

**Ohio EPA Supplemental Keys to the
Larval Chironomidae (Diptera) of Ohio
and Ohio Chironomidae Checklist**

November 2012



Photo of *Coelotanypus scapularis* (Loew) used with permission from Stephen Marshal.

Michael J. Bolton
Ohio Environmental Protection Agency
Division of Surface Water
4675 Homer Ohio Lane
Groveport, Ohio 43235

E-mail: mike.bolton@epa.state.oh.us

Introduction

The following keys were developed to supplement existing keys as an aid in the identification of Chironomidae larvae collected in Ohio. They were designed to incorporate most of the taxa known from the temperate eastern North America. The bulk of the characters used in these keys were taken from existing keys. There is, however, many gaps in our understanding of the chironomid fauna. For that reason every attempt was made to positively identify larvae by associating them with their pupal and adult male stages. Therefore, some of the information presented in this guide is not available in other keys.

These keys should be used in conjunction with existing keys. The standard generic level key that everyone identifying chironomid larvae should have is “Chironomidae of the Holarctic Region. Keys and Diagnoses. Part 1 - Larvae” edited by Wiederholm (1983). In addition to keys, this work contains extremely useful diagnoses and illustrations for every genus known from the covered area at the time. Another essential publication is “Identification Manual for the Larval Chironomidae (Diptera) of North and South Carolina” by Epler (2001). This very useful manual identifies larvae to species when possible and is extensively illustrated. However, it was designed to cover the Southeastern United States. At least two genera (*Doncricotopus* and *Synendotendipes*) found in Ohio were not included. Great care should be taken when attempting to apply the species keys to the Ohio fauna. The keys in this Ohio EPA guide should always take precedence when identifying chironomids from Ohio. This guide is an updated version and replaces previous editions (Bolton 1998, 2007). Oliver, Dillon, and Cranston’s (1990) “A Catalog of Nearctic Chironomidae” is a useful listing of the named species in the Nearctic region and their known distribution as of 1989. A checklist of Ohio chironomids known from Ohio by the author or reported in published revisionary works is included at the end of this guide.

The changes to the larval morphology figures from Wiederholm (1983) are planned to be included in a revised edition of the Holarctic manual.

ENT. SCAND. SUPPL. 19 (1983)

2. The larvae of Chironomidae — Key to subfamilies 13

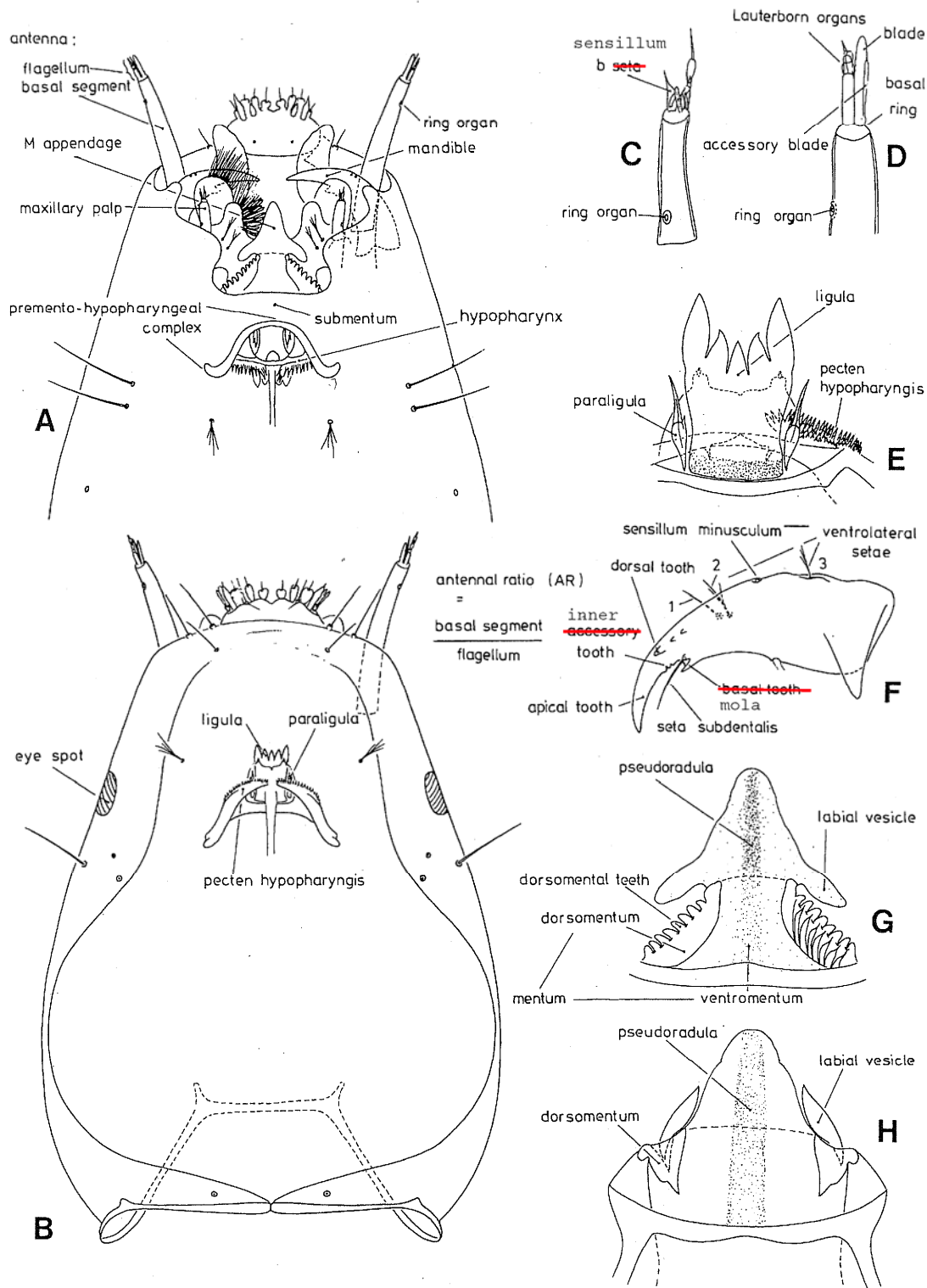


Fig. 2.1. Tanypodinae. — A. Larval head, ventral view. — B. Larval head, dorsal view. — C. Maxillary palp. — D. Antenna. — E. Premento-hypopharyngeal complex except appendage. — F. Mandible. — G. Mentum and M appendage of premento-hypopharyngeal complex (Macropelopiini). — H. Mentum and M appendage of premento-hypopharyngeal complex (Pentaneurini).

Used with permission from Scandinavian Entomology Ltd.

14 P. S. Cranston and F. Reiss

ENT. SCAND. SUPPL. 19 (1983)

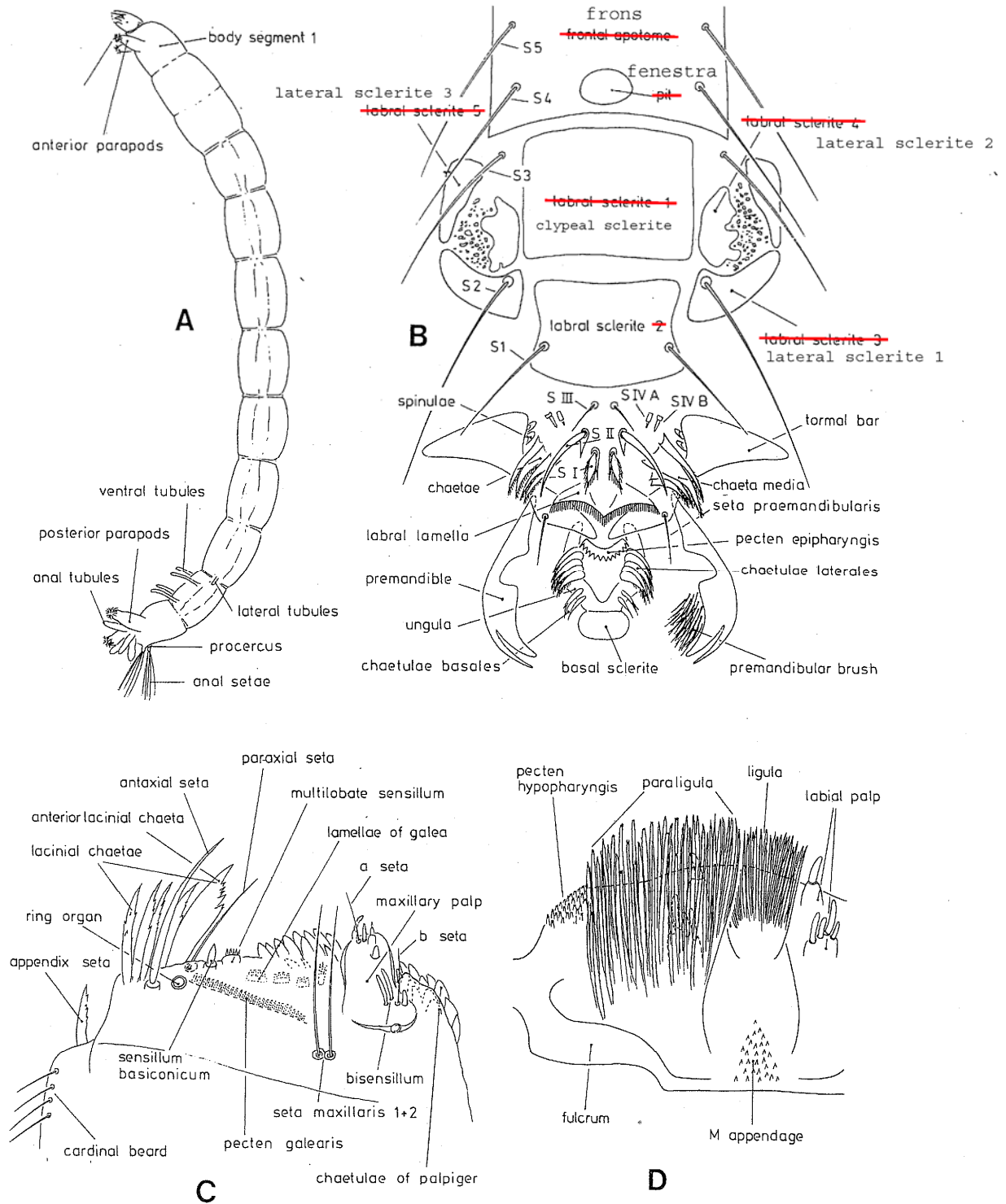


Fig. 2.2. Chironominae, Orthocladiinae, Diamesinae. — A. Larva, lateral view (Chironomini). — B. Labro-epipharyngeal region (Chironomini). — C. Maxilla ventral view (Orthocladiinae). — D. Premento-hypopharyngeal complex, ventral view (Diamesini).

Used with permission from Sandinavian Entomology Ltd.

ENT. SCAND. SUPPL. 19 (1983)

2. The larvae of Chironomidae — Key to subfamilies 15

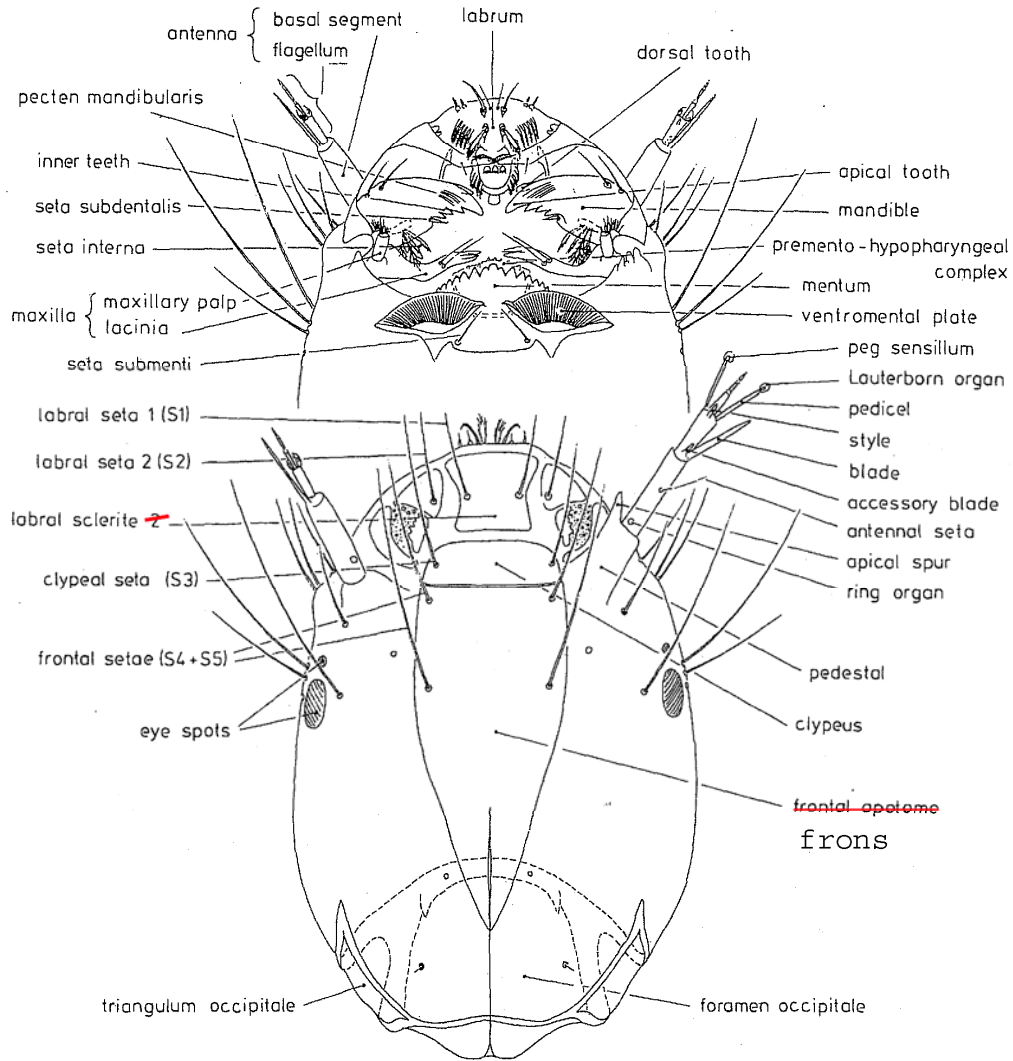


Fig. 2.3. Larval head, ventral and dorsal view (Chironominae).

Used with permission from Scandinavian Entomology Ltd.

KEY TO SUBFAMILIES OF CHIRONOMIDAE

1. Antennae retractile into head capsule; head capsule with ligula bearing 4-8 teeth; the mentum usually poorly developed, at least partially membranous. **Tanypodinae**
- 1'. Antennae not retractile; head capsule without ligula; mentum usually well developed and sclerotized. **2**
- 2 (1'). Premandibles absent; procercus long, more than 5 times as long as wide; antennal segment 3 annulate. **Podonominae**
- 2'. Premandibles present; procercus short, less than 4 times as long as wide; antennal segment 3 may or may not be annulate. **3**
- 3 (2'). Antennal segment 3 usually annulate, or, if not annulate, antenna 4 segmented and mandible with 5-6 inner teeth and mentum as in *Protanypus*. **Diamesinae**
- 3'. Antennal segment 3 not annulate; antenna and mandible variable. **4**
- 4(3'). Ventromental plates usually well developed and striate (plates reduced and not distinctly striated in *Stenochironomus* and *Xestochironomus*), never with beard beneath.
..... **Chironominae**
- 4'. Ventromental plates may be indistinct or well developed, never striate, may have beard beneath. **5**
- 5(4'). Antenna 4 segmented, ventromental plates well developed and with beard beneath.
..... **Prodiamesinae**
- 5'. Antenna not 4 segmented, or if 4 segmented then ventromental plates not well developed or beard absent. **6**
- 6(5'). Prementum with dense, well-developed median brush; antenna short and 4 segmented; premandible short and broad with strong inner brush; labrum with simple S setae; procercus absent; marine habitat; not known from Ohio. **Telmatogetoninae**
- 6'. Prementum without median brush; other characters variable but not in above combination; wide variety of habitats. **Orthocladiinae**

PODONOMINAE

- 1 Procercus uniformly colored; not known from Ohio.***Parachlus***
 (*Parachlus kiefferi* (Garrett) is the only described Nearctic species; in the East, reported as far south as Minn., Ont., N.Y., and Mass.; larvae inhabit springs and small cool maintain streams)
- 1' Procercus hyaline anteriorly, blackish posteriorly from base to apex.....**2**
- 2(1') Mentum with about 13-15 pairs of lateral teeth; procercus with 11-15 anal setae; not known from Ohio***Lasiodiamesa***
 (5 Nearctic species; adult key in Wirth & Sublette (1970), larvae of *L. arietina* (Coquillet) and *L. brusti* Sæther described in Sæther (1969); in the East, genus reported as far south as Wis., Ont., N.Y., and N.H.; larvae inhabit *Sphagnum* bogs)
- 2' Mentum with 7 or 8 pairs of lateral teeth; procercus with 5-8 anal setae.**3**
- 3(2') Long, dark supraanal setae present; procercus with 8 anal setae; within Ohio, known from a small spring-fed stream in Hocking Co. that has interstitial flow in summer.
 ***Paraboreochlus***
 (*Paraboreochlus stahli* Coffman is the only described Nearctic species; all life stages described in Coffman et al. (1988); the species has been reported from small cool streams in Kans., Pa., and N.C.)
- 3' Supraanal setae absent; procercus with 5-6 anal setae; adults collected in Ohio adjacent to spring habitats.***Boreochlus***
 (3 Nearctic species with only *B. persimilis* (Johannsen) reported from eastern Nearctic; adult key in Wirth & Sublette (1970); larvae inhabit moss and leaf packs in springs and mountain streams)

Nearctic genera not keyed:

Trichotanypus: recorded from northern Nearctic and the mountains of Wyoming.

TANYPODINAE

- 1 Dorsomenta teeth present in well developed transverse plates or in longitudinal rows; body segments with well developed lateral fringe of setae. **2**
- 1' Dorsomenta teeth apparently absent or with 3 or less conspicuous teeth; body segments without lateral fringe of setae or with a weak fringe of 4 setae on body segments 4-10. **15**
- 2(1) Ligula with 6-7 (rarely 5) pale teeth; dorsomenta teeth present in longitudinal rows, but not located on distinct plates. **3**
- 2' Ligula with 4 or 5 teeth, pale or dark; dorsomenta teeth either absent or present on plates. **4**
- 3(2) Ligula with 5-7 (usually 6) teeth, inner tooth only slightly bent towards outer tooth; mandible strongly hooked, with large, pointed inner tooth; antennal ratio greater than 10; lentic and depositional areas of lotic habitats. *Clinotanypus*
- 3' Ligula usually with 7 teeth, first inner tooth strongly bent towards outer tooth; mandible not as strongly hooked, with broadly rounded inner tooth; antennal ratio less than 8; lentic and depositional areas of lotic habitats. *Coelotanypus*
- 4(2') Ligula with 5 pale teeth, apical margin convex or about straight across; mandible with enlarged base and short apical tooth (about ¼ length of base); lentic and depositional areas of lotic habitats. *Tanypus*
- 4' Ligula with apical margin usually concave, or if about straight across, only 4 pale teeth present; mandible with base not enlarged, apical tooth longer (about 1/3 length of base). **5**
- 5(4') Ligula with black teeth. **6**
- 5' Ligula with pale teeth. **7**
- 6(5) Antennal blade more than twice as long as flagellum; ligula with usually 4 teeth, or occasionally 5 teeth; lentic and depositional areas of small, slightly acidic lotic habitats; not known from Ohio. *Djalmabatista*
- 6' Antennal blade about as long as flagellum; ligula with 5 teeth; lentic and depositional areas of lotic habitats. *Procladius*

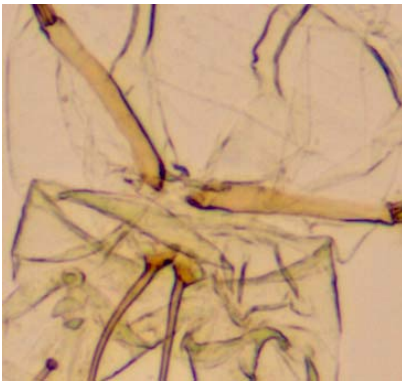
- 7(5') Ligula about straight across with 4 pale teeth; mandible with 4 or more inner teeth. **8**
- 7' Ligula concave with 5 pale teeth; mandible with less than 4 inner teeth. **9**
- 8(7) Dorsosomal plates strongly concave; mandible with teeth on dorsal surface; inhabits small, cold lentic and lotic habitats in the western mountains and the northern Nearctic as far south as southern Manitoba. *Derotanypus*
- 8' Dorsosomal plates not strongly concave; mandible without teeth on dorsal surface; lentic and depositional areas of lotic habitats. *Psectrotanypus*
- 9(7') Dorsosomal plates strongly concave; mandible with teeth on dorsal and ventral surfaces; ligula with inner tooth incurved; posterior parapod with 3 small pectinate claws; known from lentic and depositional areas of lotic habitats; not known from Ohio, primarily a southeastern taxa, collected as far north as Oklahoma and NC... *Fittkauimyia*
- 9' Dorsosomal plates not strongly concave; mandible without teeth on dorsal and ventral surfaces; ligula with inner tooth not incurved; posterior parapod without pectinate claws. **10**
- 10(9') Dorsosomal plates each with 4-6 teeth; antennal segment 2 short, 2-3 times as long as wide. **11**
- 10' Dorsosomal plates each with 6-9 teeth; antennal segment 2 long, 3.5 - 4.5 times as long as wide. **13**
- 11(10) Apex of dorsosomal plates with bluntly-pointed medial extension; 1 small claw of posterior parapod with broadly expanded base; known in Ohio from a few small cool streams in NE Ohio. *Brundiniella*
- 11' Dorsosomal plates not as above; small claws of posterior parapod usually without an expanded base. **12**
- 12(11') Dorsosomal plate with 4 large teeth and 1 small tooth; ligula deeply concave, inner teeth strongly outcurved; spring habitat. *Apsectrotanypus*

- 12' Dorsomental plate with 5 large teeth; ligula weakly concave, inner tooth nearly straight (these characters only apply to the eastern Nearctic species); spring habitat.
..... ***Radotanypus***
- 13(10') Maxillary palp ring organ in middle 1/3; ventrolateral mandibular seta all simple; depositional areas of lotic habitats. ***Alotanypus***
- 13' Maxillary palp ring organ in basal 1/3; ventrolateral mandibular setae 2 and 3 are either forked or branched. **14**
- 14(13') Dorsomental plate with 5 large teeth and 1 small tooth; the inner most tooth of the hypopharyngeal pecten enlarged, over twice the size of the adjoining tooth; procercus with 9 apical setae; spring habitat. ***Bethbilbeckia***
- 14' Dorsomental plates with 6 large teeth and 1 small tooth; the inner most tooth of the hypopharyngeal pecten similar to the adjoining tooth; procercus with 12-15 apical setae; spring habitat. ***Macropelopia***
- 15(1') Ligula with median tooth distinctly longer than inner teeth. **16**
- 15' Ligula with median tooth at most only slightly longer than inner teeth. **17**
- 16(15) Posterior parapod with 1 bifid claw, seta of posterior parapod toothed near base; head capsule may be entirely pustulate, have dark markings, or small groups of short blunt spines; lentic and lotic habitats. ***Labrundinia***
- 16' Posterior parapod with 1 pectinate claw or only serrated claws; seta of posterior parapod simple; head capsule not as above; lotic habitat. ***Nilotanypus***
- 17(15') Antenna short, less than 0.4 times as long as head capsule, AR less than 3.5; mandible with large, blunt, mola; abdominal segments with anterolateral row of 4 setae; lentic and depositional areas of lotic habitats. ***Natarsia***
- 17' Antenna longer, more than 0.4 times as long as head capsule, AR variable; mandible with or without an expanded mola; abdominal segments may have scattered setae but never set in a row..... **18**

- 18(17') Maxillary palp with basal segment subdivided into 2 or more sections, ring organ situated intersegmentally. **19**
- 18' Maxillary palp with basal segment not subdivided, ring organ located on the segment. **20**
- 19(18) Maxillary palp with 2 segments, basal segment less than ½ length of apical one; lentic and lotic habitats. ***Paramerina***
- 19' Maxillary palp with 2-6 segments, if 2 segments then segments are subequal in length or basal segment is greater than ½ length of apical segment; lentic and lotic habitats.
..... ***Ablabesmyia***
- 20(18') Head capsule with granulate surface; posterior parapod usually with 3 dark claws and 3 pectinate claws, rarely with no dark or pectinate claws; lentic habitat. ***Guttipelopia***
- 20' Head capsule not granulate; posterior parapods variable. **21**
- 21(20') Posterior parapod with pectinate claws. **22**
- 21' Posterior parapod without pectinate claws, although 1 or 2 small claws may have a large point on inner margin. **23**
- 22(21) Posterior parapod with one darker claw that has 1-4 inner teeth, 1-4 smaller pale claws that have 3-8 inner teeth, other claws may have strong serrations; mola of mandible well developed; second antenna segment usually darker than first; bog habitat.....
..... ***Monopelopia***
(The southern FL species *M. tillandsia* Beck & Beck does not have strongly pectinate or darkened posterior parapod claws.)
- 22' Posterior parapod with 3 small pale claws with 4-8 inner teeth, other claws usually serrated; mola of mandible not well developed; second antenna segment not darker than first; bog habitat..... ***Cantopelopia***
(The revised edition of the Holarctic manual will place *Cantopelopia* as a subgenus of *Monopelopia*.)

23(21') Supra anal seta dark and enlarged; procercus about 6 times as long as wide; lotic habitat.

..... *Pentaneura*



23' Supra anal seta not dark or enlarged; procercus usually less than 6 times as long as wide.

..... **24**

24(23') One (rarely none) claw of posterior parapod with a large point on inner margin; ligula weakly concave to about straight across; mandible with well developed mola; antenna ratio usually less than 3.5; inhabits springs and small cool streams. *Zavreliomyia*

24' All claws of posterior parapod simple; ligula variable; basal tooth of mandible variable; antenna ratio usually greater than 3.5, if less than 3.5 then ligula moderately to strongly concave or mola of mandible not well developed. **25**

25(24') Mandible with well-developed mola. **26**

25' Mandible with moderately developed to no mola. **28**

26(25) Antenna ratio usually less than 3.4, Lauterborn organs large, about as long as antennal segment 3, and fused with apical end of segment 2 so as to give a tuning fork-like appearance; spring habitat. *Krenopelopia*

26' Antenna ratio usually greater than 3.4, Lauterborn organs small, at most 1/2 as long as antennal segment 3, and not fused with outer margin of segment 2. **27**

27(26') Procercus usually 4-6 times as long as wide; primarily lentic habitat. *Larsia*

27' Procercus about 3 times as long as wide; lotic habitat. *Telopelopia*

- 28(25') Maxillary palp with ring organ in middle third of basal segment; mandible with weakly to moderately developed mola. **29**
- 28' Maxillary palp with ring organ in distal third of basal segment; mandible with no mola development. *Thienemannimyia* group (in part) **30**
(genera in this group may be difficult to separate but can be verified with pupal characters)
- 29(28) Maxillary palp with basal segment about 6 times as long as wide; antennal segment 1 greater than 400 μ long (need 4th instar); mandible with moderately developed mola; spring habitat. *Trissopelopia*
- 29' Maxillary palp with basal segment about 4.5 - 5.1 times as long as wide; antennal segment 1 less than 300 μ long (need 4th instar); mandible with weakly developed mola; inhabits hygropetric areas of springs; not known from Ohio. *Hudsonimyia*
- 30(28') Maxillary palp with 2-segmented b sensillum (visible under 400x). **31**

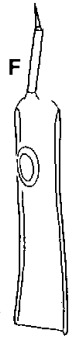


Illustration used with permission from Scandinavian Entomology Ltd.

- 30' Maxillary palp with 3-segmented b sensillum. **34**

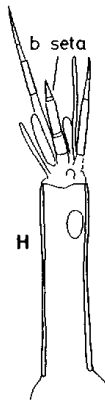


Illustration used with permission from Scandinavian Entomology Ltd.

- 31(30) Inner tooth of mandible minute ($1-2\mu$) and recessed (usually visible only under 1000X); ligula weakly concave to straight across; gular margin of head capsule usually light brown; posterior parapod with 5 smaller claws thickened and darker; lotic habitat.

..... ***Rheopelopia*** (part)

(*R. paramaculipennis* Roback is the only known species that keys here)



- 31' Inner tooth of mandible very small ($2.5-5\mu$) and usually projects past margin of mandible (usually visible under 100 or 400X); ligula weakly to distinctly concave; gular margin of head capsule dark brown or pale; posterior parapod claws variable.**32**

- 32(31') Gular margin of head capsule pale; posterior parapods with smaller claws usually not thickened and darker; lotic habitat. ***Meropelopia***

- 32' Gular margin of head capsule dark brown; posterior parapod with 5 smaller claws thickened and darker; lotic habitat. ***Hayesomyia, Thienemannimyia*** **33**

(These two genera can not be separated as larvae but can be separated by pupal characters.)

- 33(32') Pupal thoracic horn with a corona; abdomen with filamentous LS-setae on segments VII-VIII only. ***Hayesomyia***

(The revised edition of the Holarctic manual will place *Hayesomyia* as a junior synonym of *Thienemannimyia*.)

- 33' Pupal thoracic horn without a corona; abdomen with filamentous LS-setae on segments I-VIII. ***Thienemannimyia***

34(30') Inner tooth of mandible minute (1-2 μ) and recessed (usually visible only under 1000X); subbasal seta of posterior parapod unequally forked; lotic habitat.

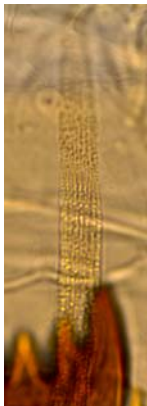
..... ***Rheopelopia*** (part)
(The 3 species in the *R. acra* group key here.)

34' Inner tooth of mandible very small (2.5-5 μ) and usually projects past margin of mandible (usually visible under 100 or 400X); subbasal seta of posterior parapod simple.

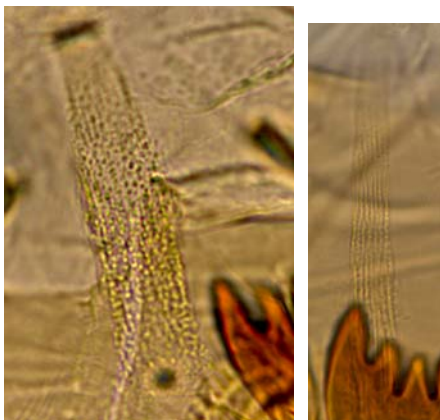
..... 35

35(34') Antennal segment 1 length usually greater than 320 μ (need 4th instar); pseudoradula relatively narrow and parallel-sided to base; lotic habitat. ***Helopelopia***

(The revised edition of the Holarctic manual will place *Helopelopia* as a subgenus of *Conchapelopia*.)



35' Antennal segment 1 length usually less than 320 μ (need 4th instar); pseudoradula relatively broad and spread out (except *C. aleta* which has a narrow pseudoradula); lentic and lotic habitats. ***Conchapelopia***



Nearctic genera not keyed:

Arctopelopia: reported from northern Nearctic.

Denopelopia: only reported from Florida.

Reomyia: larvae similar to *Zavrelimyia* according to Epler (2001), reported from Alaska, Oregon, and North Carolina. The revised edition of the Holarctic manual will place *Reomyia* as a subgenus of *Zavrelimyia*.

Xenopelopia: reported from western Nearctic.

Ablabesmyia

For additional keys and descriptions see Roback (1971, 1985) and Caldwell (1993).

