Identification Manual
for the
Larval Chironomidae (Diptera)
of
Florida
REVISED EDITION 1995
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Identification Manual for the Larval Chironomidae (Diptera) of Florida

by

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PREFACE TO THE 1995 REVISED EDITION

The first edition of this manual (Epler 1992) has met with great success. However, the taxonomy and our knowledge of the Chironomidae continues to change and grow. A summary of the changes follows.

Although it may appear that some names have "changed" (i.e., Djalmabatista pulchra), some of these changes are necessary to allow the species name to agree in gender with the genus name.

New keys are provided for Corynoneura, Thienemanniella, Kiefferulus and Tanytarsus. Revised/improved keys are provided for Ablabesmyia, Nanocladius, Chironomus, Parachironomus and Polypedilum.

Some of the taxonomic changes made are:

Nanocladius altenantherae Sublette is considered a junior synonym of N. rectinervis (Kieffer).

Orthocladiinae genus F is considered to be a Parametriocnemus; the single species known from Florida is now called Parametriocnemus sp. F Epler.

Chironomus pungens (Townes) is moved to Kiefferulus, where it becomes K. pungens (Townes).

The genus Nimbocera is considered a junior synonym of Tanytarsus. Nimbocera limnetica (Sublette) is moved to Tanytarsus and becomes T. limneticus Sublette.

Parachironomus sp. A is P. supparilis (Edwards); P. chaetoalus in the key in Epler (1992) is now called Parachironomus sp. B Epler (see Notes on species under Parachironomus).

And lots of other new information has been added!
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INTRODUCTION

The midge family Chironomidae is usually the most abundant macroinvertebrate group, in numbers of species and individuals, encountered in the majority of freshwater aquatic habitats. In addition, chironomids have invaded the sea and the land, being found 30 m down in the ocean and in dry hardwood forest litter. They form an integral part of the foodweb, serving as food for larger invertebrates, fish and birds. Many larvae possess giant chromosomes and have been used extensively in genetic research. Chironomids are recorded as pests in rice fields, and are considered nuisances when large emergences occur in close proximity to human habitations. They have also been implicated in allergic reactions in humans (see Ali (1991) and Armitage et al. (1995) for an overview of pestiferous Chironomidae). However, to benthologists, the Chironomidae have long been known as potential indicators of water quality. Unfortunately, many of the larvae are very difficult to identify, and much of the literature is burdened with studies done with Chironomidae that were misidentified. A great deal of the confusion is due to the complexity of the taxonomy of the family. "Name-changing" may have appeared rampant to the non-taxonomist, but to date the result has been a more workable knowledge of the group, where characters from all life stages are employed to separate species and delimit genera. Ashe (1983) gives an excellent review of the taxonomic problems the Chironomidae have gone through. A comprehensive update of our knowledge of the biology and ecology of the Chironomidae has recently been published (Armitage et al. 1995).

Much of the confusion concerning identifications was settled in 1983 when the first volume of the "Holarctic Keys" (Wiederholm 1983; 1986; 1989) was published. The volumes combine keys, excellent illustrations and, most importantly, diagnoses for each genus. However, time and taxonomy march on. Many new genera and previously unknown larvae have been described and some previously described genera have been reorganized. In addition, the Holarctic keys bear a strong Palaeartic influence (due to the location of most of the authors). The excellent keys offered by Coffman & Ferrington (1984) are also out of date and lack diagnoses. The present manual is an attempt to update the taxonomy of the group for Florida, and to provide identification materials to allow species-level identification of many taxa. Beck & Beck (1959) provided a checklist of the Chironomidae of Florida; they listed 110 described species. This revised edition of the manual lists 122 described genera including about 280 described species known from the state (Appendix A). When one adds 9 undescribed genera and about 65 undescribed species, the totals for the state can be estimated at about 130 genera with about 350 species. But, rather than demonstrating the extent of our knowledge of the Chironomidae, this manual reflects our ignorance.

HOW TO USE THIS MANUAL

Area covered: This manual was written for use in the state of Florida, and will identify all genera known to me from the state, as well as many which may occur here but have not yet been recorded. Thus, it should identify most genera encountered on what is commonly called the Southeastern Coastal Plain, remembering that the greater the distance one is from Florida, the less effective the manual will be. This caveat applies to identifications made at the subfamily, generic and specific level. No doubt "odd" larvae will continue to turn up in Florida, especially in the northwestern and extreme southern portions of the state. Currently extralimital Nearctic
genera with such potential include *Radotanyus*, *Thienemanninyia*, *Trissopelopia*, *Heleniella*, *Mesocricotopus*, *Sublettiella* and *Parapsectra*. With three exceptions, most of these larvae can be identified using Pinder & Reiss (1983); the larva of *Radotanyus* was described by Epler (1986b); see Murray & Fittkau (1985) for *Thienemanninyia*; the larva of *Sublettiella* is unknown.

**Illustrations and abbreviations:** The majority of the illustrations in this manual were produced by the author from Florida specimens, most of which were reared or otherwise associated. Most are somewhat schematic in that all parts of a structure were not drawn. For example, in the Chironominae, often only one ventromental plate was drawn, and only a portion of the ventromental striae were shown; premandibular brushes were not shown unless they were an important character, and the pecten mandibularis was not fully drawn on most mandibles. When specimens were unavailable or not suitable for illustration, figures were borrowed from other sources. Thus, some illustrations differ in the amount of shading, structures included, etc. If the illustrations were from publications other than my own, the source of each figure is cited at least once within the manual.

To reduce confusion, I have used few abbreviations. Those used are **AR** - antennal ratio (length of segment 1/remaining segments); **l.s.** - labral sclerite; **p.e.** - pecten epipharyngis. These structures and others are illustrated on pages 1.10-1.11.

**Taxonomy:** In general, I have not used the author's name(s) for genera and species within the text and keys; complete names are listed in Appendix A. For arrangement of tribes and subgenera, see Hudson et al. (1990) or Oliver et al. (1990).

Many larvae are undescribed or unassociated with the adult stages. Species definitions in the Chironomidae are, for the most part, based on the adult male. For several genera, several undescribed larval "types" are known. These have been given letter or number designators, such as "Tanytarsus sp. A" or "Chironomini genus III". These may represent taxa with described adults, or species new to science. When reared or otherwise associated with an identifiable life stage, the names can be updated. Several new species were reared during the course of this study. However, a manual such as this is not the proper place to publish new names and descriptions. Thus, as is noted in the text, these new species will be described in papers currently in progress.

**The Keys:** It is assumed that the reader is familiar with the use of dichotomous keys. Numbers in parentheses following the couplet number indicate the couplet that led to that position. Illustrations are usually arranged from left to right and/or top to bottom with regards to the order of statements in the couplet(s). **Keys are written for fourth instar larvae!** Measurements are only valid for fourth instar larvae, but ratios may still be useful for other instars. If you are new to chironomids, you'll have to start with the key for subfamilies that starts on page 1.12 at the end of this chapter.

**The Layout:** This manual is divided into nine sections. Subfamilies are arranged phylogenetically; each subfamily has its own section; sections are paginated separately. Each key to genera is followed by "generic units" in alphabetical order. Each genus unit consists of several parts:
A Diagnosis, or short descriptive summary of the genus' morphological characters which will separate it from similar taxa. Diagnoses in this manual pertain to Florida taxa only! Although this manual is intended for stand-alone use, it will be most effective when used in conjunction with the more detailed diagnoses in Wiederholm (1983, 1986, 1989).

A Notes section which contains additional information concerning the taxonomy and biology of the genus.

An Additional References section lists additional literature that may give more information. It should be understood that the Holarctic Keys (Wiederholm 1983, 1986, 1989) are always considered to be an additional reference. If there are no recent or pertinent references available, this section is omitted.

Illustrations of important body structures are included for each genus; a Key to species and a Notes on species section are included when possible.

ACKNOWLEDGEMENTS

This manual is the result of the combined resources and helpfulness of many friends and colleagues. A great debt is owed to the pioneers of Florida Chironomidae studies, Elizabeth C. Beck and William M. Beck, Jr. Their collection, now mostly housed at Florida A & M University (FAMU) in Tallahassee, was examined for many records; a portion of their reared material was discovered and utilized. Additional useful material in the FAMU collection was that collected and curated by Dr. Annelle R. Soponis; much of the reared material used in preparation of this manual was found there. I am indebted to Dr. William L. Peters and Jan Peters for allowing access to the collection at FAMU.

Although the collection at FAMU was extremely useful, this study was greatly enhanced by the generous loan of material from several colleagues who lent extensive and/or important material from their collections: Michael J. Bolton (Ohio EPA), Broughton A. Caldwell (Georgia EPD), David L. Evans (Water & Air Research, Gainesville), Dr. Leonard C. Ferrington, Jr. (University of Kansas); Michael W. Heyn (Clemson University), William R. Karsteter (Environmental Planning & Analysis, Tallahassee), Robert P. Rutter (formerly with Kevin L. Irwin Consulting Ecologist, Inc., Fort Myers; now with FDEP, Punta Gorda) and Dr. J.E. Sublette (formerly at University of Southern Colorado, Pueblo; now in Tucson, AZ). Others who made specimens available were: Robert A. Mattson (Suwannee River Water Management District), Doug G. Strom (FDEP, Port St. Lucie) and Dr. David Wahl (American Entomological Institute, Gainesville).

I was also greatly assisted by several colleagues who provided reviews of the manuscript. Bohdan Bilyj (Ottobicoke, Ontario, Canada) provided an in-depth review of the Tanypodinae section and allowed use of unpublished data from his current revision of Larsia. Michael W. Heyn allowed use of unpublished data from his Glyphotendipes revision. Others who provided valuable information, review or comments were Broughton A. Caldwell, Rick Cantrell (FDEP, Tallahassee), William R. Karsteter, Dr. F. Reiss (Zoologische Staatssammlung, Munich, Germany), Robert P. Rutter, Dr. Ole A. Sæther (University of Bergen, Bergen, Norway), David Smith (USEPA, Athens, GA), and Maria V. Spence (City of Lakeland). I owe a special debt to Russel Frydenborg and Kathy Lurding (FDEP, Tallahassee) for their continuous enthusiastic support, checking and reviewing the keys, and providing some of the unusual material discovered during this study.
Dr. Barry Merrill and Judy Merrill (Merrill Consultants, Dallas, TX) provided the bulk of the computer hardware utilized to produce this manual. I owe them a great debt, for without their support, I could not have produced this study.

This study could have never been started without the foresight, keen enthusiasm and hard work of James L. Hulbert (FDEP, Orlando). Jim's persistence got the contract through government mire, and kept things running smoothly throughout the study.

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Last, and certainly not least, I am forever grateful to my wife Linda for her support, love and understanding throughout these projects.

SPECIMEN PREPARATION

Materials and equipment required:

Microscopes: You will need a dissecting (stereo) microscope for sorting larvae and mounting them on microscope slides. A compound microscope is necessary for identification; one with phase-contrast optics or better is recommended. The compound microscope should have several objective lenses: a low power (4X, which gives "40 power" with a 10X eyepiece) scanning lens, which makes it easier to locate your specimens on your slide, a 40X ("400 power") lens for most work and a 100X ("1000 power") oil-immersion lens; 10X and 20X objectives are also desirable, but are not necessary. Phase-contrast optics and a high power oil-immersion lens may be expensive, but are necessary for observing minute hyaline structures such as the S 1, labral lamellae and the apical sensilla of the maxillary palp. Another necessity is a measuring reticle (a glass disc etched with a grid or ruler line, which fits into one of the microscope's eyepieces); this accessory is needed to provide accurate length measurements (often the only way to separate some species) and to calculate ratios. Be sure to calibrate your reticle with a stage micrometer (usually, a precisely etched glass slide is used) at all magnifications you will be using.

Microscope slides, cover slips (glasses) and boxes: Whatever size you find convenient. Round or square cover slips from 12 to 22 mm work well for most larvae. I favor the round ones because they allow more rotation and better positioning of your specimens. Good slide boxes for maintaining reference collections are a necessity.

Labels: These can be stick-on labels or, for large numbers of slides, transparent ("Scotch") tape. Use a dark pencil or a waterproof ink. Remember that a slide without a label is basically useless.

Mounting medium: CMC-10 (and variants) is widely used and is satisfactory for most applications. It does have a tendency to shrink away from the cover slip and produce air fingers,
so ringing slides with additional mountant is recommended; and crystallization over time can be a problem. Much of the material in the Beck collection at FAMU was mounted in CMC; much of this material is in poor or unusable condition because of air fingers/bubbles and crystallization. Mounting material in Canada balsam produces superior slides, but is much more time consuming. All reared material should be mounted in Canada balsam, or another permanent medium, such as Euparal.

**Sorting Chironomidae:**

Mounting every chironomid in a sample is often not feasible. Many Chironomidae can be sorted to genus, even species, while still in fluid preservative. Some characters to use in sorting are:

1. Shape of head capsule. Some larvae have rounded head capsules, others are apically pointed. The triangulum occipitale provides a good character to separate larvae of *Kiefferulus* and *Goeldichironomus* (where it is large) from those of *Dicrotendipes* and *Chironomus* (small) while in fluid preservative.
2. Color or markings of the head capsule. The dorsum of the head may bear stripes, spots or bars. The postmentum or the posterior margin of the head capsule may be darkened.
3. Color of body. Best seen with live or fresh specimens. Some larvae may be white, cream, red, green or even purple!
4. General appearance of body. Is it "hairy"? Are the setae scattered or arranged in lines along the side of the body? Are the setae at the end of the abdomen long, short or absent? Is the body curved or the head distinctly bent?
5. Tubules ("gills"). Are ventral or lateral tubules present near the end of the abdomen? If present, how many pairs are there and how are they shaped?
6. Antennae. The shape and length of the antennae are diagnostic for many taxa. Note that the Tanytarsini have their antennae mounted on elongated bases. Note also that some larvae have retracted antennae (they can be pulled into the head capsule).
7. Size. Although different taxa may be different sizes, remember that different instars of one species will be of different dimensions.

**Slide making: CMC.**

1. Start with clean slides and cover slips!
2. Label the slide! Slides without labels are useless. Remember that a microscope inverts the image. If you want to be able to read your label and see your specimen oriented correctly, rotate your slide 180° after labeling (i.e., your slide label will be upside-down, not under the slide!). Then mount your specimens with the head "up" (see 4 below).
3. Place a drop or two of CMC on the slide. This will vary with how many larvae you are mounting and how big they are. You will learn this fast. It also sometimes pays to use an excess of mountant; when squeezed out from under the cover slip, it can be allowed to run over the edge of the slip. This aids in forming a seal, which prevents air fingers from forming.
4. Specimens may be mounted from alcohol or after a brief bath in distilled water. Using forceps or a needle, place the larva(e) in the mountant, *ventral side up*. Remove major bubbles with a needle. Don't worry about getting all the bubbles out. If you have a large series of what appears to be one taxon, you can mount a few with the dorsal side up. This can give better views of the frontal apotome necessary for identification in genera such as *Goeldichironomus*. 
5. Using clean forceps, place the cover slip over the mountant. Do this by gently lying one side down first, then releasing the slip to allow it to slowly settle over the larva(e). Don't drop the slip quickly; this will trap air under the cover slip.

6. Using forceps or the eraser end of a pencil, press the cover slip onto the larva(e) with sufficient pressure to spread the mandibles. This may require a good deal of pressure; be careful not to break the cover slip. It may be necessary to really "squash" the larvae! It is important to spread the mandibles and labrum in order to make structures visible which must be observed at 1000X. You may also orient larvae at this point by pushing or pressing on the cover slip in various ways.

If you are using large cover slips (22 X 22 mm), as many as 10 (or more) larvae may be mounted under one cover slip. Orient all larvae so that their heads are pointed in the same direction. It is often difficult to get all the larvae lying flat on their backs. In such cases, they can be laid on their sides, all facing the same direction. After the cover slip is placed over them, push it to one side, and most of the larvae will rotate onto their backs. With some practice, this becomes easy.

Some larvae may require that you remove the head capsule to orient it correctly. The head and body may be mounted under separate cover slips on the same slide; or with practice both can be mounted under one cover slip. Never discard any body parts!

7. Set the slides on a flat surface to dry, preferably on a slide tray in a well ventilated area. Drying may take 1-3 days, but can be sped up by placing slides in a drying oven. Do not dry slides at temperatures above 55° C. Do not stand slides on edge!

8. The next day, or after several hours if using a drying oven, inspect the slides for air holes or pockets. Fill these by placing a drop of CMC by the edge of the cover slip near the problem area(s); capillary action will pull the mountant under the cover slip in most cases. It may be necessary to ring the slide with more CMC to prevent further problems with air intrusion. I have found that it is not necessary to use anything other than CMC to ring CMC. It is a good idea to always ring slides you are planning on keeping.

Mistakes can be easily corrected by remounting. CMC is water soluble; soaking the slide(s) overnight (or longer, if the slide is old) in a covered container will allow you to remove the cover slip, add more mountant, reorient the larva(e) and add a new cover slip.

Remember, however, that CMC is not as permanent a mountant as Canada balsam or Euparal. I often use Canada balsam thinned with cellosolve, rather than xylene. Specimens are placed in hot 5-10% KOH for 5-15 minutes (until cleared), then distilled water, followed by glacial acetic acid and finally straight cellosolve. Then follow instructions as above (using balsam as the mountant), but you won't have to exert as much pressure to expose mouthparts. Note that the medium may cloud a bit initially, but this clears with heating and drying. Drying slides may take as long as three weeks, or more. Note also that shed larval skins do not require clearing before mounting.

THINGS YOU CAN DO TO AID IN IDENTIFICATION

1. Maintain a voucher specimen collection of labeled slides. This is especially important for taxa given letter or number designators in lieu of "real names". Voucher specimens should be kept for every study.
2. Maintain a reference library, and keep up with the literature. The following publications are most useful: Armitage et al. (1995); Ashe (1983); Hudson et al. (1990); Oliver et al. (1990);
3. Utilize pupae for identification. Often, pupae will be found with larval skins attached. These are easy to identify, and provide additional information useful for determination. Wiederholm (1986) provides keys and diagnoses which will identify the majority of Florida's Chironomidae genera. It is anticipated that a pupal key for Florida Chironomidae may be produced at a future date. Pupae are very important: I have seen countless samples in which many taxa were represented only by their pupal stages; imagine what this may do to diversity indices, if pupae are only listed as "unidentified Chironomidae pupae".

