2 Lex, Pex, and ♂ (reared), 2 ♂, 2 ♀, 9 Pex, seepage area at spring, 3 mi. W Yankton, no date, P.L. Hudson. 23 squashes, 2 Lex, Pex, and ♂ (reared), 1 Lex, Pex, and ♀ (reared), 7 ♂, 2 ♀, 14 Pex, reared from egg mass "C", Yankton, no date, P.L. Hudson.

*Chironomus whitseli* n. sp. Sublette and Sublette

Holotype male. USNM No. 71269, Santa Clara Co., horse trough, 28-III-68, R. Whitsel.

**Coloration.** Antennal pedicels, thorax, and broad abdominal fasciae, Fig. 17, dark brown. Legs pale with the apex of femora and base of tibiae and apical tarsomeres darkened.



**Head.** Antennal ratio, 3.41; palpal proportions, 5:30:32:43. Length of frontal tubercles 0.023 mm. Dorsal extension of eye long and parallel sided about 6 facets wide near apex. Clypeus 0.91 as wide as the antennal pedicel; with 22 setae. Temporal setae in a partial doubled row, reaching a point 0.14 between the dorsal apex of the eye and the midline of the head. Tentorium, Fig. 16.

**Thorax.** Anteprenotum, Fig. 14 (Paratype), narrow, almost parallel sided on apical half; mesonotal sensory organ, Fig. 15 (Paratype). Mesonotum with a low median tubercle. Dorsolateral setae in a partial doubled row. Dorsomedial setae in a single, staggered row. About 5 prealar setae; with 1 supra-alar seta. Scutellum with a slightly staggered posterior, transverse row of about 16 setae; anteriorly with about 8 setae in a strewn pattern.

**Wing.** Anterior veins darkened; with a slight infuscation on the membrane behind  $Cu_2$  and 2nd A.  $R_{4+5}$  ends slightly proximal to M.  $R_{2+3}$  ends at 0.3 of the distance between the apex of  $R_1$  and  $R_{4+5}$ . Venarum ratio, 1.05; wing length, 3.77 mm; wing width, 0.89 mm.

**Legs.** Fortarsus with short setae only.

Leg proportions:

	F	Ti	Ta <sub>1</sub>	Ta <sub>2</sub>	Ta <sub>3</sub>	Ta <sub>4</sub>	Ta <sub>5</sub>	L.R.
Fore	89	83	119	65	48	39	17	1.43
Mid	95	87	55	32	25	18	10	0.63
Hind	107	115	82	49	35	21	12	0.71

**Abdomen.** Color pattern, Fig. 17; genitalia of paratype males, Figs. 18 and 19; inferior appendage with forked setae, Fig. 20 (Paratype); variation in the superior appendage, Fig. 21 (Paratype males).

**Diagnosis.** This species resembles *C. maturus* but differs in having a paler and differently shaped superior appendage. It can be differentiated from *C. decorus* by having broad basal fasciae which extend all the way to the base of most terga.

Allotype female. Topotypic, 5-X-64, R. Whitsel.

**Head.** Antennal proportions: 13:15:13:22; palpal proportions, 7:25:33:49. Length of frontal tubercles, 0.041 mm. Dorsal extension of eye short and broad about 7 facets wide near apex. Clypeus with 30 setae. Temporal setae in a partial doubled row of

about 22 coarse and fine setae reaching medial to the dorsal apex of the eyes.

**Thorax.** Anteprenotum, similar to male. Mesonotum with a conspicuous median tubercle. About 33 dorsolateral setae in a partial doubled row. Dorsomedial setae in one staggered row; with 6 prealar setae and 1 supra-alar seta. Scutellum with a staggered, posterior transverse row of about 16 setae; anteriorly with 14 smaller setae in a random pattern.

**Wing.** Venarum ratio, 1.06; wing length, 3.77 mm.

**Legs.**

Leg proportions:

	F	Ti	Ta <sub>1</sub>	Ta <sub>2</sub>	Ta <sub>3</sub>	Ta <sub>4</sub>	Ta <sub>5</sub>	L.R.
Fore	90	78	130	62	50	42	20	1.67
Mid	93	85	53	30	20	15	10	0.62
Hind	100	107	80	47	33	20	12	0.75

**Genitalia.** Similar to other members of the genus.

**Paratype males.** Antennal ratio, 2.75-3.17 (n=10). Clypeal setae, 18-38 (n=12). Foreleg ratio, 1.42-1.67 (n=8); middle leg ratio, 0.58-0.66 (n=9); hind leg ratio, 0.70-0.76 (n=10); wing length, 2.62-3.73 mm (n=12). Prealar setae, 5-7 (n=12). Ninth tergal setae, 4-11 (n=12).

**Larva.** Head capsule mostly pale yellow. Posterior prolegs with 13-16 (n=6) dark hooks. Preanal papillae each with 6-7 long terminal setae and each with 2 fine setae on the anterior face; papillae about as long as wide. Ventral head length, 0.29-0.37 mm (n=9). Ventral labral setae and sensillae very similar to other members of the genus. Pecten epipharyngis, Fig. 22, with 11-17 teeth (n=9). Labial plate, Fig. 23, also similar to other members of the genus. Paralabial plate nonstriate on anterior margin, Fig. 24. Antenna, Fig. 25. Prementum, Fig. 27, similar to that illustrated for *Chironomus anthracinus* Zett. by Mozley (1971) but differing in slight details of number and arrangement of scales and chaetulae. Mandible, Fig. 27. Maxilla, Fig. 28, similar to other members of the genus.