- 1 Maxillary palp with 2 segments. **2**
- 1' Maxillary palp with 3-6 segments. **6**
- 2(1) Ligula nearly straight across, middle and inner teeth truncate with apices pale; posterior parapod elongate with extensive lateral hooklets, no dark claws; lentic and lotic habitats.
 *Ablabesmyia (Asayia) annulata* (Say)
- 2' Ligula usually concave, teeth not truncate; posterior parapod shorter and lacking extensive lateral hooklets, 0-3 dark claws. **3**
- 3(2') Ligula with inner tooth relatively straight; posterior parapod with 2 medium to dark brown claws; primarily lentic habitat. *Ablabesmyia (Karelia) peleensis* (Walley)
- 3' Ligula with inner tooth distinctly outcurved; posterior parapod with 0-3 dark claws. **4**
- 4(3') Posterior parapod with all claws pale; apical segment of maxillary palp 1.7-3.0X length of basal segment. not known from Ohio.
 *Ablabesmyia (Karelia) philosphagnos* Beck & Beck
- 4' Posterior parapod with 1-3 claws darker than the others; apical segment of maxillary palp 0.9-1.7X length of basal segment. **5**
- 5(4') Posterior parapod with 3 darker claws; not known from Ohio.
 *Ablabesmyia (Karelia) cinctipes* (Johannsen)
- 5' Posterior parapod with 1-2 darker claws.
 *Ablabesmyia (Karelia) spp.* see Roback (1985)
 (*A. ideii* (Walley), *A. illinoensis* (Malloch), and *A. pulchripennis* (Lundbeck) will key out here but are difficult to separate)
- 6(1') Maxillary palp with 3 segments, basal segment short, apical two segments long and about equal in length. **7**

- 6' Maxillary palp with 5 or 6 segments, the basal 4 or 5 segments short and the apical segment long.....**10**
- 7(6) Ligula nearly straight across, middle and inner teeth semi-truncate; posterior parapod with 2 dark claws, hooked claw present; lotic habitat.....
..... *Ablabesmyia (s.s.) janta* (Roback)
(there's a variety of *A. janta* that is a symbiont of freshwater mussels which has 0-2 slightly darker claws on the posterior parapod and no hooked claw).
- 7' Ligula usually concave, teeth not semi-truncate; posterior parapod with 0-2 dark claws, hooked claw present or absent.....**8**
- 8(7') Head capsule with mesal-ventral dark spot; posterior parapod with 0-1 dark claw, hooked claw absent; lotic habitat.*Ablabesmyia (s.s.) simpsoni* Roback
- 8' Head capsule with at most a faint mesal-ventral spot; posterior parapod with 2 dark claws, hooked claw present.**9**
- 9(8') Ligula length greater than 80 μ (measured from tip of outer tooth to basal most chitenized part of ligula); lentic habitat.....*Ablabesmyia (s.s.) monilis* (Linnaeus)
- 9' Ligula length less than 80 μ ; lentic and lotic habitats.....
..... *Ablabesmyia (s.s.) rhamphe* group
- 10(6') Maxillary palp with 5 segments; posterior parapod with 2-3 dark claws, hooked claw absent; lentic and lotic habitats.*Ablabesmyia (s.s.) mallochi* (Walley)
- 10' Maxillary palp usually with 6 segments (the basal two segments may be incompletely seperated); posterior parapod with 2 dark claws, hooked claw present or absent.....**11**
- 11(10') Posterior parapod without hooked claw; not known from Ohio.
..... *Ablabesmyia (s.s.) hauberi* Beck & Beck
- 11' Posterior parapod with hooked claw; lentic habitat.
..... *Alblabesmyia (s.s.) aspera* (Roback)

Guttipelopia

For additional keys and descriptions see Bilyj (1988).

- 1 Posterior parapod with 3 dark claws and 3 small pectinate claws; antenna ratio 6.0 - 7.3; lentic habitat. ***Guttipelopia guttipennis* (van der Wulp)**
- 1' Posterior parapod without dark or pectinate claws; antenna ratio 4.3 - 5.1; not known from Ohio. ***Guttipelopia rosenbergi* Bilyj**

Labrundinia

For additional keys and descriptions see Roback (1987).

- 1 Head capsule completely pustulate (pustules may be weak and difficult to see).....**2**
- 1' Head capsule not pustulate.**4**
- 2(1) Head capsule with mesal-ventral dark area, latero-ventral and caudo-ventral groups of short, blunt spines present; not known from Ohio.***Labrundinia* sp. 6 (Roback 1987)**
- 2' Head capsule without mesal-ventral dark area, small latero-ventral group of short, blunt spines may be present, caudo-ventral group of spines not present.**3**
- 3(2') Head capsule with small latero-ventral group of short, blunt spines, head capsule without dark markings; subbasal seta of posterior parapod with flag-like group of spines near base; lotic habitat.***Labrundinia longipalpis* (Goetghebuer)**
- 3' Head capsule without latero-ventral group of spines, posterior 1/4 of head capsule may be darkened; subbasal seta of posterior parapod without flag-like group of spines near base; lotic habitat.***Labrundinia pilosella* (Loew)**
- 4(1') Subbasal seta of posterior parapod with flag-like group of spines near base; head capsule with latero-ventral group of short, blunt spines, caudo-ventral group of spines not present.**5**

- 4' Subbasal seta of posterior parapod without flag-like group of spines near base; head capsule with latero-ventral group of spines, caudo-ventral group of spines may be present.6
- 5(4) Head capsule with mesal, brown transverse band; lotic habitat.*Labrundinia johannseni* Beck & Beck
- 5' Head capsule without mesal transverse band; lentic habitat.*Labrundinia neopilosella* Beck & Beck
- 6(4') Head capsule with 1 large latero-ventral spine about 20 μ long, caudo-ventral group of short, blunt spines present; not known from Ohio.*Labrundinia* sp. 4 (Roback 1987)
- 6' Head capsule with latero-ventral group of 2-7 short, blunt spines, caudo-ventral spines not present.7
- 7(6') First antenna segment 160-190 μ long; lotic habitat.*Labrundinia becki* Roback
- 7' First antenna segment 250-310 μ long; not known from Ohio.*Labrundinia virescens* Beck & Beck

Natarsia

For additional keys and descriptions see Roback (1978).

- 1 Ligula about straight across, less than 88μ long. *Natarsia baltimoreus* (Walker)
- 1' Ligula usually strongly concave, greater than or equal to 88μ long.
 *Natarsia species A* (Roback 1978)

Nilotanypus

For additional keys and descriptions see Roback (1986b).

- 1 Posterior parapod with 1 pectinate claw. *Nilotanypus fimbriatus* (Walker)
- 1' Posterior parapod with only serrated claws, not known from Ohio.... see Roback (1986b)

Paramerina

For additional keys and descriptions see Beck & Beck (1966) and Roback (1971, 1972).

- 1 Head capsule with posterior third darkened; posterior proleg claws all simple; pupal thoracic horn with relatively large plastron plate and elongate corona; lotic habitat.
 *Paramerina sp. 1*
- [Beck & Beck (1966) described *P. anomala* which is similar to *P. sp. 1* except the plastron plate is not as large. However, these two taxa may prove to be the same species.]



- 1' Head capsule not darkened; posterior proleg claws variable. 2

- 2(1') Posterior proleg with two smaller claws bifid; pupal thoracic horn with plastron plate that is intermediate in size; forested wetland habitat. *Paramerina smithae* (Sublette)

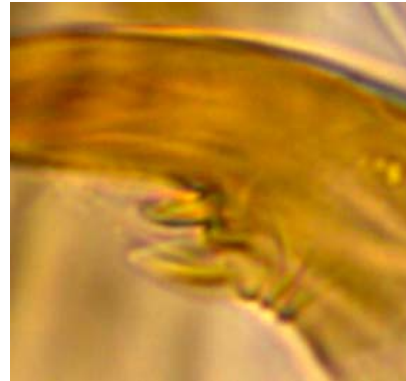


- 2' Posterior proleg with all claws simple; pupal thoracic horn plastron plate small; this is the most commonly collected *Paramerina* in Ohio's streams. *Paramerina fragilis* (Walley)

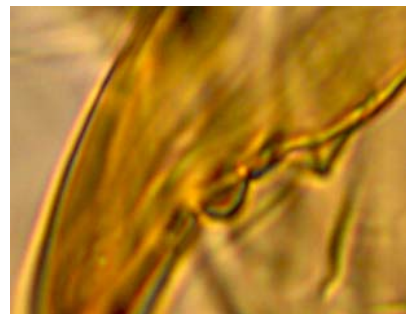


Pentaneura

- 1 Ligula about straight across with inner tooth curved outward; mandible with mola acute and directed apically; posterior parapod with 1 dark claw.
..... ***Pentaneura inconspicua* (Malloch)**



- 1' Ligula about straight across with inner tooth nearly straight; mandible with mola blunt and not directed apically; posterior parapod without any dark claws.
..... ***Pentaneura inyoensis* Sublette**



Procladius

For additional keys and descriptions see Roback (1980) and Wrubleski and Roback (1987).

- 1 Smaller claws of posterior parapod elongate, never with inner teeth; mostly larger species, body length 7-11 mm; lentic and depositional areas of lotic habitats.
 *Procladius (Holotanypus)*
- 1' Smaller claws of posterior parapod short with an expanded base, 1 or 2 smaller claws may have strong points on inner side; mostly smaller species, body length 5-8 mm.
 *Procladius (Psilotanypus)* **2**
- 2(1') Two of the smaller posterior parapod claws sharply hooked, no claws with strong points on inner side; known from lentic habitats in B.C., Alta., Sask., and Man.
 *Procladius (Psilotanypus) nietus* **Roback**
- 2' The smaller posterior parapod claws not sharply hooked, 0, 1, or 2 claws with strong points on inner side; primarily lentic habitats.
 *Procladius (Psilotanypus) bellus* **(Loew)**

Psectrotanypus

For additional keys and descriptions see Roback (1978).

- 1 Posterior parapod with 1 small claw with ovoid base; ligula length/mesal width 2.0-2.1; dorsomentum with 6-7 teeth each side; lentic and lotic habitats.....
 *Psectrotanypus dyari* **(Coquillett)**
- 1' Posterior parapod with all claws simple and curved; ligula length/mesal width 2.6-3.7; dorsomentum with 5 teeth each side; depositional areas of lotic habitats; not known from Ohio.....
 *Psectrotanypus discolor* **(Coquillett)**

Tanypus

For additional keys and descriptions see Roback (1977).

- 1 Ligula relatively pale and narrow; mentum pale; 2-3 smaller claws of posterior parapods pectinate.....**2**
- 1' Ligula and mentum darker and more robust; smaller claws of posterior parapods not pectinate.....**3**
- 2(1) Ligula very long and narrow, 5.1-5.4 times as long as mesal width; paralogula 8-10 branched; not known from Ohio.***Tanypus* poss. *concaus* Roback**
- 2' Ligula slightly shorter, 2.2-4.8 times as long as mesal width; paralogula 5-7 branched.
.....***Tanypus stellatus* Coquillett**
- 3(1') Smaller claws of posterior parapods simple.....**4**
- 3' Smaller claws of posterior parapods with base expanded.....**5**
- 4(3) Main fork of paralogula 0.60-0.78 from base (Fig. H); mesal tooth of mentum pale; head infuscated.....***Tanypus carinatus* Sublette**
- 4' Main fork of paralogula 0.45-0.53 from base; mesal tooth of mentum dark along margin; head pale..... ***Tanypus punctipennis* Meigen**
- 5(3'). Smaller claws of posterior prolegs with inner edge serrate; not known from Ohio.....
..... ***Tanypus clavatus* Beck**
- 5'. Smaller claws of posterior prolegs with inner edge smooth.**6**
- 6(5'). Dorsomental plate with 5-6 darker lateral teeth; smaller expanded claws of posterior prolegs 62-70 μ long. ***Tanypus neopunctipennis* Sublette**
- 6'. Dorsomental plate with 6-8 paler teeth; smaller expanded claws of posterior prolegs about 90 μ long; not known from Ohio..... ***Tanypus nubifer* Coquillett**

PRODIAMESINAE

- 1 Median mental tooth pale, broad, and convex; mandible expanded basally.
 ***Odontomesa***
- 1' Mentum with either one broad concave or 2 small dark median teeth; mandible not so
 expanded basally. **2**
- 2(1') Ventomental plate narrow, beard weak; median mental tooth broad and concave.
 ***Monodiamesa***
- 2' Ventomental plate broad, beard strong; mentum with paired median teeth deeply
 recessed between 1st lateral teeth. ***Prodiamesa***

Nearctic genera not keyed:

Compteromesa: larvae are unknown for the only known Nearctic species, *C. oconeensis* Sæther, reported from S.C. Epler (2001) included the larva of *C. haradensis* Niitsuma & Makarchenko from Japan in his key.

DIAMESINAE

- 1 Head capsule with numerous closely spaced setae; antenna 4 segmented, segment 3 not annulate; mentum lacking distinct teeth on central 2/3, with only 2 pairs of lateral teeth; mandible with 5-6 inner teeth; not known from Ohio. ***Protanypus***
(5 Nearctic species; in the East, the genus has been reported as far south as Lake Michigan and Maine; the larvae inhabit oligotrophic lakes)
- 1' Head capsule with few setae; antenna 5 segmented, segment 3 annulate; mentum with teeth on middle 2/3 or entirely toothless. **2**
- 2(1') Dorsal surface of head capsule with 4-5 tubercles; not known from Ohio.
..... ***Boreoheptagyia***
(*B. lurida* (Garrett) is the only described Nearctic species; in the East, reported as far south as N.Y.; larvae inhabit cool mountain streams on rocks at the splash line.)
- 2' Dorsal surface of head capsule without tubercles. **3**
- 3(2') Mentum without teeth; premandible with about 15 small, pointed teeth; mandible without seta interna; known from Ohio in Lake Erie off of Ashtabula County.
..... ***Potthastia longimana* Kieffer**
- 3' Mentum with teeth; premandible with less than 13 broad teeth; mandible with seta interna. **4**
- 4(3') Pecten epipharyngis consisting of a row of 5 or more elongate, blunt scales. **5**
- 4' Pecten epipharyngis consisting of 3 pointed scales. **6**
- 5(4) Pecten epipharyngis with 5 scales; premandible with about 7 teeth; procercus shorter than wide with 4 anal setae; cool lotic habitat. ***Diamesa***
- 5' Pecten epipharyngis with 7-9 scales; premandible with a simple apical tooth and 3-4 smaller inner teeth; procercus longer than wide with 8-9 anal setae. ***Lappodiamesa***
(*L. boltoni* Sæther & Willassen is the only described Nearctic species; all life stages were described by Sæther & Willassen (1988); reported only from Ohio where it inhabits shallow, vernal woodland runs and pools; I have also examined a specimen from Maine collected by Mike and Rhonda Mendel)

- 6(4') Premandible with 5-6 teeth; mentum with flat median area that has several small projections and 5-8 lateral teeth; inhabits small streams. ***Pagastia***
- 6' Premandible either simple or with a large apical tooth and 1-3 smaller inner teeth; mentum not as above. **7**
- 7(6') Mentum with either a broad, dome-shaped median tooth with the median and first lateral teeth pale and 7-8 dark lateral teeth or the median tooth a broad, flat toothless area with 9 lateral teeth; premandible simple; within Ohio, known only from Yellow Creek in SE Ohio. ***Potthastia gaedii* group**
- 7' Mentum with median tooth similar to lateral teeth, 8-10 pairs of lateral teeth; premandible with a large apical tooth and 1-3 small, appressed inner teeth; inhabits small spring fed streams during winter and spring months. ***Sympotthastia***

Nearctic genera not keyed:

Arctodiamesa: reported from Alaska.

Pseudodiamesa: reported from western and northern Nearctic.

Pseudokiefferiella: reported from northern Nearctic and in western mountains.

Syndiamesa: reported from northern Nearctic.

Genus P (Doughman 1985): reported from extreme SE U.S.

Corynoneura

For additional keys and descriptions see Fu & Sæther, 2012.

Measurements and ratios used in this key:

Head capsule length = measurement from base of premandibles to posterior most part of head capsule.

AL/HL = antenna length/head capsule length. A_1L/HL = 1st antenna segment length/head capsule length.

- 1 Head capsule integument sculptured with fine ridges that are usually in a reticulate pattern (sculpturing usually strongest dorsally, but may be faint and difficult to see). ... **2**
- 1' Head capsule integument smooth, unsculptured. **6**
- 2(1) Mentum with 2 median teeth; antenna slightly shorter than head capsule length (AL/HL = 0.8-0.9); known from one small acid mine drainage impacted stream in SE Ohio.
 ***Corynoneura acuminata* F&S (*Corynoneura* n. sp. 9)**

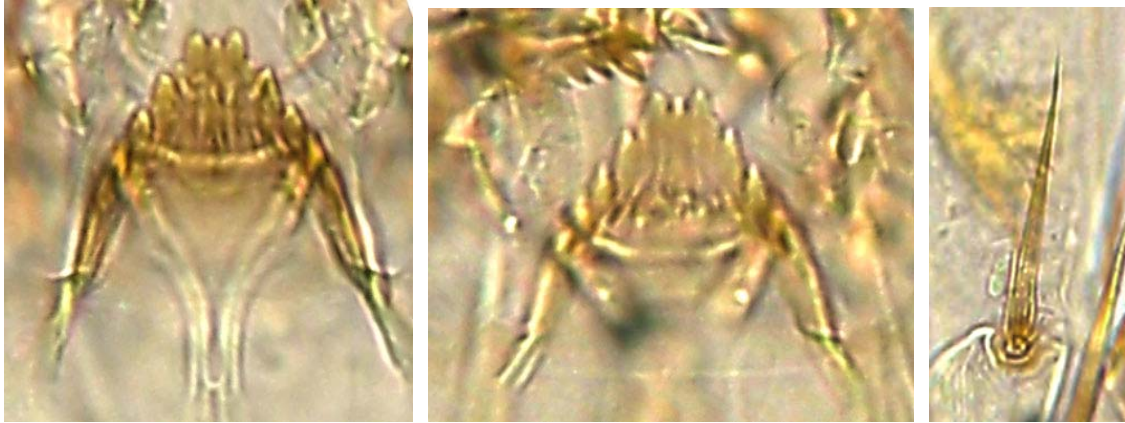


- 2' Mentum with 3 median teeth; antenna longer than head capsule. **3**
- 3(2') Antenna about twice as long as head capsule (AL/HL = 1.8-2.2); head capsule weakly sculptured; mentum with 5 lateral teeth; premandible not noticeably toothed at 400X; posterior parapod subbasal seta with a star shaped sclerotized ring around the attachment area; lotic and lentic habitats. ***Corynoneura macula* F&S (*Corynoneura* n. sp. 8)**



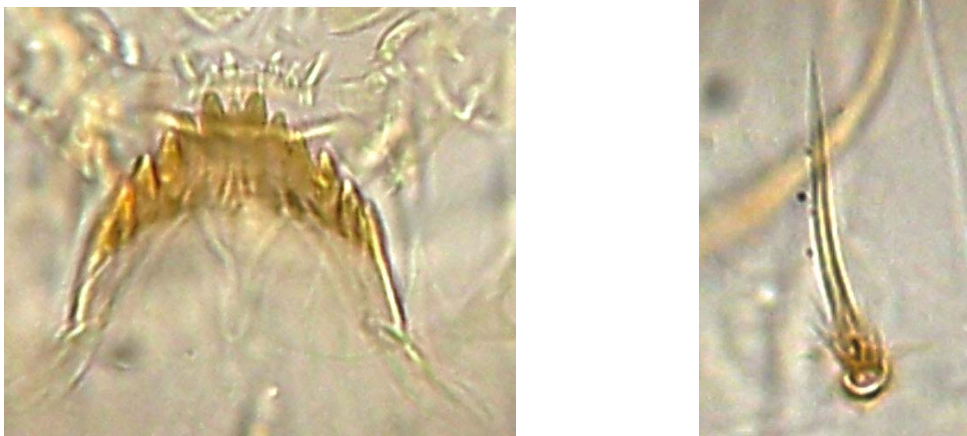
3' Antenna shorter ($AL/HL = 1.1-1.7$); other characters variable. 4

4(3') Mentum with first lateral tooth reduced and partially fused with median teeth or absent, in which case there are only 4 lateral teeth; premandible not noticeably toothed at 400X (fine teeth visible at 1000X); this is the most commonly collected species in lotic habitats, in size from rheocrenes to large rivers. *Corynoneura lobata* Edwards



4' Mentum with first lateral tooth not reduced or partially fused, 5 lateral teeth; premandible noticeably toothed at 400X; lentic habitats. 5

5(4') Head capsule weakly sculptured; antenna only slightly longer than head capsule ($AL/HL = 1.1-1.2$); posterior parapod subbasal seta with only short lateral spinules arising near base. *Corynoneura edwardsi* Brundin

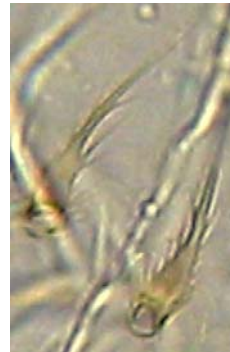
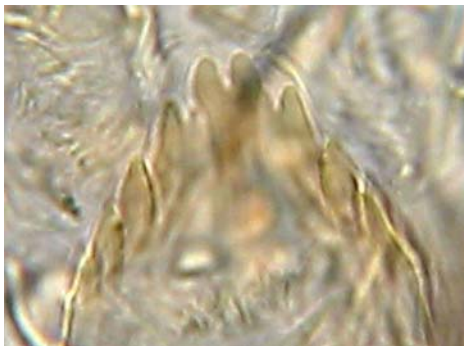


- 5' Head capsule strongly sculptured; antenna at least 1.5 times as long as head capsule (AL/HL = 1.5-1.8); posterior parapod subbasal seta often with one or two spinules arising from one side near the base.*Corynoneura scutellata* Winnertz

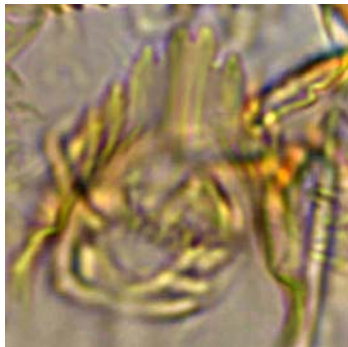


- 6(1') Mentum with 2 median teeth.....7
6' Mentum with 3 median teeth.....8

- 7(6) Antenna with segment 3 dark; posterior parapod subbasal seta with lateral spinules originating from about half or more of the length of main shaft; inhabits small streams to large rivers. *C. floridaensis* F&S [*C. "celeripes"* (sensu Simpson & Bode, 1980)]



- 7' Antenna with segment 2 and 3 dark; posterior parapod subbasal seta with lateral spinules originating from about a third the length of the main shaft.....*Corynoneura sp. 12*



- 8(6') Antenna very long ($AL/HL = 2.2-2.5$, $A_1L/HL = 1.1-1.3$); premandible noticeably toothed at 400X; mentum with a small 6th lateral tooth; lentic habitats.....
*Corynoneura doriceni* M&M (*Corynoneura* n. sp. 4)



- 8' Antenna not unusually long ($AL/HL = 0.8-1.8$); premandible not noticeably toothed at 400X (fine teeth may be visible at 1000X); mentum with only 5 lateral teeth.**9**
- 9(8') Mentum with 1st lateral tooth reduced, not as wide as 2nd lateral tooth.**10**
- 9' Mentum with 1st lateral tooth not reduced.....**13**

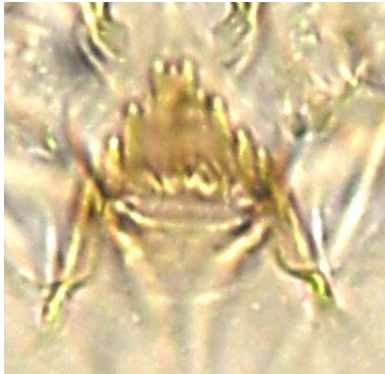
- 10(9) Antenna slightly shorter than length of head capsule ($AL/HL = 0.8-0.9$); posterior parapod subbasal seta with long lateral spinules that primarily arise from one side; inhabits small to medium sized streams.
*Corynoneura caudicula* F&S (*Corynoneura* n. sp. 1)



- 10' Antenna longer than head capsule ($AL/HL = 1.1-1.8$).....**11**

11(10') Antenna AL/HL = 1.1-1.5; posterior parapod subbasal seta with lateral spinules usually arising primarily on one side, inhabits rheocrenes.

..... *Corynoneura ascensa* F & S (*Corynoneura* n. sp. 5)



11' Antenna AL/HL = 1.3-1.8; posterior parapod subbasal seta with lateral spinules usually arising more equally on both sides; inhabits larger streams or lentic habitats. **12**

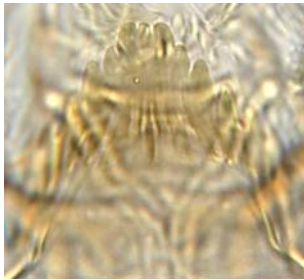
12(11') Antenna AL/HL = 1.3; lentic habitats. *Corynoneura* sp. 6



12' Antenna AL/HL = 1.6-1.8; inhabits small to medium sized streams.
..... *Corynoneura* sp. near *lacustris* Edwards (sensu F&S) (*Corynoneura* sp. 11)



13(9') Antenna AL/HL = 1.1; inhabits shallow vernal woodland pools.....
..... *Corynoneura disinflata* F&S (*Corynoneura* n. sp. 2)



13' Antenna AL/HL = 1.6; inhabits rheocrenes. *Corynoneura* sp. 10



- 5(4) Antenna 4 segmented; inhabits ponds and lakes; not known from Ohio.
 *Orthocladius (Pogonocladius)*
- 5' Antenna 5 segmented. **6**
- 6(5') Mandible with 1 or 2 dorsal teeth; head capsule dark; mentum strongly triangular, with 5
 or 6 lateral teeth, median tooth wider than first three lateral teeth combined; inhabits
 colonies of the cyanobacterium *Nostoc* *Cricotopus (Nostococladius)*
- 6' Mandible without dorsal teeth; head capsule color variable; mentum more gently arched,
 with 6 lateral teeth, median tooth not as wide as first three lateral teeth combined; not
 associated with *Nostoc*. **7**
- 7(6') Labrum with variously developed pectinate labral lamellae; head capsule dark; the three
 PE scales distinctly separate; premandible bifid; Lauterborn organs not unusually robust;
 inhabits rheocrenes to medium sized streams during the winter and spring.
 *Orthocladius (Mesorthocladius) lamellatus* Sæther
- 7' Labrum without labral lamellae; head capsule color variable; the three PE scales
 partially fused giving the appearance of a single triangular scale; premandible variable;
 Lauterborn organs may be unusually robust and usually reach to the base of A₄. **8**
- 8(7') Lauterborn organs unusually robust and usually reach to the base of A₄; mentum with
 second lateral tooth not partially fused; head capsule pale to dark; inhabits small to
 medium streams during the winter and spring. *Orthocladius (Euorthocladius)*
- 8' Lauterborn organs not unusually robust; mentum may have second lateral tooth partially
 fused; head capsule dark; in Ohio has been collected from cool hydropetric habitats.....
 *Orthocladius (Eudactylocladius)*
- 9(4') The posterolateral abdominal setae (L₄) on segments 1-7 composed of setal tufts. **10**
Note: the setal tufts may be small and difficult to see. They are usually less well developed on
 abdominal segments 1 and 7 and in some taxa are absent on 7.
- 9' Setae simple, although they may be forked. **22**
Note: It is important to make sure you are seeing the L₄ setae and not one of the other
 abdominal setae. If the L₄ setae are not present, in some cases, you may not be able to identify
 your specimen to genus, in which case it can be labeled as “*Cricotopus* or *Orthocladius*” or

“*Cricotopus* or *Paratrichocladius*”. Of course, if your specimen appears to be the same as other specimens in the sample that do have the L₄ present, then it should be considered to be that taxon.

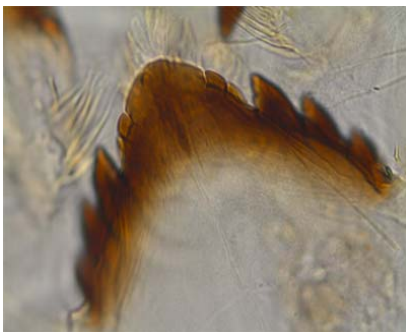
- 10(9) Pecten epipharyngis with three simple scales.11
 10' Pecten epipharyngis fused into a single scale that is either triangular or elongate with rounded projections in the middle and at both ends.16

- 11(10) Mandible with molar area produced into a flat pointed shelf, inner margin with serrations; setal tufts short and difficult to see.*Cricotopus (C.) bicinctus* Maegen



- 11' Mandible without pointed molar area or serrated inner margin.12

- 12(11') Mentum with 1st and 2nd lateral teeth reduced and partially fused with the wide median tooth giving them a domed shape, the 6th lateral tooth reduced and may be absent in later instars; setal tufts short and difficult to see.*Cricotopus (C.) trifascia* Edwards



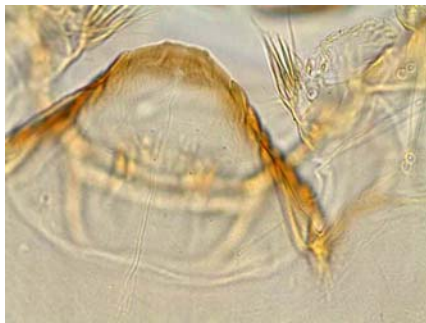
- 12' Mentum not as above, 6th lateral tooth well developed.13

- 13(12') Mentum triangular in outline, median tooth projecting forward, 1st lateral tooth partially fused to median tooth; not known from Ohio.
*Orthocladius (Symposiocladius) annectens* Sæther

13' Mentum with median tooth not projecting forward and 1st lateral tooth not partially fused.14

14(13') Mentum with median tooth about 4 times as wide as 1st lateral teeth; mandible with apical tooth longer than length of inner teeth together; setal tufts usually as long as half the length of the segment or longer; lentic habitats.....

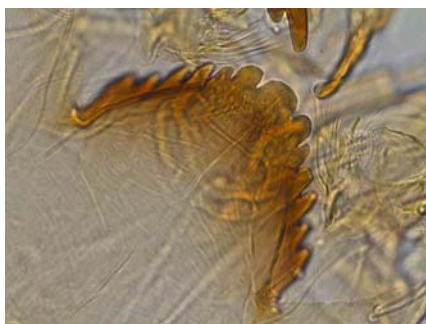
.....*Orthocladius (Symposiocladius) n. sp. 2*



14' Mentum with median tooth not as wide and mandible with the apical tooth not as long.15

15(14') Mentum with median tooth less than 2 times as wide as 1st lateral tooth.

.....*Cricotopus (C.) tremulus* group

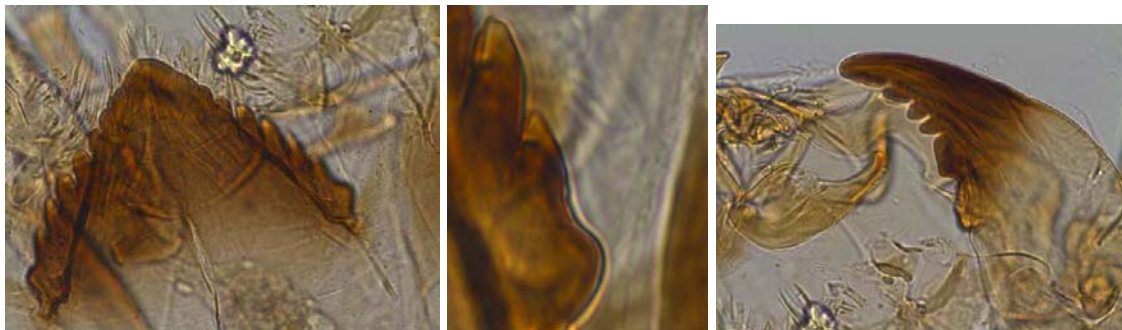


15' Mentum with median tooth about 3 times as wide as 1st lateral tooth.

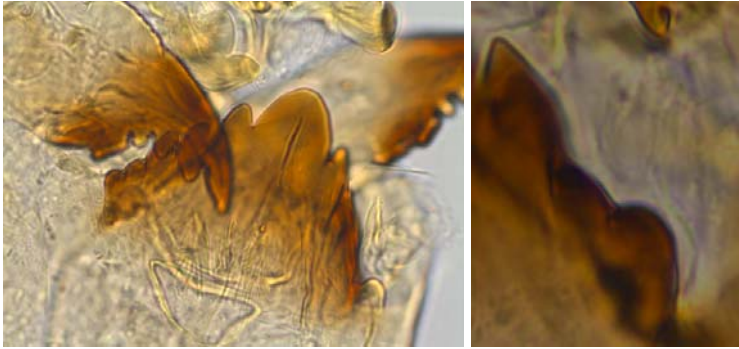
.....*Cricotopus (C.)* sp.