4. Rear larvae! This can not be stressed enough! Many common taxa are just not identifiable at the species level without another associated life stage (Kiefferulus, Glyptotendipes, Dicrotendipes, Chironomus, Polypedilum, and Ablabesmyia, to name a few), sometimes even at the generic level (Cricotopus, Orthocladius). Rearing is simple: collect live larvae in the field. While in the field, place each larva in a separate 2-4 dram vial with a small amount of water from the habitat, and place a cork or other permeable stopper in it (don't use cotton! Adults lose legs and antennae in it). Maintain an even temperature (this may require using a cooler; larvae are difficult to overcool for short periods, but succumb easily to high heat) and return to the lab. Or take a container (cooler) with samplers with live insects back to lab, and sort larvae there. In the lab, place the vials in rafts floating in water (see figure below), or if air conditioned, leave them at room temperature. I've had good results at temperatures ranging from 15°-20° C. This will vary depending on what and where you have collected, time of year, etc. Check vials daily. If you have collected fourth instar larvae, they may pupate, and eventually an adult may emerge. Allow the adult to harden for several hours or a day, and then knock it into the water with a squirt of alcohol. There you have it: an adult with its shed pupal and larval skins! Be sure to add preservative in an adequate strength (70-80% ethanol). Incomplete rearings (larva died in transition to pupa, or pupa died before adult emerged) can also be extremely valuable.

Rearred larvae may be sent to experts for identification. You might be the person who makes an important association which allows better identifications for everyone. And, rearing and observing live larvae, pupae and adults can be fun!

5. Have your identifications verified by a qualified expert. Unfortunately, there are very few such experts in this country. Someone who has memorized a few keys and can say a few
long scientific names is not necessarily an expert! Although quality assurance may be closely monitored for such things as water chemistry, sampling methods and preparation, often little is done to assure that identifications are correct. This is especially important in long term monitoring programs. Identification can be a very technical and difficult process; it may take years and the study of thousands of specimens to develop the necessary skills. Don't identify specimens to a level beyond your capability. There is no shame in listing a specimen as a "Dicrotendipes sp." when you can not be positive of your determination at the species level (without associated material this may be necessary for many larvae).

If you are uncertain of a generic or species identification but are relatively sure that you're correct, you can use the modifier "cf.". This is an abbreviation for a Latin term (conferre) that means "compare". If you're uncertain about the genus, use: "cf. Meropelopia" (or whatever genus); if uncertain of the species use: "Goeldichironomus cf. natans" (or whatever). Question marks can also be used, but many workers place them incorrectly, which leads to confusion! This confusion is best avoided by not using question marks in names. Also, do not use the modifier "nr." (an abbreviation for "near"). This implies a close phylogenetic relationship between your specimen and another species. Many keys are artificial constructs used to identify organisms; they do not necessarily imply phylogenetic relationships. Thus if your specimen keys to a couplet but doesn't quite fit, it does not automatically follow that your specimen is "near" the other taxa in that couplet.

Before you send specimens to an expert, contact him/her and find out if he/she has the time to see your specimens, what fees may be charged and how the specimens should be prepared. See the Bulletin of the North American Benthological Society, Summer 1991, for a list of some taxonomists.

MORPHOLOGY

The majority of important structures are illustrated on the following pages. Terminology used in this manual follows Sæther (1980), Wiederholm (1983) and Epler (1987; 1988b). A detailed account of chironomid morphology is beyond the scope of this identification guide; however, a few structures bear additional mention.

In all subfamilies, the antennae provide important characters. A commonly used character is the antennal ratio, AR. This is the length of the basal antennal segment divided by the combined lengths of the remaining segments (the remaining segments are collectively termed the flagellum). The apical segments are sometimes difficult to discern, especially in those genera with 7- or 8-segmented antennae; phase-contrast optics aid in observing these structures.

The prementum is membranous structure located dorsal of the mentum that bears several structures important for identification.

Tanypodinae. The sensory structures at the apex of the maxillary palp have proven to be important in the generic identification of members of the Thienemannimyia group. Although previously called setae, this is anatomically incorrect. I have used b "seta" for the multi-segmented sensillum used to differentiate genera. In most specimens, this must be observed under an oil-immersion lens. It may take some practice before you are able to distinguish this structure from the other sensilla present.

The ligula is one of the most obvious structures of the head capsule; it is a dorsal
appendage of the **prementum**. It is important that ligula be flat in order to compare relative lengths of the teeth. Also associated with the prementum is the membranous, somewhat triangular **M appendage**, which lies dorsal to the ligula. The M appendage bears a longitudinal band of minute spinules, the **pseudoradula** (except in *Tanypus*).

The setae of the head capsule are also very useful in identifying genera and some species. These setae were reviewed in detail by Kowalik (1985).

**Orthocladiinae.** On the dorsal anteromedial surface of the labrum are located several important setae and lamellae. Most important of these are the S I and S II, and the **labral lamellae**. These structures may be minute and hyaline, and are best observed with a phase contrast microscope using an oil-immersion lens. The **premandibles** are located ventrally of the labrum; they are paired structures, not present in the Tanypodinae, that are of importance in identification in the Orthocladiinae and the Chironominae.

The **mentum**, sometimes referred to as the labial plate, labium or hypostomium, is one of the most noticeable structures of the head capsule. It is composed of a ventromentum and a dorsomentum. The **ventromental plates** are ventral and lateral extensions of the ventromentum. Their presence/absence and/or shape can be important. In some taxa a "beard", a group of setae, is present beneath these plates. In all Florida chironomids, with the exception of the prodiamenesine *Odontotmesa*, this beard is a **cardinal beard**; the setae arise from the cardo (the inner edge of the maxilla).

Another structure bears mentioning, the **pecten galearis** of the maxilla. This is a comb-like structure on the dorsal side of the maxilla useful in separating some genera.

**Chironominae.** The dorsum of the head capsule is divided into several sclerites. An important structure is the **apotome**. The S3, or clypeal, setae often arise from a medial sclerite anterior to the apotome; this sclerite is then termed the clypeus. If the S3 setae are mounted on the apotome, it is called a frontoclypeal apotome (i.e., the clypeus is fused with the apotome); if they arise elsewhere, the apotome is termed a frontal apotome. If the setae do not arise on the clypeus, the medial sclerites anterior to the apotome are termed labral sclerites. In most cases I have avoided this complexity by using the broad term apotome for both types, and have called the clypeus and labral sclerites "medial sclerites anterior to the apotome".

The labral setae S I and S II are important for identifications in this subfamily also, as are the **premandibles**.

The **mentum** and striated **ventromental plates** are also of great importance in this subfamily. The ventromental plates lie under the maxillae; where the ventromental plates and the maxilla meet the striae of the ventromental plate are matched by grooves on the cardo of the maxilla; this area on the maxilla can be referred to as a maxillary plate. In the Chironominae, silk is extruded through the channels formed when the ventromental and maxillary plates are brought together. This silk is then combed by claws on the anterior parapods and is used to build tubes, catch-nets, etc.
Tarypodinae head structures

posterior body segments
Chironominae/Orthocladiinae head structures
Key to Subfamilies of Florida Chironomidae

1. Antennae retractile (can be drawn into head); a large, well sclerotized ligula present ............................................. Tanypodinae (Section 3)

1'. Antennae non-retractile (can not be drawn into head); ligula not well developed or sclerotized (if developed, usually brush-like) ................................................................. 2

2 (1'). Third antennal segment annulated .. Diamesinae (Section 4)

2'. Third antennal segment not annulated .................................. 3

3 (2'). Striated ventromental plates present (striae extremely reduced in Stenochironomus and Xestochironomus, which have a concave mentum with well developed teeth); no beard (setae) present beneath ventromental plates .......... Chironominae (Section 7)

3'. Ventromental plates, if present, never striated (a few ridges may be present in some Nanocladius); a weak to strong beard may be present beneath or adjacent to ventromental plates or mentum, or beard absent ................................................................. 4
4 (3') Ventromental plates large, with well developed beard; antennæ 4 segmented ........................................................... Prodiamesinae (Section 5)

4' Ventromental plates smaller; if well developed then without beard or antennæ with more than 4 segments ................................................................. 5

5 (4') Prementum with dense, well developed median brush; antennæ short (less than 1/5 length of mandible), 4 segmented; ventromental plates and beard absent; exclusively marine in Florida ...................................................... Telmatogotoninae (Section 2)

5' Prementum without dense median brush; antennæ usually longer and/or with more than 4 segments (if short with fewer than 5 segments, then segments indistinct and/or shorter than antennal blade): plates present or absent: mostly freshwater genera (at least one genus, Clunio, with 5 segmented antenna, is intertidal) ..... Orthocladiinae (Section 6)
Subfamily TELMATOGETONINAE


**NOTES**: This subfamily is apparently restricted to marine environments (coastal jetties; the Intracoastal Waterway) in Florida. Larvae are almost invariably associated with algae growing attached to rocks (jetties, etc.). Two genera, each represented by a single species, are present in Florida. Larvae of this subfamily may be mistaken for some orthoclad larvae, but can be easily distinguished by the dense median brush on the prementum, short antennae and the absence of proceri.

**Key to the genera of Florida Telmatogotoninae**

1. Anterodorsal portion of head without medial sclerites anterior to apotome; premandible simple; mandible apparently with 3 inner teeth or 4 inner teeth; mentum with 13 teeth

------------------------------------------------------------------------------------------------------------------------------- Thalassomya

![Diagram](attachment:diagram.png)
1' Anterodorsal portion of head with 2 well developed medial sclerites anterior to apotome; premandible with 3 blunt apical teeth; mandible with 4 inner teeth; mentum with 15 teeth (outer tooth very small; median tooth may appear notched) \hfill \textit{Telmatogoton}
Genus *Telmatogeoton*

**DIAGNOSIS:** Separated from *Thalassomya* by the presence of sclerites anterior to the apotome; premandible with blunt apical teeth; and 15-toothed mentum.

**NOTES:** Only one species, *T. japonicus*, is known from Florida. I have found this species to be abundant in March on the rock jetties at St. Andrews State Recreation Area near Panama City; it has also been found on the jetties at the mouth of the St. Johns River near Mayport. Adults "swarm" on or immediately above the rocks of the jetties. Larvae and pupae can be collected from algae scraped from the rocks; larval and pupal exuviae are easily collected by skimming beachside foam produced by wave action.

**ADDITIONAL REFERENCES:** Tokunaga 1935; Wirth 1952.
Genus *Thalassomya*

DIAGNOSIS: *Thalassomya* can be separated from *Telmatogeton* by the lack of distinct sclerites anterior to the apotome, the simple premandible and the lower number of teeth on the mentum.

NOTES: One species, *T. bureni*, is known from Florida. Wirth (1952) described the larva from specimens collected from algae on rocks at Lake Worth. I have collected larvae of *Thalassomya* from algae scraped from rocks in the Intracoastal Waterway in Pompano Beach, where they coexisted with larvae of the orthoclad genus *Clunio*. I have also collected adults of *T. bureni* on rock jetties in Key West. Wirth (1952) described the larva of *T. bureni* with 11 mental teeth and 3 inner teeth on the mandible. However, specimens of *Thalassomya* I've collected possess 13 mental teeth (the outermost teeth are small and can be closely appressed to their neighbors) and 4 inner teeth on the mandible. Some specimens appear to have only 3 teeth, but apparently this is a result of the innermost tooth being closely appressed to the molar region of the mandible. My specimens were not reared; if one assumes only one species occurs in Florida, they represent *T. bureni*.

ADDITIONAL REFERENCES: Wirth 1949; 1952.
Subfamily Tanypodinae

**DIAGNOSIS:** Antennae usually 4 segmented (5 in *Bethbitbeckettia*), retractile into head capsule. Labrum with sensillae usually simple, occasionally multibranched, on pedicels or with expanded bladder-like bases. Labral lamellae absent. Mentum with large membranous triangular M appendage; dorsomental teeth present as separate or fused horizontal plates, in longitudinal rows, or as a few usually blunt teeth located laterad, or apparently absent. Prementum bears a large, well sclerotized 4–7 toothed ligula. Body with well developed procerci and anterior and posterior parapods; with or without lateral fringe of setae, sometimes with long setae. Anal tubules usually well developed in freshwater forms; reduced in brackish water taxa.

**NOTES:** Many members of this subfamily are free swimming/crawling predators; some apparently burrow in bottom mud. Larvae are found in a variety of aquatic habitats, from seeps to streams/riders, ditches, ponds and lakes.

Most Tanypodinae genera are easily identified. However, one group of Pentaneurini, the *Thienemannimyia* group, presents some problems. You may have to be happy with an identification of "*Thienemannimyia* group sp." for many early instar larvae of this complex of closely related genera, which in Florida includes *Conchapelopia*, *Hayesomyia*, *Helopelopia*, *Meropelopia* and *Rheopelopia* (the genus *Thienemannimyia*, for which the group is named, is not known from Florida). Mature fourth instar larvae with developing pupal characters may be positively identified by the developing thoracic horn; this structure is illustrated for each of these genera in the diagnoses following the key.

**Key to the genera of Florida Tanypodinae**
(The larva of *Canicopelopia* is unknown)

1. Maxillary palp with 2 or more distinct, well sclerotized segments; ring organ located intersegmentally ................. 2

1'. Maxillary palp with sclerotized basal segment with a ring organ or palp indistinctly segmented with ring organ on basal segment ....... ..................................................... 3
2 (1) Maxillary palp consists of 2 unequal segments, basal segment less than 1/2 length of second segment; pseudoradula broadened posteriorly, appearing attached to transverse bar, with granules of pseudoradula not arranged in longitudinal rows .................... *Paramerina*

2' Maxillary palp with 2-5 segments; if only 2 segments then segments subequal in length or basal segment greater than 1/4 length of apical segment (be aware that in some species with more than 2 segments, basal segment may be very small); pseudoradula not broadened posteriorly, not appearing attached to transverse bar; with granules of pseudoradula arranged in longitudinal rows ........................................... *Ablabesmyia*

3 (1') Dorsomental teeth present in well developed transverse plates or in longitudinal rows; body usually with well developed lateral setal fringe ........................................... 4
3' Dorsomental teeth apparently absent, not confined to well defined transverse plates or in longitudinal rows; body without lateral setal fringe (setae may be present, but are scattered) or with a weak fringe of 4 setae on body segments 4-10 (see couplet 23) ..................................................... 13

4 (3) Dorsomental teeth arranged in longitudinal rows ....................................... 5

4' Dorsomental teeth arranged on transverse or somewhat diagonal plate(s) ......................... 6

5 (4) Mandible with apical tooth strongly hooked; large basal tooth present; ligula usually with even number of teeth, with inner tooth at most only bent towards outer tooth; without pair of sclerotized hooks on posterior margin of body segment 3 ......................................................................... Clinotanypus
5' Mandible not strongly hooked; basal tooth low, rounded; ligula usually with odd number of teeth, with inner tooth strongly bent towards or on to outer tooth; a pair of sclerotized hooks present on posterior margin of body segment 3 .......................................................... Coelotanypus

6 (4') Mandible with stout base, so that apical tooth appears small in relation to remainder of mandible; pseudoradula absent ......... Tanypus

6' Mandible base not as stout, apical tooth appears large in relation to mandible; pseudoradula present .................................................. 7

7 (6') Ligula with black teeth; mandible with large, blunt basal tooth ................. 8
7' Ligula with pale or brownish-yellow teeth; basal tooth of mandible not large and blunt ........................................ 9

8 (7) Antennal blade subequal to length of flagellum; ligula with 5 teeth (4 in aberrant specimens) ........... Procladius

8' Antennal blade about twice as long as flagellum; ligula usually with 4 teeth, but may have 5 ...................... Djalmabatista

9 (7) Mandible with numerous additional teeth, either in several dorsal and ventral rows or arranged on inner side of mandible; paraligula without inner points ..................................... 10

9' Mandible with at most a few small additional teeth near basal tooth; paraligula with inner teeth .................................. 11
10 (9) Ligula with 5 teeth, inner tooth bent towards median tooth; dorsomental teeth arranged in concave arch; mandible with several rows of additional small dorsal and ventral teeth ........................................... *Fittkaumyia*

10' Ligula with 4 straight teeth; dorsomental teeth in straight transverse row; mandible with row of teeth on inner side ........................................... *Psuctrotanypus*

11 (9') Dorsomemtum with 6 pairs of large teeth; 3rd antennal segment at least twice as long as wide; all ventrolateral setae of mandible simple ...................... *Alotanypus*
11' Dorsomentum with 4 or 5 pairs of large teeth (see couplet 12); 3rd antennal segment about as long as wide; at least 1 ventrolateral seta on mandible bifid or multibranched .................. 12

12 (11') Inner tooth of ligula straight; dorsomentum with 5 pairs of large teeth and with medial extension which reaches or almost reaches pseudoradula; antenna with 5 segments ......................................................................... *Bethbilbeckia*

12' Inner tooth of ligula turned out; dorsomentum with 4 pairs of large teeth, without medial extension reaching pseudoradula; antenna with 4 segments ...... ........................................................................... *Apsectrotanypus*

13 (3') Median tooth of ligula longer than inner teeth, reaching or surpassing level of outer teeth ........................................... 14
13' Median tooth of ligula less than or equal to inner teeth

14 (13) One small claw on posterior parapod bifid; anal tubules shorter than posterior parapods; head sometimes with lateral spines or covered with numerous small points or granules, or both Labrundinia (in part)

14' One small or medium claw on posterior parapod with several inner spines; anal tubules longer than posterior parapods; head never with lateral spines or covered with small points or granules Nilotanyus

15 (13') Apex of antennal segment 2 with large Lauterborn organs fused to apex, appearing like a tuning fork
15' Apex of antennal segment 2 without tuning fork appearance ................................................................. 18

16(15) Paraligula trifid; small claws of posterior parapod with large inner tooth; all claws of posterior parapod pale ........................................ Denopelopia

16' Paraligula bifid (see couplet below); posterior parapod with either pale simple claws or with one dark claw and one or more small, clear pectinate claws ........................................................................... 17

17 (16') Granulose area at base of ligula forming a basal band ......................................................... Krenopelopia

17' Granulose area at base of ligula roughly triangular ................................................................. Monopelopia

18 (15') Anal tubules long and thin; much longer than posterior parapods ....................... Pentaneura
18' Anal tubules elongate-conical; at most equal to posterior parapods .......... 19

19 (18') Surface of head granulose; body surface with undulating longitudinal striae; 2-3 small claws of posterior parapod with 3 or more inner teeth ............ *Guttipelopia*

19' Surface of head usually without granules; body smooth, non-striate; at most 1 small claw of posterior parapod with a single inner tooth ........................................ 20

20 (19) Mandible with large basal tooth ........................................ 21

20' Mandible without large basal tooth .................................... 24
21 (20') One small claw of posterior parapod with inner tooth ........................................ 22

21' Small claws of posterior parapod simple .......................................................... 23

22 (21) Head smooth, without lateral or ventral spines; inner tooth of small bifid claw on posterior parapod much shorter than upper tooth ................................. *Zavrelimyia*

22' Head granulose, with weak, blunt lateral and ventral spines; inner tooth of small bifid claw on posterior parapod subequal to upper tooth ................. *Labruninia* (in part)

23 (21') Antennae short, about 1/3 length of head and 2X length of mandible; basal segment of palp with ring organ in apical 1/3; body segments 4-10 with small anterolateral fringe of 4 larger setae ........................................... *Natarsia*

23' Antennae longer, about 1/2 length of head and at least 3X length of mandible; basal segment of palp with ring organ near middle; body segments without fringe .......................................... *Larsia*
24 (20') Basal segment of maxillary palp with ring organ at middle of segment or closer to base .................................. *Hudsonimyia*

24' Basal segment of maxillary palp with ring organ in distal 1/3 .. *Thienemanniymia* group ................................. 25

(In Florida, this group of genera includes Conchapelon, Hayesomyia, Helopelopia, Moropelopia and Rheopelopia. They are extremely difficult to separate; data in this key are based on 4th instar larvae. Earlier instar larvae may have to be identified as "Thienemanniymia group sp."); identifications should be verified by associated pupae or adults. The more northernly distributed genus *Thienemanniymia* apparently does not occur in Florida.)