**Pupa.** Cephalothorax blackish; abdomen infuscate with marginal markings and swim fin blackish. Total length (males),

6.13-8.44 mm (n=9). Recurved hooks of second tergal apex, 65-74 (n=9). Postero-lateral spur of segment VIII highly variable with each spur composed of from 1-6 spines, usually with 2 or more spines, Fig. 29 (n=28). Flattened swim fin setae, 57-85 (n=9).

Paratypes:

Alameda Co.

1 ♂, Berkeley, 22-V-67, F. Ennik.

Contra Costa Co.

1 Pex and ♂, 11 squashes (reared, Lot B), 2 mi. N Lafayette, 20-IV-68, G. Grodhaus (CDPH). 3 Pex and ♂; 1 Pex and ♀, 2 P, 2 Pex, 1 Lex, 7 squashes (reared), 23-VIII-67, UC-6-1; 2 Lex, Pex and ♀, 1 Lex, Pex and ♀ (reared), Kennsington, G. Grodhaus (CDPH). 1 ♂, 2 ♀, 1 Pex, 3 Lex (reared) 1 mi. S Martinez, 15-IV-58, Te-58-33, G. Grodhaus (CDPH). 1 Pex and ♂, 24-VII-67; 5 squashes, 9-VII-67; 3 squashes, 16-VII-67, Wildcat Creek, El Cerrito, G. Grodhaus (CDPH).

Los Angeles Co.

1 ♂, Pico Rivera (Headworks Rio Hondo Water spreading grounds), 3-7-62 (UCR).

Mariposa Co.

2 ♂, 4 ♀, 8 Pex, 13 squashes, 12 mi NE El Portal, Progeny of female, Lot C, adults emerged 13-V-68, G. Grodhaus (CDPH).

Riverside Co.

1 ♂, 6724 Western, Arlington, 5-V-67, R.D. Sjogren (UCR). 3 ♂, Experimental ponds (Midgeville), UCR, 16-22-V-62; 3 ♂, 9-12-VI-62, Saul I. Frommer (UCR). 1 ♂, 448 N. Orange St., Riverside, 29-IV-67, R.D. Sjogren (UCR).

Santa Clara Co.

2 ♂, 62 squashes, topotypic, 28-III-68, R. Whitsel; 3 ♂, 2 ♀, topotypic, 5-X-64, R. Whitsel.

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*Chironomus matorus* Johannsen

## Male

Fig. 1. Holotype genitalia, dorsal view. The superior appendage is shown full view although it was actually partially covered by the gonocoxite.

Fig. 2. Abdominal color pattern, lateral view.