- 16(10') Labral S I simple; pecten epipharyngis fused into a single scale that is elongate with rounded projections in the middle and at both ends; antenna unusually short; adapted to mining leaves of macrophytes in lentic habitats.17
- 16' Labral S I bifid, pecten epipharyngis fused into a single triangular scale; antenna more normal length.....18
- 17(16) Head capsule elongate and wedge shaped; antenna very short, about 23 μ long; mentum with a squared off central part and the lateral teeth in about a straight line toward the posterior; so far found mining leaves of *Potamogeton crispus*.....
..... ***Cricotopus (Isocladius) flavipes* Johannsen**
- 17' Head capsule more normal shaped; antenna not as short, about 43 μ long; mentum more normal looking; not known from Ohio..... ***Cricotopus (Isocladius) elegans* Johannsen**
- 18(16') Mandible with molar area forming a squared off projection; lotic habitat.....19
- 18' Mandible with normal looking molar area; primarily lentic habitats.....20
- 19(18) Mentum with 6 lateral teeth, 1st lateral tooth partially fused to median tooth, last two teeth normal looking; ventromental plate normal.
..... ***Cricotopus (Isocladius) absurdus* (Johannsen)**



- 19' Mentum with 5 lateral teeth, 1st lateral tooth not partially fused, last two teeth deformed looking; ventromental plate with an anteriorly directed rounded lobe.....
 *Cricotopus (Isocladius) sp. near absurdus*

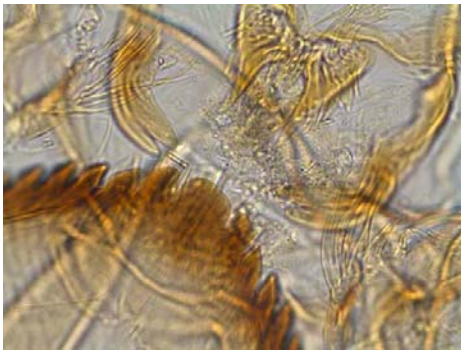


- 20(18') Premandible apically bifid..... *Cricotopus (Isocladius) sylvestris* group
 20' Premandible simple. **21**

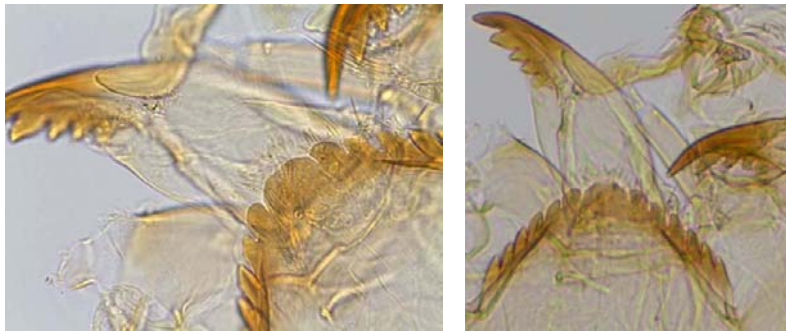
- 21(20') Setal tuft on abdominal segment VII with 20-50 setae.
 *Cricotopus (Isocladius) reversus* group
 21' Setal tuft on abdominal segment VII with about 10 setae.....
 *Cricotopus (Isocladius) intersectus* group

- 22(9') Mentum more convex in outline, usually only lightly to moderately colored. **23**
 22' Mentum more triangular in outline, moderately to darkly colored. **24**

- 23(22) Premandible apically bifid..... *Orthocladius (Orthocladius) oliveri* Sopenis



23' Premandible simple. *Orthocladius (Orthocladius) sp.*

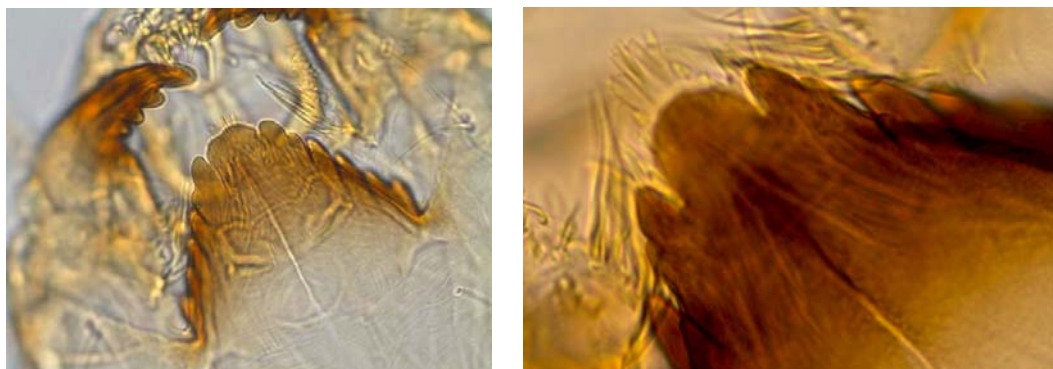


24(22') Abdominal L₄ unusually long, about ½ as long as segment, may be apically forked; lotic habitat. *Cricotopus (Cricotopus) luciae* LeSage & Harrison



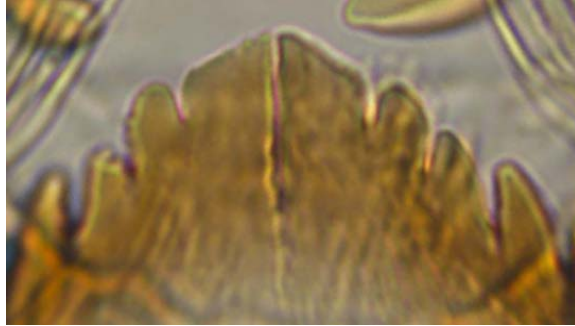
24' Abdominal L₄ normal length, less than 1/4 the segment length, not forked.25

25(24') Mentum strongly triangular in outline, very darkly colored, 2nd lateral tooth partially fused to 1st or absent; lotic habitat. *Paratrichocladius*

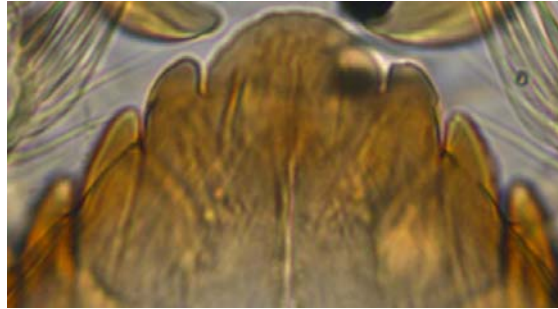
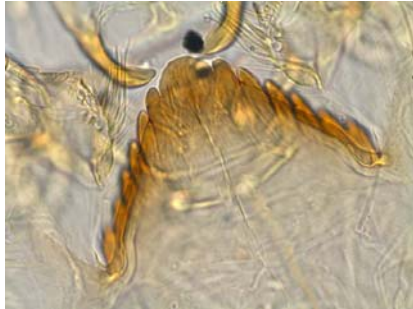


25' Mentum not as strongly triangular, not as darkly colored.26

26(25') Mentum with the 2nd lateral tooth lower, not in line with 3rd lateral, giving the appearance of a domed grouping of the median tooth and the first two lateral teeth; lotic habitat.....*Orthocladius (Orthocladius) carlatus* (Roback)



26' Mentum with 2nd lateral tooth in line with 3rd lateral; lentic and lotic habitats.....*Cricotopus (Cricotopus) politus* (Coquillett)



Nanocladius

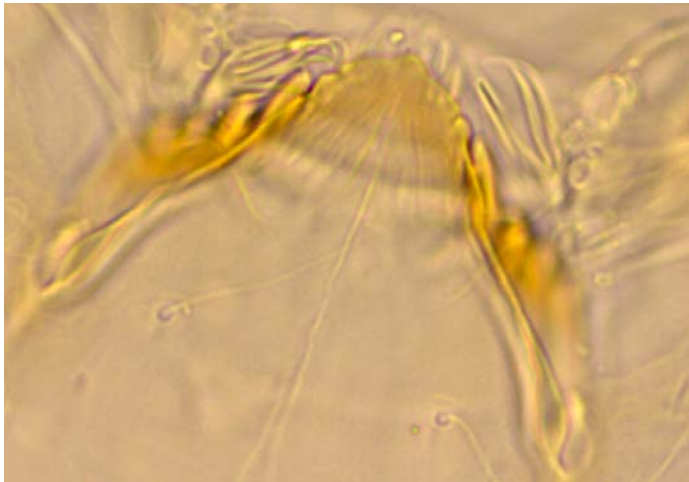
For additional keys and descriptions see Sæther (1977a), Simpson & Bode (1980) and Epler (2001).

- 1 Ventromental plates distinct but not elongate, extending to about the base of the mentum.....**2**
- 1' Ventromental plates elongate, extending distinctly beyond the base of the mentum.**4**
- 2(1) Anterior proleg claws weakly to moderately pectinate; antenna ratio usually greater than 1.5; on aquatic macrophytes in lentic habitats.
.....*Nanocladius (s.s.) alternantherae* Dendy & Sublette
- 2' Anterior proleg claws strongly pectinate; antenna ratio usually less than 1.5; phoretic on immature Perlidae (Plecoptera), *Corydalus* and *Nigronia* (Megaloptera), and *Argia* (Odonata).....**3**
- 3(2') Antenna ratio about 1.0; first antenna segment 30-40 μ long; parasitic on immature Perlidae (Plecoptera); not known from Ohio.
.....*Nanocladius (Plecopteracoluthus) branchicolus* Sæther
- 3' Antenna ratio 1.3-1.7; first antenna segment 50-60 μ long; phoretic on Perlidae (Plecoptera), *Corydalus* or *Nigronia* (Megaloptera), or *Argia* (Odonata).
.....*Nanocladius (Plecopteracoluthus) downesi* (Steffan)
- 4(1') Mentum with lateral teeth indistinct; ventromental plates extremely elongate; premandible with 3-5 apical teeth.**5**
- 4' Mentum with lateral teeth distinct; ventromental plates less elongate; premandible simple or weakly bifid.....**6**
- 5(4) Head capsule with postmental length greater than 130 μ ; ventromental plate with longitudinal ridges near proximal end; not known from Ohio.....
.....*Nanocladius (s.s.) poss. balticus* (Palmen)
- 5' Head capsule with postmental length less than 120 μ ; ventromental plates apparently smooth; within Ohio, known from a single pupa collected from a bog in Geauga Co.
.....*Nanocladius (s.s.) incomptus* Sæther

- 6(4') Ventromental plates oblong, lateral margins roughly parallel; anterior proleg claws either very weakly or strongly pectinate.7
- 6' Ventromental plates tear drop shaped; anterior proleg claws weakly to moderately pectinate.....*N. (s.s.) crassicornus*, *N. (s.s.) "rectinervis"* 9
(*N. crassicornus* and *N. "rectinervis"* can not be separated as larvae but can be separated by pupal characters.)
- 7(6) Anterior proleg claws strongly pectinate; antenna ratio 1.2-1.5; first antenna segment 34-43 μ long; lotic habitat.*Nanocladius (s.s.) spiniplenus* Sæther
- 7' Anterior proleg claws very weakly pectinate; antenna ratio ≥ 1.5 ; first antenna segment $\geq 40 \mu$ long.8
- 8(7') Ventromental plates narrow and heavily wrinkled; antenna ratio 1.7-2.0; first antenna segment 53-60 μ long..... *Nanocladius (s.s.) distinctus* (Malloch)
- 8' Ventromental plates not as narrow or heavily wrinkled; antenna ratio 1.5-1.8; first antenna segment 40-53 μ long.*Nanocladius (s.s.) minimus* Sæther
- 9(6') Pupal thoracic horn broad, oval shaped, length/width 2.0-2.2; lotic habitat.
.....*Nanocladius (s.s.) crassicornus* Sæther
- 9' Pupal thoracic horn elongate, digitiform, length/width 5.7-9.2; lotic habitat.
.....*Nanocladius (s.s.) "rectinervis (Kieffer)"* (sensu Simpson & Bode 1980)
(This species has been identified as *N. rectinervis* due to its similarity to the larva identified as *N. rectinervis* in Simpson & Bode (1980) and its similarity to the pupa of *N. rectinervis* in Sæther (1977). However, the larvae are different from those of *N. rectinervis* illustrated in Sæther (1977), Cranston (1982), and Wiederholm (1983).)

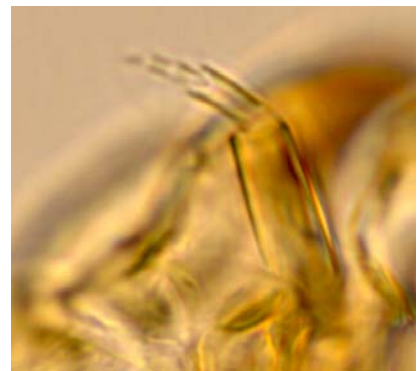
Parakiefferiella

- 1 Fourth antennal segment more than two times the length of segment three; S I bifid; ventromental plates relatively small; primarily lentic habitat.
 ***Parakiefferiella coronata* (Edwards)**



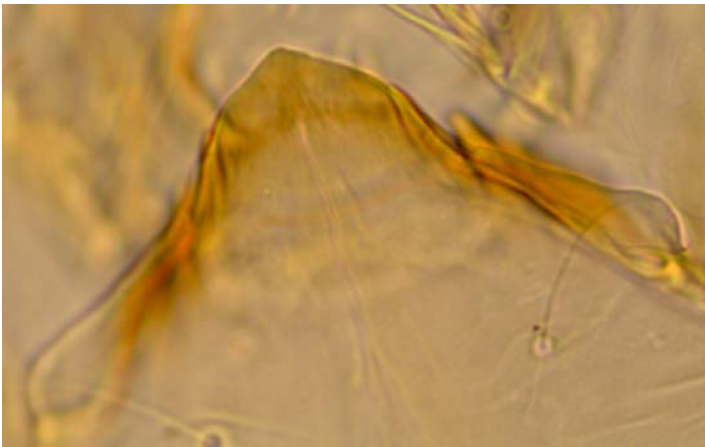
- 1' Fourth antennal segment less than two times the length of segment three; S I variable; ventromental plates relatively large; primarily lotic habitat. **2**

- 2(1') Mentum with median tooth not broad. ***Parakiefferiella n. sp. 1***
 (This taxon usually has pectinate S I setae, but some specimens have bifid S I which may be a different species.)



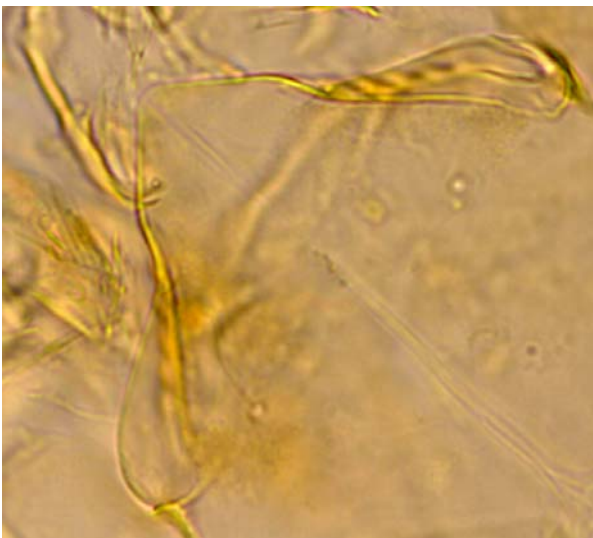
- 2' Mentum with median tooth broad and dome shaped. **3**

- 3(2') Mentum with a gap between first and second lateral teeth. *Parakiefferiella* n. sp. 2



- 3' Mentum without a gap between first and second lateral teeth. *Parakiefferiella* n. sp. 5

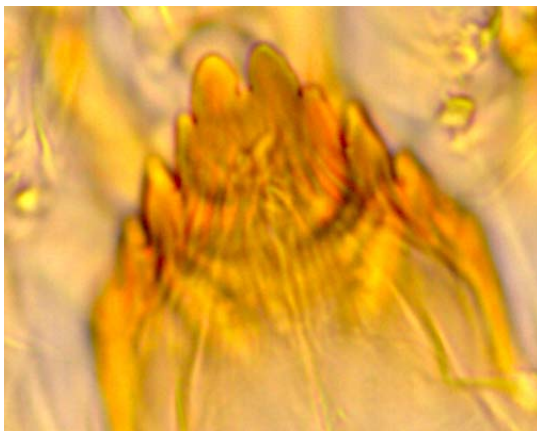
(This taxon was keyed in Epler, 2001 as *P.* sp. A)



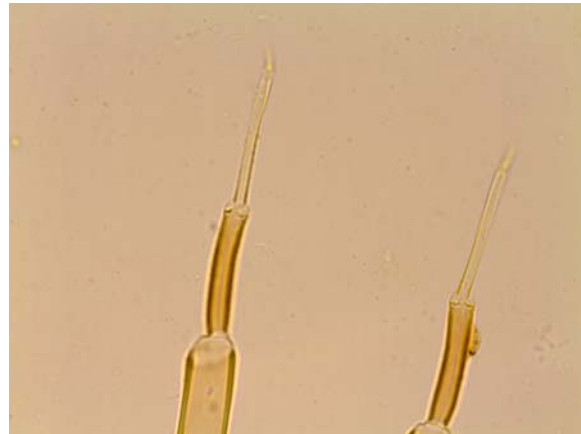
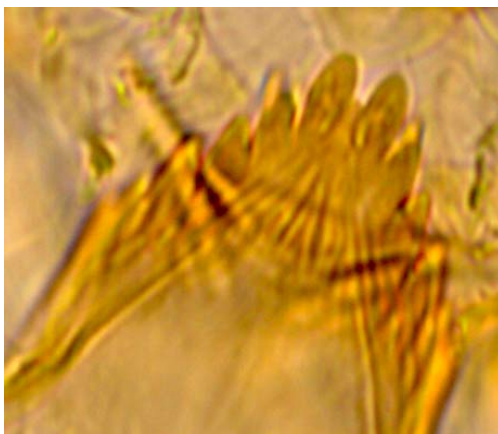
Thienemanniella

For additional keys and descriptions see Hestenes & Sæther (2000).

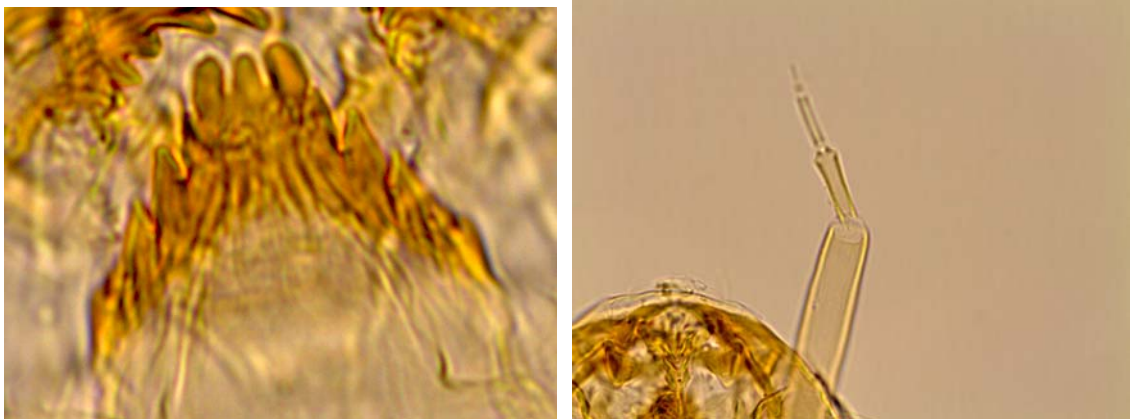
- 1 Mentum with 2 large median teeth, may have a minute central tooth.2
- 1' Mentum with 3 large median teeth.3
- 2(1) Mentum with a minute central tooth which is usually worn down, first lateral teeth partially fused to median teeth; antenna segment 3 about 0.5-0.7 as long as segment 2, segment 2 pale.***Thienemanniella lobapodema* Hestenes & Sæther**
 [This species was keyed and illustrated as *T. nr. fusca* (Kieffer) in Simpson and Bode (1980).]



- 2' Mentum without minute central tooth, first lateral teeth not partially fused to median teeth; antenna segment 2 and 3 about equal length, segment 2 brown.
***Thienemanniella boltoni* Hestenes & Sæther**

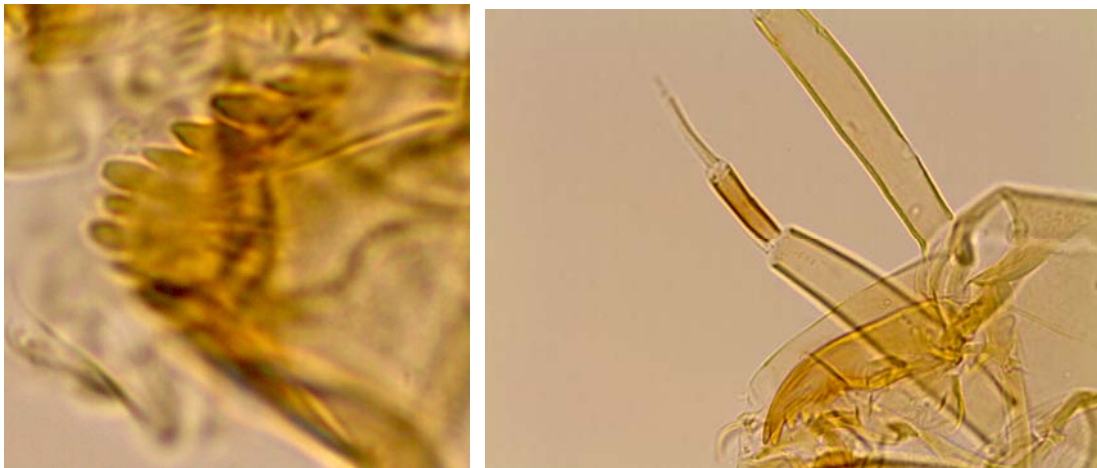


- 3(1') Antenna segment 3 about 0.5-0.7 as long as segment 2, segment 2 usually pale; mentum with central tooth only slightly shorter than lateral median teeth, first lateral teeth partially fused to median teeth. *Thienemanniella similis* (Malloch)



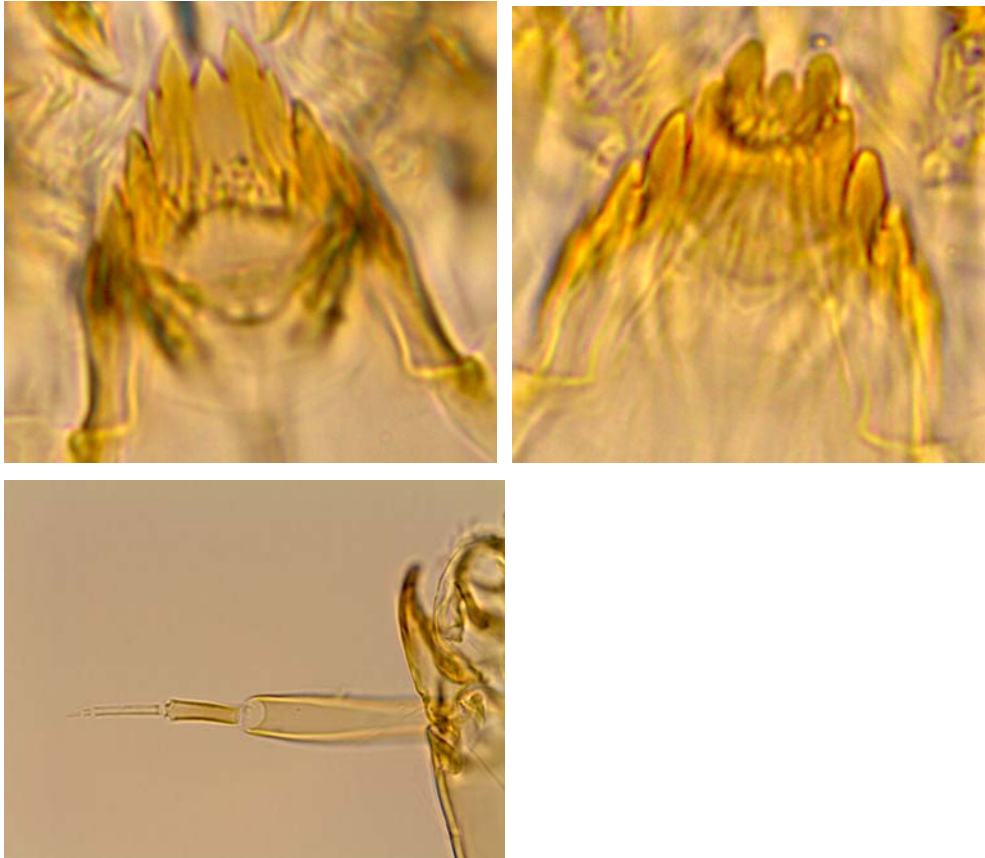
- 3' Antenna segment 2 and 3 about equal length, segment two light to dark brown; mentum variable. 4

- 4(3') Mentum with central tooth only slightly shorter than lateral median teeth, first lateral teeth not partially fused with median teeth; antenna segment 2 dark brown.
 *Thienemanniella xena* (Roback)



- 4' Mentum with central tooth distinctly shorter than lateral median teeth, first lateral teeth partially fused with median teeth; antenna segment 2 usually light brown.

.....*Thienemanniella taurocapita* Hestenes & Sæther



Ecology and Distribution: *Thienemanniella* have been collected from primarily lotic habitats. *T. boltoni* is restricted to springs and small spring fed streams. *T. taurocapita* has been collected from headwater streams to medium sized streams of about 550 sq. mi. drainage area. *T. xena* and *T. lobapodema* have been collected from headwater streams to rivers of drainage area of about 4000 and 6000 sq. mi., respectively. *T. similis* prefers larger streams with drainage areas greater than about 400 sq. mi. *Thienemanniella* are commonly collected from high quality streams. *T. xena* and *T. lobapodema* have the greatest ecological tolerance. *T. lobapodema* is tolerant of slow current and lake effect. *T. xena* is the most commonly collected species in Ohio and has been collected from streams impacted by municipal and industrial dischargers.

Chironomus

Modified from Oliver et al. (1983). Martin (2011) provided online information on the North American species based on chromosome analysis.

- | | | |
|-------|---|---|
| 1 | Eighth abdominal segment without ventral tubules, seventh abdominal segment without posterolateral tubules, larvae 30-60 mm long, mandible with 2 dark and 1 pale inner teeth, lentic habitat. | <i>Chironomus (s.s.) major</i> Wülker & Butler
(This larvae is a member of the <i>salinarius</i> group. <i>C. major</i> has been reported from SE US, the only specimens from Ohio I have seen came from the stomachs of Black Crappie caught in Buckeye Lake, Perry Co.) |
| 1' | Eighth abdominal segment with ventral tubules, body length usually less than 30 mm., other characters variable. | 2 |
| 2(1') | Ventral tubules longer than length of eighth abdominal segment. | 3 |
| 2' | Ventral tubules shorter than length of eighth abdominal segment. | 13 |
| 3(2) | Seventh abdominal segment with posterolateral tubules. | 4 |
| 3' | Seventh abdominal segment without posterolateral tubules. | 11 |
| 4(3) | Anterior margin of ventromental plate finely crenulate.
..... <i>Chironomus (s.s.) staegeri</i> group | 5 |
| 4' | Anterior margin of ventromental plate smooth. | 6 |
| 5(4) | Pecten epipharyngis with about equal sized teeth.
..... <i>Chironomus (s.s.) staegeri</i> Lundbeck | 5 |
| 5' | Pecten epipharyngis with distinctly unequal sized teeth.
..... <i>Chironomus (s.s.) crassicaudatus</i> Malloch | 5 |
| 6(4') | Larva more than 20 mm long, lentic habitat. | <i>Chironomus plumosus</i> group |
| 6' | Larva less than 20 mm long, lotic and lentic habitats. | 7 |

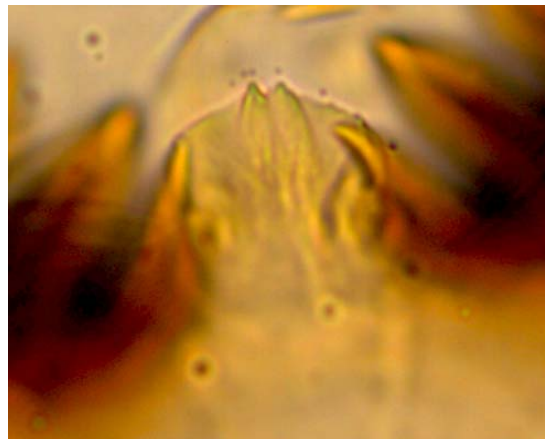
- 7(6') Pecten epipharyngis with unequal sized teeth, lentic habitat.
 ***Chironomus (Lobochironomus) dorsalis* (Meigen)**
- 7' Pecten epipharyngis with equal sized teeth, lotic and lentic habitats. **8**
- 8(7') Mentum with median tooth composed of 3 about equal sized lobes; premandible with 4 or 5 lobes; seventh abdominal segment with exceptionally long lateral tubules, as long as segment width; lentic habitat. ***Chironomus* sp. "Florida" (sensu Epler, 2001)**
 (This taxon has been collected from a wetland stream and a natural lake in NE Ohio.)
- 8' Mentum with a more typical trifid median tooth, premandible with the usual 2 apical lobes, lateral tubules shorter. **9**
- 9(8') Mandible with 2 dark and one pale inner teeth, ventral and lateral tubules not as long, lateral tubules may be poorly developed or absent, lotic and lentic habitats.
 ***Chironomus (s.s.) decorus* group**
 (Specimens without visible lateral tubules can be separated from the *C. riparius* group by the mandible having only 2 dark inner teeth compared to 3 dark inner teeth on the *C. riparius* group.)
- 9' Mandible with 3 dark inner teeth, ventral and lateral tubules unusually long, ventral tubules extend well past the posterior prolegs, lotic and lentic habitats. **10**
- 10(9') Head capsule with a central dark dorsal stripe, lotic and lentic habitats.
 ***Chironomus (s.s.) stigmaterus* Say**
 (*C. stigmaterus* has a distinctive pupa which has abdominal tergites 4-6 completely covered with highly sclerotized spiny ridges.)
- 10' Head capsule without a dark stripe, lotic habitat. ***Chironomus (s.s.)* sp. 1**
- 11(3') Pecten epipharyngis with unequal sized teeth, lentic habitat.
 ***Chironomus (Chaetolabis)* sp.**
- 11' Pecten epipharyngis with about equal sized teeth, lotic and lentic habitats. **12**
- 12(11') Larva \leq 15 mm long, mandible with 3 dark inner teeth (if only 2 dark and 1 pale teeth then identify specimen as *Chironomus decorus* group), lotic and lentic habitats.
 ***Chironomus (s.s.) riparius* group**
- 12' Larva $>$ 15 mm long, lentic habitat. ***Chironomus (s.s.) anthracinus* group**

- 13(2') Seventh abdominal segment with posterolateral tubules, lentic habitat.
 ***Chironomus (s.s.) semireductus* group**
- 13' Seventh abdominal segment without posterolateral tubules, lentic habitat.
 ***Chironomus (s.s.) halophilus* group**

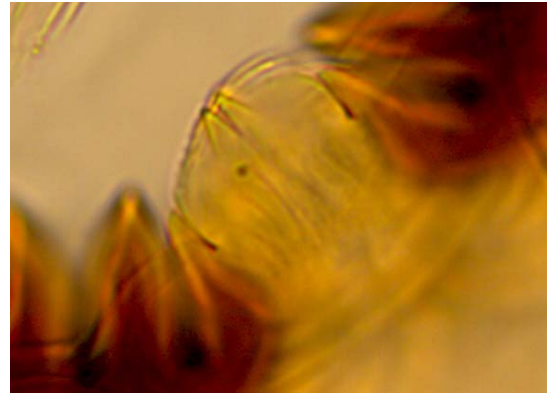
Cryptochironomus

For additional keys and descriptions see Curry (1958), Mason (1986) and Sæther (2009).

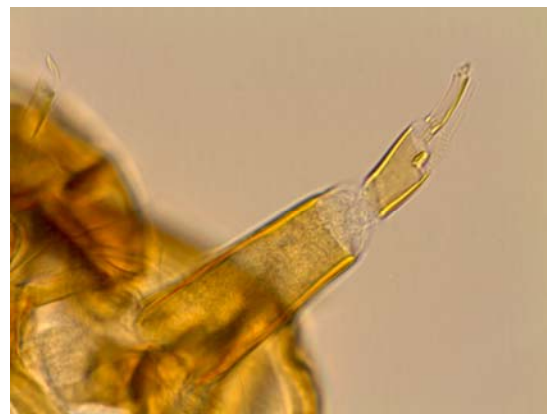
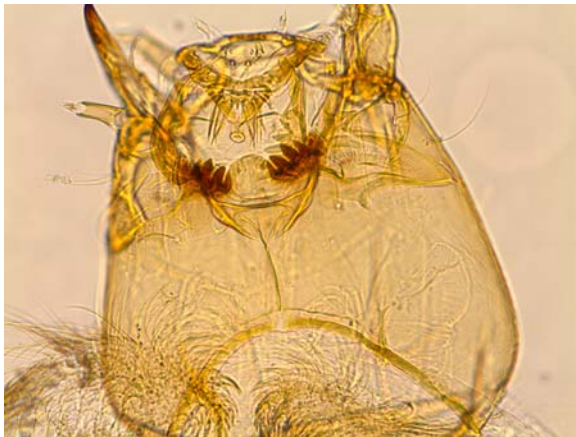
- 1 Apical tooth of mandible more than 2.6 the length of the inner teeth together, at least one of the inner mandible teeth blunt; median tooth of mentum with 2 small spines near center.**2**
 [Larvae with these characters have pupae with highly enlarged and modified cephalic tubercles. However, other species with similar cephalic tubercles that I've examined, i.e. *C. curryi* Mason and *C. fulvus* (Johannsen), do not have these larval characters.]
- 1' Apical tooth of mandible less than 2.6 the length of the inner teeth together, the inner mandible teeth pointed; median tooth of mentum without 2 small spines near center.**3**
- 2(1) Apical inner tooth of mandible blunt and basal inner tooth pointed.
 ***Cryptochironomus ponderosus* (Sublette)**



- 2' Both inner teeth of mandible blunt.***Cryptochironomus eminentia* Mason**
 [Curry's (1958) larval description of *C. blarina* Townes match the larvae of *C. eminentia*, however, I have not seen a verification of that association.]