25 (24') Maxillary palp with b "seta" 2-segmented ............... 26

25' Maxillary palp with b "seta" 3-segmented ....................... 28

26 (23) Basal segment of maxillary palp shorter than antennal segment 2; median 3 teeth of ligula subequal; maximum width of anterior portion of ligula 1.3-1.7X width at base ..................................................... *Rheopelopia* (in part)
26' Basal segment of maxillary palp equal to or longer than antennal segment 2; median tooth of ligula lower than inner teeth; maximum width of anterior portion of ligula 1.1-1.2X basal width ........................................... 27

27 (24') Length of antennal segment 1 divided by mandible length = 1.5 or less; caudal margin of head capsule usually with darker subtriangular area ........... *Hayesomyia*

27' Length of antennal segment 1 divided by mandible length greater than 1.75; caudal margin of head capsule may be darkened, but usually not as a subtriangular area ....................................................................................... *Meropelopia*  
(*Thienemannimyia*, which apparently does not occur in Florida, will key here. Note that its basal antennal segment is produced into a point on its outer side, lacking in *Meropelopia*; the basal ring of the antennal blade is as long as wide in *Thienemannimyia*, but 2X as long as wide in *Meropelopia*, and antennal segment 2 is 5X as long as wide in *Thienemannimyia*, but 8X as long as wide in *Meropelopia*.)

28 (25') Basal and accessory teeth of mandible extremely reduced, accessory tooth visible only at 1000X; subbasal seta of posterior parapod may be bifid .......... *Rheopelopia* (in part)  
(species from this "species group" of *Rheopelopia* not recorded from Florida)

28' Basal and accessory teeth larger; subbasal seta of posterior parapod simple ......... 29
29 (28') Central tooth of ligula about as long as wide; length of maxillary palp/width at ring organ 4.6 or more

.......................... *Helopelopia*

29' Central tooth of ligula about twice as long as wide; length of maxillary palp/width at ring organ 4.4 or less

.......................... *Conchapelopia*
Genus *Ablabesmyia*

DIAGNOSIS: The large basal tooth of the mandible; maxillary palpus with 2 or more segments; pseudoradula not broadened posteriorly, not connected to a transverse bar, and with its granules arranged in longitudinal rows, will distinguish this genus.

NOTES: *Ablabesmyia* is one of the most common tanypods in Florida. Roback (1985) noted that *Ablabesmyia* larvae were found over a pH range of <4.1 - >8.1, but were predominantly found in a circumneutral range of 6.1-7.0. He also observed that they preferred softer, less alkaline water. Roback also stated that larvae of the subgenus *Karelia* (which includes all species with a 2-segmented maxillary palpus, except *A. annulata*) were most often encountered in lakes, ponds and swamps, but were also found in large shallow streams. Most other species in the genus were found in flowing water.

Many name changes have taken place in this genus. See the checklist (Appendix A) and notes on the species following the key. Identification of many species is difficult, especially in the subgenus *Karelia*. Species level identifications of specimens with 2-segmented palps (the subgenus *Karelia*, with the exception of *A. annulata*, which is placed in the subgenus *Asayia*) and members of the *A. rhamphe* group should be considered at best uncertain. **Note** that early instar larvae may not possess the full complement of maxillary palpus segments! Rear larvae to positively identify species! Some concepts used in the following key are adapted from Roback (1985).

Key to Florida *Ablabesmyia*

1 Maxillary palpus with 2 sclerotized segments  ............................................................. 2

**CAUTION!** Do not mistake membranous base of maxillary palp for a segment.

1' Maxillary palpus with 3 or more sclerotized segments (basal segment may be small) .................................................. 7

2 (1) Apices of ligula teeth even; procercus length 7-8X width; numerous well developed lateral hooklets on distal 4/10 of posterior parapod ...................................................... *A. annulata*
2' Apices of ligula teeth form a concave arc; procercus length 2-4X width; lateral hooklets on posterior parapod smaller and less numerous

............... *A. (Karelia) sp.* ....... 3
(these species are difficult to separate; reared associations are highly desirable)

3 (2') Apex of inner tooth of ligula directed relatively straight forward; 1-3 dark claws on posterior parapod ................. *A. peleensis*

3' Apex of inner tooth of ligula directed slightly outward; 0-3 dark claws on posterior parapod

............... 4
4 (3') Posterior parapod with all claws pale; length of apical palpal segment 1.7-3X length of basal segment ................................................................. A. philosphagnos

4' Posterior parapod with 1-3 claws darker than others (difference in color may be slight); length of apical palpal segment 0.9-1.7X length of basal segment ...................... 5

5 (4') Posterior parapod with 3 darker claws; ratio of length of apical palpal segment/basal palpal segment 0.9-1.3 (mean 1.2); AR = 4.6-5.2 (mean 4.8) ....................... A. cinctipes

5' Posterior parapod with 1-2 darker claws; apical palpal segment/basal palpal segment 1.2-2.3 ; AR either around 4.0 or 4.7-6.1 ......................................................... 6

6 (5') AR = 4.7-6.1; basal antennal segment/mandible length 2.6-3.2 ......................... A. sp. B

6' AR around 4.0; basal antennal segment/mandible length 2.3 ................................. A. sp. A

7 (1') 3 sclerotized palpal segments ........................................... 8

7' 5 or 6 sclerotized palpal segments ............................... 9

8 (7) Apices of ligula teeth even or almost so; found only in freshwater mussels (Unionidae) ........... A. janta
8' Apices of ligula form a concave arc; free-living
........................................................................... \textit{A. rhamphe group}
(larvae of \textit{A. parajanta}, \textit{A. rhamphe} and some \textit{A. janta} are inseparable without associated adults)

9 (7') 5 palpal segments; small claw of posterior parapod without expanded base ..... \textit{A. mallochi}

9' 6 palpal segments; small claw of posterior parapod with or without expanded base ............................................. 10

\begin{itemize}
  \item with expanded base
  \item without expanded base
\end{itemize}
10 (9') Head with a dorsal anteromesal brown spot; small claw of posterior parapod without expanded base ........................................... *A. hauberi*

10' Head without a dorsal anteromesal brown spot; small claw of posterior parapod with expanded base ................................................................. *A. aspera*

**Notes on species**

*A. annulata* - This species is unmistakable with its 2-segmented palpus, ligula with even teeth and numerous large spines on the posterior parapods. It is not keyed correctly in Beck (1976; 1979).

*A. aspera* - Probably uncommon in Florida. Roback (1985) recorded it from Duval and Nassau Counties; R. Rutter (pers. comm.) has found larvae in Osceola Co. and I have seen larvae from the Suwannee River basin. I have seen *A. aspera* larvae with a small amount of brown anteromesally, but not as large or as dark as that of *A. hauberi*. Be sure to observe the small claw of the posterior parapod.

*A. cinctipes* - The immature stages of this species have been described recently by Caldwell (1993). He found larvae living in a shallow, well-water fed pond with a high pH (7.6-8.8) and conductivity (410-494 μmhos/cm @ 25°C), the highest yet noted for an *Ablabesmyia* sp. Differences in coloration of the claws of the posterior parapod are subtle and make this species, as with the majority of species in the subgenus *Karelia*, difficult to identify. It will not key correctly in Beck (1976; 1979). It is likely that this species name has been misused often, and most records of *A. cinctipes* based on larvae are probably erroneous.

*A. hauberi* - This species is unmistakable with its 6-segmented palpus and anteromesal brown spot. It may be a southern form of *A. aspera*.

*A. janta* - This species has been reared from freshwater mussels in Florida, but has been found free-living in Tennessee. Roback (1985) described 3 varieties for this species, one of which may have been missassociated; thus "true" *A. janta* may not key out with
the *A. rhamphe* group as in the above key. Associated adult males are necessary for correct species level identification.

*A. mallochi* - Probably the most common species in the genus in Florida. The names *auriensis*, *ornata* and *tarella* are synonyms. Common in streams and rivers, and is apparently somewhat tolerant of organic pollution. More empirical data are needed.

*A. parajanta* - As a larva, not separable from *A. rhamphe*. Should be identified as "*A. rhamphe group."") Associated adult males are necessary for correct species level identification.

*A. peleensis* - This species can usually be identified by the inner teeth of the ligula which point directly forward. This character can be quite variable and is dependent on the angle at which the ligula is viewed. Roback (1985) noted two larval types, based on differences of the dark claws on the posterior parapods. One type has the base of one of the dark claws expanded; the other does not. Both types occur in Florida.

*A. philosphagnos* - This species has no dark claws on the posterior parapods, according to Roback (1985). Thus, it will not key correctly in Beck (1976; 1979).

*A. rhamphe* - As a larva, not separable from *A. parajanta*. Should be identified as "*A. rhamphe group."") Associated adult males are necessary for correct species level identification.

*A. sp. A* - This taxon is based on larvae from south Florida which do not fit any description as given in Roback (1985). The larvae may represent an undescribed species. Morphometrically, it is closest to *A. illiuensis*, which apparently (and probably) does not occur in Florida. This unknown taxon must be reared before it can be properly named.

*A. sp. B* - This taxon is known only from south Florida; it is abundant in Lake Okeechobee. Although the larva will key to *A. idei* in Roback (1985), its antennal ratio is lower than the range given in that publication; pupae and adults I have reared from Lake Okeechobee do not fit the concept of that species. This is a new species which will be described in all life stages in a forthcoming publication.

Other species: *A. americana* is keyed in Beck & Beck (1966b) and Beck (1976; 1979). This name is a junior synonym of *A. monilis*, a northern species not known to occur in Florida (it has been recorded from South Carolina). If larval specimens of *A. monilis* were encountered in Florida, they would key to the *A. rhamphe* group, from which, on a practical basis, they are inseparable as larvae.
Genus *Alotanypus*

**DIAGNOSIS:** *Alotanypus* can be distinguished by the lateral fringe of setae on the body; well developed dorsomental plates with 6 large and 1 small tooth; the long third antennal segment (at least twice as long as wide); and the mandible with all ventrolateral setae simple.

**NOTES:** One species, *A. aris*, occurs in the Southeast, recorded from Alabama and North Carolina in addition to Florida. I have examined specimens from Mule Creek, south of Torreya State Park. Larvae are recorded from acid (pH 3.9-4.0) water in springs, seeps and hogs (Roback 1978; 1987). I collected the specimens illustrated below from hogs in Maine.

**ADDITIONAL REFERENCES:** Roback 1971; 1978; 1987.
Genus *Apsectrotanypus*

**DIAGNOSIS:** The lateral setal fringe of the body; ligula with inner teeth turned out; well developed dorsomental tooth plates, each with 4 large and 1 small tooth; and the branched ventrolateral setae 2 and 3 of the mandible will separate this genus.

**NOTES:** One species, *A. johnsoni*, is known from Florida. It occurs in small streams. I have seen specimens from Peters Creek and Long Branch in Clay Co., and from the Perdido River system in extreme western Florida. Specimens in the Beck collection at FAMU had been identified as "Macropelopia decedens". Although listed in Oliver et al. (1990) as occurring in Florida, *M. decedens* is a northern species and probably will not be found here. The records in Oliver et al. (1990) refer to *A. johnsoni* and *Bethbilbeckia floridensis* (there are specimens of the latter species in the Beck collection at FAMU identified as *M. dena*, a junior synonym of *M. decedens*).

Another closely related genus, *Brundiniella*, will key to couplet 12 in the tanypod key. It can be distinguished by the presence of an expanded claw on the posterior parapod. *Brundiniella* is not recorded from Florida, and is unlikely to occur here.

**ADDITIONAL REFERENCES:** Roback 1971; 1978.

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*Apsectrotanypus johnsoni*, larval structures
Genus *Bethbilbeckia*

**DIAGNOSIS:** The weak lateral setal fringe on the body; ligula with inner teeth directed forward; dorsomental plates with 6 (5 large, 1 small) teeth each and with a medial extension which reaches or almost reaches the pseudoradula; and 5 segmented antenna will distinguish this genus.

**NOTES:** *Bethbilbeckia*, with only 1 species, *B. floridensis*, was recently described (Fittkau & Murray 1988) from specimens reared from Peters Creek in Clay Co. I have also seen adult specimens from the FAMU Biological Station in Okaloosa Co. The genus occurs at least as far north as Ohio (Bolton 1997). Larval specimens of *B. floridensis* found in the Beck collection at FAMU were labeled as "Macropelopia dena Roback", a junior synonym of *M. decedens*. Most records in the southeast U.S. for *M. decedens*, a northern species, are probably *Bethbilbeckia* or *Apsectrotanypus* (q.v.), although I have seen larval specimens of *Macropelopia* from the Smoky Mountains.

Fittkau & Murray (1988) state that mandibular ventrolateral seta 3 is simple. However, their illustration (fig. 15) shows this seta as bifid. On one unassociated larval specimen I've examined this seta is multibranched. This specimen also has 6 large teeth on one side of the mentum; the lateral fringe of body setae is weak.

Another closely related genus, *Brundiniella*, will key to couplet 12 in the tanypod key. It can be distinguished by the presence of an expanded claw on the posterior parapod. *Brundiniella* is not recorded from Florida, and is unlikely to occur here.

**ADDITIONAL REFERENCES:** Fittkau & Murray 1988.
Genus *Clinotanypus*

**DIAGNOSIS:** *Clinotanypus* is distinguished by the well developed lateral setal fringe; the strongly hooked apical tooth and large pointed basal tooth of the mandible; dorsomental teeth in longitudinal rows; and an even number of teeth on the ligula.

**NOTES:** Larvae occur in ponds and lakes as well as streams and rivers. They prefer soft sediments and can be found in "clean" water or water that has been organically enriched. Roback (1976) recorded the following water chemistry parameters for the genus: pH < 4.0-9.0, with a mean of 6.2; total hardness 0-300 ppm, mean 69.8; alkalinity 0-200, mean 47.8; specific conductivity 0-600 µmhos @ 25 °C, mean 140.6. It has been found in water with a dissolved oxygen level of less than 4 ppm (Roback 1974b).

One species, *C. pinguis*, is widely distributed in the eastern U.S. However, 3 additional species occur in Florida. Two of these are known only as adults. The immature stages of the third species, *C. aureus*, were described from a single reared specimen from the Devil's Millhopper, a large sinkhole near Gainesville. Roback (1976) separated the larvae of *C. aureus* and *C. pinguis* on measurements of the first antennal segment and the maxillary palpus. With such a small sample size, the range of variation is unknown. All these species may be variants of a single species. Unless reared, all *Clinotanypus* larvae should be identified as "*Clinotanypus* sp."

**ADDITIONAL REFERENCES:** Boesel 1974; Roback 1971; 1976.

![ligula](image1)

![mentum and M-appendage](image2)

![mandible](image3)

![body segment 3](image4)
Genus *Coelotanypus*

**DIAGNOSIS:** The well developed lateral setal fringe; smoothly curved apical tooth with low, rounded basal tooth of the mandible; dorsomental teeth in longitudinal rows; ligula with an odd number of teeth; and a pair of sclerotized hooks on the posterior margin of body segment 3 distinguish this genus.

**NOTES:** *Coelotanypus* larvae are found in/on bottom sediments in marshes, ponds, lakes and the slower portions of streams and rivers. At least one species, *C. concinnus*, can be found in, but is not necessarily limited to, extremely eutrophic water bodies.

Although most *Coelotanypus* larvae possess a ligula with an odd number of teeth, specimens are often found with an even number of teeth. The converse may also be true with the closely related genus *Clinotanypus*.

The key which follows is constructed from data in Roback (1974a); the data are based on 4th instar larvae which were reared to the adult stage. The antennal ratios should work for most 3rd instar larvae as well, but measurements of the basal segment of the maxillary palpus will hold true only for 4th instar larvae.

**ADDITIONAL REFERENCES:** Boesel 1974; Roback 1971; 1974a.

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*Coelotanypus* sp. larval structures

- **mentum and M-appendage**
- **mandible**
- **aberrant ligula**
- **normal ligula**
- **body segment 3 (note posterior sclerotized hooks)**
Key to Florida Coelotanyphus

1  Mentum with 9 or more teeth on each side .... *C. tricolor*

1'  Mentum with 5-8 teeth on each side ..................... 2

2 (1')  AR = 7.0 or more; basal segment of maxillary palp > 70 μm (4th instar larvae only!)
.............................. .................................................. *C. concinnus*

2'  AR < 6.7; basal segment of maxillary palp < 70 μm (4th instar larvae only!)
.............................. .................................................. *C. scapularis*
Genus *Conchapelopia*

**DIAGNOSIS:** *Conchapelopia* larvae are distinguished by long scattered body setae; the 3 segmented b "seta" on the maxillary palp; ring organ in distal third of maxillary palp; mandible with small basal and accessory teeth; ratio of maxillary palp length/width at ring organ 4.4 or less; pseudoradula with 8-12 rows of coarse granules; and central tooth of ligula about twice as long as wide.

**NOTES:** *Conchapelopia* is a member of the *Thienemanniymia* group. Separation of the genera of this group is difficult. Late 4th instar larvae can be positively identified if the developing pupal thoracic horn is visible (see figure below); note the large plastron plate. Taxa which were considered subgenera of *Conchapelopia* have been elevated to generic status (*Helopelopia, Meropelopia*); many taxa previously identified or keyed in Beck (1976;1979) as "*Conchapelopia*" may belong to these two genera or *Hayesomyia* or *Rheopelopia*. Four species are recorded from Florida; species separation of unassociated larvae is not practically possible. Fittkau & Murray (1983) stated that *Conchapelopia* larvae have a pseudoradula of about 8 longitudinal rows of granules. This character is difficult to discern, and many associated Florida larvae I've seen have about 10-12 rows.