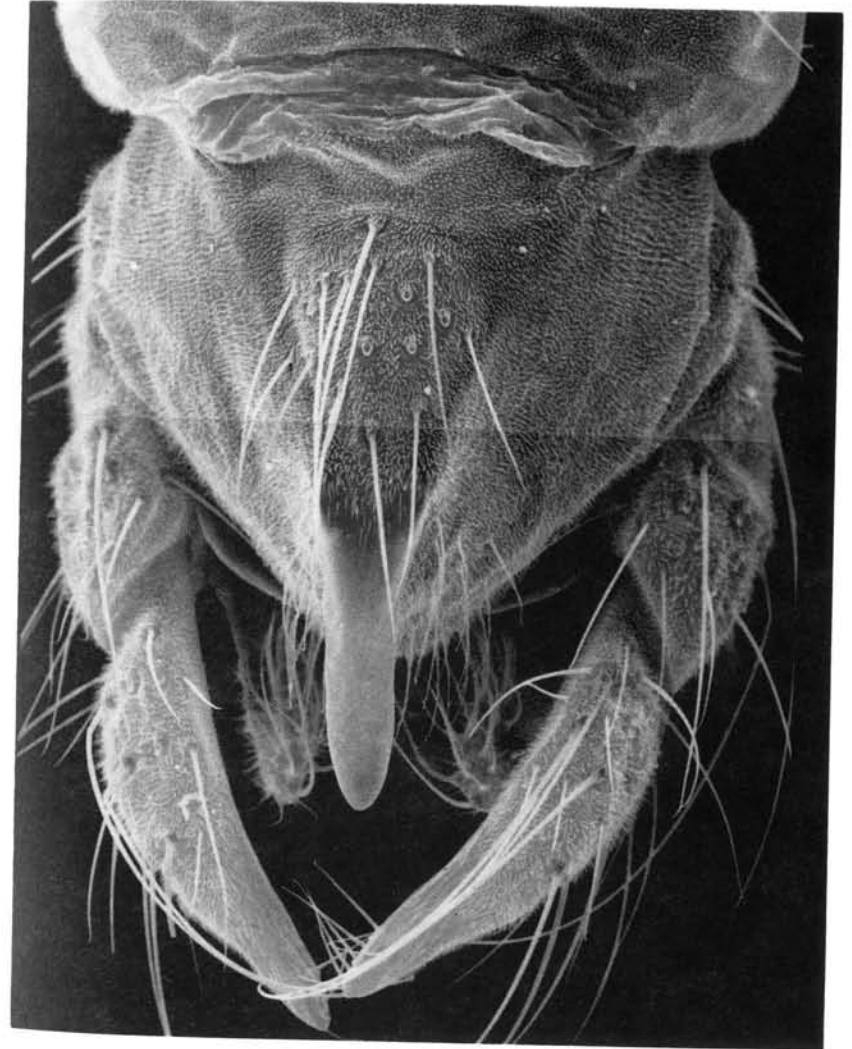




*Chironomus matorus* Johannsen

Male

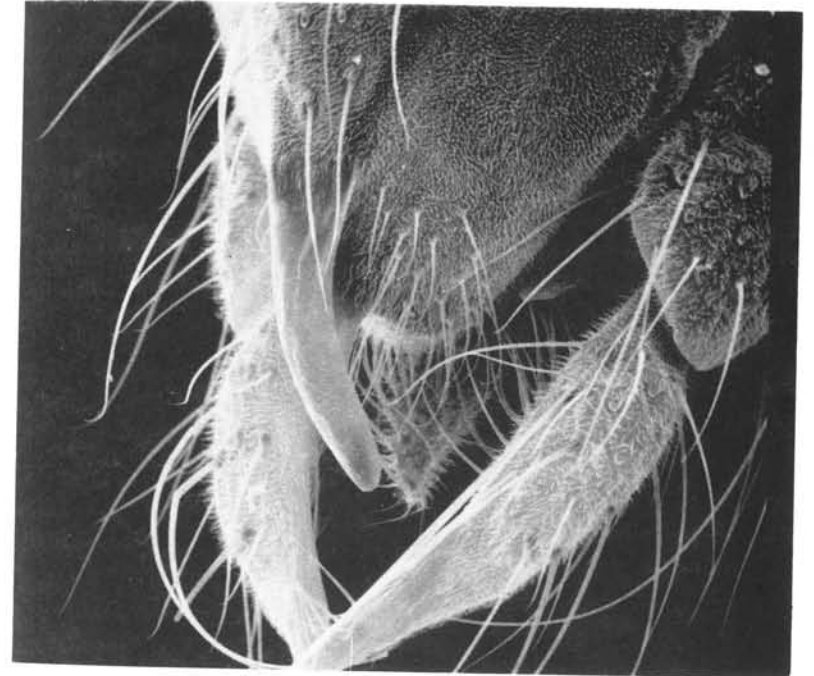
Fig. 3. Genitalia, dorsal view; scanning electron micrograph (SEM),  
300X.



*Chironomus matorus* Johannsen

Male

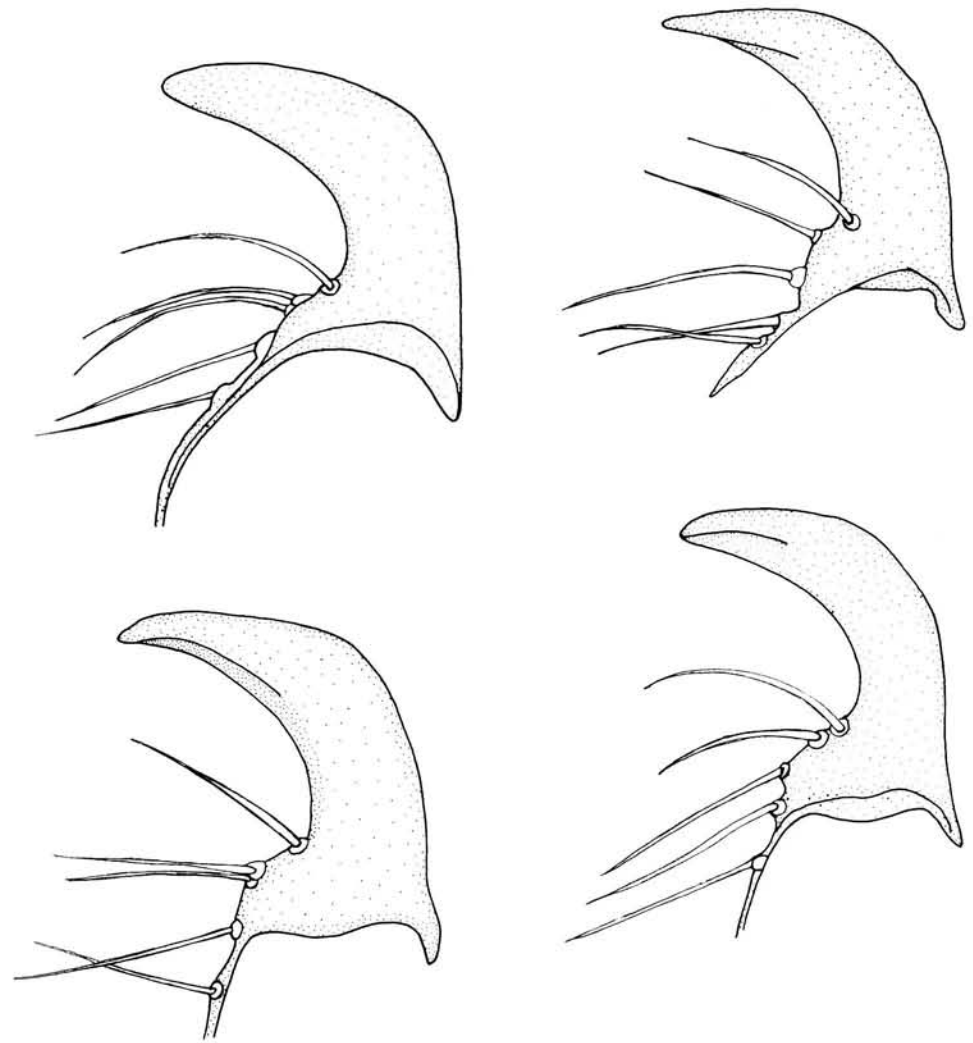
Fig. 4. Genitalia, dorsal view, 45° tilt; SEM, 300X.