- 3(1') Head capsule length greater than 0.4 mm, width of antenna segment 2 over twice as wide as segment 3.***Cryptochironomus psittacinus* (Meigen)**
 [This species *sensu* Townes (1945) was considered a synonym of *C. stylifera* (Johannsen) by Sæther (1977a, 2009), however, Ohio larvae do not match the description in Sæther (2009) and Langton & Coffman (in prep.) considered the pupae conspecific with *C. psittacinus*, so the use of *C. psittacinus* is for now retained.]

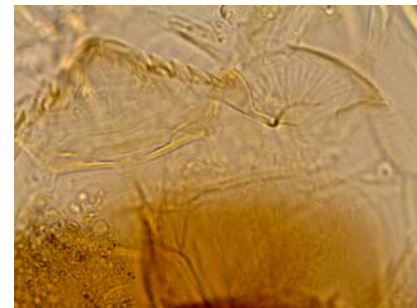
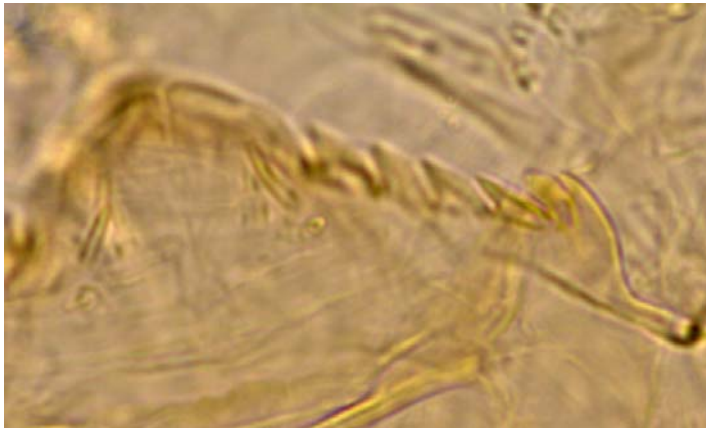


- 3' Head capsule length less than 0.4 mm, antenna segments variable.
 other ***Cryptochironomus***

Cryptotendipes

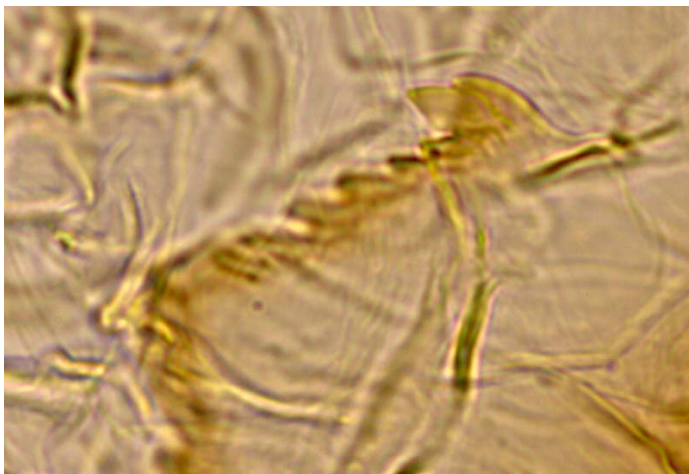
For additional keys and descriptions see Sæther (2010).

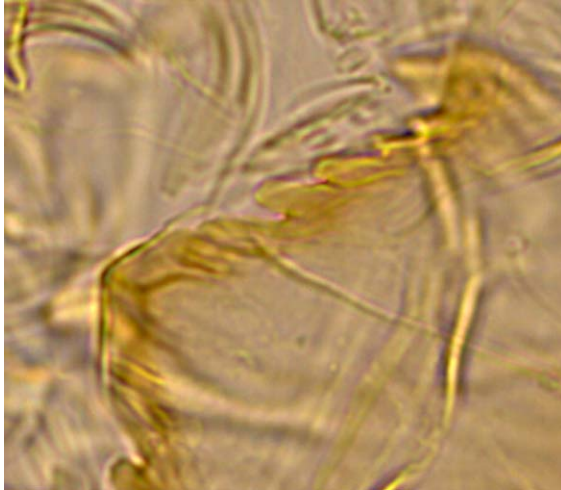
- 1 Mentum with lateral two teeth only slightly higher than adjacent lateral teeth.
 ***Cryptotendipes pseudotener* (Goetghebuer)**



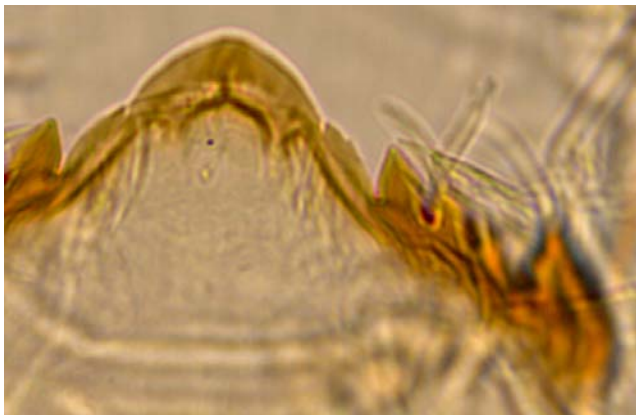
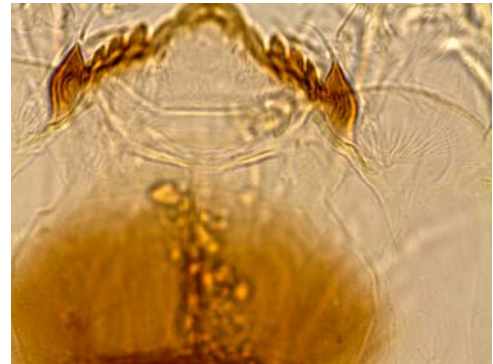
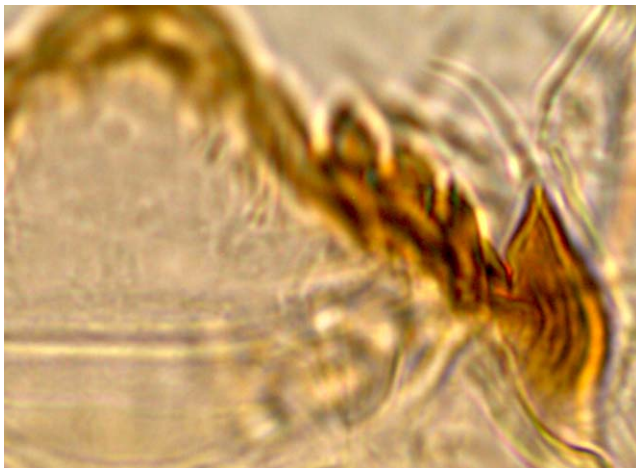
- 1' Mentum with lateral two teeth (especially the penultimate tooth, the last tooth is reduced and partially fused) considerably higher than adjacent lateral teeth. **2**

- 2(1') Mentum with the third most lateral tooth in line with the fourth most lateral tooth; first lateral tooth narrow; posterior fourth of head capsule dark. ***Cryptotendipes* sp. 1**





2' Mentum with the third most lateral tooth considerable shorter than the fourth most lateral tooth; first lateral tooth broad; head capsule with dark area restricted to the gular area. *Cryptotendipes* sp. 2



Parachironomus

- 1 Labral SI with lateral projections; median tooth of mentum bifid (simple in early instars); premandible with 3 or 4 large teeth; within Ohio, usually found in association with colonies of the bryozoan *Plumatella*.*Parachironomus frequens* group **2**
- 1' Labral SI simple; other characters variable, but not in above combination.**3**
- 2(1) Premandible with 4 large teeth; mentum with 1st lateral tooth extending as far forward or a little beyond the 2nd lateral. *Parachironomus frequens* (**Johannsen**)
- 2' Premandible with 3 large teeth; mentum with 1st lateral tooth not extending as far forward as the 2nd lateral.*Parachironomus pectinatellae* (**Dendy & Sublette**)
- 3(1') Mentum with median tooth weakly notched medially, 1st lateral tooth lower than 2nd lateral; head capsule entirely pale, with no parts darkened; ventromental plate with strong recurved striae posterolaterally; premandible with only a subapical notch; lentic habitat, associated with curly leaf pondweed (*Potamogeton crispus*).
.....*Parachironomus* **poss. vitiosus** **Goetghebuer**
- 3' Mentum with median tooth simple, 1st lateral tooth at same level or higher than 2nd lateral; other characters variable.**4**
- 4(3') Mentum with median tooth dome shaped and along with 1st and 2nd laterals projecting above the other teeth; head capsule entirely pale, with no parts darkened; premandible with three large apical teeth (may be only weakly devided); collected from an impounded portion of a small stream.*Parachironomus* **sp. B** (**sensu Sæther 1977b**)
- 4' Mentum with the median tooth apically peaked or pointed; head capsule with at least portions of the mentum and mandible darkened; premandible apically bifid.**5**
- 5(4') Pecten epipharyngis with 3 points**6**
- 5' Pecten epipharyngis with 5-11 points.**8**
- 6(5) Lateral margin of mentum smooth; ventromental plate with recurved posterolateral striae well developed. *Parachironomus* "**abortivus**" (**sensu Simpson & Bode 1980**)

- 6' Lateral margin of mentum with fine serrations (may be weak or difficult to see in some specimens); ventomental plate with recurved posterolateral striae weakly developed or absent.....7
- 7(6') Second antennal segment 3/4 to slightly shorter than antennal segments 3 through 5, 3rd antennal segment shorter than 4th; ventomental plate with anterior crenulations pointed.
..... *Parachironomus carinatus* (Townes)
- 7' Second antennal segment about 1/2 length of antennal segments 3 through 5, 3rd and 4th segments about equal length; ventomental plate with anterior crenulations rounded.....
..... *Parachironomus directus* (Dendy & Sublette)
- 8(5') Mentum with median 3 teeth about the same width and height and project above the other lateral teeth, the lateral most tooth usually with anterior serrations; ventomental plate with unusually well developed recurved posterolateral striae that extend under most of the width of the structure; premandible with only weakly developed bifurcation. .
..... *Parachironomus potamogeti* (Townes)
- 8' Mentum with median tooth wider than 1st lateral and not forming a group that projects above other laterals, the lateral most tooth without anterior serrations; ventomental plate with more typically developed recurved posterolateral striae that extend a shorter distance under the structure; premandible with well developed bifurcation.
..... other *Parachironomus*
(Species that key here are all very similar looking and probably can not be separated with certainty. Several species (*P. hirtalatus* (Beck & Beck) and *P. tenuicaudatus* (Malloch)) have the penultimate tooth of the mentum higher than the adjacent teeth and would key to *P. hirtalatus* (Beck & Beck) in Simpson and Bode (1980). Other species that key here but don't necessarily have the penultimate tooth higher than the adjacent teeth are *P. hazilriggi* Spies and *P. "Bolton"* (sensu Spies 2000)).

Parachironomus species known to occur in Ohio but have not been positively associated with larvae:

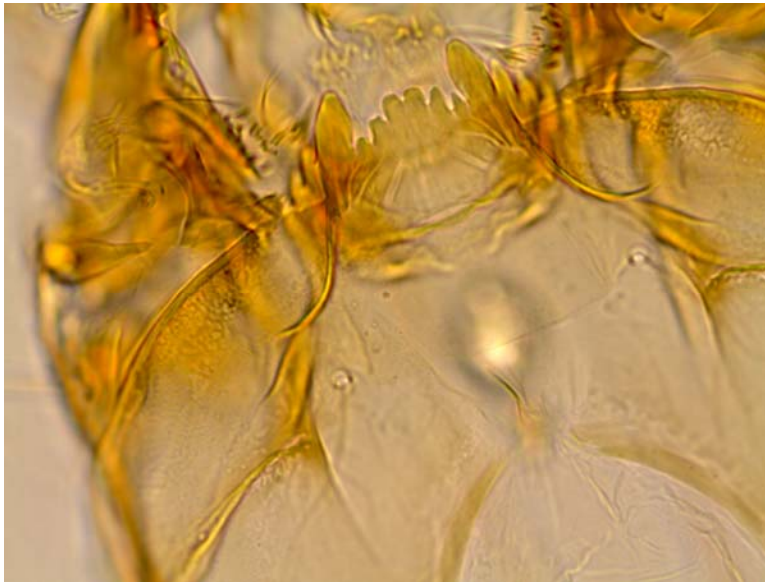
Parachironomus abortivus (Malloch)

Parachironomus chaetoalus (Sublette)

Parachironomus parilis (Walker)

Paratendipes

- 1. Ventromental plates unusually wide; mentum with the median 2 teeth higher than next 2 adjacent teeth. *Paratendipes basidens* Townes

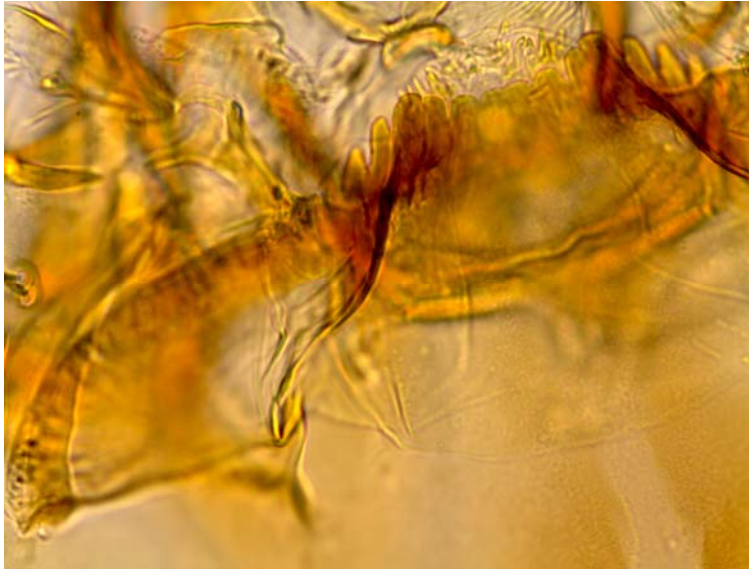


- 1' Ventromental plates less wide; mentum with the median 2 teeth not higher than next 2 adjacent teeth. 2

- 2(1') Mentum with the 1st lateral tooth as high or higher than the 4 median teeth; ventromental plates not triangular shaped.
 *Paratendipes albimanus* (Meigen), *Paratendipes duplicatus* (Johannsen)



Paratendipes albimanus



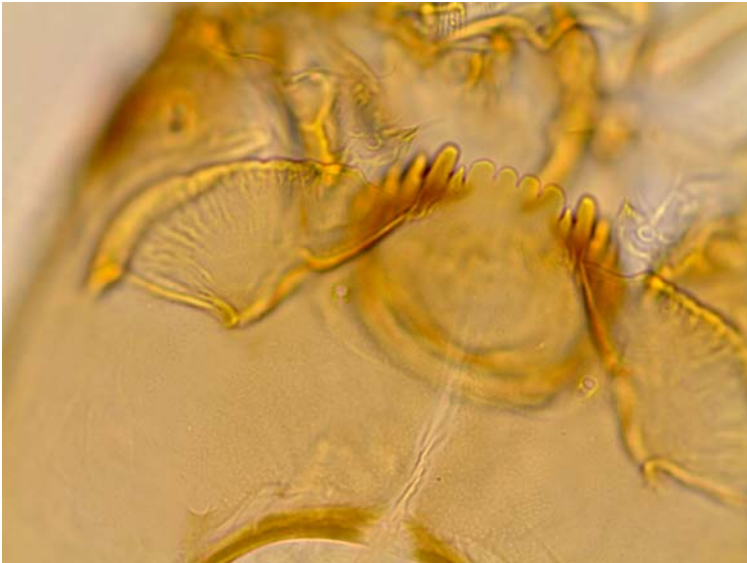
Paratendipes duplicatus

2' Mentum with the 1st lateral tooth lower than the 4 median teeth; ventromental plates triangular shaped. 3

3(2') Mentum with 2nd lateral tooth substantially higher and wider than median teeth; collected from lentic habitats in Ohio. *Paratendipes subaequalis* (Malloch)



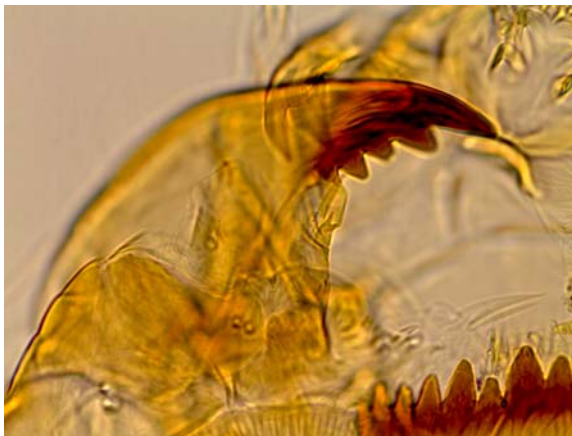
- 3' Mentum with 2nd lateral tooth only slightly higher and wider than individual median teeth; collected from lotic habitats in Ohio. ***Paratendipes* sp. 1**



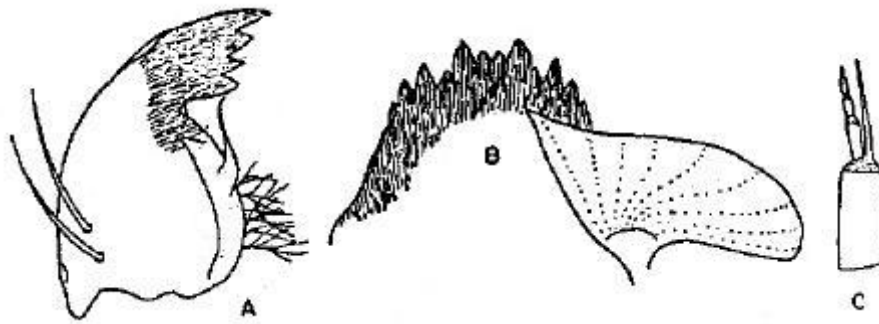
Endochironomus, Phaenopsectra, Sergentia, Synendotendipes, and Tribelos

This key includes the Chironomini with plumose labral S I, five segmented antenna, mentum with even number of teeth in the characteristic pattern of the median four teeth extending beyond the laterals and the median two usually lower than the first laterals, and the ventromental plates with the median ends produced anteriorly and intersecting the mentum between the first and second lateral teeth. For additional keys and descriptions see: Grodhaus (1987a, 1987b).

- 1 Labral S I triangular and plumose only on inner side.2
- 1' Labral S I plumose on both sides4
- 2(1) Lauterborn organs unusually large and extend at least half the length of A₃; anterior margin of the cardo (area of head capsule integument adjacent to the maxilla) not tuberculate; median teeth of mentum not partially fused; ventromental plates not as elongate; inhabits forested depressional wetlands in Ohio.....***Synendotendipes* sp. 1**
(The larva of this taxon is similar to *S. luski* Grodhaus except the mandible has only 3 inner teeth instead of 4 and the Lauterborn organs are unusually large.)



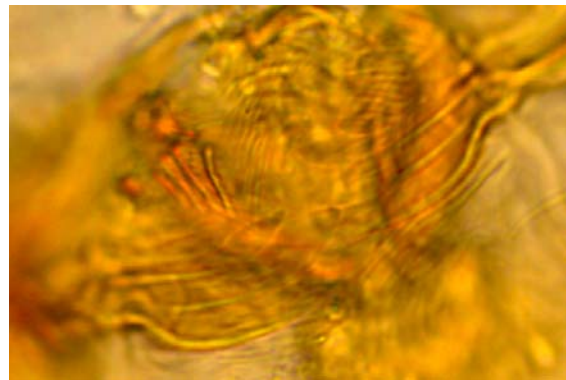
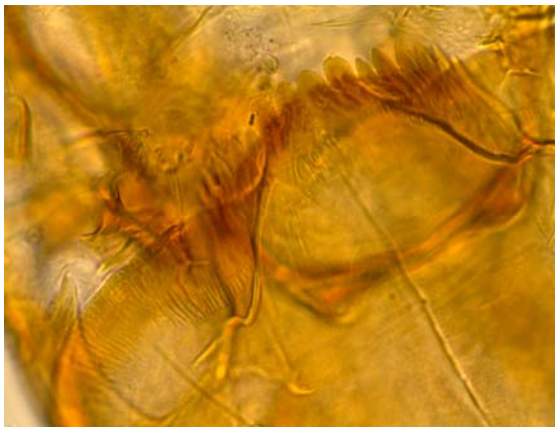
- 2' Lauterborn organs not unusually large and extend at most to half the length of A₃; anterior margin of the cardo tuberculate, median teeth of mentum partially fused; ventromental plates unusually elongate.....**3**
- 3 (2') Mentum with darkened area extending posterior of the base of teeth, 2nd lateral tooth usually distinctly shorter than 3rd; primarily lentic habitats.
.....*Endochironomus nigricans* (Johannsen)
- 3' Mentum with the darkened area not extending much past the base of the teeth, 2nd lateral tooth about as long as 3rd; primarily lentic habitats, known from only adults in Ohio.
.....*Endochironomus subtendens* (Townes)
- 4(1') Mandible with large notch at base of inner teeth; mentum with lateral two teeth absent and that portion slumping away.**5**
- 4' Mandible without notch; mentum with the usual 16 teeth.**6**
- 5(4) Mandible with a moderately deep notch; mentum with the lateral area moderately reduced; depositional areas of lotic habitats.....*Phaenopsectra flavipes* (Meigen)
- 5' Mandible with an extremely deep notch; mentum with lateral area extremely reduced and slumping away; lentic and depositional areas of lotic habitats.....
.....*Phaenopsectra punctipes* (Wiedemann)

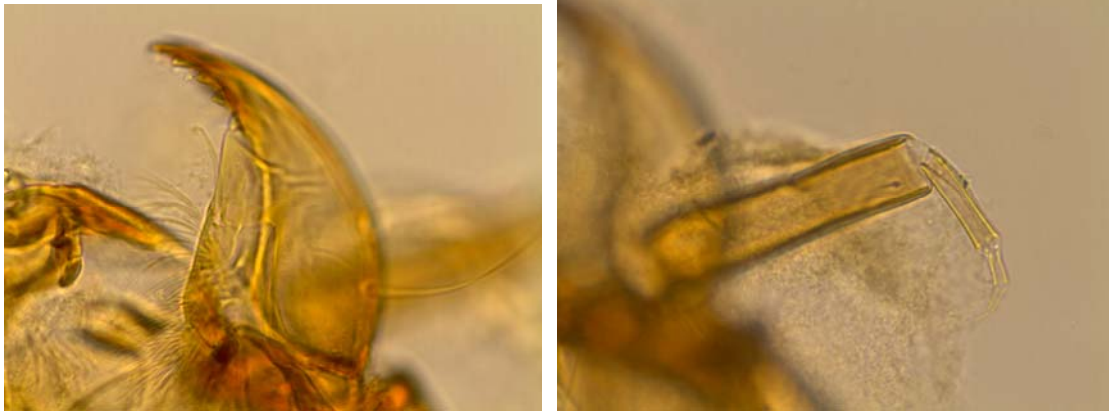


Figures from Roback (1953), used with permission from the publisher.

- 6(4') Mandible with four inner teeth; mature larvae at least 12 mm long; inhabits the sublittoral and profundal of oligotrophic to mesotrophic lakes; not known from Ohio.....
.....*Sergentia*

- 6' Mandible with three inner teeth; mature larvae usually less than 13 mm long.....7
- 7(6') Distance from basal notch of inner mandibular teeth to insertion of seta subdentalis at least $\frac{3}{4}$ distance from basal notch to apical notch of inner teeth; mentum with median teeth the same height or only slightly shorter than 1st laterals.8
 (*Tribelos* has traditionally been separated from *Phaenopsectra* by the presence of a distinctly separated clypeus. However, *T. fuscicorne* and *T. jucundum* are the only Nearctic species with a distinctly separated clypeus. The other species have various gradations of a clypeal suture that are similar to the condition in some *Phaenopsectra*.)
- 7' Distance from basal notch of inner mandibular teeth to insertion of seta subdentalis less than $\frac{3}{4}$ distance from basal notch to apical notch of inner teeth; mentum with median teeth usually distinctly shorter than 1st laterals.....9
- 8(7) Premandible with 3 teeth, two large apicals and one small lateral; mentum with 2nd lateral tooth distinctly shorter than 3rd; depositional areas of lotic habitats.
***Phaenopsectra obediens* (Johannsen)**
- 8' Premandible with 4 teeth; mentum with 2nd lateral tooth only slightly shorter than 3rd; known from a single larva from a small stream in SE Ohio. ***Phaenopsectra* sp. 1**

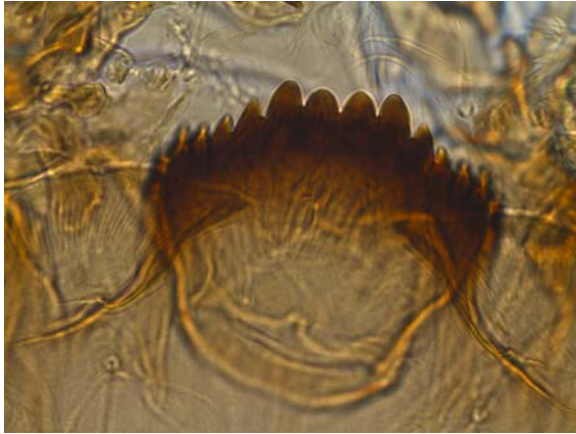




- 9(7') Third antennal segment only as long as wide and completely surrounded by Lauterborn organ; mature larvae with the antennal blade much longer than flagellum; lentic and depositional areas of lotic habitats. ***Tribelos jucundum* (Walker)**
- 9' Third antennal segment distinctly longer than wide; antennal blade not distinctly longer than flagellum. **10**
- 10(9') The 2nd lateral tooth distinctly shorter than the 3rd; ventromental plate with distinct striae across face of plate; depositional areas of lotic habitats. ***Tribelos fuscicorne* (Malloch)**
- 10' The 2nd lateral tooth as long or longer than 3rd; ventromental plate with striae indistinct in middle of plate; inhabits vernal pools. ***Tribelos atrum* (Townes)**

5' Mentum with first lateral teeth higher than median and second lateral teeth, mentum arch shaped; lotic habitat; parasitoid of hydropsychid caddisfly pupae.

..... *Polypedilum (s.s.) sp. 1*



6(4') Mentum with central 4 or 6 teeth higher than lateral teeth; lotic habitat.

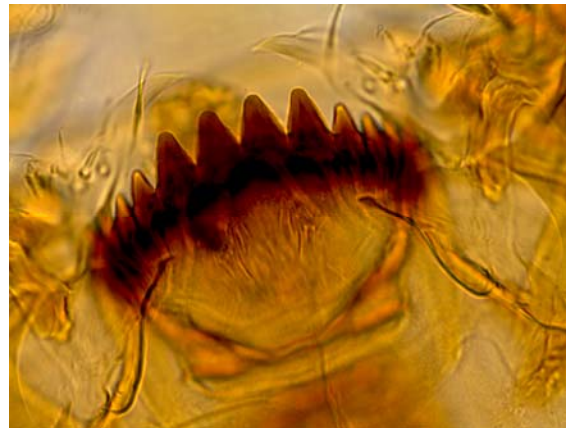
..... *Polypedilum (s.s.) laetum* group 7

6' Mentum with teeth about equal height except second lateral teeth are slightly higher than adjacent teeth; lentic habitat. .. *Polypedilum (Pentapedilum) epleri* Oyewa and Jacobsen

7(6) Mentum with central 4 teeth higher and wider than lateral teeth.

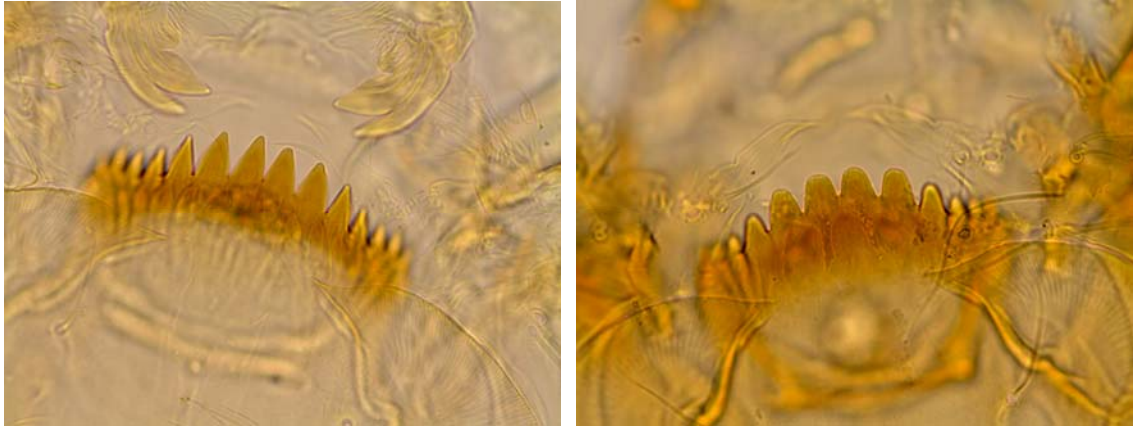
..... *Polypedilum (s.s.) sp. 3*

[This taxon was keyed by Epler (2001) as *P. laetum*. However, Maschwitz & Cook's (2000) illustration has the central 6 teeth higher than the lateral teeth. This taxon has been infrequently collected from small streams in southern Ohio]



- 7' Mentum with central 6 teeth higher than the lateral teeth.
 ***Polypedilum (s.s.) laetum* group**

(All of my adult male rearings of this taxon have been *P. (s.s.) tuberculum* Maschwitz.)



- 8(1') Ventromental plate with well developed posterolateral lobe. **9**
 8' Ventromental plate without well developed posterolateral lobe. **10**

- 9(8) Mentum with first lateral teeth only slightly lower than second lateral tooth; antennal segment 2 about twice as long as segments 3, 4, and 5 together; small, cool lotic habitat.
 ***Polypedilum (Uresipedilum) aviceps* Townes**

- 9' Mentum with first lateral teeth distinctly lower than median and second lateral teeth; antennal segment 2 about as long as segments 3, 4, and 5 together; lotic habitat.
 ***Polypedilum (Uresipedilum) flavum* (Johannsen)**

[This species until recently was referred to as the Palearctic species *P. convictum* (Walker). I agree with Boesel (1985) that *P. flavum* (as *P. convictum*) and *P. obtusum* Townes should be synonymized due to the similarity of their immature stages and that there is a continuum in the width of the anal point.]

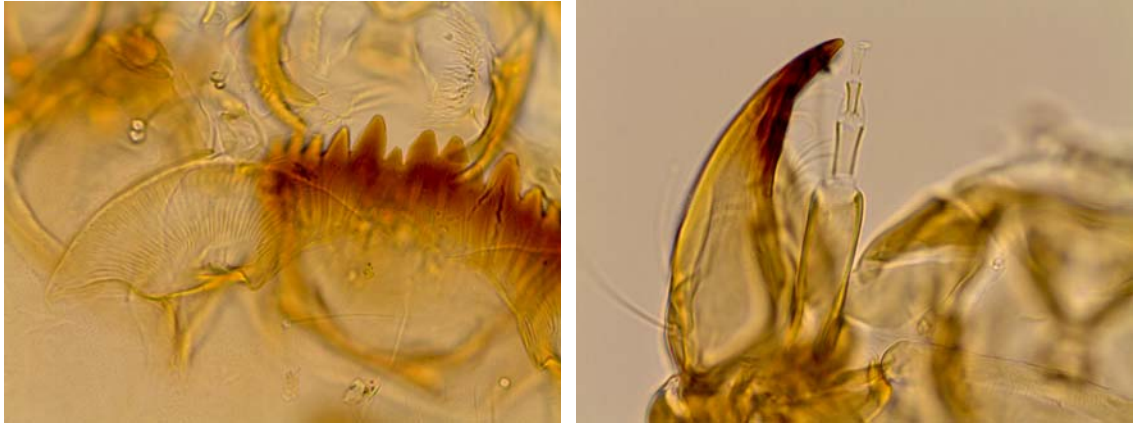
- 10(8') Mentum with 1st lateral tooth only slightly lower than median and 2nd lateral teeth.
 ***Polypedilum (Pentapedilum) sordens* (van der Wulp)**
 10' Mentum with 1st lateral tooth distinctly lower than median and 2nd lateral teeth. **11**

- 11(10') Antennal segment 3 very short, not as long as wide, antennal segment 5 weakly developed and may be indistinct; ventromental plates wide, width greater than 4 times the distance between the plates. **12**
- 11' Antennal segment 3 longer than wide, antenna always with 5 distinct segments; ventromental plates variable. **13**
- 12(11) Antennal segment 3, 4, and 5 very short, segment 4 about 2 times as long as segment 3; lentic and lotic habitats. ***Polypedilum (Tripodura) scalaenum* group**
- 12' Antennal segment 4 about 4-5 times longer than segment 3; lentic and lotic habitats.
..... ***Polypedilum (Tripodura) halterale* group**
- 13(11') Width of ventromental plates ≤ 2 times the distance between the plates.
.....***Polypedilum (s.s.) illinoense* group** **14**
(Some members of the *P (s.s.) illinoense* group are difficult to separate and should be verified with reared pupal and adult specimens.)
- 13' Width of ventromental plates greater than 2 times the distance between the plates.**18**
- 14(13) Mentum with median teeth distinctly lower than second lateral teeth; associated with the floating leaves of pondweed (*Potamogeton*) in primarily lentic habitats.
..... ***Polypedilum (s.s.) bergi* Maschwitz**
[I have seen a larva from a bog area in Ohio which has distinctly lower median teeth but with 6 lateral teeth instead of 7 as in *P. bergi*. This may be the same taxa Epler (2001) keyed as *P. bergi* but is now calling "*Polypedilum* sp. Florida".]
- 14' Mentum with median teeth about the same height as second lateral teeth; various habitats. **15**
- 15(14') Mentum with median teeth slightly lower than second lateral teeth; primarily lentic habitats.
..... ***Polypedilum (s.s.) falciforme* Maschwitz and *P. (s.s.) nymphaeorum* Maschwitz**
- 15' Mentum with median teeth slightly higher than second lateral teeth; lentic or lotic habitats. **16**

- 16(15') Lauterborne organs reaching to the apex of antennal segment 3; lotic habitat.
 *Polypedilum (s.s.) ophioides* Townes
- 16' Lauterborne organs reaching to about mid part of antennal segment 3. **17**
- 17(16') Antennal segment 3 and 4 about equal in length; lentic and lotic habitats.
 *Polypedilum (s.s.) illinoense* (Malloch)
- 17' Antennal segments 3 usually distinctly shorter than segment 4; not known from Ohio.
 *Polypedilum (s.s.) angulum* Maschwitz
- 18(13') Mentum with 4th lateral tooth lower than 3rd and 5th; Lauterborn organs large and
 distinct; lentic habitat. *Polypedilum (s.s.) trigonus* Townes
- 18' Mentum with lateral teeth gradually decreasing in size; Lauterborn organs variable.**19**
- 19(18') Labral SI broad apically, with apical border of fine, short filaments; antennal Lauterborn
 organs indistinct; lentic habitat; not known from Ohio.
 *Polypedilum (s.s.) nubeculosum* (Meigen)
- 19' Labral SI lanceolate with lateral fringe of long, fine filaments; antennal Lauterborn
 organs variable.**20**
- 20(19') Ventromental plates broad, width ≥ 3.9 times the distance between the plates. **21**
- 20' Ventromental plates not as broad, width ≤ 3 times the distance between the plates.**22**

21(20) Antennal Lauterborn organs distinct; ventromental plate width 3.9-4.3 times the distance between the plates; known from a few small acidic streams in SE Ohio.