*Conchapelopia* larvae have been recorded from waters with a pH range of 5.1-8.0, with most records at a pH of < 7.0; specific conductivity ranged from 0-400 μmhos @ 25°C, with most records below 300; total hardness from 0-250+ ppm, most records below 200; alkalinity 0-200 ppm, most below 40; and water temperatures ranged from 9-28°C.

**ADDITIONAL REFERENCES:** Beck & Beck 1966; Roback 1971; 1981.
Genus  *Denopelopia*

**DIAGNOSIS:** *Denopelopia* larvae are distinguished by the large Lauterborn organs "fused" to the apex of antennal segment 2, giving a tuning fork appearance; the trifid paraligula; lack of well developed dorsomental tooth plates; 2 small claws of posterior parapod with a large inner tooth; and all claws of posterior parapod pale.

**NOTES:** One species, *D. atria*, is described for this genus. Previously known only from the type locality, a drainage ditch near the Punta Gorda DEP office in Charlotte Co., I have recently examined larvae from the Orlando area. I've also reared this species from a vegetation-choked pond in a cattle pasture in southwestern Costa Rica. The immature stages occur in shallow water and can withstand low DO (0.3 mg/l) and high iron (108 mg/l) levels.

**ADDITIONAL REFERENCES:** Roback & Rutter 1988.
Genus *Djalmabatista*

**DIAGNOSIS:** This genus closely resembles *Procladius*, but may be separated by the long antennal blade, which is about twice (or more) the length of the flagellum (segments 2-4), and by its (usually) 4 toothed ligula. Like *Procladius*, it has a well developed lateral setal fringe and well developed dorsomental teeth arranged on plates.

**NOTES:** One species, *D. pulchra*, is known from Florida. It was formerly placed in the genus *Procladius*, subgenus *Calotanypus*, as *P. (C.) maculatus*. Although this species usually has a 4 toothed ligula, 5 toothed "variants" may be encountered. Roback (1980) noted that some South American species of *Djalmabatista* had 5 toothed ligulae. Thus, some 5 toothed "variants" may represent a different species. However, until reared, no definite statements on their taxonomic position can be made. Tennessen & Gottfried (1983) found high variation in ligula tooth numbers in *D. pulchra* from northern Alabama. It may be wise to note the existence of these 5 toothed taxa as "*Djalmabatista pulchra* variant".

*Djalmabatista* larvae occur in ponds, lakes, streams and rivers. They apparently prefer soft water, low alkalinity, a slightly acidic to circumneutral pH, and were tolerant of moderate levels of iron (Roback & Tennessen 1978).

**ADDITIONAL REFERENCES:** Roback 1971, 1980, 1989; Roback & Tennessen 1978; Tennessen & Gottfried 1983.
Genus *Fittkauimyia*

**DIAGNOSIS:** *Fittkauimyia* is easily diagnosed by the dorsomental teeth arranged in a concave arc; multiple dorsal and ventral accessory teeth on the mandible; and its distinctive ligula.

**NOTES:** One species, *Fittkauimyia serta*, is known from Florida. The larva has not yet been conclusively associated with the adult, which was formerly classified in the genus *Parapelopia*. *Parapelopia* was tentatively synonymized with *Fittkauimyia* by Roback (1982b), based on associated specimens of another species from Australia; Oliver et al (1990) list it as a junior synonym. *Fittkauimyia* larvae are found in marshes, ponds, lakes, streams and rivers.

**ADDITIONAL REFERENCES:** Roback 1971; 1982b.

![Diagram of larval structures](image-url)

*Fittkauimyia*, larval structures
Genus *Guttipelopia*

**DIAGNOSIS:** The granulose surface of the head capsule; longitudinally wrinkled body surface; posterior parapods with 2-3 small claws, each with 3 or more inner teeth; and at least 3 darker claws on the posterior parapods distinguish *Guttipelopia*.

**NOTES:** One species, *Guttipelopia guttipennis*, occurs in Florida. It was formerly considered a separate species, *G. currani*, but was synonymized by Bilyj (1988).

Larvae are most often found in sphagnum bogs, ditches, ponds and lakes, but may occur in streams.

**ADDITIONAL REFERENCES:** Beck & Beck 1966; Bilyj 1988; Roback 1971.
Genus *Hayesomyia*

DIAGNOSIS: Larvae of this genus are distinguished by the long scattered body setae; 2 segmented b "seta" of the maxillary palp; ring organ in distal third of maxillary palp; basal segment of maxillary palp equal to or longer than second antennal segment; length of basal antennal segment / mandible length less than or equal to 1.5; mandible with small basal and accessory teeth; and caudal margin of head capsule often with triangular dark area.

NOTES: One species, *Hayesomyia senata*, occurs in Florida. Another member of the *Thienemanniinyia* group, *H. senata* was formerly placed in *Thienemanniinyia* (which does not occur in Florida). *Hayesomyia* larvae are extremely difficult to separate from those of *Meropelopia*, and one may have to be content with an identification of "*Thienemanniinyia* group sp." or "*Hayesomyia/Meropelopia* sp." for many specimens encountered. Late fourth instar larvae with an internally developed pupal thoracic horn may be positively identified; note the distinctive aeropyle and corona. The dark coloration on the caudal margin of the head capsule is variable.

*Hayesomyia senata* larvae are found in rivers; I have seen larvae and pupae from the Suwannee and Perdido River systems. Roback (1981) gave the following water chemistry data: specific conductivity 301-400 μmhos @ 25°C; pH 7.1-8.0; total hardness 51-150 ppm; alkalinity 41-200 ppm; temperature 19-28°C.

Genus *Helopeolia*

**DIAGNOSIS:** *Helopeolia* is similar to *Conchapelopia* in having a 3 segmented b "seta" on the maxillary palp; ring organ in distal third of palp; and small basal and accessory teeth on the mandible. It may be separated by the smaller central tooth of the ligula (about as long as wide); ratio of length of maxillary palp/width at ring organ 4.6 or more; and pseudoradula with about 12 longitudinal rows of coarse granules.

**NOTES:** This genus was formerly included as a subgenus of *Conchapelopia*. Two species are known from Florida. Only *H. cornuticaudata* is described in the immature stages; I have seen a single adult male of *H. pilicaudata* from the FAMU Biological Station in Okaloosa Co. Positive separation of *Helopeolia* from *Conchapelopia* may be achieved with late 4th instar larvae; note that the developing pupal thoracic horn has a much smaller plastron plate. Note that the size of the corona in *Conchapelopia* is quite variable in size.

*Helopeolia cornuticaudata* larvae are found over a wide range of total hardness (0-250 ppm) and alkalinity factors (0-200 ppm); they are found in waters with a pH of 5.1-> 8.1 and at water temperatures from 14-28°C (Roback 1981). They are most often found in small streams to large shallow streams.

**ADDITIONAL REFERENCES:** Roback 1971; 1981.
Genus *Hudsonimyia*

**DIAGNOSIS:** The lack of well developed dorsomental tooth plates; small accessory and basal teeth on the mandible; and maxillary palp with ring organ proximal to or at middle of segment will distinguish this genus.

**NOTES:** Two species are described from the Southeast, *H. karelena* from the Carolinas and GA and *H. parrishi* from northern GA. Larvae of *H. parrishi* were collected from shallow (1 cm) water flowing over granitic bedrock covered with moss, algae and detritus; *H. karelena* larvae collected in SC were found in a blue-green algae mat on steep granite outcrops with a low flow of water. An apparent third species, known only from larvae, has been collected in NW FL. This taxon is most similar to *H. parrishi*, but differs in having a shorter, stouter maxillary palp, shorter procerci and longer body setae (about 295 μm; *H. parrishi* setae are about 175 μm).

Sublette & Sasa (1994) relegated *Hudsonimyia* to subgeneric status under *Pentaneura*. Immature stages linked to adults of a new species described from Guatemala were only provisionally associated and present an apparent mix of characters. Given the substantial differences between the two taxa in the larval and pupal stages, for the present time the generic status of *Hudsonimyia* is maintained.

**ADDITIONAL REFERENCES:** Caldwell & Saponis 1982; Roback 1971; 1979; Sublette & Sasa 1994.

*Hudsonimyia parrishi*, larval structures
Genus *Krenopelopia*

**DIAGNOSIS:** *Krenopelopia* larvae may be distinguished by the large Lauterborn organs on the apex of antenna segment 2, giving the appearance of a tuning fork; bifid paraligula; ligula with granulose area forming a basal band; lack of well developed dorsomental tooth plates; and large basal tooth on the mandible.

**NOTES:** Larvae of the only known SE species, *K. hudsoni*, were reported from SC living in muddy seeps along the borders of small springs or spring-fed streams (Roback 1983). I have seen a single larval specimen (illustrated below) from near Quincy, Gadsden Co., which fits the diagnosis for this genus. The specimen fits the description for *K. hudsoni* with one exception: the proceri are longer (about 5X as long as wide) as published accounts (3-3.8X as long as wide). Only reared specimens can determine whether the FL material represents *K. hudsoni* or another, undescribed, species.

**ADDITIONAL REFERENCES:** Roback 1983.
Genus *Labrundinia*

**DIAGNOSIS:** The genus is diagnosed by the median tooth of the ligula usually longer than the inner teeth (one species in S FL has the median tooth equal to or less than inner teeth); head capsule covered with spinules/nodules/ granules or with small to large lateral spines near center of head, or with both head nodules and lateral spines; pseudoradula slightly broadened posteriorly; mandible with large basal tooth; one small bifid claw on posterior parapod; and anal tubules shorter than posterior parapods.

**NOTES:** *Labrundinia* larvae are found in herbaceeous marshes, ponds, lakes and the slower moving portions of streams and rivers. Roback (1987a) noted larvae occurring at the following water chemistry parameters: pH 4.5-7.2 (most around 7.0); total hardness 19-94 ppm; alkalinity 0-82 ppm; specific conductivity 48-197 $\mu$hmhos @ 25°C; temperature 19-24°C.

Contrary to the diagnosis provided in Fittkau & Roback (1983), the pseudoradula is broadened posteriorly in many species, but not to the extent shown in *Nilotanypus*, a genus which may be confused with *Labrundinia*.

Note also that the characteristic shapes of the small bifid claw of the posterior parapod may not be evident until the fourth instar.

In his review of the genus, Roback (1987a) recorded 5 described species from Florida. Two additional larval species which he gave number designators (sp. 4 and sp. 6) occur in Florida. These two species and two additional unnamed taxa (sp. A and sp. B) from Florida are included in the following key, which is partially adapted from Roback (1987a). The existence of these four unassociated larval taxa indicates that more work on the genus is needed. Benthic workers can contribute greatly by attempting to rear these taxa.

**ADDITIONAL REFERENCES:** Beck & Beck 1966; Roback 1971; 1987a.

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![Mandible](image1)
![Typical Ligula](image2)
![Mentum & M Appendage](image3)
![Caudal Segment](image4)

*Labrundinia*, larval structures
Key to Florida *Labrundinia*

1 Surface of head capsule covered with small nodules/spinules; lateral spines present or absent near center of head ................................................................. 2

1' Surface of head capsule smooth; lateral spines or spurs usually present near center of head ................................................................. 6

2 (1) Head without ventral darker area near center of head, although caudal margin of head may be darkened; lower spur of bifid posterior parapod claw longer than upper ........................................ 3

2' Head with ventral darker area near center of head; lower spur of bifid posterior parapod claw subequal to or shorter than upper ....................... 4

3 (2) Head without lateral spines; caudal margin of head may be darkened; lower groove of bifid posterior parapod claw forming an acute angle ......................... *L. pilosella*
3' Head with small lateral spines; caudal margin not darkened; lower groove of bifid posterior claw forming a U-shaped angle .............
........................................... *L. maculata*

4 (2') Median tooth of ligula subequal to or shorter than inner teeth; lateral spines of head weakly developed ................................................... *L. sp. A*

4' Median tooth of ligula much longer than inner teeth; lateral spines/spurs of head well developed ...................................................... 5
5 (4') Lateral spur group of head consists of a large spur; lower groove of bifid posterior parapod claw forming an acute angle .......
............................................................................. *L. sp. B*

5' Lateral spur group consists of several smaller spines; lower groove of bifid posterior parapod claw wide .......
......................................................................................... *L. sp. 6*

6 (1') Head with medial brown transverse band
......................................................................................... *L. johannseni*

6' Head without medial transverse band, although caudal margin may be darkened ....... 7
7 (6') Bifid claw of posterior parapod with U-shaped lower groove .................................. *L. neopilosa*

**NOTE:** that the characteristic shapes of the small bifid claw of the posterior parapod may not be evident until the fourth instar.

7' Bifid claw of posterior parapod with V-shaped lower groove .............................................. 8

8 (7') Lateral spine group of head consists of a single large spur .................................. *L. sp. 4*

8' Lateral spine group of head consists of 2-7 small spines ................................................. 9

9 (8') Lower spur of bifid posterior parapod claw short ................................................................. *L. becki*

9' Lower spur of bifid posterior parapod claw elongate ............................................................... *L. virescens*
Notes on species

*L. becki* - This relatively common species is keyed as *L. pilosella* in Beck & Beck (1966) and Beck (1976; 1979).

*L. johannseni* - A distinctly marked species distributed throughout the Southeast. It is closely related to *L. neopilosella*.

*L. maculata* - The nodules/spinules of the head capsule may be difficult to discern in some specimens. Bob Rutter has sent me a larval specimen from a marsh in Polk Co. and Broughton Caldwell has reared this species from St. Simon Island in SE Georgia.

*L. neopilosella* - Roback (1987a) described 5 forms of this species; the nominal species and one of his varieties (var. 4) occur in Florida. I have seen the single Florida specimen of var. 4 noted in Roback (1987a); it is difficult, if not impossible, to separate it from "typical" *neopilosella*. See Roback (1987a) for more information.

*L. pilosella* - This is the most ubiquitous species of the genus in Florida. It is keyed as *L. floridana*, a junior synonym, in Beck & Beck (1966) and Beck (1976; 1979).

*L. virescens* - The largest (in size) species of the genus in Florida; apparently uncommon.

*L. sp. 4* and *L. sp. 6* were described by Roback (1987a) and are known only as larvae.

*L. sp. A* has been found as far north as Hamilton Co. It is unusual in that the middle tooth of the ligula is subequal to or shorter than the inner teeth. I have seen similar larvae from northern Costa Rica.

*L. sp. B* is found throughout peninsular Florida.
Genus *Larsia*

**DIAGNOSIS:** The lack of any setal fringe; basal segment of maxillary palp with ring organ near middle; large basal tooth of mandible; and long antennae (½ length of the head and at least 3X mandible length) will distinguish Florida species of *Larsia*.

**NOTES:** *Larsia* larvae are most often found in marshes and ponds in Florida.

*Larsia* is currently being revised by B. Bilyj, Etobicoke, Ontario, Canada. He has graciously provided me with much of the following information. I have adapted a key to species he has provided; head capsule figures are adapted from his illustrations. The placement of ventral head capsule setae and sensory pores are of importance in separating species; Kowalyk (1985) provides an in-depth study of the setae of the tanypod head.

Three species are known from Florida. *Larsia lurida*, described and keyed in Beck & Beck 1966, is a junior synonym of *L. decolorata*. Although Oliver, et al. (1990) list *L. indistincta* as a junior synonym of *L. decolorata*, Bilyj (pers. comm.) considers it a valid species.

**ADDITIONAL REFERENCES:** Beck & Beck 1966; Roback 1971.
Key to Florida *Larsia*
(4th instars only: with mandible length > 75 μm; antenna length > 230 μm)

1 Ventral cephalic setae 9, 10 and ventral pore forming a more or less straight line perpendicular to longitudinal axis of head capsule ....
.................................................................................. *L. bernerii*

1' Ventral cephalic setae 9, 10 and ventral pore forming a more or less straight line diagonal to longitudinal axis of head capsule ............... 2

(1') Ligula with inner lateral teeth subequal to outer teeth and turned slightly inward (ligula must be flat to observe this!) ............... *L. decolorata*

2' Ligula with inner lateral teeth distinctly shorter and parallel to outer teeth (ligula must be flat to observe this!) ................................. *L. indistincta*
Genus *Meropelopia*

**DIAGNOSIS:** Larvae of this genus are distinguished by the long scattered body setae; 2 segmented b "seta" of the maxillary palp; ring organ in distal third of maxillary palp; basal segment of maxillary palp equal to or longer than second antennal segment; length of basal antennal segment/mandible length greater than 1.75; mandible with small basal and accessory teeth; and caudal margin of head capsule usually light, may be darkened.

**NOTES:** One species, *M. flavifrons*, occurs with certainty in Florida. It was called *Arctopelopia fittkaui* in Beck & Beck (1966) (true *Arctopelopia* do not occur in Florida). Another species, *M. americana*, was recorded for Florida by Hudson, et al. (1990). Larvae of the two species are separable only by size (data on reared 4th instar larvae from Roback (1981): *M. flavifrons* has basal segment of maxillary palp < 60 µm, first antennal segment < 300 µm; *M. americana* is larger); pupae and adults are more easily separated. Consider yourself lucky if you can identify these larvae to genus, let alone species!! Species level identification of larvae would be suspect without associated pupae or adults.

*Meropelopia* was formerly considered a subgenus of *Conchapelopia*, from which it is easily separated by the 2 segmented b "seta" of the maxillary palp (*Conchapelopia* has a 3 segmented b "seta"). It is more difficult to separate *Meropelopia* from *Hayesomyia*, and one may have to be content with an identification of "Thienemannymyia group sp." or "*Hayesomyia/Meropelopia* sp." for many specimens. As with other members of the *Thienemannymyia* group, mature 4th instar larvae may be identified to genus if the developing pupal thoracic horn is visible; note the lack of a corona.

*Meropelopia flavifrons* occurs in streams and rivers. Roback (1981) recorded the following water chemistry data for *Meropelopia*: total hardness 0-150 ppm, most < 50; alkalinity 0-80 ppm, most < 40; specific conductivity 0-300 µhos @ 25°C, most < 100; pH 4.1-8.0, most from 6.1-7.0; temperature 9-28°C, most from 9-18.

**ADDITIONAL REFERENCES:** Roback 1971; 1981

![pupal thoracic horn](image1.png) ![maxillary palp (b "seta" shaded)](image2.png) ![ligula](image3.png) ![mandible](image4.png)

*Meropelopia flavifrons*, larval and pupal structures
Genus *Monopelopia*

**DIAGNOSIS:** The tuning fork appearance of the large, well sclerotized Lauterborn organs at the apex of antennal segment 2; the triangular rugose area at the base of the ligula and the lack of well developed dorsomental teeth will distinguish this genus.

**NOTES:** *Monopelopia* larvae are found in small bodies of water such as ponds and marshes; one species is found in the water held by bromeliads.