*Chironomus maturus* Johannsen

Male

Fig. 5. Variation in the superior appendage of the genitalia.



*Chironomus matorus* Johannsen

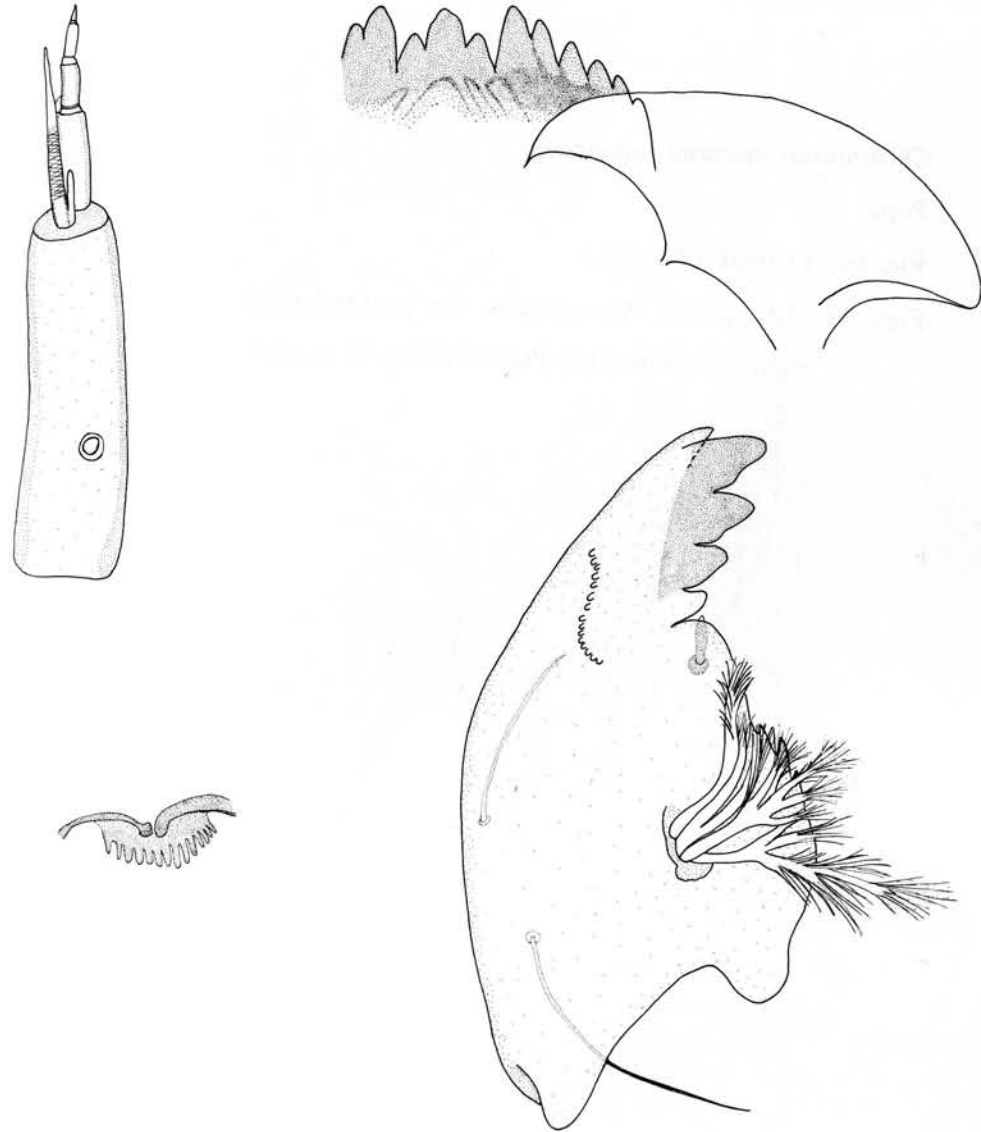
## Larva

Fig. 6. Antenna; the spiral structure shown in the blade is an internal feature not visible with the scanning electron microscope.

Fig. 7. Mandible.

Fig. 8. Pecten epipharyngis.