..... *Polypedilum (s.s.) sp. 2*



21' Antennal Lauterborn organs indistinct; ventromental plate width 4.1-4.8 times the distance between the plates; lentic habitats.

..... *Polypedilum (Pentapedilum) intuber Oyewo & Sæther*

22(20') Antennal segments 2, 3 and 4 about equal length or segment 4 slightly shorter than segments 2 and 3, Lauterborn organs indistinct; lentic and small acidic lotic habitats.

..... *Polypedilum (Pentapedilum) tritum (Walker)*

22' Antennal segment 3 distinctly shorter than segments 2 and 4, Lauterborn organs variable; cool lotic habitats. *Polypedilum (s.s.) albicorne (Meigen)*

TANYTARSINI

- 1 Ventromental plates nearly touching medially, separated by less than the width of the median tooth of the mentum. **2**
- 1' Ventromental plates widely separated, separated by greater than the width of the median three teeth of the mentum; larvae construct transportable tubes of sand or silt. **9**
- 2(1) Premandible bifid. **3**
- 2' Premandible with more than 2 teeth. **8**
- 3(2) Predicel of Lauterborn organ does not reach past the apical end of antenna segment 4. ... **4**
- 3' Predicel of Lauterborn organ reaches past the apical end of antenna segment 4. **5**
- 4(3) Pedicel of Lauterborn organ shorter than antennal segment 3; pecten epipharyngis with 3-6 simple elongate plates which are joined at their bases; lentic and lotic habitats.
..... *Paratanytarsus* (Part)
- 4' Pedicel of Lauterborn organ as long as antennal segment 3 but do not reach past the apical end of segment 4; pecten epipharyngis a single serrated plate that may have a couple deep incisions. *Rheotanytarsus*
- 5(3') Pedicel of Lauterborn organ 0.9-1.3 times as long as antennal segments 3-5 combined; mentum with the median and 1st lateral teeth about equal width and all reaching about the same level forward; mandible with a pronounced hump on outer margin about 1/3 from base; pecten epipharyngis variable. **6**
- 5' Pedicel of Lauterborn organ \geq 1.3 times as long as antennal segments 3-5 combined; mentum with the apices of the lateral teeth generally sloping away posteriorly from the median tooth; mandible without a pronounced hump on outer margin; pecten epipharyngis with 3 apically serrated plates. **7**
- 6(5) Pecten epipharyngis with 3 simple elongate plates; mentum with 11 teeth; lotic habitat. ...
..... *Sublettea*
[*Sublettea coffmani* (Roback) is the only known Nearctic species.]

- 6' Pecten epipharyngis with 3 apically serrated plates; the mentum with 9 or 11 teeth; known in Ohio from a few small high quality streams. ***Neozavrelia***
- 7(5') Pedestal of antenna with an apical spur; pedicel of Lauterborn organ longer than 2 times as long as antennal segments 3-5 combined. ***Micropsectra***
- 7' Pedestal of antenna without apical spur; pedicel of Lauterborn organ 1.3-1.7 times as long as antennal segments 3-5 combined. ***Paratanytarsus*** (Part)
[The only species that keys here, *Paratanytarsus longistilus* Bolton et al. (2010), inhabits cool streams; Epler (2001) keyed this species as *Micropsectra* sp. D.]
- 8(2') Lauterborn organs large, situated on pedicels which are shorter than antennal segments 3-5 combined; lentic and lotic habitats. ***Cladotanytarsus***
- 8' Lauterborn organs small, situated on pedicels which are usually as long or longer than antennal segments 3-5 combined; lentic and lotic habitats. ***Tanytarsus***
- 9(1') Lauterborn organs originating at different heights on antennal segment 2, one proximally and one distally; transportable tube straight sided and only slightly tapered; lentic and lotic habitats. ***Stempellinella, Zavrelia***
- 9' Lauterborn organs both originating from distal end of antennal segment 2; transportable tube curved and tapered. **10**
- 10(9') Antennal pedestal with conspicuous palmate process. **11**
- 10' Antennal pedestal with simple apical spur only. **12**
- 11(10) Antennal pedestal with a blade like process in addition to the palmate process; procercus highly developed into strongly sclerotized, apically palmate structure; spring habitat.
..... ***Neostempellina reissi* Caldwell**
[These larvae have historically been placed in *Stempellina*; Caldwell (2000) described *N. reissi* based on adult specimens; Caldwell et al. (2010) documented the association of the immature stages with *N. reissi* and describe them. Epler (2001) keyed this species as *Stempellina* sp. C.]
- 11' Antennal pedestal with only the palmate process; procercus at most only weakly developed into an apically palmate structure; lentic and lotic habitats. ***Stempellina***

- 12(10') Head capsule with the clypeal setae (S3) unusually large and highly branched or flattened with serrations along the edges; spring habitat. "***Constempellina***" **n. sp. 1**
 [These larvae have historically been placed in *Constempellina*, but the pupae more closely resemble *Neostempellina*. Epler (2001) keyed this taxon as *Constempellina* sp. A and B. A revised edition of the Holarctic manual (Wiederholm, 1983) will refer to this genus as Tanytarsini genus A.]
- 12' Head capsule with the clypeal setae (S3) of usual size and not highly branched; inhabits small mountain streams; not known from Ohio. ***Constempellina***

Nearctic genera not keyed:

Corynocera: reported from northern Nearctic.

Krenopsectra: associated larvae are not known for specimens reported from W. Canada. The revised edition of the Holarctic manual will place *Krenopsectra* as a junior synonym of *Micropsectra*.

Parasectra: associated larvae are not known for adult specimens collected from a mountain area in NC. The revised edition of the Holarctic manual will place *Parasectra* as a junior synonym of *Micropsectra*.

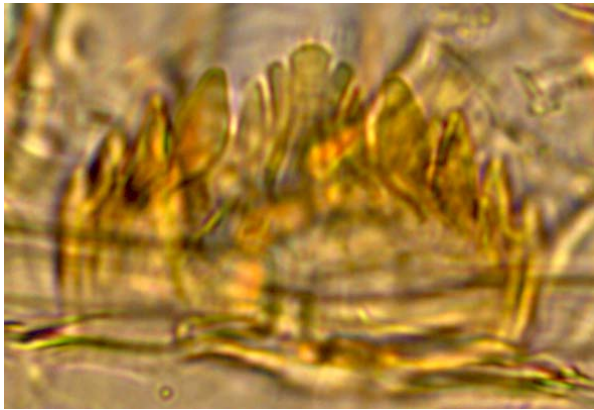
Pontomyia: a marine taxa only reported from Florida.

Skutzia: associated larvae are not known for adult specimens collected from a mountain seep in NC.

Cladotanytarsus

The species groups of Pinder and Reiss (1983) were retained in this key for convenience, even though similar groupings have not been found in the other life history stages.

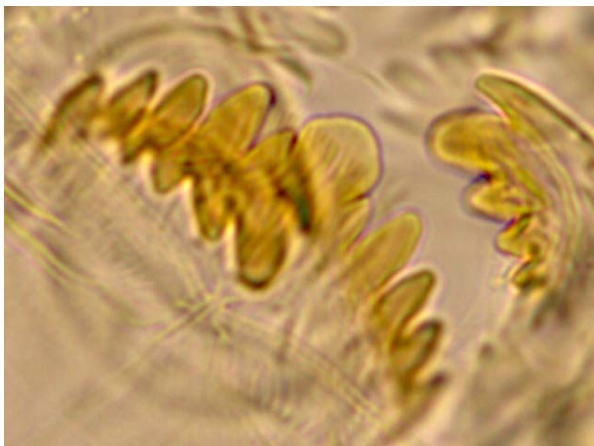
- 1 Mentum with first pair of lateral teeth very small and close to trifold median tooth, thus mentum appears to consist of a compound median tooth and 4 pairs of separate lateral teeth. ***Cladotanytarsus* species group A (sensu Pinder & Reiss 1983)**



- 1' Mentum not as above. **2**

- 2(1') Mentum with trifold median tooth and 4 pairs of lateral teeth. ***Cladotanytarsus* species group B**

(Make sure your specimen is not worn, otherwise a *C. species group A* could look like this taxon.)

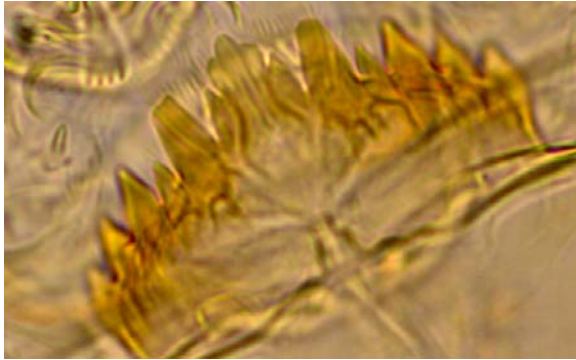


- 2' Mentum with at least 5 pairs of lateral teeth. **3**

- 3(2') Mentum with a more or less trifold median tooth and 5 lateral teeth. **4**

- 3' Mentum with the median tooth divided into 3 equal sized teeth and 5 lateral teeth. **6**

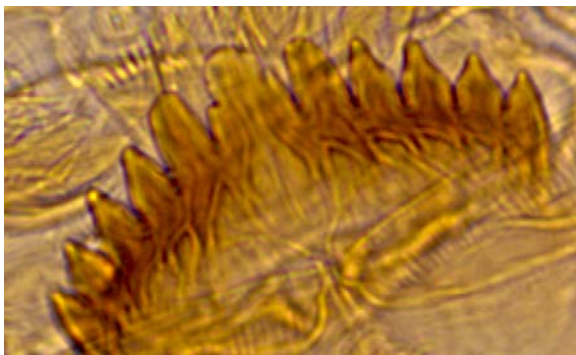
- 4(3) Mentum with second pair of lateral teeth smaller than adjacent teeth.
 ***Cladotanytarsus mancus* group (sensu Pinder & Reiss 1983)**



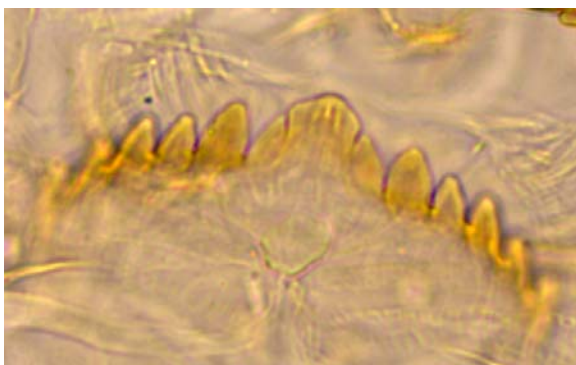
- 4' Mentum with teeth progressively diminishing in size laterally. **5**

- 5(4') Mentum with regular looking trifid median tooth.
 ***Cladotanytarsus vanderwulpi* (Edwards)**

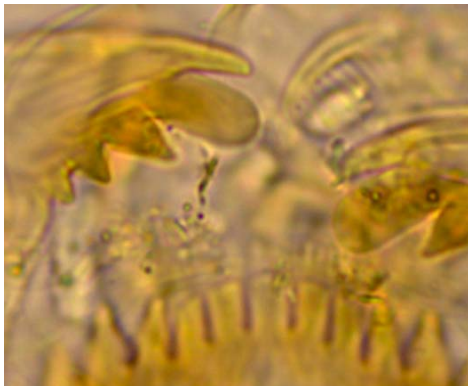
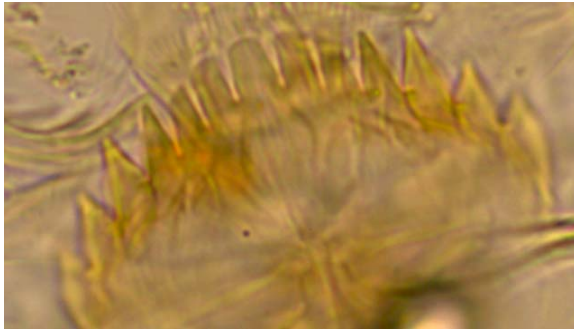
[The larvae of this species are similar to *C. sp. A* (sensu Epler, 2001) except the mandible usually has three inner teeth and the gular area is not dark, and to *C. acornutus* Jacobsen & Bilyj, 2007, except that the AR is 1.05-1.18 compared to 0.58-0.74.]



- 5' Mentum with wide dome shaped trifid median tooth.
 ***Cladotanytarsus vanderwulpi* group species 2**



- 6(3') Antenna with Lauterborn organs on long pedicels, Lauterborn organs extend beyond last antenna segment; mentum with the tri-lobed median tooth and first lateral teeth form a gentle arch with the first lateral teeth shorter and about the same width as the adjacent lobe of the median tooth. ***Cladotanytarsus vanderwulpi* group species 5**
(Epler, 2001 keyed this taxon as *C. sp. C.*)

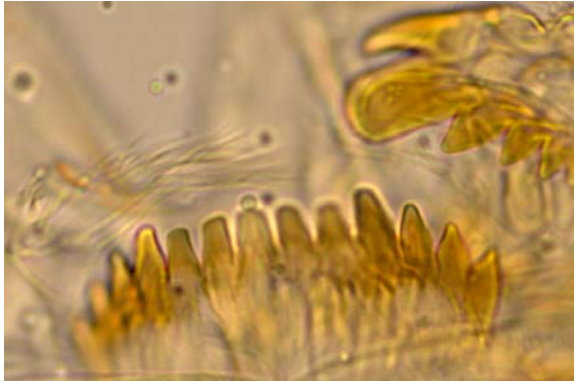


- 6' Antenna with Lauterborn organs on short pedicels, Lauterborn organs do not extend beyond last antenna segment. **7**

7(6') Mandible with expanded and rounded apical tooth; mentum with the tri-lobed median tooth and first lateral teeth all about the same width and height.

..... ***Cladotanytarsus vanderwulpi* group species 3**

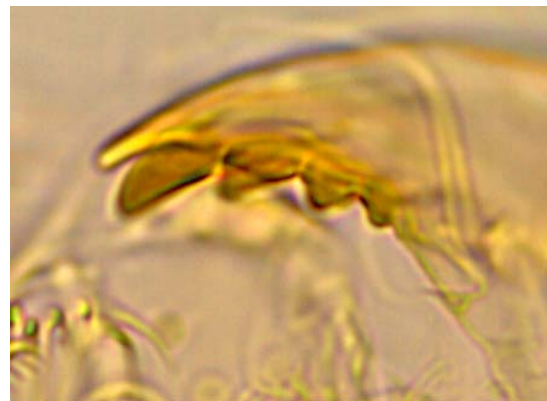
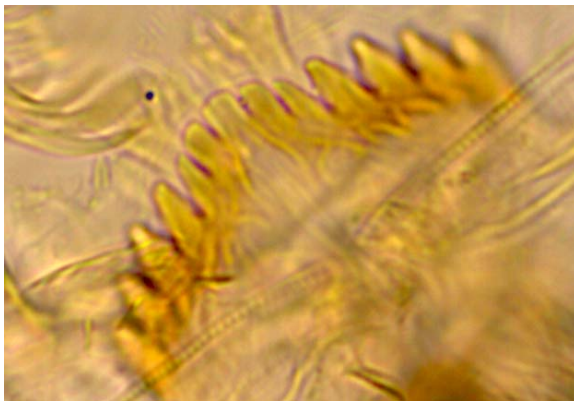
(Epler, 2001 keyed this taxon as *C. cf. daviesi*.)



7' Mandible with pointed apical tooth; mentum with the tri-lobed median tooth and first lateral teeth form an arch with the first lateral teeth shorter and thinner.

..... ***Cladotanytarsus vanderwulpi* group species 4**

(Epler, 2001 keyed this taxon as *C. sp. H.*)



Neozavrelia

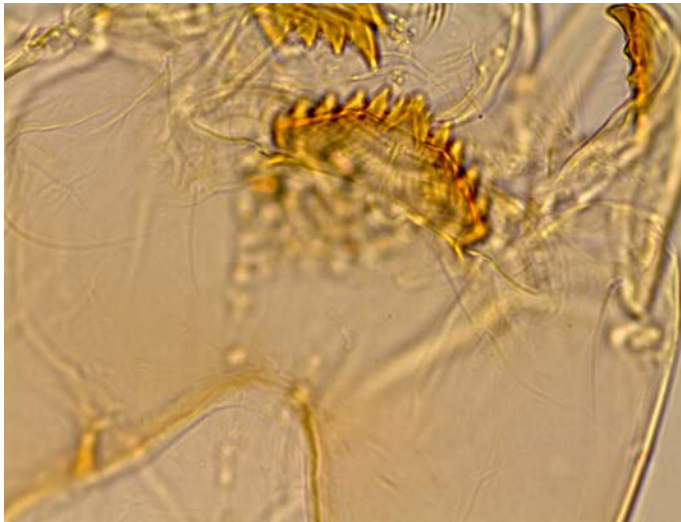
- 1 Mentum with 9 teeth (a minute 5th pair is sometimes evident), 2nd lateral tooth projecting about as far forward as the median three teeth; antenna with pedicel of Lauterborn organ about 1.1 times the length of antenna segments 3-5 combined.....
.....*Neozavrelia* **sp. 1**
(I've seen specimens from a few small high quality streams in Ohio and from Maryland and North Carolina.)

- 1' Mentum with 11 teeth, 2nd lateral tooth not projecting as far forward as median three teeth; antenna with pedicel of Lauterborn organ about 1.3 times the length of antenna segments 3-5 combined.*Neozavrelia* **sp. 2**
(I've seen a specimen from Arkansas and this may be the same as *Tanytarsus* sp. 3 in Oliver et al. (1978) from N.W.T. or Y.T.)

Rheotanytarsus

- 1 The pigmentation of the gular margin rounded, following the outline of the head capsule margin; the ventromental plates look thicker; the median tooth of the mentum is broader; the head capsule is more round; antennal ratio usually less than 2.0; larval tube attached at end of a petiole. ***Rheotanytarsus pellucidus* (Walker)**

[This species has historically been referred to as *R. distinctissimus* (Brundin)]



- 1' The pigmentation of the gular margin triangular, not following the outline of the head capsule; the ventromental plates are less thick looking; the median tooth of the mentum is not as broad; the head capsule is more elongate; antennal ratio 2.0 or greater; larval tube attached along one side..... ***Rheotanytarsus* sp.**



Stempellina

For additional keys and descriptions see Brundin (1948), Webb (1969) and Gilka (2005).

- 1 Clypeal setae (S3) arise from large pedicels. 2
- 1' Clypeal setae (S3) not originating from large pedicels. 4
- 2(1) Clypeal setae (S3) pedicel about twice as long as wide; S3 setae equally forked near the base; frontoclypeus extensively granulate and with one pair of pointed tubercles near posterior margin; procercus with highly sclerotized setae including one that is broad, flat and toothed along one or both edges. ***Stempellina* poss. *subglabripennis* (Brundin)**
(The larvae and pupa I have seen are very similar to this Palearctic species but have not been confirmed with an adult male. This species has been uncommonly collected from small streams to small rivers and a lake in Ohio and I have seen specimens from IL, NY and NC.)
- 2' Clypeal setae (S3) pedicel shorter (about 1.0 – 1.6 times as long as wide); S3 setae simple or forked; head capsule not granulate and has numerous large rounded tubercles, mostly posteriorly on the frontoclypeus and on adjacent genae; procercus setae not highly sclerotized or flattened. 3
- 3(2') Clypeal setae (S3) pedicel about 1.6 times as long as wide; S3 simple. ***Stempellina* sp. 3**
(I have seen one specimen from AK that was provided by Bob Bode)
- 3' Clypeal setae (S3) pedicel about as long as wide; S3 forked. ***Stempellina* sp. 4**
(This species was keyed in Epler (2001) as *S. sp. B.* *S. sp. 3* and *4* are similar and may be the same species)
- 4(1') Frontoclypeus with one pair of pointed tubercles near the posterior margin and no tubercles on the side of the head. ***Stempellina* sp. 2**
(The larvae and pupae of this species are very similar to the Palearctic species *S. bausei* (Kieffer) but the adult male hypopygium is different. Epler (2001) keyed the species *S. sp. A* which is similar to *S. sp. 2* except the frontoclypeus has 1-3 pairs of pointed tubercles and has a few smaller pointed tubercles near the side of the head. I have seen a specimen from NY that has 3 pair of tubercles on the frontoclypeus but no tubercles near the side of the head. These taxa may all be the same species, however, in Ohio I have only seen specimens with the one pair of pointed tubercles on the frontoclypeus.)

- 4' Head capsule with three pair of equal sized pointed tubercles in the posterior half of the frontoclypeus and three pair of equal sized pointed tubercles near the side of the head, lotic habitat. *Stempellina johannsenii* (Thienemann and Bause)

Stempellinella and *Zavrelia*

For additional keys and descriptions see Ekrem (2007) and Ekrem & Stur (2009).

- 1 Spur of antenna pedestal 55-63 μ long, curved, and attached subapically; anterior clypeal setae (S3) forked; lotic habitat.....
.....*Stempellinella fimbriata* Ekrem
- 1' Spur of antenna pedestal $\leq 30\mu$ long, curved or straight, and attached apically; clypeal setae (S3) simple or forked.....2
- 2(1') Clypeal setae (S3) forked; spur of antenna pedestal 30-37 μ long and gently curved; known from mountain streams in PA and NC and small spring fed streams in Ohio.....
.....*Stempellinella boltoni* Ekrem
- 2' Clypeal setae (S3) simple; spur of antenna pedestal usually less than 30 μ long and either gently curved or straight.....3
- 3(2') Spur of antenna pedestal 15-18 μ long and gently curved; transportable tube constructed of silt sized particles; inhabits small streams.
.....*Stempellinella leptocelloides* (Webb)
- 3' Spur of antenna pedestal 23-28 μ long and straight; transportable tube constructed of sand sized particles; inhabits springs.....*Zavrelia aristata* Ekrem & Stur

Tanytarsus

- 1 Pedestal of antenna with long (about 25-30 μ long) tapered apical spur (may be difficult to see when viewed through rest of head capsule); median tooth of mentum pale and only weakly notched. ***Tanytarsus* n. sp. near *curticornis* Kieffer**
- 1' Pedestal of antenna with at most a short, blunt apical spur. **2**
- 2(1') Mandible with 2 dorsal teeth and 2 additional teeth on inner surface.
..... ***Tanytarsus glabrescens* group [sensu Simpson & Bode (1980)]**
- 2' Mandible with only 1 dorsal tooth and no additional teeth on inner surface. **3**
- 3(2') Clypeal setae (S3) plumose (very bushy looking with many fine dissections, also usually weakly bifid); median tooth of mentum with pale center; pedicel of Lauterborn organ about 3.5-4 times as long as antennal segments 3-5; antennal segment 2 with basal 1/2 usually more distinctly sclerotized than distal 1/2. ***Tanytarsus sepp* Ekrem et al.**
(This species was until recently referred to as *T guerlus* group.)
- 3' Larva with other combination of characters; clypeal setae (S3) may be branched or plumose but never as thickly dissected. **4**
- 4(3') Antennal segment 2 with a narrow ring near its base separated from the remainder of the segment by a narrow unsclerotized area; median tooth of mentum pale and divided into 3 equal lobes; clypeal setae (S3) thick and usually forked or serrate. ***Tanytarsus* sp. 1**
[Keyed by Epler (2001) as *T. sp.* O, adult male of this taxa would belong to the *T. signatus* group in Reiss & Fittkau (1971)]
- 4' Larva with other combination of characters. other ***Tanytarsus***

***Tanytarsus glabrescens* group [sensu Simpson & Bode (1980)]**[=*T. recurvatus* group of Reiss & Fittkau (1971)]

- 1 Median 3 teeth of mentum grouped together and more or less project above other teeth. **2**
- 1' Median 3 teeth of mentum not grouped together, lateral teeth gradually decreasing evenly. **5**

- 2(1) Clypeal setae (S3) equally forked with a few lateral serrations; second antenna segment usually as long or longer than 1/2 the length of the first antenna segment; lotic habitat.
*Tanytarsus glabrescens* group species 4
- 2' Clypeal setae (S3) not forked but may have a few lateral serrations; second antenna segment usually as long as or shorter than 1/2 the length of the first antenna segment.....3
- 3(2') Group of three median teeth of mentum strongly separated from lateral teeth; lentic habitat.*Tanytarsus glabrescens* group species 6
- 3' Group of three median teeth of mentum weakly to moderately separated from lateral teeth; lotic habitat.4
- 4(3') First antenna segment about 50 μ long; this taxa has rarely been identified from streams in NE and SE Ohio; **Remember** that measurements are only valid for fourth instar larvae.*Tanytarsus glabrescens* group species 5
- 4' First antenna segment 75-125 μ long; this is the most common species of this group in Ohio's lotic habitats.....*Tanytarsus glabrescens* group species 7
- 5(1') The posterior 1/3 of head capsule dark brown; antenna segment 2 greater than 1/2 length of first antenna segment; lotic habitat.*Tanytarsus glabrescens* group species 1
- 5' The head capsule unpigmented; antenna segment lengths variable; lentic habitat.6
- 6(5') Second antenna segment greater than 1/2 length of first antenna segment.
*Tanytarsus glabrescens* group species 2
- 6' Second antenna segment equal to or shorter than 1/2 length of first antenna segment.
 *Tanytarsus glabrescens* group species 3

Checklist of Ohio Chironomidae (Diptera)

The family Chironomidae (commonly known as midges) is a diverse and abundant group of flies (Diptera). This is a list of all the taxa known from Ohio that have personally been examined by the author or are listed in revisionary publications. Taxa are listed alphabetically within subfamily and in the case of the Chironominae also grouped by tribe. Each taxa is listed (if known) with the genus name, species name, species author, life history stages examined by the author from Ohio, and any published revisionary references, other than those based at least in part on my specimens. Taxa I have not personally examined from Ohio are indented. The life history stage abbreviations are: L = larva, P = pupa, M = adult male, and F = adult female. Stages that are not separated by a comma are directly associated with each other. Life history stages that are based on specimens that are only visible inside the preceding stage (pharate) are placed in parentheses. The life history stages are listed because it is important to know what stage or stages the species identification is based on. Some taxa are best separated from similar taxa by only one or two stages.

Included after the checklist are the Chironomidae in the Ohio EPA database along with their tolerance category, whether they are considered a Coldwater habitat indicator, their drainage area percentiles, the mean drainage area and the number of stream or river collection records in the database. The tolerance categories are an expression of a taxon's ability to withstand anthropogenic pollution or physical habitat alterations. The categories are assigned by an analysis of the EPT diversity percentiles of all the stations each taxon was found. The categories are very tolerant (VT), tolerant (T), moderately tolerant (MT), facultative (F), moderately intolerant (MI) and intolerant (I).