**ADDITIONAL REFERENCES:** Beck & Beck 1966b; Roback 1986a; 1987c.
Key to Florida *Monopelopia*

1  All claws of posterior parapod pale yellow or clear; found in (limited to?) bromeliads ................................. *M. tillandsia*

1'  At least one dark claw on posterior parapod ................................................................. 2

2 (1') Teeth of ligula in relatively straight line; procercus length/width 3.0 or less; relatively common .......... *M. boliekae*

2'  Teeth of ligula in concave arc; procercus length/width > 4.0; rare (?) ........

........................................ *M. tenuicalcar*

From Roback 1986a

Notes on species

*M. boliekae* - The most commonly encountered species of the genus in Florida; it occurs throughout the state.

*M. tenuicalcar* - I have not seen this species from Florida. Roback (1986a) recorded specimens from St. Johns Co.

*M. tillandsia* - To date, larvae of this species have been found only in the water retained by bromeliads. It was originally described from specimens reared from bromeliads at Vero Beach. I have reared this species from bromeliads at Donald MacDonald Park in Indian River Co., where they co-existed with psychodid and culicid larvae, and a *Metriocnemus* sp. The possibility of other (undescribed) species occurring in Florida bromeliads cannot be discounted, for I have seen two additional, unassociated, larval types or variants from Jamaica.
Genus *Natarsia*

**DIAGNOSIS:** The large basal tooth of the mandible, absence of well developed dorsomental tooth plates; basal segment of maxillary palp with ring organ in apical third; the lateral fringe of 4 larger setae on body segments 4-10; and the short antennae (about 1/3 length of head and twice the length of the mandible) are distinctive.

**NOTES:** Two species are recorded from Florida. However, the taxonomy of the two species is unclear; it is probable that only one species occurs here. This is *Natarsia* sp. A; this taxon is unnamed because of taxonomic uncertainty. The other eastern species, *N. baltimoreus*, is recorded from Florida based on specimens of *Anatopynia fastuosa*, a junior synonym, in part, of *N. baltimorea* (Roback 1971). However, because of differences in the larvae Roback (1978) believed that some larger specimens of *N. baltimorea* represented another species previously misdetermined as *T. hirtipennis*; larger specimens of *N. baltimorea* were tentatively named *N. sp. A*. This is the only species of the genus I've seen from Florida. More reared material is needed before this taxon can be redescribed and, if it represents a new species, given a new name. Both species are keyed below. Roback (1978) also described variants of each species.

*Natarsia* larvae are found in streams and marshes; they can apparently withstand organic and toxic discharges, especially sewage (Hudson et al. 1990). Roback (1978) gave the following water chemistry data for *N. sp. A*: pH 5.1-7.0; total hardness 0-100 ppm; alkalinity 0-40; specific conductivity 0-300 μm @ 25°C; temperature 14-28°C.

**ADDITIONAL REFERENCES:** Roback 1971; 1978.
Key to *Natarsia* of eastern U.S.

1. Ligula teeth apically concave .......... *N. sp. A*

1'. Ligula teeth approximately even .. *N. baltimorea*
Genus *Nilotanypus*

**DIAGNOSIS:** The small size; ligula with the median tooth longer than the inner teeth; at least one small or medium claw of the posterior parapod pectinate or with several small spines; pseudoradula with fine granules and greatly broadened posteriorly; anal tubules longer than posterior parapods; and head without nodules/spinules or lateral spines serve to separate this genus.

**NOTES:** Two species are recorded from Florida, *N. americanus* and *N. fimbriatus*. I have seen an adult male specimen from SE Alabama which fits the description for *N. kansensis*; this species may also occur here, or there is more variability than documented for the genus. Some taxonomic uncertainty exists, for the male of *N. americanus* remains undescribed. Roback (1986b) also described a larval type from Texas (incorrectly located on his map, fig. 91). Species separation of the larvae of *N. americanus* and *N. kansensis* is difficult and impossible without 4th instar larvae (which should be reared to confirm identification); the pectinate small claw on the posterior parapod of *N. fimbriatus* easily distinguishes that species. Specimens of *Nilotanypus* which are not clearly assignable to *fimbriatus* should be identified as "*Nilotanypus* sp."

*Nilotanypus* larvae are found in clean, shallow sand bottomed streams. They are apparently not tolerant of some forms of pollution, and may serve as indicators of good water quality. Roback (1986b) gave the following water chemistry data: pH 5.6-7.0; total hardness 16-44 ppm; alkalinity < 20 ppm; specific conductivity 32-92 μmhos @ 25°C.

**ADDITIONAL REFERENCES:** Roback 1971; 1986b.
Key to *Nilotanytus* of eastern U.S.

1 One medium claw of posterior parapod pectinate .......................... *N. fimbriatus*

1' One or more medium claws of posterior parapod with inner row of small spines/serrations .............................. 2
(4th instar larvae only beyond this point)

2 (1') Length of antenna segment 2 < 44 μm; head usually < 326 μm .......... *N. americanus*

2' Length of antenna segment 2 > 44 μm; head usually > 326 μm .......... *N. kansensis*
Genus *Paramerina*

**DIAGNOSIS:** Larvae of this genus are distinguished by the large basal tooth of the mandible; the two segmented maxillary palp, with the proximal segment < \( \frac{1}{2} \) length of the distal segment; and the pseudoradula broadened posteriorly, appearing attached to a transverse bar and consisting of small granules not arranged in parallel rows.

**NOTES:** Two species are known from Florida: *P. anomala* and *P. testa*. A third species, *P. fragilis*, is recorded from SC and may occur here. The immature stages of the latter two species are undescribed. Through the kindness of M. Bolton, Ohio EPA, I have been able to examine reared specimens of *P. fragilis*; the larvae strongly resemble some *Paramerina* larvae I've seen from Florida. Without reared associations their identification can not be positive. It may be possible to distinguish *P. anomala* by the darkened caudal margin of the head capsule; however, specimens should be reared for correct identification. *P. testa* was previously known only from Texas; I have seen males from peninsular FL. Unless reared, larvae should be identified as "*Paramerina* sp."

Although Fitzkau & Roback (1983) stated that the claws of the posterior parapods were simple, some species possess bifid small claws.

Larvae are found in marshes and streams.

**ADDITIONAL REFERENCES:** Beck & Beck 1966; Roback 1971.
Genus *Pentaneura*

**DIAGNOSIS:** Larvae are distinguished by the large, pointed, apically directed basal tooth of the mandible; apices of ligula teeth even; lack of well developed dorsomental teeth; one dark claw on each posterior parapod; and anal tubules longer than posterior parapods.

**NOTES:** One species, *P. inconspicua*, is common in rivers and streams. The species *P. inculta* was synonymized with *P. inconspicua* by Roback (1971). An additional, undescribed species may be present in the Southeast (Hudson et al. 1990).

**ADDITIONAL REFERENCES:** Beck & Beck 1966; Roback 1971.

*Pentaneura inconspicua*, larval structures
Genus  Procladius

DIAGNOSIS: The well developed lateral setal fringe; well developed dorsomental tooth plates; mandible with large blunt basal tooth; black/dark brown five toothed ligula; and antennal blade subequal to the flagellum distinguish Procladius.

NOTES: Four species are recorded from Florida. Some larvae may be identified to subgenus, but with the exception of P. bellus, species identification of unreared larvae is not possible. Two subgenera occur in Florida: P. (Psilotanypus) with one species, P. bellus; and P. (Holotanypus) [referred to as P. (Procladius) in Roback (1980)] with three species, P. curtus, P. fremani and P. sublettei. Procladius bellus and P. sublettei are by far the most common species in Florida. Roback (1980) noted three varieties of P. bellus; some of these may represent different species (see Hudson et al. 1990). Earlier records of P. culiciformis from Florida are most likely referable to P. fremani or P. sublettei.

Procladius larvae are found in the bottom sediments of ponds, lakes and the slower moving portions of streams and rivers. Roback (1980) recorded the following water chemistry data: pH, 4.1-8.0; total hardness (ppm CaCO₃) < 50-260, with most records < 51; alkalinity < 40-200, with most < 41; specific conductivity < 100-500 µmhos @ 25°C, with most < 200; and water temperature < 8-28°C, with most records for 19-23°C.

Larvae may be found in heavily polluted conditions, and are subject to numerous deformities (see Warwick 1989; 1990). Larvae with a 4 toothed ligula may be confused with Djalmabatista, but may be separated by the shorter antennal blade in Procladius. The length of the apical tooth of the paraligula is variable, and may not be useful as a character to separate the subgenera P. (Psilotanypus) and P. (Holotanypus), contrary to the key in Fittkau & Roback (1983). The small claws of the posterior parapod do allow identification of some forms of P. bellus; other specimens are best identified as "Procladius sp." The key which follows is modified from Roback (1980).


![ligula and paraligula](image1)
![mentum and M appendage](image2)
![apex of antenna](image3)
![mandible](image4)

Procladius sp., larval structures
Key to Florida *Procladius*

1. Small claws of posterior parapod with 2 or more inner teeth .......... *P. bellus* .......... 2

1'. Small claw of posterior parapod without inner teeth ........................................... 3

2 (1). Each posterior parapod with one toothed claw ........................................... *P. bellus* var. 2

2'. Each posterior parapod with two toothed claws ........................................... *P. bellus* var. 3

3 (1'). **Fourth instar larvae only:** first antennal segment < 118 μm; ligula < 65 μm .......... ................................................................. *P. bellus* var. 1

3'. **Fourth instar larvae only:** first antennal segment > 118 μm; ligula > 65 μm .......... ................................................................. *P. (Holotanythus)* sp.
Genus *Psectrotanyxus*

**DIAGNOSIS:** Larvae possess a lateral setal fringe; well developed transverse dorsomental tooth plates; mandible with several large inner teeth; a pale ligula with 4 even teeth; and numerous long apicolateral branches on the paraligula.

**NOTES:** One species, *P. dyari*, is recorded from Florida. Another undescribed species has been reported from the Carolinas (Hudson et al. 1990). An additional described species is known from northern North America.

Larvae are found in ponds, springs, and streams. Roback (1978) noted that *P. dyari* appeared to be the only member of its tribe (the Macropeliini) tolerant of high levels of organic pollution. He gave the following water chemistry parameters for the species: pH 6.1-8.0; total hardness 51-200 ppm; alkalinity < 40-200 ppm; specific conductivity < 100-400 µmhos @ 25°C; temperature 9-23°C.

**ADDITIONAL REFERENCES:** Roback 1971; 1978.
Genus *Rheopelopedia*

**DIAGNOSIS:** The long, radially arranged body setae; lack of dorsomental teeth; 2 or 3 segmented b "seta" of the maxillary palp; maxillary palp shorter than antennal segment 2 and with ring organ in apical third; and the mandible with its basal and accessory teeth extremely reduced will distinguish *Rheopelopedia* larvae in Florida.

**NOTES:** I have seen one species, based on larval/pupal/pharate female associations, from the Suwannee River basin, where at times it can be the dominant tanypod found on Hester-Dendy samplers. This larva, which I call *Rheopelopedia* sp. A, may represent a southern population of *R. paramaculipennis*. Mike Bolton (Ohio EPA) has sent me reared *R. paramaculipennis;* the sp. A larvae apparently differ from his Ohio larvae only in the darkened head capsule of the Florida specimens. This taxon is easily confused with *Hayesomyia* or *Meropelopia*. Generic identification can be assured with late fourth instar larvae; the pharate pupa has an elongate saccoid thoracic horn without a distinct respiratory atrium.

The larvae of *Rheopelopedia* sp. A (and the Ohio *R. paramaculipennis*) depart from the generic diagnosis given in Fittkau & Roback (1983) in that the b "seta" of the maxillary palp is 2 segmented rather than 3 segmented. In some specimens I've seen the basal portion of the b "seta" is partially divided. The exact taxonomic position of *Rheopelopedia* sp. A will not be known until the larva is reared and compared type material of described species. I have not seen *Rheopelopedia* larvae from Florida with a 3 segmented b "seta".

**ADDITIONAL REFERENCES:** Roback 1971; 1981.

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*ligula and paraligula*  
*mandible*  
*maxillary palp (b "seta" shaded)*  
*pupal thoracic horn*

*Rheopelopedia* sp. A. larval and pupal structures
Genus *Tanypus*

**DIAGNOSIS:** The well developed lateral setal fringe on the body, stout mandible (apical tooth appears small in relation to remainder of mandible), well developed transverse row of dorsomental teeth and the lack of a pseudoradula distinguish this genus.

**NOTES:** *Tanypus* larvae are found in or on the soft sediments of marshes, ponds, lakes, bays and slower areas of streams/rivers. Data in Roback (1977) indicate that the larvae are found in a pH range of <4-8.0, an alkalinity range of <40-160 ppm, a total hardness range of <50-200 ppm and a specific conductivity range of <100-400 μmhos @ 25°C. The larvae feed on the soft parts of chironomid larvae (the head capsule is not engulfed as in many other Tanypodinae), diatoms and plant parts.

Six species are recorded from Florida; the larvae of five are known and are included in the following key, which is modified from that in Roback (1977).

**ADDITIONAL REFERENCES:** Roback 1969; 1971; 1977.
Key to Florida Tanypus
(One species, T. telus, is unknown in the larval stage)

1  Smaller claws of posterior parapods pectinate; 4 anal tubules; ligula pale, relatively long and narrow ................................................................. T. stellatus

1' Smaller claws of posterior parapods simple or expanded, with at most a serrate inner margin; 6 anal tubules or tubules reduced or vestigial; ligula darker, shorter and wider ........................................ 2

2 (1') Ligula with teeth in an even arc; smaller claws of posterior parapods simple ............. 3
2' Ligula with 3 median teeth much longer than outer teeth; smaller claws of posterior parapods with expanded base ................................................................. 4

3 (2) Paraligula deeply divided to about ½ its length; head capsule pale..............
................................................. T. punctipennis

3' Paraligula not as deeply divided, at most about 1/3 of its length; head capsule darkened .......... T. carinatus

4 (2') Smaller claws of posterior parapod with serrate inner margin; anal tubules reduced; found in brackish water ................................................................. T. clavatus
Smaller claws of posterior parapod with smooth inner margin; anal tubules normal; not commonly found in brackish water. \( T. \textit{neopunctipennis} \)

Notes on species

\( T. \textit{carinatus} \) - This species exhibits the widest range of physico-chemical parameters in the genus (Roback 1977). In Florida, it often occurs with \( T. \textit{neopunctipennis} \).

\( T. \textit{clavatus} \) - A species of brackish or salt water, apparently limited to the Gulf Coast. Roback (1977) gave a salinity range of 5-25 o/oo for this species. I have seen many larvae from Perdido Bay. As in many other species of brackish/salt water Chironomidae, the anal tubules are reduced/vestigial.

\( T. \textit{neopunctipennis} \) - Often found with \( T. \textit{carinatus} \) in Florida. Roback (1977) noted that it could apparently tolerate brackish water (4.45 o/oo) in the Escambia River.

\( T. \textit{punctipennis} \) - I have seen adults of this species from peninsular Florida. Roback (1971) records it from Bay Co.

\( T. \textit{stellatus} \) - I have reared this species from Lake Okeechobee. It is often found in deeper water (up to 14 meters in Tennessee [Roback 1971]) than other species of \( T. \textit{anypus} \), which tend to live in shallow (< 2 meters) water.
Genus *Zavrelimyia*

**DIAGNOSIS:** Larvae are distinguished by smooth head capsule; lack of well developed dorsomental teeth; pseudoradula with broad base which appears to be connected to a transverse bar; large basal tooth on the mandible; and one small claw on each posterior parapod with an inner tooth.

**NOTES:** One species, *Z. sinuosa*, is recorded from Florida. However, the taxonomy of this genus is unsettled and B. Bilyj (pers. comm.) suggests that *Z. sinuosa* represents a species complex. Oliver et al. (1990) list *Z. carneosa*, as used by Beck & Beck (1966), as a junior synonym of *Z. sinuosa*. Larval specimens collected in Florida can not be identified at the species level and should be called "*Zavrelimyia* sp. ".

Larvae appear to be dwellers in sediments in springs and spring-fed streams. They are not common in Florida. I have found larvae in the gut contents of the One toed Amphiuma (*Amphiuma pholoter*) collected by Bruce Means. Florida larvae I've examined have a distinctive "shoulder" near the base of the ligula.

**ADDITIONAL REFERENCES:** Roback 1971.
Subfamily DIAMESINAE

DIAGNOSIS: Antennae 5 segmented, 3rd segment annulated. Labrum with simple S setae (S III may be bifid). Labral lamellae present, may be obscure. Mentum with 0 to more than 15 teeth; ventromental plates present or absent; beard absent. Prementum with setae arranged in groups (brushes) or transverse rows. Body with well developed anterior and posterior parapods. Proccreri present in Florida taxa. Anal tubules present.

NOTES: Most Diamesinae genera are cool adapted. Thus, only 2 "genera" are known from Florida. The genus Diamesa may eventually be found in northwest Florida. Specimens listed as Pagastia in Soponis (1980a) were misidentified; the specimens were Xylotopus par.

Key to the genera of Florida Diamesinae

1  Mentum with more than 15 teeth; ventromental plates absent ........ Diamesa
   (this genus is not yet known from Florida)

1' Mentum with 15 or fewer teeth or no teeth; ventromental plates present or apparently absent .............................................. 2

2 (1') Mentum completely toothless; mandible without seta interna; no apparent ventromental plates .............................................. Potthastia
   (one species group, the P. longimana group, is known from Florida)
2' Mentum with teeth visible below ventromentum; mandible with well developed seta interna; ventromentum forming apparent plates laterally ........................................ genus P
Genus *Diamesa*

**DIAGNOSIS:** The mentum, with more than 15 teeth, will serve to distinguish this genus from other Florida Diamesinae.

**NOTES:** I have not seen specimens of this genus from Florida. It may eventually be found in northwestern Florida. Species keys offered by Doughman (1983) should be used with caution, and any larva should be reared before specific identification is attempted (using Hansen & Cook 1976). *Diamesa* larvae typically are found in cool running water.

**ADDITIONAL REFERENCES:** Doughman 1983; Hansen & Cook 1976.

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*Diamesa* sp., larval mentum

( Pennsylvania specimen)
Genus *Potthastia*

**DIAGNOSIS:** The toothless mentum and lack of a seta interna on the mandible distinguish this member of the *P. longimana* group in Florida.

**NOTES:** To date, I have found only larval specimens of the *P. longimana* group in Florida, from the Suwannee and Perdido River systems; none have been associated with adults. I have seen adults of *P. longimana* from Alabama. As noted in Oliver (1983), the *P. gaedii* group also occurs in North America.

**ADDITIONAL REFERENCES:** Doughman 1985.

![Diagram](image)

*Potthastia longimana* grp. sp., larval structures
Genus P

DIAGNOSIS: The unique dorsomentum with 6-7 lateral teeth on each side, large apparent ventromental plates and a well developed seta interna on the mandible will distinguish this genus.