Fig. 9. Labial (hypostomal) plate, paralabial plate.

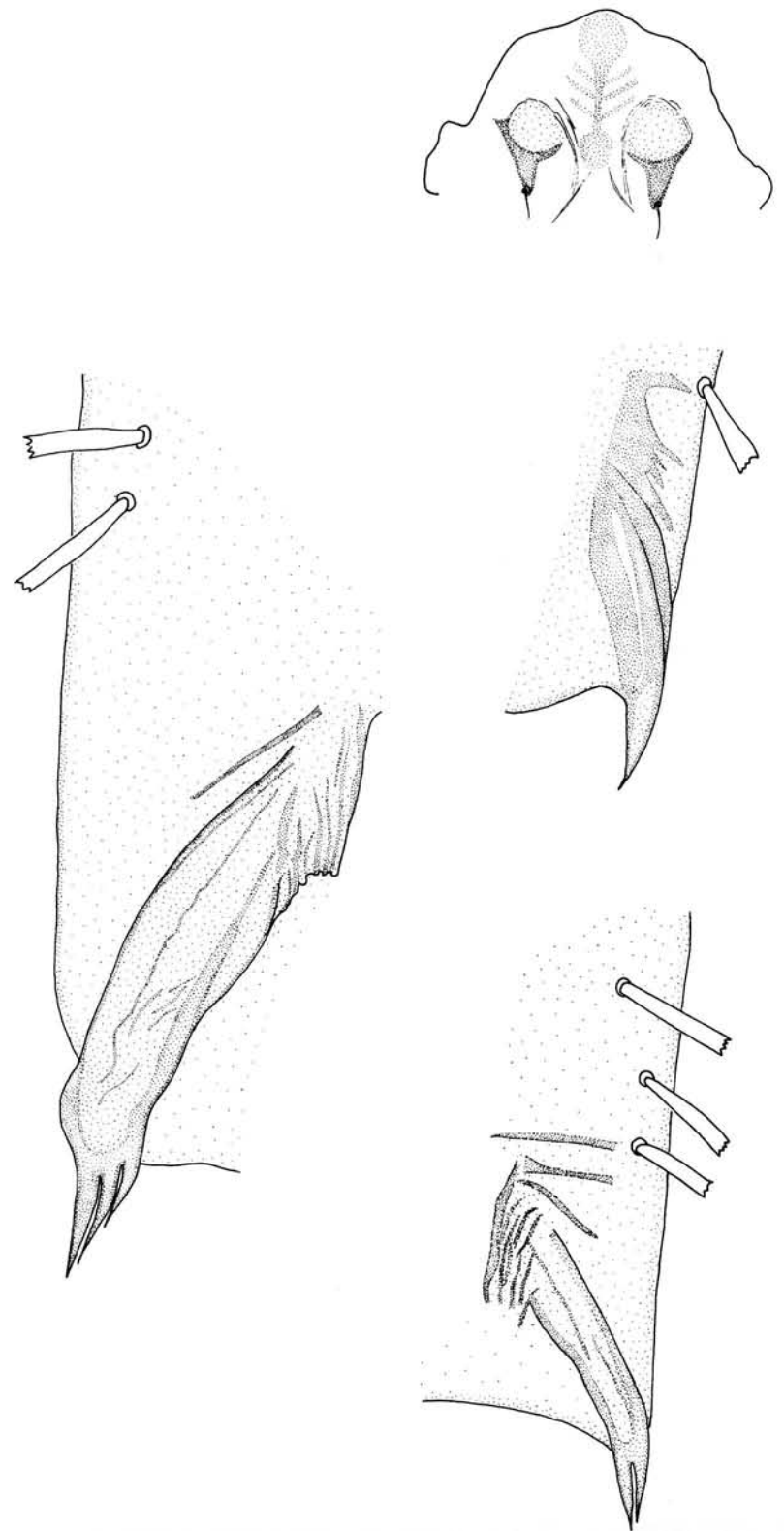


*Chironomus matorus* Johannsen

## Pupa

Fig. 10. Frontal tubercles.

Figs. 11, 12, and 13. Variation in the posterolateral spur of segment eight. The condition shown in Fig. 11 is most common.