Podonominae (2)

Boreochlus persimilis (Johannsen); L,M
Paraboreochlus stahli Coffman; P,M

Tanypodinae (69)

Ablabesmyia (*s.s.*) *aspera* (Roback); LPM
Ablabesmyia (*s.s.*) *janta* Roback var. II (*sensu* Roback, 1985); LPF
Ablabesmyia (*s.s.*) *mallochi* (Walley); LPMF
Ablabesmyia (*s.s.*) *monilis* (Linnaeus); LPM
Ablabesmyia (*s.s.*) *rhamphe* Sublette; LPM
Ablabesmyia (*s.s.*) *simpsoni* Roback; L(P)
Ablabesmyia (*Asayia*) *annulata* (Say); LP; Boesel, 1972
Ablabesmyia (*Karelia*) *idei* (Walley); LPM
Ablabesmyia (*Karelia*) *peleensis* (Walley); LPMF
Alotanypus venustus (Coquillett); LPM
Apsectrotanypus johnsoni (Coquillett); LPF
Bethbilbeckia floridensis Fittkau & Murray; LPF
Brundiniella eumorpha (Sublette); L,M

Cantopelopia gesta Roback; LPMF
Clinotanypus pinguis (Loew); LPMF; Boesel, 1974
Coelotanypus concinnus (Coquillett); L(P); Roback, 1971; Boesel, 1974
Coelotanypus scapularis (Loew); Roback, 1971; Boesel, 1974
Conchapelopia aleta Roback; LPM
Conchapelopia fasciata Beck & Beck; LPM
Conchapelopia pallens (Coquillett); LPM
Conchapelopia rurika (Roback); LPMF
Conchapelopia telema Roback; LPM
Guttipelopia guttipennis (van der Wulp); LPF
Hayesomyia senata (Walley); LPMF
Helopelopia cornuticaudata (Walley); LPMF
Helopelopia n. sp. 1; LPMF
Helopelopia n. sp. 2; M
Krenopelopia hudsoni Roback; LPF
Labrundinia becki Roback; L(P)
Labrundinia johannseni Beck & Beck; L(P)
Labrundinia longipalpis (Goetghebuer); L(P)
Labrundinia neopilosella Beck & Beck; LPMF
Labrundinia pilosella (Loew); LPMF
Larsia bernerii Beck & Beck; LPF
Larsia canadensis Bilyj; LPM
Larsia decolorata (Malloch); LPMF
Larsia indistincta Beck & Beck; LPMF; not a syn. of *L. decolorata* (B. Bilyj, pers. comm.)
Larsia n. sp. 1 (B. Bilyj, pers. comm.); LPF,M
Larsia n. sp. 2 (B. Bilyj, pers. comm.); LP
Larsia n. sp. 3 (B. Bilyj, pers. comm.); P
Macropelopia decedens (Walker); LPF
Meropelopia americana (Fittkau); LPMF
Meropelopia flavifrons (Johannsen); LPMF
Monopelopia tenuicalcar (Kieffer); LPMF
Natarsia baltimorea (Macquart); LPF,M
Natarsia species A (Roback, 1978); LP; Roback, 1978
Nilotanypus fimbriatus (Walker); LPM
Paramerina fragilis (Walley); LPMF
Paramerina smithae (Sublette); LPMF
Paramerina sp. 1; L(P)
Pentaneura inconspicua (Malloch); LPM
Pentaneura inyoensis Sublette; LP(M)F
Procladius (Holotanypus) freemani Sublette; LPM; Roback, 1971
Procladius (Holotanypus) sublettei Roback; LPM
Procladius (Psilotanypus) bellus (Loew); LPM; Roback, 1971
Psectrontanypus dyari (Coquillett); LPMF
Radotanypus florens (Johannsen); LPMF
Rheopelopia acra (Roback); LP
Rheopelopia paramaculipennis Roback; LPMF
Tanypus (Apelopia) neopunctipennis Sublette; LPM

Tanypus (s.s.) carinatus Sublette; LP
 “*Tanypus (s.s.) punctipennis Meigen*” (*sensu* Roback, 1977); LPM
Tanypus (s.s.) stellatus Coquillett; L(P); Roback, 1971, 1977
Telopelopia okoboji (Walley); LP
Thienemannimyia norena (Roback); LP,M
Trissopelopia ogemawi Roback; LPF,M
Zavreliomyia bifasciata (Coquillett); LPMF
Zavreliomyia sinuosa (Coquillett); LPMF
Zavreliomyia thryptica (Sublette); LPM

Diamesinae (6)

Diamesa nivoriunda (Fitch); LPMF
Lappodiamesa boltoni Sæther & Willassen; LPMF
Pagastia orthogonia Oliver; L
Pothastia gaedii group; L
Pothastia longimana Kieffer; L(P)
Sympothastia n. sp. 1; LPMF

Prodiamesinae (4)

Monodiamesa depectinata Sæther; LPF
Monodiamesa tuberculata Sæther; LP
Odontomesa ferringtoni Sæther; LPMF
Prodiamesa olivacea (Meigen); LPM

Orthoclaadiinae (184)

Acricotopus nitidellus (Malloch); LPM
Antillocladius pluspilalus Sæther; M
Brillia flavifrons (Johannsen); LPMF
Brillia parva Johannsen; LPMF
Bryophenocladus near *fumosinus* (Curran) or *vernalis* (Goetghebuer) sp. 1; M
Bryophenocladus near *fumosinus* (Curran) or *vernalis* (Goetghebuer) sp. 2; M
Bryophenocladus nitidicollis (Goetghebuer); M
Bryophenocladus near *psilacrus* Sæther or *subvernalis* (Edwards); M
Bryophenocladus sp. 1; M
Camptocladus stercorarius van der Wulp; M
Cardiocladus albiplumus Sæther; L(P)
Cardiocladus obscurus (Johannsen); LPMF
Chaetocladus piger (Goetghebuer); LPMF
Chaetocladus vitellinus group; L
Chaetocladus sp. 1; L,P,M
Chasmatonotus atripes Rempel; Arntfield, 1977
Chasmatonotus unimaculatus Loew; LPM,F
Comptosmittia nerius (Curran); M
Corynoneura acuminata Fu & Sæther (= *Corynoneura* n. sp. 9); LPMF

Corynoneura ascensa Fu & Sæther (= *Corynoneura* n. sp. 5); LPMF
Corynoneura caudicula Fu & Sæther (= *Corynoneura* n. sp. 1); LPMF
Corynoneura disinflata Fu & Sæther (= *Corynoneura* n. sp. 2); LPM
Corynoneura doiceni Makarchenko & Makarchenko (= *Corynoneura* n. sp. 4); LPMF
Corynoneura edwardsi Brundin; LPMF
Corynoneura floridaensis Fu & Sæther (= "C. celeripes Winnertz" in Simpson & Bode, 1980); LPMF
Corynoneura lobata Edwards; LPMF
Corynoneura macula Fu & Sæther (= *Corynoneura* n. sp. 8); LPMF
Corynoneura scutellata Winnertz; L
Corynoneura sp. near *lacustris* Edwards (sensu Fu & Sæther, 2012) (= *C.* sp. 11); LP(M)
Corynoneura sp. 6; LPF
Corynoneura sp. 10; L,P
Corynoneura sp. 12; L(P)
Cricotopus (s.s.) *annulator* Goetghebuer; PM
Cricotopus (s.s.) *bicinctus* (Meigen); LPM; Boesel, 1983
Cricotopus (s.s.) *cylindraceus* group; LP
 Cricotopus (s.s.) *elegans* Johannsen; Boesel, 1983
Cricotopus (s.s.) *festivellus* (Kieffer); M
Cricotopus (s.s.) *infuscatus* (Malloch); LPM; Boesel, 1983
Cricotopus (s.s.) *luciae* LeSage & Harrison; LPM(F)
Cricotopus (s.s.) *politus* (Coquillett); LPM; Boesel (1983)
Cricotopus (s.s.) *slossonae* Malloch; LPM; Boesel (1983) (as *C. varipes*)
Cricotopus (s.s.) *triannulatus* (Macquart); LPMF; Boesel (1983)
Cricotopus (s.s.) *trifascia* Edwards; LP,M; Boesel (1983)
Cricotopus (s.s.) *varipes* Coquillett; PM; Boesel (1983)
Cricotopus (s.s.) *vierrienses* Goetghebuer; LPM; Boesel (1983)
Cricotopus (s.s.) sp. 4; P; (= *C.* (s.s.) NA12 in Langton & Coffman, in prep.)
Cricotopus (*Isocladius*) *absurdus* (Johannsen); LP(MF); Boesel, 1983
Cricotopus (*Isocladius*) sp. near *absurdus* (Johannsen); L
Cricotopus (*Isocladius*) *flavipes* Johannsen; L; Boesel, 1983
Cricotopus (*Isocladius*) *intersectus* group; L
Cricotopus (*Isocladius*) *reversus* group; L
Cricotopus (*Isocladius*) *sylvestris* (Fabricius); LPM; Boesel, 1983
Cricotopus (*Isocladius*) *tricinctus* (Meigen); LPM; Boesel, 1983
 Cricotopus (*Isocladius*) *trifasciatus* (Meigen); Boesel, 1983
 Cricotopus (*Nostococladius*) *nostocicola* Wirth; Boesel, 1983
 Cricotopus *diversus* Boesel; Boesel, 1983
Diplocladius *cultriger* Kieffer; LPMF
Doithrix villosa Sæther & Sublette; M
Doncricotopus bicaudatus Sæther; LP
Epoicocladius flavens (Malloch); L
Epoicocladius species 3 (sensu Jacobsen, 1992); L
Eukiefferiella brehmi group sp. 1; L
Eukiefferiella brevicar group sp. 1; LPMF; (= *E.* NA9 in Langton & Coffman, in prep.)
Eukiefferiella claripennis (Lundbeck); LPMF
Eukiefferiella gracei group sp. 1; LPMF; (= *E.* NA5 in Langton & Coffman, in prep.)
Eukiefferiella ilkleyensis (Edwards); LPMF

Eukiefferiella tirolensis Goetghebuer; LPMF
Eukiefferiella unknown group sp. 1; LPM; (= E. NA1 in Langton & Coffman, in prep.)
Georthocladus (Atelopodella) sp.; L
Georthocladus (s.s.) near *luteicornis* (Goetghebuer); LPF
Gymnometiocnemus (s.s.) subnudus (Edwards); M
Gymnometiocnemus (Raphidocladus) brumalis (Edwards); P,M
Heleniella hirta Sæther; LPM
Heterotrissocladus boltoni Sæther; LPMF
Heterotrissocladus marcidus (Walker); LPMF
Hydrobaenus spp. (6); LPMF
Krenosmittia sp. 1; L,P,M
Krenosmittia poss. n. sp.; M
Limnophyes asquamatus Andersen; LPF
Limnophyes bracytomus (Kieffer); M
Limnophyes carolinensis Sæther; M,F
Limnophyes fumosus (Johannsen); LPMF
Limnophyes hastulatus Sæther; M
Limnophyes minimus (Meigen); LPMF
Limnophyes natalensis (Kieffer); M
Lipurometrioctenus vixlobatus Sæther, M
Lopescladius sp.; L
Mesocricotopus loticus Caldwell; LPMF
Mesosmittia prolixa Sæther; M
Metrioctenus eurynotus (Holmgren); LPMF
Metrioctenus knabi Coquillett; LPM
Metrioctenus sp. 1; P(F)
Nanocladius (s.s.) alternantherae Dendy & Sublette; LPMF
Nanocladius (s.s.) crassicornus Sæther; LPM
Nanocladius (s.s.) distinctus (Malloch); LPM
Nanocladius (s.s.) incomptus Sæther; P
Nanocladius (s.s.) minimus Sæther; LPM
“*Nanocladius (s.s.) rectinervis* (Kieffer)” (*sensu* Simpson & Bode, 1980); LPM
Nanocladius (s.s.) spiniplenus Sæther; LP
Nanocladius (Plecopteracoluthus) downesi (Steffan); LPMF
Orthocladus (Eudactylocladus) dubitatus Johannsen; LPMF
Orthocladus (Euorthocladus) luteipes Goetghebuer; P
Orthocladus (Euorthocladus) rivicola Kieffer; LPM
Orthocladus (Euorthocladus) rivulorum Kieffer; LPM
Orthocladus (Euorthocladus) thienemanni Kieffer; LPM
Orthocladus (Mesorthocladus) lamellatus Sæther; LPMF
Orthocladus (Mesorthocladus) nimidens Sæther; LPMF
Orthocladus (s.s.) carlatus (Roback); LPM
Orthocladus (s.s.) doreus (Roback); LP,M
Orthocladus (s.s.) ferringtoni Soponis; LPM
Orthocladus (s.s.) mallochi Kieffer; LPM
Orthocladus (s.s.) oliveri Soponis; LPMF
Orthocladus (s.s.) robacki Soponis; LPM

Orthocladius (s.s.) rubicundus (Meigen); P
Orthocladius (s.s.) tryoni Soptonis; M
Orthocladius (Symposiocladius) lignicola Kieffer; LPM
Orthocladius (Symposiocladius) n. sp. 1; LPM
Parachaetocladius abnobaenus (Wülker); LP(F),M
Paracricotopus millrockensis Caldwell; LPMF
Parakiefferiella coronata (Edwards); LPF
Parakiefferiella n. sp. 1; LPM
Parakiefferiella n. sp. 2; LPM
Parakiefferiella n. sp. 5; LPMF; (same as *P. sp. A* in Epler, 2001)
Parametriocnemus hamatus (Johannsen); LPMF
Parametriocnemus lundbeckii (Johannsen); LPMF
Parametriocnemus species A (sensu Sæther, 1969); L
Parametriocnemus sp. 2; L,M
Paraphaenocladius exagitans (Johannsen); LPM
Paraphaenocladius pseudirritus Strenzke; LPM
Paraphaenocladius sp. 1; M
Paratrichocladius rufiventris (Meigen); LPM
Platysmittia fimbriata Sæther; P
Psectocladius (Allopsectrocladius) sp. 1; P,M
Psectocladius (Allopsectrocladius) sp. 2; LP(M)
Psectrocladius (s.s.) semicirculatus Sæther; LPM
Psectrocladius (s.s.) simulans (Johannsen); LPMF
Psectrocladius (s.s.) sordidellus group; L
Psectrocladius (s.s.) vernalis (Malloch); LPMF
Psectrocladius (s.s.) NA 2 (sensu Langton & Coffman, in prep.); LPM
Pseudorthocladius (Lordella) wingoi Sæther & Sublette; M
Pseudorthocladius (s.s.) poss. curtistylus Goetghebuer; M
Pseudorthocladius (s.s.) destitutus Sæther & Sublette; M
Pseudorthocladius (s.s.) morsei Sæther & Sublette; M
Pseudorthocladius (s.s.) nr. pilosipennis Brundin; M,F
Pseudorthocladius (s.s.) rectangilobus Caspers & Siebert; M
Pseudorthocladius (s.s.) uniserratus Sæther & Sublette; M
Pseudosmittia forcipata (Goetghebuer); M
Pseudosmittia nanseni (Kieffer); M
Psilometriocnemus triannulatus Sæther & Schnell; LPMF
Rheocricotopus (Psilocricotopus) glabricollis (Meigen); LPMF
Rheocricotopus (Psilocricotopus) robacki (Beck & Beck); LP(M)
Rheocricotopus (s.s.) effusoides Sæther; LPF
Rheocricotopus (s.s.) eminellobus Sæther; LPM
Rheocricotopus (s.s.) unidentatus Sæther & Schnell; LPMF
Rheocricotopus (s.s.) n. sp. 1; LPM(F)
Rheocricotopus (s.s.) n. sp. 2; L
Rheosmittia spinicornis (Brundin); L,P
Smittia poss. aterrima (Meigen) or *lasiops* (Malloch); M
Smittia poss. edwardsi Goetghebuer; M
Smittia poss. nudipennis (Goetghebuer); M

Smittia sp. 2; M
Smittia sp. 6; M
Stilocladius clinopecten Sæther; L,P,M
Stilocladius n. sp. 1; LPF,M
Synorthocladius semivirens (Kieffer); LP(M)
Tavastia cristacauda Sæther; M
Thienemanniella boltoni Hestenes & Sæther; LPMF
Thienemanniella lobapodema Hestenes & Sæther; LPMF
Thienemanniella similis (Malloch); LPF(M)
Thienemanniella taurocapita Hestenes & Sæther; LPMF
Thienemanniella xena (Roback); LPMF
Tokunagaia n. sp. near *scutellata* (Brundin); LPM
Tvetenia bavarica group sp. 1; LP; (= *T. calvescens* (Edwards) in Langton & Coffman, in prep.)
Tvetenia paucunca (Sæther); LPMF
Tvetenia tshernovskii (Pankratova); LP(MF)
Xylotopus par (Coquillett); LPM
Zalutschia lingulata Sæther; L,P,M
Orthoclaadiinae species C (*sensu* Sæther, 1982); L
Unknown genus near *Rheosmittia*; P; (= Orthoclaadiinae unk. gn. unk. sp. NA4 in Langton & Coffman, in prep.)

Chironominae (245)

Chironomini

Apedilum sp.; LP
Axarus festivus (Say); P(M)
Chironomus (Camptochironomus) dilutus Shobanov, Kiknadze & Butler; M
Chironomus (Chaetolabis) atroviridis (Townes); M; Townes, 1945
Chironomus (Chaetolabis) ochreatus (Townes); M
Chironomus (s.s.) anthracinus group; L
Chironomus (s.s.) crassicaudatus Malloch; L
Chironomus (s.s.) decorus Johannsen; LPM; Townes, 1945
Chironomus (s.s.) halophilus group; L
Chironomus (s.s.) major Wülker & Butler; L
Chironomus (s.s.) maturus Johannsen; M
Chironomus (s.s.) plumosus (Linnaeus); Townes, 1945
Chironomus (s.s.) plumosus group; L
Chironomus (s.s.) riparius Meigen; LPM; Townes, 1945
Chironomus (s.s.) staegeri Lundbeck; L
Chironomus (s.s.) stigmaterus Say; LP(M); Townes, 1945
Chironomus (s.s.) sp. 1; LP
Chironomus (s.s.) sp. "Florida" (*sensu* Epler, 2001); L
Chironomus (Lobochironomus) dorsalis Meigen; LPMF; Townes, 1945
Cladopelma collator (Townes); LPM; Townes, 1945
Cladopelma galeator (Townes); LPM
Cladopelma viridula (Linnaeus); Townes, 1945
Cryptochironomus conus Mason; LPM
Cryptochironomus curryi Mason; LPM

Cryptochironomus digitatus (Malloch); Townes, 1945
Cryptochironomus eminentia Mason; LP(M)
Cryptochironomus fulvus (Johannsen); LP
Cryptochironomus ponderosus (Sublette); LPM
Cryptochironomus psittacinus (Meigen); LP
Cryptochironomus NA 2 (*sensu* Langton & Coffman, in prep.); P
Cryptochironomus NA 6 (*sensu* Langton & Coffman, in prep.); P
Cryptochironomus NA 7 (*sensu* Langton & Coffman, in prep.); P
Cryptochironomus near NA 8 (*sensu* Langton & Coffman, in prep.); LPM
Cryptochironomus NA 10 (*sensu* Langton & Coffman, in prep.); LPM
Cryptotendipes emorsus (Townes); M; Townes, 1945
Cryptotendipes pseudotener (Goetghebuer); LPMF
Cryptotendipes sp. 1; L(P)
Demeijerea brachialis (Coquillett); LPMF
Demicryptochironomus fastigatus (Townes); L,M
Demicryptochironomus poss. sp. A (*sensu* Epler, 2001); L
Demicryptochironomus sp. C (*sensu* Epler, 2001); L
Dicrotendipes fumidus (Johannsen); LPM
Dicrotendipes lucifer (Johannsen); LPM
Dicrotendipes modestus (Say); LPM; Townes, 1945; Epler, 1987
Dicrotendipes neomodestus (Malloch); LP(M); Epler, 1987
Dicrotendipes nervosus (Staeger); M
Dicrotendipes simpsoni Epler; LP
Dicrotendipes tritomus (Kieffer); LPM
Einfeldia pagana (Meigen); M
Einfeldia sp. A (*sensu* Epler, 2001); L
“*Einfeldia*” *natchitocheae* (Sublette); LP
“*Einfeldia*” sp. near *natchitocheae* (Sublette); LPM(F)
Endochironomus nigricans (Johannsen); LPM
Endochironomus subtendens (Townes); M
Endotribelos hesperium (Sublette); L(P)
Gillotia prob. *alboviridis* (Malloch); L
Glyptotendipes (Caulochironomus) dreisbachi Townes; LPF
Glyptotendipes (Caulochironomus) senilis (Johannsen); LPM
Glyptotendipes (Caulochironomus) sp. 1; LP
Glyptotendipes (s.s.) barbipes (Staeger); LP(M)
Glyptotendipes (s.s.) lobiferus (Say); LPM; Townes, 1945
Glyptotendipes (s.s.) meridionalis Dendy & Sublette; LPM
Glyptotendipes (s.s.) testaceus townes; LPMF
Glyptotendipes (s.s.) n. sp. 1 (M. Heyn, pers. comm.); LP
Glyptotendipes (Heynotendipes) chelonia (Townes); LPMF
Goeldichironomus holoprasinus (Goeldi); LPF
Harnischia curtilamellata (Malloch); L,M
Harnischia sp. 1; L
Hyporhygma quadripunctatum (Malloch); LP(M)
Kiefferulus (s.s.) dux (Johannsen); LPMF; Townes (1945)
Kiefferulus (Wirthiella) pungens (Townes); LPMF

Kloosia sp.; L
Kribiodorum perpulchrum (Mitchell); L
Lauterborniella agrayloides (Kieffer); L,P,M
Lipiniella sp.; L,P
Microchironomus sp.; L
Microtendipes caducus Townes; LPM
Microtendipes pedellus (De Geer); LPMF; Townes, 1945
Microtendipes rydalensis (Edwards); LP(M)
Microtendipes sp. 1; LPM
Nilothauma bicorne (Townes); M
Nilothauma n. sp. 1; LP(M)
Nilothauma n. sp. 2; M
Omisus pica Townes; L,M
Pagastiella sp.; L
Parachironomus abortivus (Malloch); M
Parachironomus "abortivus (Malloch)" (sensu Simpson & Bode, 1980); LP(M)
Parachironomus carinatus (Townes); LPM
Parachironomus chaetoalus (Sublette); M
Parachironomus directus (Dendy & Sublette); LPM
Parachironomus frequens (Johannsen); LPM
Parachironomus hazelriggi Spies; LPM
Parachironomus hirtalatus (Beck & Beck); LPM
Parachironomus parilis (Walker); M
Parachironomus pectinatellae (Dendy & Sublette); LPMF
Parachironomus potamogeti (Townes); LPM
Parachironomus tenuicaudatus (Malloch); LPM; Townes, 1945
Parachironomus poss. *vitiosus* Goetghebuer; L
Parachironomus n. sp. 2 ("*P. sp. B*" *sensu* Sæther, 1977); LP(MF)
Parachironomus n. sp. 3 ("*P. sp. Bolton*" *sensu* Spies, 2000); LPMF
Parachironomus sp. 4 ("*P. unresolved*" *sensu* Spies, 2000); LPM
Paracladopelma nais (Townes); LPMF
Paracladopelma nereis (Townes); L
Paracladopelma undine (Townes); LPF,M
Paralauterborniella nigrohalteralis (Malloch); LPMF
Paratendipes albimanus (Meigen); LPMF
Paratendipes basidens Townes; L
Paratendipes duplicatus (Johannsen); LPM
Paratendipes subaequalis (Malloch); LPM
Paratendipes sp. 1; L
Phaenopsectra obediens (Johannsen); LPMF
Phaenopsectra flavipes (Meigen); LPM
Phaenopsectra punctipes (Wiedemann); LPM
Phaenopsectra sp. 1; L
Polypedilum (Cerobregma) ontario (Walley); LP(M); Boesel, 1985
Polypedilum (Pentapedilum) epleri Oyewo & Jacobsen; LPMF
Polypedilum (Pentapedilum) intuber Oyewo & Sæther; LPMF
Polypedilum (Pentapedilum) sordens (van der Wulp); LP; Boesel, 1985

Polypedilum (Pentapedilum) tritum (Walker); LPMF; Boesel, 1985
Polypedilum (s.s.) albicorne (Meigen); LPM; Boesel, 1995
Polypedilum (s.s.) bergi Maschwitz; LPM
Polypedilum (s.s.) braseniae (Leathers); LPMF
Polypedilum (s.s.) calopterus (Mitchell); Boesel, 1985
Polypedilum (s.s.) falciforme Maschwitz; LPMF
Polypedilum (s.s.) fallax (Johannsen); LPM; Boesel, 1985
Polypedilum (s.s.) illinoense (Malloch); LPM; Boesel, 1985
Polypedilum (s.s.) nymphaeorum Maschwitz; LPM
Polypedilum (s.s.) ophioides Townes; LPM; Townes, 1945
Polypedilum (s.s.) trigonus Townes; LPMF; Boesel, 1985
Polypedilum (s.s.) tuberculum Maschwitz; LPM
Polypedilum (s.s.) species Florida (*sensu* Epler, 2011); L
Polypedilum (s.s.) n. sp. 1 (*fallax* group); LP(MF)
Polypedilum (s.s.) sp. 2; LP(MF)
Polypedilum (s.s.) sp. 3; L; (= *P. laetum* *sensu* Epler, 2001)
Polypedilum (Tripodura) acifer Townes; Boesel, 1985
Polypedilum (Tripodura) albinodus Townes; LPM; Boesel, 1985
Polypedilum (Tripodura) digitifer Townes; Boesel, 1985
Polypedilum (Tripodura) griseopunctatus (Malloch); LP,M; Boesel, 1985
Polypedilum (Tripodura) halterale (Copulleit); LPM; Boesel, 1985
Polypedilum (Tripodura) scalaenum (Schrank); LPM; Boesel, 1985
Polypedilum (Tripodura) simulans Townes; LPM; Townes, 1945; Boesel, 1985
Polypedilum (Uresipedilum) aviceps Townes; LPM; Boesel, 1985
Polypedilum (Uresipedilum) flavum (Johannsen); LPM; Boesel, 1985; Maschwitz & Cook, 2000
Polypedilum (Uresipedilum) pedatum Townes; M
Robackia demeijerei (Kruseman); L,P
Saetheria tylus (Townes); LP,M
Saetheria species 1 (*sensu* Jackson, 1977); L
Stenochironomus (s.s.) hilaris (Walker); LP(F),M
Stenochironomus macateei (Malloch); P,M
Stictochironomus poss. annulicrus (Townes); L(P)
Stictochironomus devinctus (Say); LP,M
Stictochironomus virgatus (Townes); LPMF
Synendotendipes sp. 1; LPF
Tribelos atrum (Townes); LPMF
Tribelos fuscicorne (Malloch); LP(M)
Tribelos jucundum (Walker); LPM
Xenochironomus xenolabis (Kieffer); LP(M); Townes, 1945
Xestochironomus subletti Borkent; L
Zavreliella marmorata (van der Wulp); LPM

Pseudochironomini

Pseudochironomus articaudus Sæther; P
Pseudochironomus richardsoni Malloch; LPMF
Pseudochironomus near NA 2 (*sensu* Langton & Coffman, in prep.); LPF
Pseudochironomus NA 4 (*sensu* Langton & Coffman, in prep.); P

Pseudochironomus NA 5 (*sensu* Langton & Coffman, in prep.); P(M)

Tanytarsini

Cladotanytarsus aeiparthenus Bilyj; LP(M)F

Cladotanytarsus mancus group (*sensu* Pinder & Reiss, 1983) sp. 1; L(P)

Cladotanytarsus mancus group (*sensu* Pinder & Reiss, 1983) sp. 2; LPMF

Cladotanytarsus mancus group (*sensu* Pinder & Reiss, 1983) sp. 3; LPM

Cladotanytarsus vanderwulpi (Edwards); LPMF

Cladotanytarsus vanderwulpi group (*sensu* Pinder & Reiss, 1983) sp. 2; L

Cladotanytarsus vanderwulpi group (*sensu* Pinder & Reiss, 1983) sp. 3; L(P)

Cladotanytarsus vanderwulpi group (*sensu* Pinder & Reiss, 1983) sp. 4; LPF

Cladotanytarsus vanderwulpi group (*sensu* Pinder & Reiss, 1983) sp. 5; LPM

Cladotanytarsus species group A (*sensu* Pinder & Reiss, 1983) sp.; L(P)

Cladotanytarsus species group B sp.; L(P)

“*Constempellina*” n. sp. 1; LPMF

Micropsectra geminata Oliver & Dillon; LPMF

Micropsectra nigripila (Johannsen); LPMF

Micropsectra polita (Malloch); LPM

Micropsectra sp. 1; LPMF

Micropsectra sp. 5; LPMF

Micropsectra sp. 6; LPM

Micropsectra sp. 7; LPMF

Micropsectra sp. 8; M

Micropsectra sp. 9; M

Micropsectra sp. 10; P,M

Neostempellina reissi Caldwell; LPF

Neozavrelia sp. 1; L,P

Paratanytarsus dissimilis (Johannsen); LPM

Paratanytarsus grimmii (Schneider); P

Paratanytarsus laccophilus (Edwards); LPMF

Paratanytarsus longistilus Bolton, Ekrem, Sublette & Sublette; LPMF

Paratanytarsus varelus (Roback); LPMF

Paratanytarsus sp. 3; LP(M)

Paratanytarsus sp. 6; LPF

Paratanytarsus sp. 7; LP(F)

Paratanytarsus sp. 8; P,M

Rheotanytarsus pellucidus (Walker); LP(M)

Rheotanytarsus sp. 1; LPM

Rheotanytarsus sp. 2; LP(MF)

Rheotanytarsus sp. 3; LPM

Rheotanytarsus sp. 4; LP(F)

Rheotanytarsus sp. 5; LPM

Rheotanytarsus sp. 6; LPM

Rheotanytarsus sp. 7; M

Rheotanytarsus sp. 8; P(M)

Stemellina johannsenii (Thienemann & Bause); LP

Stempellina poss. *subglabripennis* (Brundin); LP

Stempellina sp. 2; LPF(M)
Stempellinella boltoni Ekrem; LP(M)
 Stempellinella edwardsi Spies & Sæther; Ekrem, 2007
Stempellinella fimbriata Ekrem LPMF
Stempellinella leptocelloides (Webb); LP(M)
Sublettea coffmani (Roback); LP(M)
Tanytarsus acifer Ekrem, Sublette & Sublette; LPM
Tanytarsus angulatus Kawai; LPM
Tanytarsus boltoni Ekrem, Sublette & Sublette; LP(M)
Tanytarsus confusus Malloch; LPM
Tanytarsus n. sp. near *curticornis* Kieffer; LPMF
 Tanytarsus dendyi Sublette; Ekrem et al. (2003)
Tanytarsus epleri Ekrem, Sublette & Sublette; PM
 Tanytarsus guerlus (Roback); M; Ekrem et al., 2003
Tanytarsus harperi Ekrem, Sublette & Sublette; LPMF
Tanytarsus near *lactescens* Edwards sp. 1; LP(M)
Tanytarsus near *lactescens* Edwards sp. 2; LPM
 Tanytarsus lestagei Goetghebuer; Ekrem et al., 2003
Tanytarsus martini Ekrem, Sublette & Sublette; LPM
Tanytarsus mendax Kieffer; LPM
Tanytarsus messersmithi Ekrem, Sublette & Sublette; LPM
Tanytarsus near *nemorosus* Edwards; LPM
Tanytarsus neoflavellus Malloch; LPM
Tanytarsus glabrescens group (*sensu* Simpson & Bode, 1980) sp. 1; LPM
Tanytarsus glabrescens group (*sensu* Simpson & Bode, 1980) sp. 2; L
Tanytarsus glabrescens group (*sensu* Simpson & Bode, 1980) sp. 3; LPM
Tanytarsus glabrescens group (*sensu* Simpson & Bode, 1980) sp. 4; LP(M)
Tanytarsus glabrescens group (*sensu* Simpson & Bode, 1980) sp. 5; LP(M)
Tanytarsus glabrescens group (*sensu* Simpson & Bode, 1980) sp. 6; L
Tanytarsus glabrescens group (*sensu* Simpson & Bode, 1980) sp. 7; LPM
Tanytarsus sepp Ekrem, Sublette & Sublette; LPM
Tanytarsus near *signatus* van der Wulp; LP(M)
Tanytarsus wirthi Ekrem, Sublette & Sublette; LPM
Tanytarsus sp. 7; LPM
Tanytarsus sp. 8; PM
Tanytarsus sp. 9; M
Zavrelia aristata Ekrem & Stur; LPMF

Total taxa: 510

Ohio EPA Macroinvertebrate Taxa List

Taxa Code	Taxa	Tol. Cat.	CW Taxa	Drainage %iles (mi) ²							Mean	N
				Min	5	25	50	75	95	Max		
76001	<i>Chironomidae</i>			6.10	6.10	6.10	16.30	27.50	130.20	495.00	100.03	6
77001	<i>Tanypodinae</i>			0.10	0.65	5.68	25.60	124.50	706.75	2374.00	168.84	75
77100	<i>Ablabesmyia sp</i>			2.50	3.39	26.65	111.50	439.00	2519.60	5720.00	464.41	88
77110	<i>Ablabesmyia annulata</i>	F		2.80	3.36	15.90	76.50	350.00	1070.30	5684.00	377.64	44
77111	<i>Ablabesmyia aspera</i>										13.40	1
77113	<i>Ablabesmyia ideii</i>										13.20	1
77115	<i>Ablabesmyia janta</i>	F		2.20	6.33	20.20	59.00	170.50	641.85	7713.00	309.51	213
77120	<i>Ablabesmyia mallochi</i>	F		0.30	3.40	12.20	41.00	149.00	1072.50	7470.00	253.32	3840
77125	<i>Ablabesmyia monilis</i>			1.90	1.90	1.90	5.60	38.00	262.20	1067.00	196.52	6
77130	<i>Ablabesmyia rhamphae group</i>	MT		1.30	7.14	69.00	208.00	716.00	3208.00	7470.00	700.91	539
77140	<i>Ablabesmyia peleensis</i>			0.20	0.59	5.03	11.10	27.65	70.12	4856.00	181.64	37
77150	<i>Ablabesmyia simpsoni</i>	F		2.80	2.80	6.98	20.60	32.43	146.65	331.00	40.51	33
77250	<i>Alotanypus venustus</i>	VT		0.20	0.20	0.75	2.00	3.40	13.22	70.00	5.13	36
77280	<i>Brundiniella eumorpha</i>	MI	X									0
77300	<i>Cantopelopia gesta</i>											0
77355	<i>Clinotanypus pinguis</i>	MT		0.20	1.60	5.35	10.75	29.00	175.20	1770.00	42.39	548
77470	<i>Coelotanypus sp</i>	T		4.40	4.40	6.25	50.00	413.25	3154.60	5864.00	767.11	19
77474	<i>Coelotanypus concinnus</i>										29.70	1
77477	<i>Coelotanypus scapularis</i>			3.10						399.00	201.05	2
77500	<i>Conchapelopia sp</i>	F		0.10	2.20	7.50	23.55	78.00	464.00	6328.00	100.48	5422
77700	<i>Guttipelopia guttipennis</i>										13.40	1
77740	<i>Hayesomyia senata</i>	F		1.60	16.24	62.70	157.00	774.00	2845.80	6330.00	648.82	242
77750	<i>Hayesomyia senata or Thienemannimyia norena</i>	F		0.20	5.20	30.00	98.00	437.50	3191.00	8041.00	532.74	3477
77800	<i>Helopelopia sp</i>	F		0.10	3.00	9.40	27.00	91.00	484.50	5562.00	117.08	3864
78000	<i>Krenopelopia sp</i>	MI		0.10						9.00	2.33	4
78100	<i>Labrundinia sp</i>	F		3.20	6.45	35.00	78.50	245.50	1066.00	3197.00	271.97	160
78101	<i>Labrundinia becki</i>	F		1.70	2.32	8.90	20.50	46.00	139.30	586.00	49.73	52
78110	<i>Labrundinia johannseni</i>	T									8.40	1
78120	<i>Labrundinia longipalpis</i>	T		4.50	4.50	4.50	5.30	15.73	70.03	867.00	83.33	13
78130	<i>Labrundinia neopilosella</i>			3.00	3.05	8.53	15.10	41.40	307.00	496.00	68.44	31
78140	<i>Labrundinia pilosella</i>	F		0.30	4.13	14.60	40.00	149.75	1145.00	7422.00	303.48	1135
78200	<i>Larsia sp</i>	MT		0.20	1.70	7.20	24.00	98.25	671.55	3817.00	154.21	297
78300	<i>Macropelopia sp</i>	MI	X	0.10	0.10	0.10	0.20	0.30	15.72	73.00	12.53	6
78350	<i>Meropelopia sp</i>	F	X	0.10	0.47	3.50	8.50	24.00	174.30	1022.00	40.02	644
78370	<i>Monopelopia tenuicalcar</i>											0
78400	<i>Natarsia sp</i>	F		0.10	0.73	6.28	15.00	53.75	412.25	1047.00	74.05	145
78401	<i>Natarsia species A (sensu Roback, 1978)</i>	T		0.10	1.50	5.50	13.55	48.90	289.10	1697.00	62.03	1284
78402	<i>Natarsia baltimoreus</i>	F		0.10	0.63	7.58	16.00	50.25	503.45	3857.00	106.31	141
78450	<i>Nilotanypus fimbriatus</i>	F		0.60	5.70	27.00	73.30	240.00	782.50	5694.00	213.98	2300
78500	<i>Paramerina fragilis</i>	F		0.10	1.84	4.50	9.35	18.10	133.20	1752.00	51.42	154
78510	<i>Paramerina sp 1</i>	MI		4.30						5.80	5.02	5
78599	<i>Pentaneura sp</i>	F		0.60	0.60	5.25	32.00	94.50	321.70	534.00	105.28	16
78600	<i>Pentaneura inconspicua</i>	F		0.20	4.52	24.13	51.00	225.25	537.00	2718.00	179.61	231
78601	<i>Pentaneura inyoensis</i>	F		0.30	1.23	4.25	8.00	17.93	115.35	431.00	28.36	73
78650	<i>Procladius sp</i>	MT		0.20	2.70	12.90	47.25	165.00	1143.40	6471.00	268.71	1356
78655	<i>Procladius (Holotanypus) sp</i>	MT		0.10	2.50	7.00	20.40	79.25	638.85	6328.00	140.46	1489
78680	<i>Procladius (Psilotanypus) bellus</i>	MT		0.10	0.10	5.90	10.05	58.50	152.40	217.00	47.34	24
78700	<i>Psectrotanypus sp</i>	VT		0.60	1.50	4.90	10.15	31.00	266.80	2641.00	101.24	54
78702	<i>Psectrotanypus dyari</i>	VT		0.10	0.60	2.10	4.60	16.95	141.65	1624.00	41.82	217
78720	<i>Radotanypus florens</i>	I	X								0.20	1
78740	<i>Rheopelopia acra</i>	I		28.60						630.00	469.12	5
78750	<i>Rheopelopia paramaculipennis</i>	MI		2.90	55.95	342.00	607.00	1228.50	4869.50	7422.00	1245.32	515
79000	<i>Tanypus sp</i>	T		1.40	1.68	8.80	17.30	76.00	198.40	295.00	62.73	38
79010	<i>Tanypus carinatus</i>	MT		3.00	3.00	3.00	16.35	30.00	135.20	336.00	81.12	6
79020	<i>Tanypus neopunctipennis</i>	T		0.40	1.17	5.70	14.90	44.50	166.20	3271.00	85.85	224
79030	<i>Tanypus "punctipennis" (sensu Roback, 1977)</i>	T		0.40	0.79	4.95	13.80	31.20	137.97	485.00	40.81	41
79040	<i>Tanypus stellatus</i>	MT		4.10	4.10	7.40	57.00	165.58	236.05	429.00	138.81	7
79085	<i>Telopelopia okoboji</i>	MI		0.50	7.20	80.78	535.00	1168.75	3637.75	5746.00	1025.93	323
79100	<i>Thienemannimyia group</i>	F		0.10	3.30	19.00	71.00	286.50	1726.65	5562.00	321.39	1163
79210	<i>Thienemannimyia norena</i>	F		0.10	0.64	5.28	18.10	45.88	99.70	211.00	34.91	39
79300	<i>Trissopelopia ogemawi</i>	MI	X	0.10	0.10	0.30	3.20	7.75	34.95	655.00	18.70	60