NOTES: This unusual taxon was keyed and its mentum figured in Doughman (1985). Beck (1976) and Beck & Beck (1974) called it Sympothisia. Its taxonomic status is uncertain. Hudson, et al. (1990) listed it as "undescribed genus" under the Diamesinae and speculated that it may represent the larva of Comperomese, a Prodimesinae. This is unlikely, for genus P has an annulate 3rd antenal segment; a redefinition of the Prodimesinae would be necessary to include this genus. Larvae are found in sand bottomed streams. I have seen specimens from Juniper Creek in Calhoun Co. and the Perdido River system in extreme western Florida.
Subfamily PRODIAMESINAE

**DIAGNOSIS:** Antennae 4 segmented, not reduced. Labrum with S I apically toothed or apicolaterally fringed; S II and S III simple; S IV normal or S IV A with long fringed terminal element mounted on long pedicellate base. Labral lamellae present. Mentum with 15-18 teeth; ventromental plates large, with well developed beard. Prementum without dense brush(es) of setae. Body with well developed anterior and posterior parapods, procerci and anal tubules.

**NOTES:** Larvae are found in freshwater habitats such as springs, streams/rivers, ponds and the littoral zone of lakes. I know of only a single larval record from Florida for this subfamily. Pupal specimens recorded as *Odontomesa* (as Diamesinae) by Soponis (1980) were misidentified (see page 5.2). The genus *Comptieromesa* may occur in Florida; it is known only in the adult stage.

**Key to genera of Prodiamesinae that may occur in Florida**

1 Mentum with odd number of teeth; mandible inflated .......................... *Odontomesa*

1' Mentum with even number of teeth; mandible normal .......................... *Prodiamesa*

(adapted from Sether 1983c)
Genus *Odontomesa*

**DIAGNOSIS:** The unique S setae of the labrum (see illustration below), odd number of teeth on the mentum, well developed ventromental beard and the inflated mandible will distinguish this genus.

**NOTES:** This genus is known from Florida by a larval record in Beck & Beck (1974), which probably represents *Odontomesa fulva*. Pupal *Odontomesa* specimens recorded from Turkey Creek, Gadsden Co., by Soponis (1980) were misidentified; I have determined the specimens as *Brillia flavifrons*.

The larvae are filter feeders (Shilova 1966).

**ADDITIONAL REFERENCES:** Shilova 1966; Sæther 1985.

*Odontomesa fulva* (specimen from South Carolina)
Genus *Prodiamesa*

**DIAGNOSIS:** The mentum with 14 teeth (18 apparent teeth if accessory teeth on first lateral teeth are counted) with the inner 2 deeply recessed, simple S setae and normal mandible will distinguish this genus from *Odontomesa*. As in *Odontomesa*, the ventromental beard is well developed.

**NOTES:** Not yet known from Florida. If eventually found in Florida, this genus will probably be represented by *Prodiamesa olivacea*.

*Prodiamesa olivacea* (adapted from Sæther 1983c)
Subfamily Orthocladiinae

DIAGNOSIS: Antennae with 4-7 segments; may be strongly reduced to much longer than head. Labrum with S I setae variable (simple, bifid, branched, plumose); S II usually simple but mat be bifid, branched, palmate or plumose; S III simple, rarely bifid; S IV normal. Labral lamellae present or absent. Mentum usually well sclerotized, with 3 to more than 25 teeth; ventromental plates vestigial to well developed, usually without striae; beard present or absent. Prementum variably developed but never with dense well developed median brush of setae. Body with anterior parapods (sometimes fused); with posterior parapods well developed, separate or fused, or parapods reduced or absent. Procercus present or absent. Setal fringe, setal tufts or long setae sometimes present. Anal tubules normally present, may be reduced or vestigial.

NOTES: Larvae of this subfamily are found in an amazing variety of habitats, ranging from purely terrestrial (corn fields, leaf litter in hardwood forests) to seeps, springs, streams/rivers, ponds and lakes in freshwater, and coastal littoral marine areas. As wetlands studies and awareness increases, the importance of many of the terrestrial/semi-aquatic orthoclads may increase, for they may serve as indicators of hydrologic conditions as well as disturbed habitats.

Key to the genera of Florida Orthocladiinae
(The larvae of Compteronemita, Diplosmitia, Lipuromietronemus and Platysmitia, which may occur in Florida, are unknown.)

1 Length of antennae at least ½ length of head ............................................ 2

1' Length of antennae less than ½ length of head ........................................... 8

2 (1) Mentum with wide, dome-like median tooth, second lateral tooth lower than median tooth and third lateral tooth; apical tooth of mandible long, rounded and slightly expanded .................................... Heterotrissocladius species C

2' Mentum with bifid or trifid median tooth, or if single, not dome-like and second lateral tooth subequal to median and third lateral teeth; apical tooth of mandible not long, rounded and slightly expanded .................................... 3
3 (2') Well developed ventromental plates present; mandible with globose base ....... 4

3' Ventromental plates weak or indistinguishable; mandible normal .................... 5

4 (3) Dorsomentum with numerous fine anterior and lateral teeth .......... ............... Orthocladiinae species C

4' Dorsomentum with a few rudimentary medial teeth .......... ............... Orthocladiinae genus D

5 (3') Last segment of antenna long, thin, whiplike ........................................ Lopescladius

5' Last segment of antenna short, normal (but may have short hair-like extension) .................................................................................................................................................................................. 6

6 (5') Antennae much longer than head, with 4 distinct segments; head capsule sometimes with surface sculpturing ........................................ Corynoneura

6' Antennae at most as long as head, usually shorter, with 5 distinct segments or 5-6 indistinct segments; head capsule without surface sculpturing ............................... 7
7 (6') Antennae with 5 distinct segments; small Lauterborn organs at apex of segment 2; without a pair of large hypopharyngeal scales; with simple, spine-like seta at base of posterior parapod ... *Thienemanniella*

7' Antennae with segment 2 unevenly sclerotized (may appear 6 segmented) and with alternate Lauterborn organs; with a pair of large hypopharyngeal scales; no spine-like seta at base of posterior parapod ........................................... *Rheosmittia*

8 (1') Procerci absent, or at most a vestigial tubercle present .......................... 9

(most genera which will key here are marine, terrestrial/semi-terrestrial or parasitic.)

8' Procerci present, but may be reduced .............................................................. 19
(larvae found in a variety of habitats, but usually aquatic)

9 (8) S I plumose or fringed apically ................................................................. 10

9' S I simple or bifid (if simple, may be weakly serrate laterally) ....................... 12
10 (9) Antennal blade longer than flagellum; pecten epipharyngis with about 6-8 teeth .......................... *Antillocladius*

10' Antennal blade less than or equal to flagellum; pecten epipharyngis with at most 3 teeth or scales ................................................................. 11

11 (10') Marine; premandible apically simple; anal setae present .... *Clunio*

11' Not marine, but terrestrial or semi-aquatic, occasionally found in fresh water; premandible apically bifid; no anal setae ............... *Smittia*

12 (9') S I bifid ................................................. 13

12' S I simple or weakly serrate laterally .................................................. 14
13 (12) Anal claws and posterior parapods present
.................................................................. *Pseudosmittia*

13' Anal claws and posterior parapods absent
.......................................................... *Camptocladius*

14 (12') Posterior parapods and anal segment(s) bent at 90° angle to longitudinal axis of body ........ 15

14' Posterior parapods and anal segment in straight line with body axis, or almost so
..................................................................... 16

15 (14) Posterior parapods appearing divided, anterior portion with claws, posterior portion bare; anal setae usually present and well developed ...... .............................................. *Gymnometriocnemus*

15' Posterior parapods not divided, but as in couplet 14; anal setae usually absent, but may be present ................................................................. *Bryopaenocladius*
16 (14') Anal tubules long, with numerous constrictions; mandible with well developed seta interna ................................................................. 17

16' Anal tubules absent or short, squat; mandible without seta interna (or seta interna very weak?) ................................................................. 18

17 (16) Premandible apically bifid; mentum with weakly bifid median tooth; anal setae normal ...................... *Dothrix*
   (not recorded from Florida)

17' Premandible simple; mentum with single median tooth or if double, then anal setae reduced ................................................................. *Georthocladius*

18 (16') Mentum without distinct medial teeth, with 4-5 lateral spine-like teeth; mandible with subapical cluster of sharply pointed teeth; ectoparasitic on mayflies ................................................................. *Symbiocladius*
   (not recorded from Florida)
18' Mentum with distinct medial tooth/teeth, lateral teeth blunt or圆roundly pointed; mandible with bluntly pointed inner teeth; free-living or semi-terrestrial .......... *Mesosmittia*

19 (8') Procercus with one setae at least ¼ as long as body ........................................... 20

19' Procercus never with setae as long as ¼ body length ................................................... 22

20 (19) Mentum with 6 pairs of sharply pointed lateral teeth and single median tooth with small median projection; premandible apically bifid .................

................................................................................. *Krenosmittia*

20' Mentum with 4 pairs of rounded teeth, median tooth bifid, weakly bifid or broad and simple without small median projection; premandible apically simple ...... 21

21 (20') Mandible with 1 or 2 inner teeth ... *Parachaetocladius*

21' Mandible with 3 inner teeth ....... *Pseudorthocladius*
22 (19') Beard (group of setae) present beneath ventromental plates or immediately laterad to mentum (may be only a few setae and may require observation at 1000X) ..................... 23

22' Beard absent beneath ventromental plates or adjacent to mentum ................................. 31

23 (22) S I broadly palmate (usually with at least 3 stout teeth); procercus with chitinized spur ......................... *Psectrocladius*

23' S I simple, bifid or plumose; if procercus bears a spur, then S I is bifid ......................... 24

24 (23') S I simple ................................................................................................................. 25

24' S I bifid, apically fringed or plumose .................................................................................. 27

25 (24) Mentum with single median tooth; beard very weak, often only 2-6 setae ................................................. *Stilocladius*

(not recorded from Florida)

25' Mentum with 2 or more median teeth; beard well developed ............................................. 26
26 (25') Median teeth of mentum elongate; mandible without true seta interna but with large spine on inner margin; mid-abdominal segments with 2 pairs of plumose setae

........................ Synorthocladius

26' Median teeth of mentum not elongate; mandible with seta interna, no spine present on inner margin; body segments with simple setae

........................ Donricotopus

(Does not occur in Florida; see text)

27 (24') Mandible with 4 inner teeth; labral lamellae present

........................ Diplocladius

(not recorded from Florida)

27' Mandible with 3 inner teeth; labral lamellae absent

.............................. 28

28 (27') S I plumose; beard weakly developed

........................ Zalutschia

28' S I bifid; beard well developed or weak

.............................. 29
29 (28') Antennae 6-segmented, last segment vestigial, hair-like
.............................................................................. Stilocladus?
(see Stilocladus)

29' Antennae 5-segmented, last segment normal ....................................................... 30

30 (29') Ventromental plates extending beyond lateral margin of mentum; beard well developed .......... Rheocricotopus

30' Ventromental plates not extending beyond lateral margin of mentum; beard weak .... 51

31 (22') Mentum with 6 even median teeth and 5 pairs of lateral teeth (lateral teeth visible only if mentum is flattened); body with numerous long, stout setae; symphoretic on Hexagenia in Florida .............................................................. Epoicocladus

31' Mentum never with 6 even median teeth; body usually with sparse, simple setae but if long setae present, then mentum not as above; not symphoretic on Hexagenia (but one genus, Nanocladius [couplet 33], may be associated with aquatic insects) ............. 32

32 (31') Ventromental plates extending beyond lateral margin of mentum (as in couplet 30 above) ........................................................................................................ 33

32' Ventromental plates absent/vestigial or, if present, do not extend beyond lateral margin of mentum ........................................................................................................ 40
33 (32) S I simple; mentum with a pair of small median teeth, often well separated from 0-6 pairs of lateral teeth which may be small and fused or closely appressed to each other ................................................................. *Nanocladius*

33' S I plumose or apically fringed; mentum not as above ......................................................... 34

34 (33') Third antennal segment 1/3 or less length of segment 4; antenna 6-7 segmented (last segment vestigial/hairlike) ...................... 35

34' Third antennal segment greater than or subequal to segment 4; if shorter, then antenna with 5 segments .................................................. 36

35 (34) Antenna 7 segmented; ventromental plates extend well beyond mentum, Lauterborn organs vestigial; pecten epipharyngis consists of 3 serrated spines ......................................................... *Heterotrissocladius*

35' Antenna 6 segmented; ventromental plates do not reach or barely extend beyond mentum; Lauterborn organs longer than segment 3; pecten epipharyngis consists of 3 short simple spines ......................................................... 59
36 (34') Premandible with brush of setae .......... Chaeotocladus
(not recorded from Florida)

36' Premandible without brush of setae ........................................ 37

37 (36') Mentum with a single median tooth ........................................ 38

37' Mentum with 2 median teeth ....................................................... 39

38 (37) Median tooth of mentum lower than second lateral teeth; first lateral tooth reduced and fused to second lateral tooth; mandible with 4 inner teeth ....................... Unniella

38' Median tooth of mentum higher than second lateral teeth; mandible with 3 inner teeth ........................................ Parakiefferiella (in part)

39 (37') Posterior margin of ventromental plates directed caudad, their lateral margin parallel to lateral margin of mentum; maxilla without pecten galearis. Parametriocnemus (in part)
39' Posterior margin of ventromental plates directed laterad or at a 45° angle with respect to lateral margin of mentum; maxilla with pecten galearis ......................... *Hydrobaenus*

(some *Zalutschia* may key here; check again for setae beneath ventromental plates at 1000X; *Hydrobaenus* lacks these setae)

40 (32') Mentum with large elongate single median tooth flanked by 0-2 pairs of much smaller lateral teeth; mines in wood but may "drift" into other habitats ..............................................................

........... *Orthocladius (Symposiocladius) lignicola*

40' Mentum not as above; found in a variety of habitats ........................................... 41

41 (40') Abdomen with lateral setal fringe or with long simple setae at least ½ length of segment bearing them .............................................................. 42

41' Abdomen without lateral setal fringe or long setae; 1-2 setal tufts may be present on some segments .............................................................. 45

42 (41) Abdomen with lateral fringe of setae on all but last 2 segments; mentum with 2 elongate median teeth ......................................................... *Xylothopus*

42' Abdomen without lateral fringe of setae; mentum without pair of elongate median teeth .............................................................. 43
43 (42') Inner margin of mandible with spines/serrations .............................................. *Tvetenia*

43' Inner margin of mandible without spines/serrations .............................................. 44

44 (43') Labrum with well developed labral lamellae; procerci without spurs ....................... *Metriocnemus* (in part)

44' Labrum without well developed labral lamellae; procerci with spurs ........................... *Paracricotopus* (not recorded from Florida)

45 (41') S I simple ............................................................................................................. 46

45' S I bifid, apically fringed, serrated or plumose .............................................................. 49 (serrations may be difficult to discern on some *Limnophyes* larvae)

46 (45) Mentum with 2 median teeth deeply recessed ....................................................... *Metriocnemus* (in part) (*M. fuscipes* not recorded from Florida)

46' Mentum not as above ..................................................................................................... 47
47 (46') Procercus reduced, with 2 setae thicker, longer than rest; seta interna of mandible with long single "stem", branching apically ....................................................... *Cardiocladius*

47' Procercus not reduced, with all setae subequal; seta interna divided almost to base ...

................................................................. 48

48 (47') Inner margin of mandible with spines/serrations; body segments with simple setae only ................................................................. *Eukiefferiella*

48' Inner margin of mandible without spines/serrations; body segments with setal tufts ........................................................................... *Cricotopus* (in part)

49 (45') S I bifid ................................................................. 50

49' S I apically fringed/toothed, serrated or plumose ......................................................... 55

50 (49) Antennae 6 segmented, last segment vestigial, hair-like ......................... *Parakiefferiella* (in part)

50' Antennae 5-segmented, last segment normal ............................................................. 51
51 (30'; 50') Inner margin of mandible with spines/serrations

.............................................................................. Cricotopus bicinctus group

51' Inner margin of mandible smooth ................................................................. 52

52 (51') Median and appressed first lateral teeth projecting strongly forward from remainder of mentum; Lauterborn organs distinct, well developed ................................................................. Orthocladius (Orthocladius) annectens

52' Mentum without strongly projecting median/first lateral teeth, or, if teeth project, then Lauterborn organs smaller or indistinct ................................................................. 53

53 (52') First lateral tooth of mentum distinctly separated from median tooth and wider in middle than at base; setal tufts absent; outer margin of mandible smooth; not known from Florida! .............................. Paratrichocladius

(not recorded from Florida; larvae must be associated with pupae/adults for accurate identification)
53' First lateral tooth appressed to median tooth or wider at base than at middle; setal tufts may be present; outer margin of mandible may be crenulated (wrinkled); common in Florida ................................................................. 54

54 (53') Pecten epipharyngis a single cone shaped scale .................................................. Cricotopus (Isocladius)

54' Pecten epipharyngis with 3 spines or scales ...
.... Cricotopus or Orthocladius (Orthocladius)  
(These 2 genera can not be reliably distinguished in the larval stage, even at the generic level. pupal/adult associations are needed for accurate identifications)

55 (49') Pecten epipharyngis with 15-20 teeth ........................................... Orthocladiinae genus E

55' Pecten epipharyngis with at most 3 teeth ............................................................... 56
56 (50') Labral lamellae well developed ................. 57

56' Labral lamellae absent or weakly developed ............................................. 58

57 (56) Mentum with 2 elongate median teeth, usually with smaller tooth in between their bases; setae submenti displaced posteriorly; antennal segment 2 divided in basal 1/3 by weakly sclerotized area ......................... Brillia
(Euryhaptis, not recorded from FL. will key here, but has an undivided antennal segment 2)

57' Mentum with 1-4 median teeth, not as above; setae submenti located near base of mentum; antennal segment 2 not divided by weakly sclerotized area .............. .............. Metriocnemus (in part)

58 (56') Antennae 5-segmented; usually a small rounded tooth near base of mentum ................. Limnophyes

58' Antennae 6-segmented, last segment vestigial, hair-like; mentum without small rounded tooth at base .................................................. 59
59 (35', 56') Median tooth of mentum single

Parakiefferiella (in part)

59' Median tooth bifid ................................................................. 60

60 (59') Mentum with last lateral tooth posterior to penultimate tooth; S I plumose

Parametriocnemus (in part)

60' Mentum with last lateral tooth adjacent to penultimate tooth; S I apically toothed Psilometriocnemus

(not recorded from Florida)
Genus *Antilocladius*

**DIAGNOSIS:** The palmate S I; pecten epipharyngis with around 6-8 teeth; antenna with blade longer than segments 2-5; and lack of procerci will distinguish this genus.