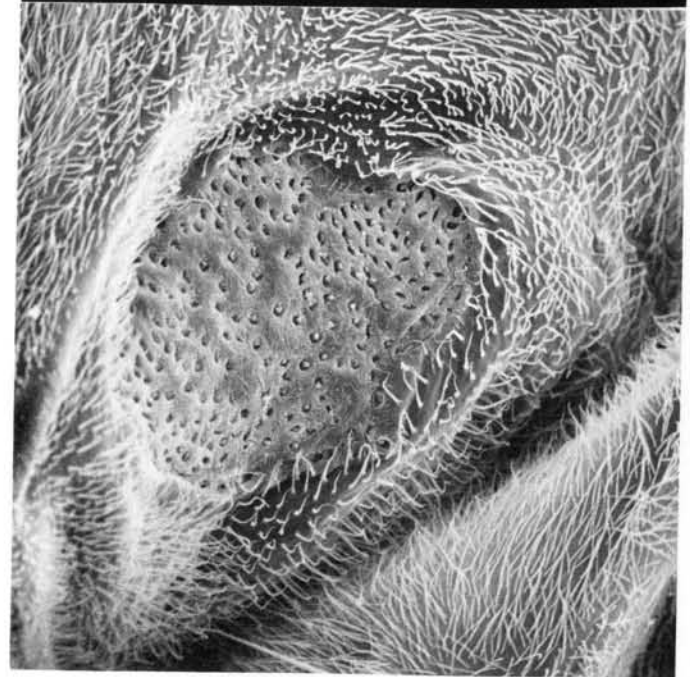


*Chironomus whitseti* n.sp. Sublette and Sublette

Male

Fig. 14 (Upper) Anteprenotum, adult male (paratype), lateral view, SEM, 200X

Fig. 15. (Lower) Mesonotal sensory organ, SEM, 600X. The open pores are apparently an artifact; in the lower left hand part of the organ, the pores are covered by a membrane.

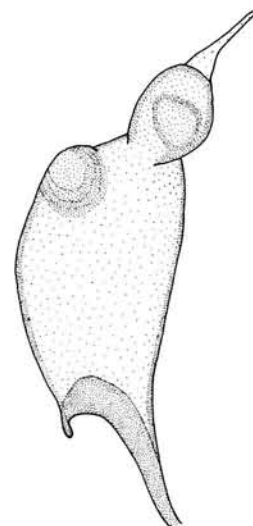
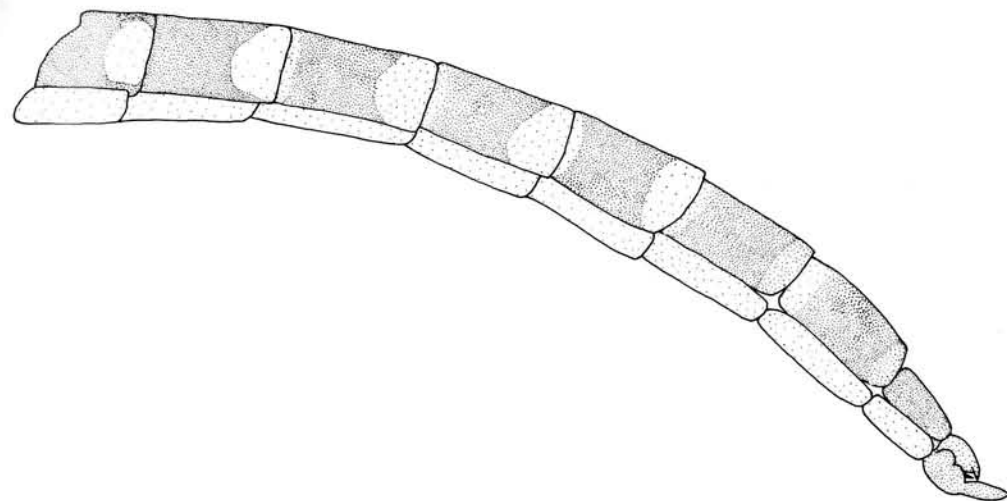


*Chironomus whitseii* n. sp. Sublette and Sublette

Male

Fig. 16. Tentorium, (holotype).

Fig. 17. Abdominal color pattern lateral view, (holotype).



*Chironomus whitseii* n. sp. Sublette and Sublette

Male

Fig. 18. Genitalia (paratype), dorsal view, SEM, 400X.