Ohio EPA Macroinvertebrate Taxa List

Taxa Code	Taxa	Tol. CW		Drainage %iles (mi) ²								
		Cat.	Taxa	Min	5	25	50	75	95	Max	Mean	N
79400	<i>Zavrelimyia sp</i>	F	X	0.10	0.10	1.73	5.50	13.55	52.75	1577.00	17.38	515
79701	<i>Diamesinae</i>										10.60	1
79720	<i>Diamesa sp</i>	F	X	0.10	0.10	2.10	5.20	11.00	66.30	744.00	20.98	124
79760	<i>Pagastia sp</i>	F		1.70						25.00	9.60	5
79761	<i>Pagastia orthogonia</i>	F	X	0.10	0.10	0.20	2.60	7.18	18.78	20.00	5.04	39
79770	<i>Pothastia gaedii group</i>	MI		59.00						99.00	78.25	4
79775	<i>Pothastia longimanus</i>	MI									56.00	1
79780	<i>Sympothastia sp</i>	MI									12.60	1
79801	<i>Prodiamesinae</i>											0
79830	<i>Monodiamesa sp</i>											0
79832	<i>Monodiamesa depectinata</i>	F		5.60	5.60	7.18	15.00	143.50	171.95	268.00	104.50	7
79836	<i>Monodiamesa tuberculata</i>											0
79864	<i>Odontomesa ferringtoni</i>	F	X	0.20	0.20	0.60	3.80	4.95	9.03	29.00	7.16	7
79880	<i>Prodiamesa olivacea</i>	MT	X	0.10	0.10	1.78	4.00	5.98	11.42	41.00	5.91	29
80001	<i>Orthoclaadiinae</i>			0.10	0.14	8.10	37.00	118.00	310.00	4861.00	208.83	38
80002	<i>Orthoclaadiinae species C (sensu Saether, 1982)</i>										7.30	1
80150	<i>Acricotopus sp</i>	T		3.10	3.10	3.80	5.50	8.50	13.50	42.30	11.03	8
80204	<i>Brillia flavifrons group</i>	F		0.10	3.12	9.30	23.10	69.00	344.40	2592.00	83.89	493
80210	<i>Brillia parva</i>	MI	X	0.10						0.80	0.28	4
80250	<i>Bryophenocladus sp</i>											0
80305	<i>Cardiocladius albiplumus</i>	F		6.30	6.30	8.28	34.00	48.90	139.92	480.00	100.80	7
80310	<i>Cardiocladius obscurus</i>	MI		2.40	11.80	78.00	283.00	642.00	2592.00	7470.00	571.08	850
80330	<i>Chaetocladius piger</i>	MI	X	0.10	0.10	0.10	0.10	0.40	8.54	17.10	1.74	28
80350	<i>Corynoneura sp</i>			0.10	3.51	27.50	127.00	377.25	3136.95	5832.00	483.63	231
80351	<i>Corynoneura caudicula</i>	F		0.10	2.92	8.90	22.30	51.00	200.40	2309.00	56.38	422
80354	<i>Corynoneura doricensi</i>			30.70						496.00	263.35	2
80355	<i>Corynoneura ascensa</i>	MI	X	0.10						13.40	4.08	4
80357	<i>Corynoneura sp 6</i>										0.10	1
80358	<i>Corynoneura macula</i>			32.00						66.10	49.05	2
80359	<i>Corynoneura acuminata</i>	VT		3.10						12.20	6.17	3
80360	<i>Corynoneura floridaensis</i>	MI		0.90	7.72	51.00	229.50	669.00	3863.40	7713.00	781.80	814
80361	<i>Corynoneura sp 10</i>										10.30	1
80362	<i>Corynoneura sp nr. lacustris (sensu Fu and Saether, 2012)</i>											0
80363	<i>Corynoneura sp 12</i>	MI		3.20	3.20	13.10	49.00	140.00	464.75	496.00	148.41	19
80370	<i>Corynoneura lobata</i>	F		0.10	3.30	16.50	47.50	140.00	540.70	7713.00	142.30	3243
80380	<i>Corynoneura scutellata</i>											0
80400	<i>Cricotopus sp</i>	F		0.50	6.50	29.00	118.00	464.00	2597.00	3277.00	451.61	100
80410	<i>Cricotopus (C.) sp</i>	F		0.10	4.25	24.30	87.00	372.00	2714.50	8041.00	473.84	2500
80411	<i>Cricotopus (Isocladius) sp nr. absurdus</i>	MT		6.70	6.70	6.83	7.80	16.58	64.85	315.00	55.39	7
80415	<i>Cricotopus (Isocladius) absurdus</i>	MI		3.50	3.50	14.28	69.00	153.25	555.30	1069.00	169.36	21
80420	<i>Cricotopus (C.) bicinctus</i>	T		0.10	2.90	11.60	46.30	198.00	1468.60	7995.00	301.84	3818
80425	<i>Cricotopus (C.) luciae</i>	F		9.40	9.40	11.80	34.00	61.50	138.60	162.00	64.08	8
80427	<i>Cricotopus (C.) politus</i>	MI		9.00	9.07	54.70	150.00	205.50	523.40	1054.00	199.04	44
80430	<i>Cricotopus (C.) tremulus group</i>	MT		0.10	2.70	13.65	58.00	253.00	1159.10	7995.00	295.86	2736
80440	<i>Cricotopus (C.) trifascia</i>	F		1.10	5.44	19.80	98.25	539.00	3174.20	6850.00	544.60	738
80450	<i>Cricotopus (C.) vierriensis</i>			4.10	4.10	62.00	171.50	401.00	525.30	2309.00	322.42	24
80470	<i>Cricotopus (C.) or Orthoclaadius (O.) sp</i>			0.10	0.10	13.25	54.70	161.00	554.50	1137.00	160.28	44
80474	<i>Cricotopus (C.) or Paratrichocladius sp</i>			6.20	6.20	9.10	34.75	142.00	295.90	583.00	152.34	8
80480	<i>Cricotopus (Isocladius) sp</i>	MT		11.10	11.10	14.80	56.50	75.40	309.00	642.00	149.19	10
80490	<i>Cricotopus (Isocladius) intersectus group</i>	MT		2.30	2.36	14.33	72.00	398.75	477.00	1150.00	210.97	41
80500	<i>Cricotopus (Isocladius) reversus group</i>	MT		4.20	4.20	59.50	140.00	443.00	1218.05	3846.00	524.31	29
80510	<i>Cricotopus (Isocladius) sylvestris group</i>	T		0.20	1.57	6.95	23.60	123.50	1305.30	5936.00	240.31	424
80530	<i>Cricotopus (Nostococcladius) sp</i>											0
80550	<i>Diplocladius cultriger</i>	MT		0.10	0.10	2.05	7.50	23.00	381.00	586.00	68.90	33
80570	<i>Donericotopus bicaudatus</i>	F		1.10	2.26	7.70	15.75	40.50	162.40	654.00	54.40	68
80640	<i>Epoicoccladius sp</i>			3.00	3.00	6.60	15.40	79.00	106.50	136.00	46.09	15
80646	<i>Epoicoccladius sp 3 (sensu Jacobsen, 1992)</i>	MI		0.90	0.90	1.45	4.40	27.85	104.30	107.00	34.80	8
80648	<i>Epoicoccladius flavens</i>	MT		7.40	7.40	7.40	36.05	101.00	110.40	136.00	70.08	6
80700	<i>Eukiefferiella sp</i>			0.10	0.27	6.25	19.00	42.25	502.95	1049.00	104.19	33
80710	<i>Eukiefferiella brehmi group</i>	MI		5.10	5.10	9.10	21.20	56.00	224.00	444.00	62.30	30

Ohio EPA Macroinvertebrate Taxa List

Taxa Code	Taxa	Tol. Cat.	CW Taxa	Drainage %iles (mi) ²							Mean	N
				Min	5	25	50	75	95	Max		
80720	<i>Eukiefferiella brevicar group</i>	F		0.10	0.39	9.38	28.00	186.75	685.00	1047.00	169.02	49
80740	<i>Eukiefferiella claripennis group</i>	MT		0.10	0.17	2.03	5.00	10.18	223.35	6343.00	163.64	103
80750	<i>Eukiefferiella devonica group</i>	F	X	2.90	4.44	12.15	31.00	63.50	351.40	694.00	84.25	79
80770	<i>Eukiefferiella gracei group</i>	MI		0.10	0.10	3.75	25.40	85.25	161.40	674.00	114.63	11
80830	<i>Heleniella sp</i>	MI	X	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	6
80845	<i>Heterotrissocladius sp</i>	MI		0.30	0.30	3.33	11.20	60.00	128.60	229.00	43.53	23
80850	<i>Heterotrissocladius marcidus</i>	MI	X	0.10	0.10	0.10	1.40	4.65	14.75	29.00	4.33	35
80870	<i>Hydrobaenus sp</i>	F		0.10	0.10	6.70	17.25	105.00	2649.40	3271.00	496.49	58
80871	<i>Hydrobaenus sp 9</i>	F		0.10						2.30	0.95	4
80900	<i>Krenosmittia sp</i>										14.70	1
81040	<i>Limnophyes sp</i>	T		0.10	0.10	0.95	4.80	24.50	228.00	706.00	52.25	53
81060	<i>Lopescladius sp</i>	MI		0.20	0.20	34.20	42.00	132.50	177.55	251.00	89.74	19
81100	<i>Mesosmittia sp</i>										26.00	1
81120	<i>Metriocnemus sp</i>	MI	X									0
81123	<i>Metriocnemus eurynotus</i>	MI	X	0.10						0.10	0.10	2
81125	<i>Metriocnemus knabi</i>											0
81200	<i>Nanocladius sp</i>	F		0.50	2.45	11.35	33.35	106.50	1103.90	7470.00	362.67	64
81201	<i>Nanocladius (N.) sp</i>	F		2.00	5.72	35.50	124.50	583.00	3238.80	6089.00	633.87	252
81210	<i>Nanocladius (N.) alternantherae</i>			9.30	9.30	11.53	40.80	352.50	993.60	1143.00	301.82	11
81229	<i>Nanocladius (N.) crassicornus</i>	F		5.70	27.60	102.00	254.00	608.00	2474.20	6342.00	675.13	118
81230	<i>Nanocladius (N.) crassicornus (old)</i>	F		1.50	9.94	72.00	223.50	657.00	4862.40	7470.00	883.46	506
81231	<i>Nanocladius (N.) crassicornus or N. (N.) "rectinervis"</i>	F		0.20	5.16	28.00	85.00	431.00	3218.00	8041.00	516.55	1282
81240	<i>Nanocladius (N.) distinctus</i>	MT		2.30	12.00	59.00	161.00	533.25	2648.00	7995.00	591.61	1065
81250	<i>Nanocladius (N.) minimus</i>	F		1.10	7.16	39.00	105.50	431.00	1893.40	7422.00	432.61	408
81259	<i>Nanocladius (N.) "rectinervis" (sensu Simpson and Bode, 1980)</i>	MT		5.00	5.00	7.70	11.50	21.60	41.20	58.00	18.53	26
81260	<i>Nanocladius (N.) "rectinervis" (old)</i>	MT		1.20	4.40	23.00	83.50	226.90	1657.20	4861.00	358.12	84
81270	<i>Nanocladius (N.) spinipennis</i>	F		1.40	5.31	18.53	50.00	136.00	495.95	4868.00	130.30	551
81280	<i>Nanocladius (Plecopteracolutus) downesi</i>	MI		1.70	5.24	40.50	171.00	410.50	686.90	1161.00	253.01	151
81400	<i>Orthocladius sp</i>			3.00	4.40	22.00	40.50	76.00	268.80	685.00	89.25	38
81420	<i>Orthocladius (Eudactylocladius) sp</i>										0.10	1
81430	<i>Orthocladius (Euorthocladius) sp</i>			1.90	1.90	3.00	9.00	33.23	77.00	552.00	62.33	13
81445	<i>Orthocladius (Euorthocladius) rivulorum</i>										0.10	1
81451	<i>Orthocladius (Euorthocladius) thienemanni</i>										12.60	1
81459	<i>Orthocladius (O.) sp or Paratrithocladius sp</i>			8.30						217.00	89.10	3
81460	<i>Orthocladius (O.) sp</i>	F		0.10	0.54	8.50	33.00	224.50	3123.30	8041.00	492.95	324
81461	<i>Orthocladius (Mesorthocladius) nimidens</i>											0
81462	<i>Orthocladius (Symposiocladius) n. sp 2</i>											0
81465	<i>Orthocladius (O.) carlatus</i>	F		1.60	3.68	9.03	34.00	138.50	503.75	1285.30	120.88	125
81471	<i>Orthocladius (O.) oliveri</i>	T		0.10	0.10	1.20	8.00	31.28	163.25	659.00	53.93	35
81490	<i>Orthocladius (Pogonocladius) sp</i>											0
81530	<i>Orthocladius (Symposiocladius) lignicola</i>	MI		0.20	0.59	3.53	6.30	15.20	101.40	150.00	20.05	43
81600	<i>Parachaetocladius sp</i>	MI	X	0.10	0.10	0.80	3.10	8.00	18.94	26.00	6.66	18
81620	<i>Paracricotopus sp</i>	F		1.30	1.30	3.58	6.30	20.13	34.95	36.10	15.02	11
81630	<i>Parakiefferiella sp</i>	F		0.10	2.40	19.70	69.40	311.50	683.60	3298.00	218.35	72
81631	<i>Parakiefferiella n.sp 1</i>	F		0.10	3.27	18.45	66.00	190.25	784.65	6082.00	239.77	283
81632	<i>Parakiefferiella n.sp 2</i>	F		0.20	3.96	13.20	33.50	82.00	327.60	1142.00	75.31	396
81633	<i>Parakiefferiella n.sp 5</i>	MI		1.00	1.00	4.80	14.95	22.30	94.50	185.00	30.92	20
81640	<i>Parakiefferiella poss. coronata</i>			13.80						112.00	51.73	4
81650	<i>Parametriocnemus sp</i>	F	X	0.10	0.90	4.90	12.00	34.00	223.35	4861.00	56.08	2001
81651	<i>Parametriocnemus sp A (sensu Saether, 1969)</i>	MI									12.60	1
81670	<i>Paraphaenocladius sp</i>			0.10	0.10	0.10	9.00	59.00	228.32	336.00	62.88	14
81690	<i>Paratrithocladius sp</i>	MI		0.10	2.30	6.90	17.95	62.50	334.50	2221.00	79.33	380
81700	<i>Psectrocladius sp</i>	MT		3.90	3.90	21.90	38.00	85.75	413.00	1008.00	136.68	25
81705	<i>Psectrocladius (Allopsectrocladius) sp</i>			7.20						431.00	219.10	2
81712	<i>Psectrocladius (P.) psilopterus group</i>	MT		1.10	1.10	2.08	5.10	20.95	108.40	151.00	27.82	17
81720	<i>Psectrocladius (P.) sordidellus group</i>											0
81750	<i>Pseudorthocladius sp</i>			0.10	0.10	0.10	1.85	4.20	21.56	71.80	14.80	6
81770	<i>Pseudosmittia sp</i>			3.60						6850.00	1396.04	5
81800	<i>Psilometriocnemus triannulatus</i>	MI	X	0.10						28.00	9.40	3

Ohio EPA Macroinvertebrate Taxa List

Taxa Code	Taxa	Tol. Cat.	CW Taxa	Drainage %iles (mi) ²								N
				Min	5	25	50	75	95	Max	Mean	
81810	<i>Rheocricotopus sp</i>	F		0.10	0.10	0.63	61.00	139.00	488.25	2590.00	213.19	23
81811	<i>Rheocricotopus (R.) eminellobus</i>	MI	X	0.10						2.80	0.78	4
81812	<i>Rheocricotopus (R.) effusoides</i>			5.40						23.10	13.27	3
81813	<i>Rheocricotopus (R.) unidentatus</i>											0
81814	<i>Rheocricotopus (R.) n.sp 1</i>			0.10						0.20	0.15	2
81815	<i>Rheocricotopus (Psilocricotopus) glabricollis</i>			7.30						66.00	36.65	2
81825	<i>Rheocricotopus (Psilocricotopus) robacki</i>	F		0.20	3.60	13.10	44.35	154.00	668.40	5356.00	167.98	2142
81870	<i>Rheosmittia sp</i>	F		2.40						55.00	23.00	4
81890	<i>Smittia sp</i>										42.60	1
81910	<i>Stilocladius sp</i>										6.30	1
82070	<i>Synorthocladius semivirens</i>	F		1.10	2.46	16.10	94.00	395.50	1022.20	1713.00	269.62	68
82100	<i>Thienemamiella sp</i>			0.10	1.46	11.28	34.00	218.25	2110.40	5551.00	389.02	93
82101	<i>Thienemamiella taurocapita</i>	MI		1.00	5.50	23.50	65.00	240.00	957.90	5551.00	212.72	961
82102	<i>Thienemamiella boltoni</i>	MI	X	0.10	0.10	0.10	0.10	0.85	63.40	238.00	21.27	16
82121	<i>Thienemamiella lobapodema</i>	F		0.40	5.60	25.70	71.10	202.00	651.50	5720.00	198.43	940
82130	<i>Thienemamiella similis</i>	MI		3.30	27.47	269.00	630.00	2311.00	5746.70	8041.00	1468.85	333
82141	<i>Thienemamiella xena</i>	F		0.10	3.50	15.10	48.90	160.00	698.00	6042.00	198.58	2366
82160	<i>Tokunagaia sp</i>			0.10						0.10	0.10	2
82200	<i>Tvetenia bavarica group</i>	MI		0.10	0.80	4.80	11.00	35.10	299.00	2641.00	57.06	721
82201	<i>Tvetenia sp</i>	MI		129.00						2596.00	1362.50	2
82220	<i>Tvetenia discoloripes group</i>	MI		1.10	10.90	57.25	240.50	598.50	2593.50	7422.00	610.58	780
82300	<i>Xylotopus par</i>	MI		0.90	2.00	5.00	11.25	44.50	231.70	521.00	49.14	156
82401	<i>Chironominae</i>			142.00						3879.00	1379.25	4
82501	<i>Chironomini</i>			4.50	4.50	17.58	155.00	648.00	2063.15	2566.00	581.95	19
82550	<i>Apedilum sp</i>										1.10	1
82600	<i>Axarus sp</i>	F		2.70	7.12	32.50	111.00	376.00	3218.00	6497.00	577.81	92
82700	<i>Chironomus sp</i>	MT		1.20	1.87	13.13	38.00	97.00	724.75	1036.00	138.10	61
82701	<i>Chironomus (Chaetolabis) sp</i>			11.70						34.00	19.10	4
82710	<i>Chironomus (C.) sp</i>	MT		0.10	2.30	9.00	36.75	135.50	727.10	3341.00	199.71	484
82711	<i>Chironomus (C.) sp 1</i>	T		0.20	1.32	3.40	10.25	31.90	95.40	2729.00	86.24	46
82712	<i>Chironomus (C.) sp "Florida" (sensu Epler, 2001)</i>										6.10	1
82720	<i>Chironomus (C.) anthracinus group</i>			3.90						411.00	108.05	4
82730	<i>Chironomus (C.) decorus group</i>	T		0.10	2.30	8.30	32.00	157.00	1708.45	7995.00	311.28	3281
82770	<i>Chironomus (C.) riparius group</i>	T		0.20	1.10	6.20	20.95	112.00	1036.00	6343.00	229.67	724
82775	<i>Chironomus (C.) semireductus group</i>											0
82780	<i>Chironomus (C.) staegeri group</i>	T		0.60	0.60	5.73	10.80	42.53	1012.60	2291.00	230.88	23
82785	<i>Chironomus (Lobochironomus) dorsalis</i>											0
82800	<i>Cladopelma sp</i>	T		1.00	2.54	9.30	22.35	49.50	210.20	630.00	58.22	68
82820	<i>Cryptochironomus sp</i>	F		0.10	2.90	10.50	37.60	163.00	1022.50	7713.00	243.29	4652
82822	<i>Cryptochironomus eminentia</i>	F										0
82824	<i>Cryptochironomus ponderosus</i>	F										0
82826	<i>Cryptochironomus psittacinus</i>	F										0
82880	<i>Cryptotendipes sp</i>	F		1.00	3.09	14.48	30.00	90.00	365.80	3348.00	105.14	189
82881	<i>Cryptotendipes sp 1</i>			19.90						326.00	98.68	4
82882	<i>Cryptotendipes sp 2</i>	MT		2.30	2.30	2.30	3.85	12.00	45.60	48.00	19.17	6
82885	<i>Cryptotendipes pseudotener</i>	F		0.10	3.70	8.45	24.00	60.00	246.40	522.00	58.30	352
82890	<i>Demeijerea sp</i>	T		4.90	4.90	7.60	13.80	42.50	1345.50	3852.00	630.85	8
82900	<i>Demicrochironomus sp</i>	MI		1.20	1.20	5.10	11.80	156.00	1236.30	3197.00	325.07	21
83000	<i>Dicrotendipes sp</i>	F		0.60	3.90	12.08	42.30	162.75	2759.50	7422.00	444.14	185
83002	<i>Dicrotendipes modestus</i>	MT		1.10	2.47	8.20	22.50	65.50	537.00	2718.00	122.72	248
83003	<i>Dicrotendipes fumidus</i>	F		0.10	2.20	6.30	14.20	64.00	557.20	6330.00	153.65	608
83040	<i>Dicrotendipes neomodestus</i>	F		0.20	3.90	15.80	57.00	193.00	1035.00	8041.00	262.13	4042
83045	<i>Dicrotendipes nervosus</i>			3.20	3.20	3.20	9.20	14.13	85.05	86.00	25.99	9
83050	<i>Dicrotendipes lucifer</i>	MT		1.10	8.00	71.00	249.50	609.00	2428.00	7995.00	660.77	494
83051	<i>Dicrotendipes simpsoni</i>	T		0.50	3.60	11.00	45.00	142.00	1196.80	7995.00	230.79	842
83055	<i>Dicrotendipes tritonus</i>										58.00	1
83100	<i>Einfeldia sp</i>											0
83101	<i>Einfeldia sp A (sensu Epler, 2001)</i>										2.50	1
83110	<i>Einfeldia natchitochaeae</i>											0
83111	<i>Einfeldia nr. natchitochaeae</i>											0
83150	<i>Endochironomus sp</i>	MT		2.40	2.40	12.50	67.00	135.78	348.15	396.00	111.75	21

Ohio EPA Macroinvertebrate Taxa List

Taxa Code	Taxa	Tol. CW Cat. Taxa	Drainage %iles (mi) ²								Mean	N
			Min	5	25	50	75	95	Max			
83158	<i>Endochironomus nigricans</i>	MT	0.60	3.89	13.05	45.00	165.00	619.80	3866.00	169.60	368	
83200	<i>Endotribelos hesperium</i>		66.00						149.00	107.50	2	
83250	<i>Gillotia albiviridis</i>	MI	2163.00	2163.00	3233.00	3866.00	5726.50	6139.00	8041.00	4478.17	29	
83300	<i>Glyptotendipes (G.) sp</i>	MT	0.30	5.58	33.00	132.90	586.00	3641.20	8041.00	713.65	2386	
83310	<i>Glyptotendipes (Heynotendipes) chelonia</i>	MI	8.70	41.00	91.25	281.00	953.50	3826.00	7470.00	867.42	160	
83320	<i>Glyptotendipes (Caulochironomus) sp</i>									13.20	1	
83330	<i>Glyptotendipes (G.) barbipes</i>	VT	0.20	0.20	4.60	9.40	78.00	2753.80	3271.00	473.11	29	
83380	<i>Goeldichironomus holoprasinus</i>	VT	0.30	0.38	2.98	9.00	38.05	2473.75	3849.00	347.96	35	
83400	<i>Harnischia sp</i>	F	6.00	6.00	67.50	158.00	413.00	1382.00	2267.00	443.93	20	
83401	<i>Harnischia sp 1</i>										0	
83410	<i>Harnischia curtilamellata</i>	F	2.50	11.05	66.75	198.00	486.50	2070.55	3240.00	452.34	117	
83430	<i>Hyporhygma quadripunctatum</i>										0	
83590	<i>Kiefferulus sp</i>	T	0.10	0.17	4.38	7.70	32.65	86.95	115.00	24.51	37	
83600	<i>Kiefferulus (K.) dux</i>	T	1.10	2.30	7.15	13.50	47.25	179.30	1238.00	71.82	67	
83610	<i>Kiefferulus (Wirthiella) pungens</i>										0	
83630	<i>Kloosia sp</i>									7.30	1	
83650	<i>Lauterborniella agrayloides</i>										0	
83670	<i>Lipiniella sp</i>	MI	18.10	18.10	23.13	127.00	308.75	3171.00	7470.00	971.64	15	
83700	<i>Microchironomus sp</i>	MT	17.30	17.30	22.18	102.00	343.50	2332.30	5684.00	895.65	11	
83800	<i>Microtendipes sp</i>	F	2.90	2.90	24.95	97.00	733.25	752.00	786.00	357.04	25	
83820	<i>Microtendipes "caelum" (sensu Simpson & Bode, 1980)</i>	MI	0.90	4.10	11.40	34.00	117.25	652.75	5993.00	154.97	1745	
83840	<i>Microtendipes pedellus group</i>	F	0.10	2.50	7.70	21.60	72.50	375.80	3225.00	80.76	3046	
83860	<i>Microtendipes rydalensis</i>	MI	1.70	2.54	6.30	36.00	127.50	177.00	575.00	82.34	52	
83900	<i>Nilothauma sp</i>	F	1.70	3.40	13.08	33.00	107.75	281.65	687.00	82.36	247	
83930	<i>Omisus sp</i>										0	
83950	<i>Pagastiella sp</i>									222.00	1	
84000	<i>Parachironomus sp</i>	MT	0.60	1.60	29.78	109.00	426.50	3219.45	7713.00	630.43	103	
84001	<i>Parachironomus potamogeti</i>		1.30						7.60	4.94	5	
84002	<i>Parachironomus sp B (sensu Saether, 1977)</i>		8.10						86.00	47.05	2	
84003	<i>Parachironomus sp "Bolton" (sensu Spies, 2000)</i>										0	
84010	<i>Parachironomus "abortivus" (sensu Simpson & Bode, 1980)</i>	MT	3.90	11.21	71.00	160.00	489.00	2858.70	7457.00	595.37	124	
84020	<i>Parachironomus carinatus</i>	F	3.80	13.80	51.00	115.00	408.00	2389.20	7386.00	488.79	214	
84030	<i>Parachironomus directus</i>	MT	4.50	7.20	27.90	70.90	143.20	996.20	1150.00	227.35	36	
84039	<i>Parachironomus frequens group</i>		32.00	32.00	45.00	266.50	650.00	957.00	1851.00	562.00	10	
84040	<i>Parachironomus frequens</i>	F	4.20	25.28	158.00	495.00	1168.25	5832.00	7995.00	1189.89	409	
84050	<i>Parachironomus "hirtalatus" (sensu Simpson & Bode, 1980)</i>	T	2.30	2.86	10.30	24.50	112.00	176.00	1628.00	108.74	38	
84060	<i>Parachironomus pectinatellae</i>	MI	0.70	16.90	71.00	177.50	478.00	2638.00	7470.00	586.17	230	
84070	<i>Parachironomus vitiosus group</i>										0	
84100	<i>Paracladopelma sp</i>		2.80	2.80	5.90	12.80	89.00	904.20	5936.00	455.37	18	
84114	<i>Paracladopelma nais</i>	MI	0.10	0.10	0.23	2.80	11.33	34.80	178.00	23.79	11	
84116	<i>Paracladopelma nereis</i>	F	1.60	2.23	16.43	57.50	292.00	1073.50	5038.00	377.08	39	
84118	<i>Paracladopelma undine</i>	MI	2.00	2.00	2.43	6.40	11.40	86.44	119.00	25.09	11	
84155	<i>Paralauterborniella nigrohalteralis</i>	F	0.10	3.20	14.00	43.00	148.50	632.50	6265.00	170.73	391	
84200	<i>Paratendipes sp</i>	F	0.20	0.70	4.40	18.85	64.00	178.00	371.00	52.58	50	
84201	<i>Paratendipes sp 1</i>	F	2.30	2.30	13.80	35.50	213.00	337.40	380.00	122.66	18	
84202	<i>Paratendipes basidens</i>									230.00	1	
84210	<i>Paratendipes albimanus</i> or <i>P. duplicatus</i>	F	0.10	2.00	6.40	15.40	41.00	178.65	2267.00	45.63	3017	
84280	<i>Phaenopsectra sp</i> or <i>Tribelos sp</i>	F	11.50	11.50	20.38	76.00	118.75	735.00	888.00	241.65	15	
84300	<i>Phaenopsectra obediens group</i>	F	0.50	3.70	14.20	50.50	216.00	1468.00	7470.00	336.56	2480	
84302	<i>Phaenopsectra punctipes</i>	F	1.10	3.85	15.00	41.50	136.50	583.50	1142.00	125.36	120	
84315	<i>Phaenopsectra flavipes</i>	MT	0.10	2.00	7.20	19.10	60.85	405.20	3240.00	82.40	1064	
84400	<i>Polypedilum sp</i>		0.90	2.30	15.45	100.70	265.00	740.50	2399.00	283.54	40	
84404	<i>Polypedilum (Pentapedilum) epleri</i>		2.50	2.50	3.40	6.20	22.80	44.19	77.00	23.63	7	
84408	<i>Polypedilum (Pentapedilum) sordens</i>									2647.00	1	
84410	<i>Polypedilum (Pentapedilum) tritum</i>	VT	0.30	0.80	3.40	18.60	39.13	356.20	937.00	76.66	71	
84411	<i>Polypedilum (Pentapedilum) intuber</i>									45.60	1	
84415	<i>Polypedilum (P.) sp</i>		1.50	1.50	3.68	6.70	125.25	848.50	1067.00	224.03	15	
84420	<i>Polypedilum (P.) n.sp 1</i>	MI	0.90	1.30	8.03	21.00	51.55	513.00	554.00	95.42	35	