**NOTES:** Three species are known, two from the U.S. Larvae are found in seeps and around small streams, or are completely terrestrial; Florida specimens came from mixed hardwood leaf litter. The median tooth may be worn and thus appear simple.

**ADDITIONAL REFERENCES:** Sæther 1981b; 1982a; 1984.
Genus *Brillia*

DIAGNOSIS: The well developed labral lamellae; plumose S I; antennae with segment 2 divided in basal 1/3 by a weakly sclerotized area; distinctive mentum; and the posteriorly displaced setae submenti (near posterior margin of head capsule) will distinguish *Brillia*.

NOTES: One species, *B. flaviventris*, is known from Florida; two other species are recorded from the SE. Larval specimens from Jackson and Okaloosa Cos. in the collection at FAMU identified by Beck as *B. sera* are *B. flaviventris*. The species "*Brillia par*" is now placed in the genus *Xylotopus*.

The genus *Euryhapsis*, which occurs in the Smoky Mountains in the SE, is similar to *Brillia* but has a completely sclerotized second antennal segment.

*Brillia* larvae are often associated with submerged allochthonous wood and leaves.

ADDITIONAL REFERENCES: Oliver & Roussel 1983.
Key to *Brillia* of SE U.S.A.

1  6th lateral tooth of mentum placed posterior to 5th lateral tooth ........................................... 2

1' 6th lateral tooth even with or anterior to 5th lateral tooth ....................................................... *B. parva*
   (not known from Florida)

2 (1) Labral sclerite 1 entire or narrowly separated medially, separation < 8μm ........ *B. flavifrons*

2' Labral sclerite 1 widely separated medially, separation > 10μm ....................... *B. sera*
   (not known from Florida)
Genus *Bryophaeocladius*

**DIAGNOSIS**: The simple S1; lack of procerci; and anal end usually without anal setae and bent at a 90° angle, with the posterior parapods undivided, will distinguish this genus.

**NOTES**: I have seen a single larval specimen assignable to this genus from northern Florida. Several species are recorded from SC.

Most species probably have terrestrial larvae, although larvae are sometimes found in stream collections. Larvae are very similar to *Gymnometriocnemus* (q.v.)

*Bryophaeocladius* sp., larval structures
(adapted from Cranston, et al. 1983)
Genus *Camptocladius*

**DIAGNOSIS:** The bifid S I and S II; reduced, 3-segmented antennae (with 3rd segment shorter than 2nd); and absence of procerci and posterior parapods will separate this genus.

**NOTES:** Only one species, *C. stercorarius*, is known. David Evans has provided larval specimens from western Florida.

Larvae are terrestrial, and are recorded from cow dung.

![Diagram of larval structures](image)

*Camptocladius stercorarius*, larval structures
(adapted from Cransion, et al. 1983)
Genus *Cardiocladius*

**DIAGNOSIS:** This genus is distinguished by its simple but heavily sclerotized S I; premandible heavily sclerotized with a broad, usually simple, apex; seta interna of mandible with long single base, branching apically; and procercus with 2 setae thicker and longer than rest. This genus is easily confused with *Eukiefferiella*, which lacks a similar seta interna and usually has equally sized procercal setae.

**NOTES:** One species, *C. obscurus*, has been recorded from Florida, but at least one other species, *C. albiplumus*, occurs in the SE. The larva initially described as *Eukiefferiella similis* group by Bode (1983) was shown by Oliver & Bode (1985) to be *C. albiplumus*. In Florida, unreared larvae should be identified as "*Cardiocladius* sp."

Larvae are recorded as facultative predators/parasites on immature blackflies (Simuliidae) and hydropsychid caddisfly pupae; gut analysis of larvae not associated with caddisflies showed they fed on algae and detritus (Oliver & Bode 1985). Larvae prefer lotic conditions; Hudson et al. (1990) indicated that larvae may be "fairly tolerant of toxic pollution".

**ADDITIONAL REFERENCES:** Bode 1983; Oliver & Bode 1985; Parker & Voshell 1979.
Genus *Chaetocladius*

**DIAGNOSIS:** Larvae are distinguished by the plumose/pectinate S I; labral lamellae (if present) located between S I and labral margin; well developed ventromental plates which extend beyond lateral margin of mentum (may be only slightly beyond); and premandible with weak to moderate brush.

**NOTES:** This genus has not yet been recorded from Florida, but may eventually be collected in the northern part of the state. Some *Limnophyes* may key to *Chaetocladius* in the generic key; however, *Limnophyes* lacks labral lamellae.

The larvae of many species are probably semi-aquatic, but true aquatic species are known. At least one species mines in submerged wood.

**ADDITIONAL REFERENCES:** Cranston & Oliver 1988b.

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*Chaetocladius* sp., larval structures
(adapted from Cranston et al. 1983)
Genus *Clunio*

**DIAGNOSIS:** The plumose S I and S II; premandible with simple apex; lack of procerci and anal tubules; and marine habitat will identify *Clunio*.

**NOTES:** One species, *C. marshalli*, is known from salt water habitats in Florida. I've collected larvae and pupae from algae on rocks in the Intracoastal Waterway at Pompano Beach, where they coexisted with *Thalassomya* larvae. The species is also known from Dade Co. and the Keys, and I've seen adults from Wakulla Co.

**ADDITIONAL REFERENCES:** Stone & Wirth 1947; Strenzke 1960; Wirth 1949.
Genus *Corynoneura*

**DIAGNOSIS:** These larvae are identified by their small size and elongate (usually longer than head capsule) 4 segmented antennae.

**NOTES:** Two species are recorded from Florida. However, it is obvious from larval data that many more species occur here. In a paper delivered at a past meeting of the North American Benthological Society, Dr. W.P. Coffman stated that, based on pupal data, at least 22 species of *Corynoneura* and the closely related *Thienemanniella* occur in the Nearctic, of which only nine are described (as adults); this manual keys 12 larval species in the two genera. It is not unusual to find two or three species from both genera in samples. Nearctic *Corynoneura* and *Thienemanniella* are in great need of a revisionary study utilizing all life stages. It is apparent that most records for these two genera must be viewed with extreme skepticism; records based on adults are unreliable and identifications based on larvae even more so. Matching a specimen's mentum with an illustration from the literature does not mean that it has been correctly identified.

Cranston et al. (1983) stated that *Corynoneura* has 5 pairs of lateral teeth plus a bifid or trifid median tooth; *C. sp. D* has a mentum with 6 pairs of lateral teeth plus a trifid median tooth.

Larvae that have lost their antennae can be difficult to separate from *Thienemanniella*. Some *Corynoneura* have a "sculptured" head capsule integument; *Thienemanniella* (and some *Corynoneura*) do not. The head capsule tends to be more elongate-oval or apically pointed in *Corynoneura*. Many larvae can be separated by the form of the stout, spine-like subbasal seta on the posterior parapods: in *Corynoneura* these setae are usually (but not always!) plumose/spinose at their base; in *Thienemanniella* the subbasal setae are always (?) simple.

*Corynoneura* larvae are found in a variety of aquatic habitats, and may be common in "clean" water or organically enriched environments.

**ADDITIONAL REFERENCES:** Boesel & Winner 1980; Hirvenoja & Hirvenoja 1988; Schlee 1968.

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*Corynoneura*, larval structures

- mentum
- head capsule
Preliminary key to Florida Corynoneura

1. Head capsule integument with pustules/granules or sculpturing consisting of fine scratches, often in a reticulate pattern (sculpturing usually strongest dorsally, but may be faint on some specimens) (see figures in couplet 2) ........................................... 2

1'. Head capsule integument smooth, unpatterned ........................................................................ 4

2 (1). Head capsule integument pustulate/granulate; median tooth of mentum bifid; south Florida only(?) ........................................................... C. sp. F

2'. Head capsule integument with sculpturing that usually forms a reticulate pattern; median tooth of mentum trifid; widespread ...................... 3

3(2'). First antennal segment shorter than or subequal to postmentum length ................................. C. taris

3'. First antennal segment longer than postmentum length ......................................................... C. sp. C
4(1') Median tooth of mentum bifid; subbasal seta of posterior parapod with lateral spinules not confined to basal half .......................................................... C. sp. B

4' Median tooth of mentum trifid; subbasal seta of posterior parapod with lateral spinules confined to basal half or less .......................................................... 5

5(4') First antennal segment much greater than postmentum length; first antennal segment length about 300-325 (fourth instar only!) .............................................. C. sp. D

5' First antennal segment much less than postmentum length; first antennal segment length about 80-100 µm (fourth instar only!) .............................................. C. sp. E

Notes on species

C. taris - This species is easily recognized by the sculptured head capsule and its relatively "short" antennae (as compared to C. sp. C). It also usually has an ovoid darker area on the mid-dorsum of the head. The accessory spinules at the base of the subbasal seta of the posterior parapod are usually shorter, thinner and less numerous than those found on C. sp. C. Corynoneura taris is one of the most common species in Florida. However, many other taxa are often misidentified as this species; specimens in the Beck collection at FAMU identified as C. taris consisted of a mixture of this and three other species. I've compared Florida material with the type specimens.

C. sp. B - This species may be the same as the C. celeripes Winnertz of Simpson & Bode (1980); the mentum and subbasal setae of the posterior parapods are similar. I have
reared this taxon from the Suwannee and Withlacoochee Rivers; it is not *C. celeripes*. The larva of *C. coronata* Edwards as illustrated by Cranston (1982) and Cranston et al. (1983) also has a similar mentum; *C. sp. B* is not that species either. This taxon appears to be an undescribed species; it is common in the Suwannee River basin and occurs at least as far north as South Carolina (and New York if conspecific with Simpson & Bode's "*celeripes*"). Hirvenoja & Hirvenoja (1988) separated some species as larvae by antennal length. Using such criteria, *C. sp. B* may consist of more than one species: in Florida and South Carolina material examined, there were two size classes based on basal antennal length/postmentum length. In specimens with basal antennal segment lengths of 150 µm or more, basal segment length was greater than postmentum length; in specimens with basal antennal lengths 125 µm or less, basal segment length was less than or subequal to postmentum length. Whether this is due to allometry, seasonal, or species differences will remain uncertain until adults of both varieties are associated with larvae (I have reared only the "short" antennal variety).

*C. sp. C* - This species and *C. sp. D* have extremely long antennae; note that sp. C has a sculptured head capsule integument. This sculpturing can be very faint in some specimens. See also *C. taris*.

*C. sp. D* - This taxon is unique in that most specimens have a mentum with 6 pairs of lateral teeth (plus a tridif median tooth); Cranston et al. (1983) stated that *Corynoneura* has 5 pairs of lateral teeth plus a bifid or tridif median tooth. The outermost sixth tooth may appear as only a notch on some specimens; the figure accompanying couplet 4' is of a considerably flattened mentum. Note also the smooth head capsule integument and the very long antennae.

*C. sp. E* - In this species, total antennal length is subequal to the length of the head capsule. I have seen specimens from as far north as South Carolina.

*C. sp. F* - This species is unique among the North American species I have seen in that the head capsule integument is pustulate (set with small granules). The median tooth of the mentum is bifid; the first antennal segment is longer than the postmental length. The head capsule is rather squat for a *Corynoneura*. It is known only from south Florida (Brevard and Palm Beach Counties) and may be restricted to marshes. Be aware that partially decomposed larvae of other species of *Corynoneura* may contain detritus, fungi, microsporida, bacteria or other organisms that may give the appearance of a granular head capsule integument; however, in such specimens these organisms also occur on/in the body segments.
Genus *Cricotopus*

**DIAGNOSIS:** Many larvae are difficult or impossible to separate from *Orthocladius* (*Orthocladius*) larvae. Note that *Cricotopus* larvae possess a simple or bifid S1; pecten epipharyngis a simple scale [C. (*Isocladius*)] or 3 scales [C. (*Cricotopus*); C. (*Nostococladius*)]; simple or bifid premandibles; weak ventromental plates; beard very weak or vestigial; mentum with odd number of teeth; and body with or without setal tufts.

**NOTES:** Of the 4 subgenera found in North America, two occur in Florida: C. (*Cricotopus*) and C. (*Isocladius*). The last subgenus is represented in Florida by the *C. sylvestris* group; the remaining Florida species probably fall in C. (*Cricotopus*). C. (*Nostococladius*) is not recorded from Florida, but may occur here. Eight species of *Cricotopus* are recorded from Florida, but undoubtedly more occur. Several species which I've seen from SE Alabama (adult specimens) probably also occur in northern Florida.

Contrary to the diagnosis in Cranston et al. (1983), most *Cricotopus* larvae do possess a weak cardinal "beard" near the lateral margin of the mentum. [Hirvenoja (1973) gives beard length measurements.]

Separation of some *Cricotopus* from *Orthocladius* (*Orthocladius*) at the generic level is difficult, and species level identification of unassociated larvae, with a few exceptions, is not possible. Setal tufts, once thought to distinguish some *Cricotopus* larvae from *O.* (*Orthocladius*), have been shown to occur in the two subgenera of *Orthocladius* which are known from Florida. Setal tuft bearing larvae with simple S1 setae (excluding *O.* (*Symposiocladius*) with its distinctive mentum) are *Cricotopus*, but most specimens encountered may have to be listed as "*Cricotopus/Orthocladius* sp." Until this genus is revised for North America, utilizing all life stages, many species will remain unidentifiable. Benthic biologists can assist taxonomists greatly by rearing larvae!

Larvae are found in a variety of aquatic habitats, where they are often associated with plants. C. (*Isocladius*) species tend to more common in lentic conditions; C. (*Cricotopus*) species are more common in lotic situations. Some *Cricotopus* larvae may be economically important as pests in rice fields and as biocontrol agents for nuisance aquatic plants. One species, *C. bicinctus*, is tolerant of many types of water pollution.

Key to Florida Cricotopus

(This key is based on literature and a limited amount of reared Florida material. You should have at least a pupal association that confirms your larval material as Cricotopus before using this key. Most identifications should be considered tentative.)

1. Head capsule dark and heavily sclerotized; outer margin of mandible with 2 tooth-like projections; mentum distinctively elongate and sharply arched; living in Nostoc ............
   ............................................................ Cricotopus (Nostococladius) sp.
   (not recorded from Florida)

1'. Head capsule, mandible and mentum not as above; not confined to Nostoc ............... 2
2 (1') Premandible apically simple ........................................... 3

2' Premandible apically bifid .......... C. sylvestris group
(Orthocladius (O.) oliveri, which may occur in N Florida, could key here. It may be distinguished by its 3-scaled pecten epipharyngis; C. sylvestris grp. species have a pecten epipharyngis of one scale [which may be notched laterally at base])

3 (2) Inner margin of mandible with serrations ... C. bicinctus

3' Inner margin of mandible smooth ................................................................. 4

4 (3') Median tooth of mentum about 3X or more width of first lateral tooth ...................................................... 5

4' Median tooth usually < 2.5X width of first lateral tooth .................................................. Cricotopus sp.; Orthocladius sp.
5 (4)  First lateral tooth of mentum smaller than outer lateral teeth and almost fused to median tooth .................. *C. trifascia* group

5'  First lateral tooth of mentum subequal to other lateral teeth, not appearing fused to median tooth
........................................................................................................................................ 6

6 (5')  Outer margin of mandible smooth ........ *C. politus*

6'  Outer margin of mandible crenulate ........
.............................. *Cricotopus* sp.; *Orthocladius* sp.
Notes on species

C. (Cricotopus) bicinctus - Common and widespread in Florida. The distinctive serrate inner margin of the mandible makes this one of the few species reliably identified. (However, C. bicinctus may be a complex of morphologically similar species.) The species is tolerant of organic and other forms of pollution. Roback (1974) recorded it from a pH range of 6.3-8.8 and at high chloride levels (> 2600 ppm). In Canada, two species of the C. bicinctus group were shown to be more abundant on oiled rather than unoiled substrates (Rosenberg et al. 1977).

C. (C.) politus - Sometimes common in the Suwannee River basin, where it can occur with C. bicinctus. Identifications must be verified by an associated pupa or adult (see LeSage & Harrison 1980).

C. (C.) trifascia group - At least one species from this group has been recorded from Florida; two may occur.

C. (Isocladus) sylvestris group - There may be at least three species from this group present in Florida (C. sylvestris, C. tricinctus, C. trifasciatus). They are at present inseparable as larvae in Florida. C. remus is a junior synonym of C. trifasciatus.

C. (Nostococladus). sp. - Not yet recorded from Florida; immature stages live in the alga Nostoc.

NOTE: The list above must be considered incomplete. Many Cricotopus may be encountered that will not fit in the preceding key. In many cases, your most accurate identification will be "Cricotopus/Orthocladius sp."
Genus *Diplocladius*

**DIAGNOSIS:** The plumose S I; apically pectinate labral lamellae; well developed beard and mandible with four inner teeth will distinguish this genus.

**NOTES:** This genus is not yet recorded from Florida, but may eventually be found in the northern and/or western part of the state. One Holarctic species, *D. cultriger*, is known, but there may be several undescribed species present in the Nearctic.

Larvae are most often found in cool streams.

*Diplocladius cultriger*, larval structures
(adapted from Cranstion et al. 1983)
Genus *Doithrix*

**DIAGNOSIS:** The S1 with weak lateral serrations; apically bifid premandible; mandible with seta interna and four inner teeth; vestigial procerci; long anal tubules with numerous constrictions; and normal anal setae will distinguish *Doithrix* larvae.

**NOTES:** *Doithrix* has not been recorded from Florida, but it may eventually be found in the western part of the state. Two species are known from the SE.

The apical tooth is considered bifid; the mandible may appear to have five inner teeth.

Larvae have been reared from the vicinity of small streams and seeps; they may best be classified as semi-terrestrial. I've collected adults of *D. villosa* at a small seep with little visible running water in a heavily wooded area on the Appalachian Trail in Pennsylvania.

**ADDITIONAL REFERENCES:** Sæther & Sublette 1983.
Genus *Doncricotopus*

DIAGNOSIS: The simple labral setae; mentum with 6 pairs of lateral teeth; distinct beard setae; mandible with seta interna and with width of four inner teeth less than length of apical tooth; and body with simple setae will distinguish this genus.

NOTES: Hudson et al. (1990) recorded this genus from Florida. However, specimens I have examined from Florida and Georgia identified as this taxon are *Rheocricotopus tuberculatus*. Thus, I consider records of *Doncricotopus* from the Southeast to be invalid. Bolton (1992) recorded the genus from Ohio. The only other records for this genus are from the Northwest Territories and Finland. Larvae closely resemble *Rheocricotopus, Psectrocladius* and *Nanocladius*.

Canadian larvae were reared from a stream.

Genus *Epoicoeladius*

DIAGNOSIS: The distinctive mentum and mandible; long, thick body setae; single pair of anal tubules; and symphoretic life habit distinguish *Epoicoeladius*.