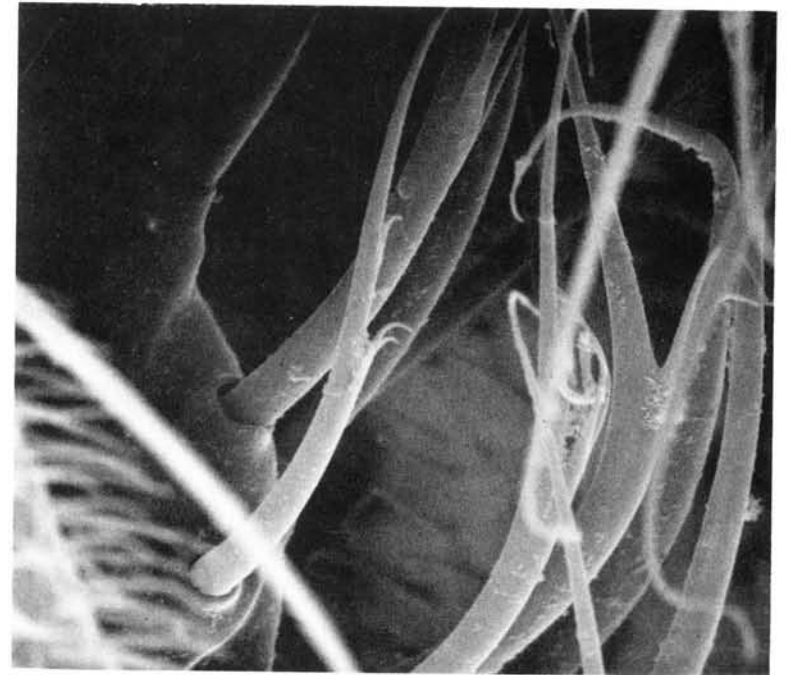
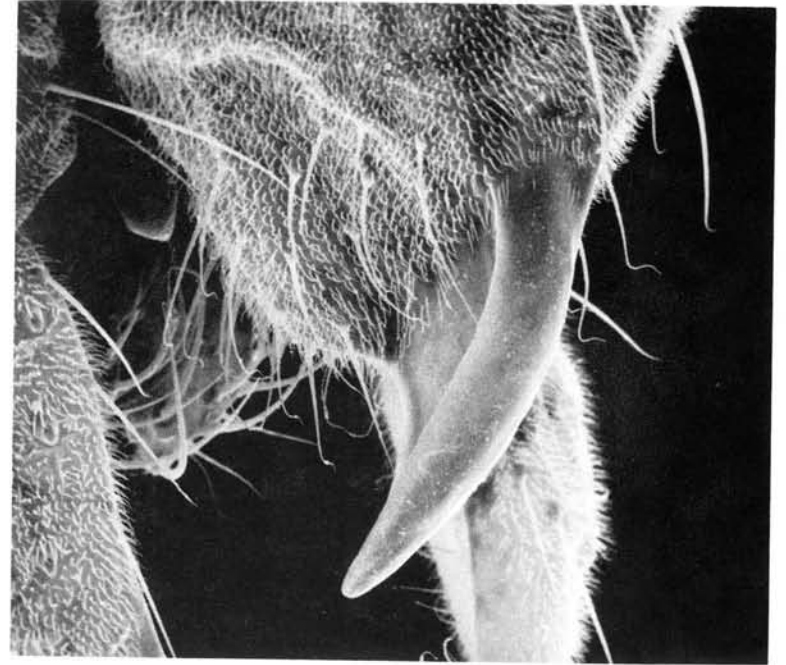


*Chironomus whitse* n.sp. Sublette and Sublette

Male

Fig. 19. Genitalia (paratype), tilted to show anal point, SEM, 500X.

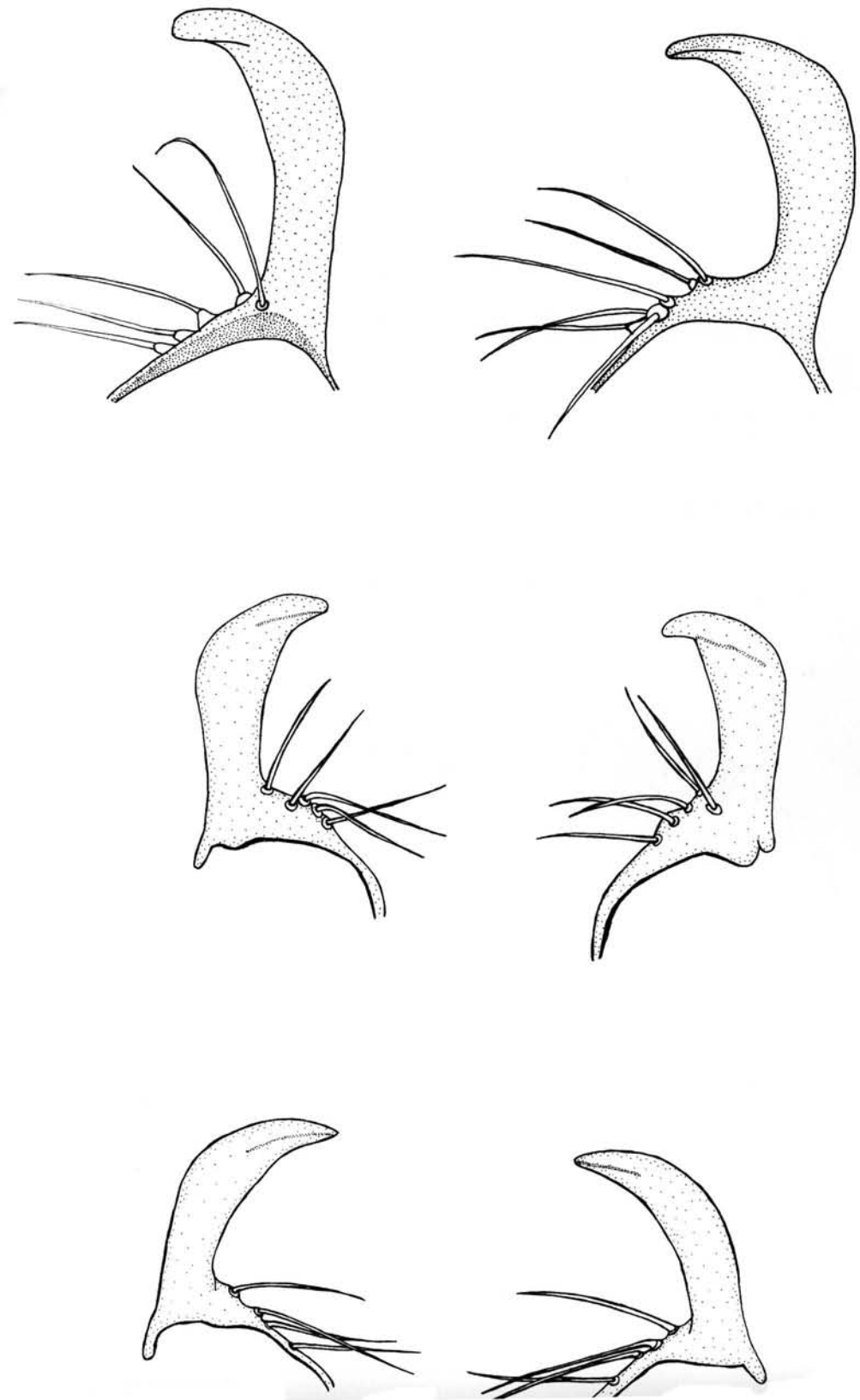
Fig. 20. Inferior appendage showing branching setae, SEM, 3000X.