Ohio EPA Macroinvertebrate Taxa List

Taxa Code	Taxa	Tol. Cat.	CW Taxa	Drainage %iles (mi) ²							Mean	N
				Min	5	25	50	75	95	Max		
84421	<i>Polypedilum (P.) sp 2</i>	VT		0.90	0.90	2.00	9.00	26.70	63.24	114.00	23.11	18
84422	<i>Polypedilum (P.) falciforme</i> or <i>P. (P.) nymphaeorum</i>										6.10	1
84423	<i>Polypedilum (P.) sp 3</i>			115.00						115.00	115.00	2
84430	<i>Polypedilum (P.) albicorne</i>	F	X	0.10	0.17	2.35	6.15	22.40	130.90	2637.00	62.33	124
84435	<i>Polypedilum (P.) bergi</i>											0
84440	<i>Polypedilum (Uresipedilum) aviceps</i>	MI	X	0.10	1.40	4.08	7.90	18.10	91.65	2638.00	29.61	697
84450	<i>Polypedilum (Uresipedilum) flavum</i>	F		0.10	3.60	14.00	58.00	268.00	2443.00	8041.00	388.32	6482
84460	<i>Polypedilum (P.) fallax</i> group	F		0.10	4.20	18.60	53.00	151.00	630.00	6042.00	170.50	3616
84469	<i>Polypedilum (P.) illinoense</i> group			1.30	1.84	5.80	17.15	125.00	690.20	1285.30	127.81	62
84470	<i>Polypedilum (P.) illinoense</i>	T		0.10	2.80	11.10	43.00	186.00	1188.40	7713.00	294.53	5376
84475	<i>Polypedilum (P.) ophioides</i>	F		0.50	1.60	7.30	20.10	86.00	534.30	4861.00	148.58	228
84480	<i>Polypedilum (P.) laetum</i> group	MI		0.60	3.30	8.00	16.90	56.25	1135.95	7422.00	239.02	561
84490	<i>Polypedilum (Cerobregma) ontario</i>	MI		3.50	19.34	53.60	122.50	409.00	946.80	1157.00	258.24	126
84500	<i>Polypedilum (P.) trigonus</i>			1.10	1.10	4.35	12.05	26.00	62.45	67.00	23.78	12
84520	<i>Polypedilum (Tripodura) halterale</i> group	MT		0.40	4.30	17.30	82.00	492.50	3161.85	7470.00	549.74	581
84540	<i>Polypedilum (Tripodura) scalaemum</i> group	F		0.10	4.90	20.70	68.00	285.00	2246.50	8041.00	368.87	4395
84580	<i>Robackia demejerei</i>	MI		289.00						459.00	374.00	2
84600	<i>Saetheria</i> sp	F		14.00						744.00	552.50	4
84601	<i>Saetheria species 1 (sensu Jackson, 1977)</i>	F		1.00	1.60	7.23	15.00	26.18	77.60	178.00	27.87	37
84612	<i>Saetheria tylus</i>	F		3.00	5.06	18.10	51.50	183.00	1369.70	6085.00	289.06	176
84651	<i>Kribiodorum perpulchrum</i>	F		11.80	11.80	141.00	333.00	494.00	684.75	857.00	389.25	15
84700	<i>Stenochironomus</i> sp	F		0.10	4.18	15.00	57.00	277.50	2208.50	8041.00	392.81	1185
84750	<i>Stictochironomus</i> sp	F		0.10	2.20	6.10	14.40	45.00	264.40	8041.00	67.80	3188
84785	<i>Tribelos atrum</i>											0
84790	<i>Tribelos fuscicorne</i>	F		2.00	12.00	48.00	115.50	384.00	1382.60	7386.00	407.60	492
84800	<i>Tribelos jucundum</i>	MT		0.20	3.43	11.80	45.00	140.00	553.40	2428.00	135.96	796
84888	<i>Xenochironomus xenolabis</i>	F		1.70	7.26	32.10	106.00	336.25	1070.70	6328.00	322.61	361
84890	<i>Xestochironomus</i> sp											0
84900	<i>Zavrelia marmorata</i>			1.10	1.10	1.40	9.20	13.10	16.01	31.40	11.64	8
84920	<i>Chironomini</i> genus A			1069.00						1713.00	1391.00	2
84951	<i>Pseudochironomini</i>											0
84960	<i>Pseudochironomus</i> sp	F		1.50	4.58	19.00	58.50	147.75	695.25	6085.00	182.98	355
85001	<i>Tanytarsini</i>			0.10	0.28	10.70	127.00	318.25	1051.80	4861.00	368.20	37
85200	<i>Cladotanytarsus</i> sp			2.30	6.29	25.40	58.00	127.50	476.80	1752.00	119.89	189
85201	<i>Cladotanytarsus species</i> group A	F		1.50	4.70	14.70	48.00	117.00	436.00	1468.00	114.70	190
85210	<i>Cladotanytarsus species</i> group B	MI		3.20						554.00	184.04	5
85230	<i>Cladotanytarsus mancus</i> group	F		1.30	5.13	14.80	37.40	102.00	474.30	6330.00	161.22	572
85260	<i>Cladotanytarsus vanderwulpi</i> group			2.30	2.30	10.30	27.35	195.00	1668.00	2576.00	363.48	22
85261	<i>Cladotanytarsus vanderwulpi</i>	MI		0.20	3.90	10.95	25.00	69.70	382.00	6330.00	109.87	569
85262	<i>Cladotanytarsus vanderwulpi</i> group sp 2	F		11.40	11.40	12.23	16.40	25.40	188.05	262.00	75.59	7
85263	<i>Cladotanytarsus vanderwulpi</i> group sp 3	MI		4.80	6.70	37.65	262.00	571.50	2451.25	5993.00	619.02	59
85264	<i>Cladotanytarsus vanderwulpi</i> group sp 4	MI		2.90	8.42	32.00	80.35	188.00	499.00	6137.00	218.93	106
85265	<i>Cladotanytarsus vanderwulpi</i> group sp 5	MI		15.00	32.01	167.00	355.50	627.50	1459.60	6042.00	599.24	172
85400	<i>Micropsectra</i> sp	MT	X	0.10	0.10	2.70	8.25	26.00	194.40	2711.00	44.37	388
85481	<i>Neozavrelia</i> sp 1	I	X	3.80						8.40	5.34	5
85500	<i>Paratanytarsus</i> sp	F		0.10	2.86	8.30	22.00	61.00	253.80	2638.00	64.59	3162
85501	<i>Paratanytarsus longistilus</i>	MI	X	0.10	1.00	4.90	11.15	25.90	190.00	657.00	37.85	450
85615	<i>Rheotanytarsus pellucidus</i>	MI		0.10	3.10	11.20	35.60	161.00	610.00	5694.00	158.11	1584
85625	<i>Rheotanytarsus</i> sp	F		0.10	3.20	13.40	57.00	261.00	2445.40	8041.00	385.07	6354
85700	<i>Stempellina</i> sp	MI		3.40	3.40	11.40	91.75	153.00	382.00	1370.00	170.55	20
85702	<i>Stempellina</i> sp 2	MI		5.20	5.20	5.20	30.15	51.00	170.80	630.00	133.75	6
85704	<i>Stempellina</i> poss. <i>subglabripennis</i>	MI										0
85706	<i>Stempellina johannsenii</i>											0
85710	<i>Stempellinella</i> sp	MI		0.20	3.20	14.00	46.00	124.50	455.00	1053.00	112.76	124
85711	<i>Stempellinella leptocelloides</i>	MI		0.30	0.70	3.90	12.65	34.10	298.00	1384.00	100.81	38
85715	<i>Stempellinella boltoni</i>	I	X								13.40	1
85720	<i>Stempellinella fimbriata</i>	MI		0.10	3.30	14.25	34.00	97.50	428.00	3842.00	98.42	776
85752	<i>Sublettea coffmani</i>	MI		0.60	7.52	26.48	89.00	217.00	566.95	2216.00	178.29	353
85800	<i>Tanytarsus</i> sp	F		0.10	2.30	8.50	27.40	95.50	586.00	7995.00	165.40	3496
85801	<i>Tanytarsus</i> sp 1	F		0.90	0.98	4.10	15.00	68.00	345.00	586.00	89.18	46

Ohio EPA Macroinvertebrate Taxa List

Taxa Code	Taxa	Tol. Cat.	CW Taxa	Drainage %iles (mi) ²							Mean	N
				Min	5	25	50	75	95	Max		
85802	<i>Tanytarsus n. sp nr. curticornis</i>	F		0.10	2.53	9.40	24.35	65.00	246.40	998.00	60.76	996
85803	<i>Tanytarsus sp 3</i>	F		0.50	3.06	17.00	54.25	98.50	291.80	888.00	89.31	86
85814	<i>Tanytarsus glabrescens group</i>	F		0.30	4.70	19.00	61.00	178.00	674.25	7457.00	186.82	2365
85815	<i>Tanytarsus glabrescens group sp 1</i>	F		3.90	4.06	7.90	17.25	80.70	287.20	648.00	81.77	46
85816	<i>Tanytarsus glabrescens group sp 2</i>										41.00	1
85817	<i>Tanytarsus glabrescens group sp 3</i>											0
85818	<i>Tanytarsus glabrescens group sp 4</i>	F		0.80	1.70	5.88	14.70	39.63	191.80	1369.00	49.74	141
85819	<i>Tanytarsus glabrescens group sp 5</i>			7.50						48.00	24.80	3
85820	<i>Tanytarsus glabrescens group sp 6</i>										13.80	1
85821	<i>Tanytarsus glabrescens group sp 7</i>	F		0.10	3.30	11.10	34.00	105.00	532.80	8041.00	136.38	2342
85840	<i>Tanytarsus sepp</i>	F		0.40	4.50	20.18	59.00	165.00	682.80	6330.00	181.80	2701
85905	<i>Neostempellina reissi</i>	MI	X	0.10						0.10	0.10	4
85910	<i>"Constempellina" n. sp 1</i>	MI	X	0.10						12.60	3.23	4
85921	<i>Zavrelia aristata</i>	MI	X								0.10	1

Acknowledgements

I thank Ole Sæther, Bohdan Bilyj, Don Oliver and Mary Dillon for spending considerable time verifying my identifications in the early years; Ole Sæther, Torbjørn Ekrem, John Epler, Martin Spies, Broughton Caldwell, Rick Jacobsen, Mike Heyn, Yue Fu, Tor Hestenes, Friedrich Reiss, Len Ferrington, Bill Coffman, Peter Cranston, Bohdan Bilyj, Peter Langton, Charles Watson, Bob Bode and Barbara Hayford for examining specimens over the years; Dave Lenat, Bob Bode, Charles Watson, Broughton Caldwell, John Epler, Rick Jacobsen, Don Oliver and Bohdan Bilyj for donating or loaning specimens; John Epler and Bohdan Bilyj for commenting on this manuscript; The Ohio Historical Society, Ohio Department of Natural Resources, The Cleveland Museum of Natural History, The Nature Conservancy in Ohio, Columbus and Franklin County Metro Parks, the City of Oberlin, the City of Ravenna and David Blyth for permission to collect from their properties; Scandinavian Entomology Ltd. and The Academy of Natural Sciences of Philadelphia for permission to use material in this work; the past and present members of the Ohio EPA Macroinvertebrate Group for their help and support: Bernie Counts, Jeff DeShon, Angela Dripps, Dale Eicher, Jack Freda, Mike Gray, Marty Knapp, Chuck McKnight and Ed Moore; Dennis Mishne and Jeff DeShon for data retrieval from the Ohio EPA database; and my family members Jason, Dave, Richard and Pat Bolton for their support and help with collections.

References

- Arntfield, P. W. 1977. Systematics and biology of the genus *Chasmatonotus* Loew (Diptera: Chironomidae: Orthoclaadiinae) from North America Unpublished Ph.D. Thesis. McGill University, Montreal, Quebec 337 pp.
- Beck, W.M. and E.C. Beck. 1966. Chironomidae (Diptera) of Florida I. Pentaneurini (Tanypodinae). Bulletin of the Florida State Museum, Biological Sciences 10(8): 305-379.
- Bilyj, B. 1988. A taxonomic review of *Guttipelopia* (Diptera: Chironomidae). Entomologica Scandinavica. 19:1-26.
- Bjørlo, A., H. Vårdal, and O.A. Sæther. 2000. A preliminary phylogenetic analysis of the subgenus *Tripodura* Townes of the genus *Polypedilum* Kieffer (Diptera: Chironomidae). pp 35-50 in Hoffrichter, O. (ed.). Late 20th Century Research on Chironomidae: an Anthology from the 13th International Symposium on Chironomidae. Shaker Verlag, Aachen, Germany.
- Bode, R.W. 1983. Larvae of North American *Eukiefferiella* and *Tvetenia* (Diptera: Chironomidae). New York State Museum Bulletin No. 452:1-40.
- Boesel, M.W. 1972. The early stages of *Ablabesmia annulata* (Say) (Diptera, Chironomidae). The Ohio Journal of Science 72(3):170-173.
- Boesel, M.W. 1974. Observations on the Coelotanypodini of the northeastern states, with keys to known stages (Diptera: Chironomidae: Tanypodinae). Journal of the Kansas Entomological Society 47:417-432.
- Boesel, M.W. 1983. A review of the genus *Cricotopus* in Ohio, with a key to adults of species of the noththeastern United States (Diptera, Chironomidae). The Ohio Journal of Science 83(3):74-90.
- Boesel, M.W. 1985. A brief review of the genus *Polypedilum* in Ohio, with keys to the known stages of species occurring in noththeastern United States (Diptera, Chironomidae). The Ohio Journal of Science 85:245-262.
- Bolton, M.J. 1998. Chironomid larvae of temperate eastern Nearctic. Ohio Environmental Protection Agency, Division of Surface Water, Columbus, Ohio 42 pp. plus 5 pp. of figures.
- Bolton, M.J. 2007. Ohio EPA supplemental keys to the larval Chironomidae (Diptera) of Ohio and Ohio Chironomidae checklist. Ohio Environmental Protection Agency, Division of Surface Water, Columbus, Ohio 77 pp. plus 7 pp. of figures.

- Bolton, M.J., T. Ekrem, J.E. Sublette and M.F. Sublette. 2010. A new species of *Paratanytarsus* Thienemann and Bause (Diptera: Chironomidae) with unusual larval and adult male morphology, pp. 262-271. In: Ferrington, L.C., Jr. (ed.). Proceedings of the XV International Symposium on Chironomidae. Chironomidae Research Group, University of Minnesota, Saint Paul, Minnesota 385 pp. + viii.
- Brundin, L. 1948. Über die metamorphose der sectio Tanytarsariae connectentes (Dipt. Chironomidae). Arkiv för Zoologi 41A(2): 1-22 + 7 plates.
- Caldwell, B.A. 1984. Two new species and records of other chironomids from Georgia (Diptera: Chironomidae) with some observations on ecology. Georgia Journal of Science 41:81-96.
- Caldwell, B.A. 1993. The immature stages of *Ablabesmyia cinctipes* (Johannsen) with comments on ecology (Insecta, Diptera, Chironomidae). Spixiana 16:49-52.
- Caldwell, B.A. 2000. First Nearctic record of *Neostempellina* Reiss, with description of a new species (Insecta, Diptera, Chironomidae). Spixiana 23:163-166.
- Caldwell, B.A., R.W. Bode and A.J. Smith. 2010. Description of the immature stages and adult female of *Neostempellina reissi* (Diptera: Chironomidae), pp. 272-284. In: Ferrington, L.C., Jr. (ed.). Proceedings of the XV International Symposium on Chironomidae. Chironomidae Research Group, University of Minnesota, Saint Paul, Minnesota 385 pp. + viii.
- Caldwell, B.A., P.L. Hudson, D.R. Lenat and D.R. Smith. 1997. A revised annotated checklist of the Chironomidae (Insecta: Diptera) of the Southeastern United States. Transactions of the American Entomological Society 123:1-53.
- Claassen, P.W. 1922. The larva of a chironomid (*Trissocladius equitans* n. sp.) which is parasitic upon a may-fly nymph (*Rithrogena* sp.). Kansas University Science Bulletin 14:395-399.
- Coffman, W.P., L.C. Ferrington, Jr. and R.M. Seward. 1988. *Paraboreochlus stahli* sp. n., a new species of Podonominae (Diptera: Chironomidae) from the Nearctic. Aquatic Insects 10:189-200.
- Cranston, P.S. 1982. A key to the larvae of the British Orthoclaadiinae (Chironomidae). Scientific Publications of the Freshwater Biological Association 45:1-152.
- Cranston, P.S. 1999. Nearctic *Orthoclaadius* subgenus *Eudactylocladius* revised (Diptera: Chironomidae). Journal of the Kansas Entomological Society 71(3): 272-295.
- Curry, L.L. 1958. Larvae and pupae of the species of *Cryptochironomus* (Diptera) in Michigan.

- Limnology and Oceanography 3(4): 427-442.
- Doughman, J.S. 1985. Annotated keys to the genera of the tribe Diamesini (Diptera: Chironomidae), descriptions of the female and immatures of *Potthastia iberica* Tosio, and keys to the known species of *Potthastia*. Alsk. IWR (Inst. Water Resour.) Ser. IWR-107. 49 pp.
- Ekrem, T. 2007. A taxonomic revision of the genus *Stempellinella* (Diptera: Chironomidae). Journal of Natural History 41(21-24):1367-1465.
- Ekrem, T. and E. Stur. 2009. A review of the genus *Zavrelia* (Diptera: Chironomidae). Eur. J. Entomol. 106:119-144.
- Ekrem, T., M.F. Sublette, and J.E. Sublette. 2003. North American *Tanytarsus* I. Descriptions and keys to species in the *eminulus*, *gregarius*, *lugens* and *mendax* species groups (Diptera: Chironomidae). Annals of the Entomological Society of America 96(3):265-328.
- Epler, J.H. 1987. Revision of the Nearctic *Dicrotendipes* Kieffer, 1913 (Diptera: Chironomidae). Evolutionary Monographs 9: 102 pp. + 37 plates.
- Epler, J.H. 1995. Identification Manual for the Larval Chironomidae (Diptera) of Florida. Revised edition. Florida Department of Environmental Protection, Tallahassee, Florida 317 pp.
- Epler, J.H. 2001. Identification manual for the larval Chironomidae (Diptera) of North and South Carolina. A guide to the taxonomy of the midges of the southeastern United States, including Florida. Special Publication SJ2001-SP13 North Carolina Department of Environmental and Natural Resources, Raleigh, NC, and St. John's River Water Management District, Palatka, FL. 526 pp.
- Epler, J.H. 2011. Correction and Additions for Epler's "Identification Manual for the Larval Chironomidae (Diptera) of North and South Carolina" (last updated 2 February 2011). <http://home.comcast.net/~johnepler3/CorAdd-NS.html>
- Fu, Y. and O.A. Sæther. 2012. *Corynoneura* Winnertz and *Thienemanniella* Kieffer from the Nearctic region. Zootaxa 3536, 61 pp.
- Gilka, W. 2005. A systematic review of European *Stempellina* Thienemann et Bause, 1913 (Diptera: Chironomidae) with description of a new species from Fennoscandia. Annales Zoologici 55(3): 413-419.
- Grodhaus, G. 1987a. *Endochironmus* Kieffer, *Tribelos* Townes, *Synendotendipes* new genus, and *Endotribelos* new genus (Diptera: Chironomidae) of the Nearctic region. Journal of the

- Kansas Entomological Society 60(2):167-247.
- Grodhaus, G. 1987b. *Phaenopsectra mortensoni* n. sp. and its relationship to other Chironomidae (Diptera) of temporary pools. *Entomologica Scandinavica Supplements* 29:137-145.
- Hestenes, T.C. and O.A. Sæther. 2000. Three new Nearctic *Thienemanniella* Kieffer species with a review of the Nearctic species. pp. 103-127 in Hoffrichter, O. (ed.). *Late 20th Century Research on Chironomidae. An Anthology from the 13th International Symposium on Chironomidae*. Shaker Verlag, Aachen, Germany.
- Hudson, P.L., D.R. Lenat, B.A. Caldwell and D. Smith. 1990. Chironomidae of the Southeastern United States: A checklist of species and notes on biology, distribution, and habitat. *United States Department of the Interior, Fish and Wildlife Research* 7:1-46.
- Jackson, G.A. 1977. Nearctic and Palearctic *Paracladopelma* Harnisch and *Saetheria* n.gen. (Diptera: Chironomidae). *Journal of the Fisheries Research Board of Canada* 34:1321-1359.
- Jacobsen, R.E. 1992. Descriptions of the larvae of four Nearctic species of *Epoicocladius* (Diptera: Chironomidae) with a redescription of *Epoicocladius ephemerae* (Kieffer). *Netherlands Journal of Aquatic Ecology* 26:145-155.
- Jacobsen, R.E. and B. Bilyj. 2007. An unusual new *Cladotanytarsus* from oligotrophic Florida Everglades marshes (Diptera: Chironomidae). pp. 145-154. In: T. Andersen (ed.), *Contributions to the Systematics and Ecology of Aquatic Diptera: A Tribute to Ole A. Sæther*. The Caddis Press. Columbus, Ohio. vi + 358 p.
- Johannsen, O.A. 1935. Aquatic diptera. Part II. Orthorrhapha - Brachycera and Cyclorrhapha. *Cornell University Agricultural Experiment Station Memoir* 177:1-62.
- Langton, P.H. and W.P. Coffman. (In Preparation). A key to pupal exuviae of North American Chironomidae.
- LaSage, L. and A.D. Harrison. 1980. Taxonomy of *Cricotopus* species (Diptera: Chironomidae) from Salem Creek, Ontario. *Proceedings of the Entomological Society of Ontario* 111:57-114.
- Martin, J. 2011. North American cytospecies of the genus *Chironomus* (includes *Camptochironomus*, *Chaetolabis*, *Lobochironomus* and *Einfeldia*).
<http://www.genetics.unimelb.edu.au/martin/NACyfiles/NACHironomus2011.pdf>
- Maschwitz, D.E. and E.F. Cook. 2000. Revision of the Nearctic species of the genus *Polypedilum* Kieffer (Diptera: Chironomidae) in the subgenera *P. (Polypedilum)* Kieffer and

- P. (Uresipedilum)* Oyewo and Saether. Bulletin of the Ohio Biological Survey. New Series 12(3):1-135.
- Mason, P.G. 1986. Four new species of the *Cryptochironomus fulvus* (Johannsen) species complex (Diptera: Chironomidae). Entomologica Scandinavica 16: 399-413.
- Oliver, D.R., M.E. Dillon, and P.S. Cranston. 1990. A catalog of Nearctic Chironomidae. Research Branch Agriculture Canada Publication 1857/B 89 pp.
- Oliver, D.R., D. McClymont and M.E. Roussel. 1978. A key to some larvae of Chironomidae (Diptera) from the Mackenzie and Porcupine River watersheds. Canadian Fisheries and Marine Service Technical Report 791:1-73.
- Oliver, D.R. and M.E. Roussel. 1983. The insects and arachnids of Canada. Part II. The genera of larval midges of Canada (Diptera: Chironomidae). Agriculture Canada Publication 1746:1-263.
- Oyewo, E.A. and R.E. Jacobson. 2007. *Polypedilum (Pentapedilum) epleri*, a new species from the eastern USA (Diptera: Chironomidae). pp. 225-234 in T. Anderson (ed.). Contributions to the Systematics and Ecology of Aquatic Diptera – A Tribute to Ole A. Sæther. The Caddis Press, Columbus, Ohio vi + 358 pp.
- Oyewo, E.A. and O.A. Sæther. 1998. Revision of Afrotropical *Polypedilum* Kieffer subgenus *Uresipedilum* Sasa et Kikuchi, 1995 (Diptera: Chironomidae), with a review of the subgenus. Annales de Limnologie 34:315-362.
- Oyewo, E.A. and O.A. Sæther. 2008. Revision of *Polypedilum (Pentapedilum)* Kieffer and *Ainuyusurika* Sasa et Shirasaki (Diptera: Chironomidae). Zootaxa 1953 1-145.
- Pinder, L.C.V. and F. Reiss. 1983. Chapter 10. The Larvae of Chironominae (Diptera: Chironomidae) of the Holarctic region – Keys and diagnoses. pp.293-435 In: Wiederholm, T. (editor). Chironomidae of the Holarctic region. Keys and diagnoses. Part 1. Larvae. Entomologica Scandinavica Supplement No. 19:1-457.
- Reiss, F. and E.J. Fittkau. 1971. Taxonomie und ökologie europaisch verbreiteter *Tanytarsus* Arten (Chironomidae, Diptera). Archiv fur Hydrobiologie, Supplement 40:75-200.
- Roback, S.S. 1953. Savannah River tendipedid larvae [Diptera: Tendipedidae (=Chironomidae)]. Proceedings of the Academy of Natural Sciences of Philadelphia 105:91-132.
- Roback, S.S. 1957. The immature tendipedids of the Philadelphia area (Diptera: Tendipedidae). Monograph of the Academy of Natural Sciences of Philadelphia 9:1-152.
- Roback, S.S. 1971. The adults of the subfamily Tanypodinae (=Pelopiinae) in North America

- (Diptera: Chironomidae). Monograph of the Academy of Natural Sciences of Philadelphia 17:1-410.
- Roback, S.S. 1972. The immature stages of *Paramerina smithae* (Sublette) (Diptera: Chironomidae: Tanypodinae). Proceedings of the Academy of Natural Sciences of Philadelphia 124(2): 11-15.
- Roback, S.S. 1977. The immature chironomids of the eastern United States II. Tanypodinae - Tanypodini. Proceedings of the Academy of Natural Sciences of Philadelphia 128(5):55-87.
- Roback, S.S. 1978. The immature chironomids of the eastern United States III. Tanypodinae – Anatopyniini, Macropelopiini, and Natarsiini. Proceedings of the Academy of Natural Sciences of Philadelphia 129(11):151-202.
- Roback, S.S. 1980. The immature chironomids of the eastern United States IV. Tanypodinae - Procladiini. Proceedings of the Academy of Natural Sciences of Philadelphia 132:1-63.
- Roback, S.S. 1981. The immature chironomids of the eastern United States V. Penaneurini – *Thienemannimyia* group. Proceedings of the Academy of Natural Sciences of Philadelphia 133:73-128.
- Roback, S.S. 1985. The immature chironomids of the eastern United States VI. Penaneurini - genus *Ablabesmyia*. Proceedings of the Academy of Natural Sciences of Philadelphia 137(2):153-212.
- Roback, S.S. 1986a. The immature chironomids of the eastern United States VII. Penaneurini - genus *Monopelopia*, with redescription of the male adults and description of some Neotropical material. Proceedings of the Academy of Natural Sciences of Philadelphia 138:350-365.
- Roback, S.S. 1986b. The immature chironomids of the eastern United States VIII. Penaneurini - genus *Nilotanypus*, with the description of a new species from Kansas. Proceedings of the Academy of Natural Sciences of Philadelphia 138(2):443-465.
- Roback, S.S. 1987. The immature chironomids of the eastern United States IX. Penaneurini - genus *Labrundinia*, with the description of some Neotropical material. Proceedings of the Academy of Natural Sciences of Philadelphia 139:159-209.
- Rossaro, B. 1985. Revision of the genus *Polypedilum* Kieffer, 1912. I. Key to adults, pupae and larvae of the species known to occur in Italy (Diptera, Chironomidae). Memorie della Societa Entomologica Italiana 62/63:3-23.
- Sæther, O.A. 1969. Some Nearctic Podonominae, Diamesinae, and Orthocladiinae (Diptera:

- Chironomidae). Bulletin of the Fisheries Research Board of Canada 170:1-154.
- Sæther, O.A. 1975. Nearctic and Palaearctic *Heterotrissocladius* (Diptera: Chironomidae). Bulletin of the Fisheries Research Board of Canada 193:1-67.
- Sæther, O.A. 1977a. Taxonomic studies on Chironomidae: *Nanocladius*, *Pseudochironomus*, and the *Harnischia* complex. Bulletin of the Fisheries Research Board of Canada 196:1-143.
- Sæther, O.A. 1977b. Female genitalia in Chironomidae and other Nematocera: morphology, phylogenies, keys. Bulletin of the Fisheries Research Board of Canada 197:1-209.
- Sæther, O.A. 1982. Orthoclaadiinae (Diptera: Chironomidae) from SE U.S.A., with descriptions of *Pludsonia*, *Unniella* and *Platysmittia* n. genera and *Atelopobella* n. subgen. Entomologica Scandinavica 13:465-510.
- Sæther, O.A. 1985a. The imagines of *Mesosmittia* Brundin, 1956 (Diptera: Chironomidae), with the description of seven new species. Spixiana Supplement 11:37-54.
- Sæther, O.A. 1985b. A review of the genus *Rheocricotopus* Thienemann & Harnisch, 1932, with the description of three new species (Diptera: Chironomidae). Spixiana Supplement 11:59-108.
- Sæther, O.A. 2003. A review of *Orthocladus* subgen. *Symposiocladius* Cranston (Diptera: Chironomidae). Aquatic Insects 25(4):281-317.
- Sæther, O.A. 2005. A new subgenus and new species of *Orthocladus* van der Wulp, with a phylogenetic evaluation of the validity of the subgenera of the genus (Diptera: Chironomidae). Zootaxa 974:1-56.
- Sæther, O.A. 2009. *Cryptochironomus* Kieffer from Lake Winnipeg, Canada, with a review of Nearctic species (Diptera: Chironomidae). Zootaxa 2208:1-24.
- Sæther, O.A. 2010. *Cryptotendipes* Lenz from Manitoba, Canada, with keys to known immatures of the genus (Diptera: Chironomidae). Zootaxa 2412:1-20.
- Sæther, O.A., T. Andersen, L.C. Pinho and H.F. Mendes. 2010. The problem with *Polypedilum* Kieffer (Diptera: Chironomidae), with the description of *Probolum* subgen. n. Zootaxa 2497:1-36.
- Sæther, O.A. and J.E. Sublette. 1983. A review of the genera *Doithrix* n. gen., *Georthocladus* Strenzke, *Parachaetocladius* Wulker, and *Pseudorthocladus* Goetghebuer (Diptera: Chironomidae, Orthoclaadiinae). Entomologica Scandinavica Supplement 20:1-100.
- Sæther, O.A. and A. Sundal. 1999. *Cerobregma*, a new subgenus of *Polypedilum* Kieffer, with a tentative phylogeny of subgenera and species groups within *Polypedilum* (Diptera:

- Chironomidae). *Journal of the Kansas Entomological Society* 71:315-382.
- Sæther, O.A. and E. Willassen. 1988. A review of *Lappodiamesa* Serra Tosia, with the description of *L. boltoni* spec. nov. from Ohio, USA (Diptera, Chironomidae). *Spixiana Supplement* 14:75-84.
- Simpson, K.W. and R.W. Bode. 1980. Common larvae of Chironomidae (Diptera) from New York State streams and rivers with particular reference to the fauna of artificial substrates. *New York State Museum Bulletin No.* 439:1-105.
- Simpson, K.W., R.W. Bode and P. Albu. 1983. Keys for the genus *Cricotopus* adapted from "Revision der Gattung *Cricotopus* van der Wulp und ihrer Verwandten (Diptera, Chironomidae)" by M. Hirvenoja. *New York State Museum Bulletin No.* 450:1-133.
- Soponis, A.R. 1977. A revision of the Nearctic species of *Orthocladius* (*Orthocladius*) van der Wulp (Diptera: Chironomidae). *Memoirs of the Entomological Society of Canada* 102:1-187.
- Soponis, A.R. 1990. A revision of the Holarctic species of *Orthocladius* (*Euorthocladius*) (Diptera: Chironomidae). *Spixiana Supplement* 13:1-56.
- Spies, M. 2000. A contribution to the knowledge of Holarctic *Parachironomus* Lenz (Diptera: Chironomidae), with two new species and a provisional key to Nearctic adult males. *Tijdschrift voor Entomologie* 143:125-143.
- Townes, H.K., Jr. 1945. The Nearctic species of Tendipedini [Diptera, Tendipedidae (=Chironomidae)]. *The American Midland Naturalist* 34(1): 1-206.
- Webb, D.W. 1969. New species of Chironomids from Costello Lake, Ontario (Diptera: Chironomidae). *Journal of the Kansas Entomological Society* 42(1):91-108.
- Wiederholm, T. (editor). 1983. Chironomidae of the Holarctic region. Keys and diagnoses. Part 1. Larvae. *Entomologica Scandinavica Supplement No.* 19:1-457.
- Wirth, W.W. and J.E. Sublette. 1970. A review of the Podonominae of North America with descriptions of three new species of *Trichotanypus* (Diptera: Chironomidae). *Journal of the Kansas Entomological Society* 43:335-354.
- Wrubleski, D.A. and S.S. Roback. 1987. Two species of *Procladius* (Diptera:Chironomidae) from a northern prairie marsh: descriptions, phenologies and mating behaviour. *Journal of the North American Benthological Society* 6(3):189-212.