*Chironomus whitseii* n. sp. Sublette and Sublette

Male

Fig. 21. Variation in the superior appendage of the genitalia.





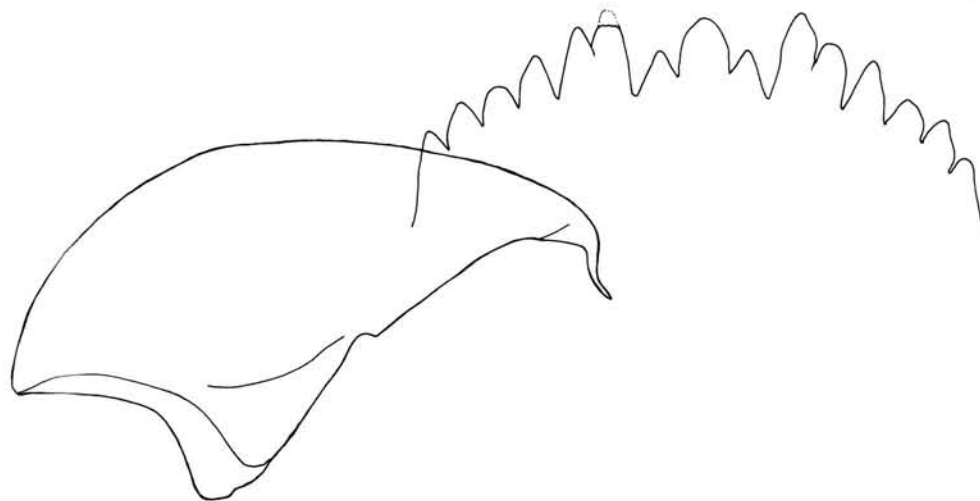
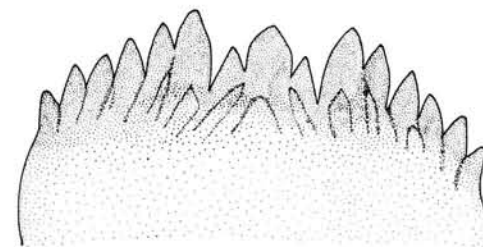
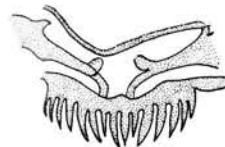
*Chironomus whitseii* n. sp. Sublette and Sublette

Larva

Fig. 22. Pecten epipharyngis.

Fig. 23. Labial plate.

Fig. 24. Labial and paralabial plates; internal striations omitted.



*Chironomus whitseti* n. sp. Sublette and Sublette

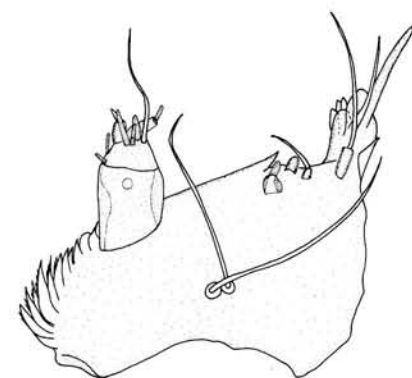
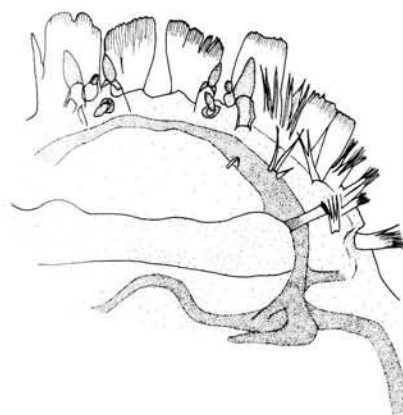
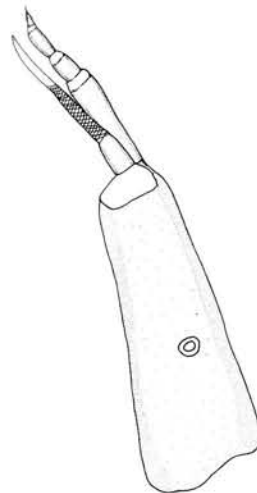
Larva

Fig. 25. Antenna.

Fig. 26. Mandible.

Fig. 27. Prementum.

Fig. 28. Maxilla.



*Chironomus whitseii* n. sp. Sublette and Sublette

Pupa

Fig. 29. Variation in the posterolateral spur of segment eight.