NOTES: One species, *E. flavens*, has been recorded from Florida (Hudson et al. 1990; Oliver et al. 1990). The larva of this species has never been associated with the adult. Jacobsen (1992) provided a key that includes four larval types in the genus for North America. He believed his *E. sp. 4* to be the best candidate as the larva of *E. flavens*; *E. sp. 4* is the only species known to occur in Florida.

Larvae are symphoretic on the ephemerid mayfly *Hexagenia*, where they apparently graze on detritus on the mayfly's gills. Larvae are sometimes found loose in samples from bodies of water with *Hexagenia* populations. I have found a larva of *E. sp. 4* (along with four *Hexagenia*) in the gut of the salamander *Amphiuma pholeter* collected in the Florida panhandle by Dr. Bruce Means.

Genus *Eukiefferiella*

DIAGNOSIS: Larvae are distinguished by the simple S I; weak/vestigial ventromental plates; seta interna of mandible divided almost to base; inner margin of mandible with spines/serrations; 4- or 5-segmented antennae; well developed procerci; and body with simple setae that are less than ½ length of the body segment that bears them.

NOTES: The taxonomy of the Nearctic *Eukiefferiella* is in poor condition; a revision utilizing all life stages is essential before the North American fauna can be identified. Hudson et al. (1990) stated that six species groups (as recognized in Bode (1983)) have been found in the Southeast; I have seen representatives of two of these groups from Florida. I have seen four species (based on adult males) from SE Alabama; these taxa may also occur in Florida. Species level identification of larvae is not possible, even with reared material, because to date only one species has been described from North America and relationships to the described Palearctic fauna are not clear.

Some earlier records of *Eukiefferiella* from Florida may refer to *Tvetenia*, recently split from *Eukiefferiella* (Sæther & Halvorsen 1981).

Larvae are found in running water; some species may be pollution tolerant.

Key to *Eukiefferiella* species groups of SE U.S.A.

1. **Mentum with 4 pairs of lateral teeth** ... *E. devonica* group

1'. **Mentum with 5 pairs of lateral teeth** ........................................ 2

2 (1') **Antenna with 4 segments** .................................................. 3

2' **Antenna with 5 segments** ...................................................... 5

3 (2) **Mentum with a single median tooth** ...................................... *E. brevicalcar* group

   (not recorded from Florida)

3' **Median tooth of mentum bifid or notched at apex** ........................ 4
4 (3') Each median tooth about twice the width of first lateral tooth .......................... *E. pseudomontana* group
(not recorded from Florida)

adapted from Bode 1983

4' Each median tooth about as wide as first lateral tooth ........
...................................................... *E. claripennis* group

adapted from Bode 1983

5 (2') Mentum with single median tooth .......... *E. gracei* group
(not recorded from Florida)

adapted from Cranston et al. 1983

5' Mentum with bifid or notched median tooth ......................................................... 6

6 (5') Antennal blade longer than segment 2; each median tooth about as wide as first lateral tooth .......................... *E. brehmi* group
(not recorded from Florida)

adapted from Cranston et al. 1983

6' Antennal blade subequal to segment 2; each median tooth about twice as wide as first lateral tooth .......................... *E. brevicalcar* group
(not recorded from Florida)

adapted from Bode 1983
Genus *Georthocladius*

**DIAGNOSIS:** The weakly serrate S I (may appear simple); apically simple premandible; mandible with seta interna; proceri absent or vestigial; and long anal tubules with numerous constrictions identify this genus. The mentum may have one or two median teeth, the mandible 2 or 3 inner teeth.

**NOTES:** Three species of *Georthocladius* have been recorded from the SE U.S. David Evans has supplied larvae collected in western Florida. These larvae apparently belong in the subgenus *G. (Atelopodella)*, but have a simple median tooth. The genus has been recorded from bogs, seeps, lotic habitats and forest litter.

**ADDITIONAL REFERENCES:** Sæther 1982; Sæther & Sublette 1983.

*Georthocladius* sp., larval structures
(Adapted from Cranston et al. 1983)
Genus *Gymnometriocnemus*

**DIAGNOSIS:** The simple S I; mandible without seta interna; posterior parapods at a right angle to body axis and divided, with claws on anterior portion; and lack of pro cerci will identify this genus. Florida larvae I've seen also possess distinctive antennae.

**NOTES:** I have seen only larvae of this genus from Florida. Specimens were terrestrial, collected from Live Oak litter in Jackson Co. There are two subgenera present in the SE U.S.; the immature stages of *G. (Gymnometriocnemus)* are mostly terrestrial; those of *G. (Rhaphidocladus)* have been recorded from seeps, springs and small streams.

**ADDITIONAL REFERENCES:** Sæther 1983d.

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*Gymnometriocnemus* sp., larval structures
Genus *Heterotrissocladius*

**DIAGNOSIS:** *Heterotrissocladius* larvae possess a plumose S I; pecten epipharyngis of 3 serrated scale-like spines; 7-segmented antennae with the third segment 1/3 or less the length of segment 4; and ventromental plates that extend beyond the lateral margin of the mentum.

**NOTES:** *Heterotrissocladius* is essentially a genus of northern climes. Two Florida taxa are placed in this genus; each will key out separately in the generic key. Both are found in streams.

*H. sp. C* has a distinctive mentum and mandible and was placed tentatively in *Heterotrissocladius* by Sæther (1975). It is known only as a larva; I have seen specimens from Juniper Creek in Calhoun Co. and Lafayette Creek in Walton Co. Several characters (mentum, premandible with brush, large plumose S II) of *H. sp. C* are unusual for the genus; once reared, this species may be placed in its own genus.

The second Florida species is more representative of the genus and is a member of the *H. marcidus* group. Florida larvae have not been reared and it is uncertain whether Florida specimens are *H. marcidus* or a related species, perhaps undescribed.

**ADDITIONAL REFERENCES:** Sæther 1975, 1992.
Genus *Hydrobaenus*

**DIAGNOSIS:** The double median teeth of the mentum; lack of a beard and premandibular brush; maxilla with a well developed pecten galearis; and ventromental plates which extend past the lateral margin of the mentum are characteristic for this genus. The very similar genus *Zalutschia* has a weak beard.

**NOTES:** One species, *H. pilipes*, is recorded from Florida based on a larval specimen from the Apalachicola River (Sæther 1976). I have seen additional larval material from the Escambia River. The genus is mostly northern in distribution; larvae are found in the littoral region in lentic and lotic situations. In Florida, larvae are collected in winter and early spring.

**ADDITIONAL REFERENCES:** Sæther 1976; 1989b.

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*Hydrobaenus sp.*, larval structures

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*mentum*

*maxilla*

(adapted from Cranston et al. 1983)
Genus *Krenosmittia*

**DIAGNOSIS:** This genus is diagnosed by its small size (< 3.5 mm); apically bifid premandible; distinctive mentum; and elongate anal setae (about ½ body length).

**NOTES:** I have seen a single larva from the Perdido River system in the northwestern portion of the state. Although Cranston et al. (1983) stated that the larva has a four segmented antenna, the Florida larva possesses a hair-like, vestigial fifth segment.

*Krenosmittia* larvae occur in sandy substrates; they are found in springs and streams. Their extremely small size (< 3.5 mm) and interstitial habitat no doubt contribute to the paucity of distribution records.

**ADDITIONAL REFERENCES:** Ferrington 1984.
**Genus Limnophyes**

**DIAGNOSIS:** Larvae of the genus are characterized by the absence of labral lamellae; S I serrate (but serrations sometimes reduced); antennae 5-segmented, with blade as long as flagellum or slightly longer; mentum with 2 median teeth and 5 lateral teeth; ventromental plates weak, with posterolateral portion appearing as rounded basal tooth of mentum; simple (occasionally bifid) body setae; and a well developed supraanal seta.

**NOTES:** Based on adult males, three species are known from Florida (the identification of one species remains uncertain). Although Sæther (1990) offered a key for some larvae, species identification of larvae is impossible without associated adult males.

Contrary to information given in Hudson et al. (1990), larvae occur in rivers, streams, springs, seeps, and in moss on rock surfaces and stream margins, as well as terrestrial and semi-aquatic habitats.

**ADDITIONAL REFERENCES:** Cranston & Oliver 1988; Sæther 1990.
Genus *Lopescladius*

**DIAGNOSIS:** *Lopescladius* is identified by its small size; simple, apically pointed premandible; and distinctive antennae, which are longer than the head capsule with segment 2 including a median unsclerotized area and the last segment long and whiplike. The seta submenti are displaced posteriorly, and Florida larvae possess 4 large hypopharyngeal scales.

**NOTES:** At present it is not possible to identify (at the species level) larval *Lopescladius* from Florida. I have not seen any Florida adult material. Pupae of this genus were formerly known as "*Cordites*".

Larvae are found in sand bottomed streams and rivers.

**ADDITIONAL REFERENCES:** Coffman & Roback 1984; Sæther 1983b.
Genus *Mesosmittia*

DIAGNOSIS: Larvae are distinguished by their simple labral setae; lack of a seta interna on the mandible; and lack of procerci, anal setae and anal tubules.

NOTES: Previous works (i.e., Cranston et al. 1983) indicated that only one species, *M. flexuella*, was present in North America. However, Sæther (1985c) demonstrated that *M. flexuella* is apparently not present in the Nearctic, and described several new species, three or four of which may occur in Florida. The larval diagnosis of this genus in Cranston et al. (1983) is based on *M. flexuella*, described from indirectly associated material by Strenzke (1950). Strenzke described the larval mandible as lacking a seta interna and possibly the seta subdentalis.

I have seen adults of *M. patrihortae* from Alabama and Florida; this species appears to be the most common member of the genus in the Southeast. Unassociated larval material I've seen from Florida which probably belongs to *Mesosmittia* matches most of the generic diagnosis of Cranston et al. (1983) except that the mentum has two median teeth, and the mandible bears a minute seta subdentalis (one of the larvae also appears to have a very weak, hyaline seta interna, but it is not clearly discernible). These specimens may represent an undescribed (as a larva) genus; reared material is necessary to accurately place these larvae.

Larvae are reported to be terrestrial, but may also occur in aquatic habitats. Florida "*Mesosmittia*" larvae came from an herbaceous marsh and other aquatic habitats.

ADDITIONAL REFERENCES: Sæther 1985c; Strenzke 1950.
Genus *Metriocnemus*

**DIAGNOSIS:** The larvae are characterized by a plumose S I (simple in *M. fuscipes*); well developed labral lamellae (reduced in *M. fuscipes*); absence of ventromental beard; and well developed procerci and short supraanal setae.

**NOTES:** *Metriocnemus* is currently being revised by O.A. Sæther. There is a large range of variation of larval characters. Two of the unreared species keyed below (*M. sp. A & sp. B*) possess long abdominal setae; this is contrary to the diagnosis given in Cranston et al. (1983). Two named species are recorded from Florida; however, the Beck & Beck (1959) record of *M. abdominoflavatus*, a bromeliad inhabitant, remains in doubt. This record may refer to either of the bromeliad dwellers *M. sp. A or sp. B*, but both possess 5 segmented antennae; according to Picado (1913), *M. abdominoflavatus* has a 4 segmented antenna. A review of type material is necessary.

Larvae are known from a variety of aquatic habitats, including the water held by the bromeliad *Tillandsia* and the pitcher plant *Sarracenia*, marine intertidal pools, sewage treatment beds, moss, tree holes, in damp soil and streams, rivers and lakes.

**ADDITIONAL REFERENCES:** Cranston & Judd 1987; Picado 1913; Sæther 1989a.
Key to some *Metriocnemus* of the SE U.S.A.

1  Body segments with long setae (at least \( \frac{1}{2} \) as long as segment) ........................................... 2

1' Body segments without long setae ................................................................. 3

2 (1) Mentum with 2 median teeth lower than first lateral teeth ......................... *M. sp. A*

2' Mentum with 2 median teeth higher than first lateral teeth ............................. *M. sp. B*

3 (1') Mentum with 4 median teeth, restricted to water held by pitcher plant *Sarracenia* ...... *M. knabi*

3' Mentum with 2 median teeth, not restricted to *Sarracenia* ........................................ 4
4 (3') Median teeth of mentum deeply recessed; antenna squat; S I simple ........ M. fuscipes
(not recorded from Florida)

4' Median teeth of mentum slightly lower than first lateral teeth; antenna normal; S I plumose ........ M. obscuripes
(not recorded from Florida)

adapted from Cranston et al. (1983)

Notes on species

M. fuscipes - I have not seen specimens of this species from Florida; it is recorded from GA and
the Carolinas. This is the so called "Bungarus" of Bill Beck.

M. knabi - This species is apparently restricted to the water held by the pitcher plant Sarracenia.

M. obscuripes - Not recorded from Florida, but is known from SC. A senior synonym of M.
hygropetricus, this species has been found in trickling filter sewage treatment plants.

M. sp. A and M. sp. B - I have collected larvae of both of these species, unassociated with adults,
from water held by the bromeliad Tillandsia at Donald MacDonald Park in Indian River
Co., where they co-existed with psychodid and culicid larvae, and with Monopelopia
tillandsia and a Tanytarsus species. Both Metriocnemus taxa possess long abdominal
setae, unknown in other described Metriocnemus larvae. Because my samples were
pooled from several plants, I can not be certain that both Metriocnemus species occurred
together in the same plant. R. Rutter has collected both taxa from bromeliads at
Alligator Creek.
Genus *Nanocladius*

**DIAGNOSIS:** The simple labral setae; large ventromental plates which extend past the lateral margin of the mentum; lack of beard; and distinctive mentum with wide median area, usually with 2 small central teeth, distinguish this genus.

**NOTES:** *Nanocladius* is currently considered to consist of two subgenera: *N.* (*Plecopteracoluthus*), with three known species, all symphoretic on Corydalidae (Megaloptera), Perlidae and other Plecoptera, or Leptophlebiidae (Ephemeroptera); and *N.* (*Nanocladius*), with usually free-living larvae, although one species has been reported living on Corydalidae. Larvae live in lakes, rivers and streams; *N. distinctus* is apparently tolerant of high levels of organic nutrients.

Identification of *Nanocladius* species is difficult and determinations based on larvae alone are suspect: a pupal association is often necessary for proper identification. The genus requires a revision utilizing all life stages, and examination of type material is essential. Sæther (1977) offered keys for all stages, but the keys and descriptions are ambiguous and contain numerous errors. See Notes on Species following the key.

**ADDITIONAL REFERENCES:** Fittkau and Lehmann (1970); Epler 1986a; Sæther 1977; Simpson & Bode 1986; Steffan 1965.
Key to Florida *Nanocladius*

1 Ventromental plates extremely broad; lateral teeth of mentum indistinct; premandible with 3-5 apical teeth .............................................................. 2

1' Ventromental plates not as long; lateral teeth of mentum distinct; premandible simple or bifid .......................................................... 3

2 (1) AR less than or equal to 1.00; distance from distal notch of mentum to caudal margin of head capsule > 130 μm; ventromental plate with horizontal ridges near front margin, as in couplet 1 ........................................................................... *N. balticus* group

2' AR 1.00 - 1.12; distance from distal notch of mentum to caudal margin of head capsule < 120 μm; ventromental plate apparently smooth ................................. *N. incomptus*

(not recorded from Florida)

3 (1') AR < 0.90; symphoretic on Plecoptera ........... *N. (Plecopteracoluthus) branchicolus*

(not recorded from Florida)

3' AR >1.00; free-living or (more rarely) phoretic on Plecoptera, Megaloptera, or Ephemeroptera ................................................................. 4
4 (3') Ventromental plates with distinct horizontal ridges ........................................ N. distinctus

4' Ventromental plates apparently smooth or with vertical ridges .................................... 5

5 (4') Mentum with 6th lateral tooth reduced/appressed; caudal margin of ventromental plates straight; symphoretic on Plecoptera .................................................................

............... N. (Plecopteracoluthus) downesi
(not recorded from Florida)

adapted from Steffan (1965)

5' Mentum with 6th lateral tooth distinct; caudal margin of ventromental plates straight or rounded; free-living, rarely found on Megaloptera ...................................................... 6

Beyond this point, larvae must be fourth instar and associated with pupae to identify to the species level!!

6 (5') Basal antennal segment length 34-38 μm (4th instar larvae only; associate with pupa!) ......................................................... N. spiniplenus

6' Basal antennal segment length 40 μm or more (4th instar larvae only; associate with pupa!) .......................................................... 7
7(6') Ventromental plates end near or just beyond a line drawn between the setae submenti; claws of anterior parapods usually pectinate ............................................. *N. rectinervis*

7' Ventromental plates extend well beyond a line drawn between the setae submenti; claws of anterior prolegs smooth or pectinate ................................................................. 8

![N. minimus](adapted from Sæther (1977))
![N. crassicornus](

8 (7') Posterior portion of ventromental plate with vertical lines (figure to right above); claws of anterior prolegs usually pectinate (4th instar larvae only; must be associated with pupa!) ................................................................. *N. crassicornus*

8' Posterior portion of ventromental plate without well defined vertical lines (figure to left above); claws of anterior prolegs mostly smooth (4th instar larvae only; must be associated with pupa!) ................................................................. *N. minimus*

**Notes on species**

*N. balticus* group - I have seen mature larvae from the northwestern portion of the state, the Suwannee River basin, and as far south as the Orlando area. Specimens are similar to the *N. (N.) cf. balticus* described by Sæther (1977: 48). The FAMU collection has one reared male with pupal and larval exuviae, but more work is needed to ascertain the taxon's identity.

*N. branchicolus* - Not recorded from Florida, but recorded from N GA. This member of the subgenus *Plecopteracoluthus* lives on Plecoptera and Megaloptera.

*N. crassicornus* - I have associated material from the Suwannee River basin; this larva was also found in New York by Simpson & Bode (1980). Florida specimens are similar; however, Simpson & Bode did not mention the existence of the well defined longitudinal ridges on the caudal portion of the ventromental plates. This species is difficult to separate from *N. rectinervis* and several other species in the larval stage. However, with the limited material available to me, it appears they can be separated by the length of their ventromental plates and perhaps first antennal segment length. Specimens *must* be associated with pupae for proper identification; the pupa of *N.*
crassicornus has an oval shaped thoracic horn, while that of N. rectinervis is digitiform. The characters used by Simpson & Bode (1980) to separate these two species in New York do not apply well to Florida specimens, although the first antennal segment is shorter in the few N. crassicornus I have before me (44-50 μm for N. crassicornus; 52-72 μm for N. rectinervis). I have seen N. crassicornus only from the Suwannee and Withlacoochee Rivers; N. rectinervis also occurs in these rivers. See also notes on N. rectinervis and N. minimus.

N. distinctus - This species can be a component of communities downstream from sources of organic enrichment, such as pulp mills. Because of the large variation observed in his material, Sæther (1977) stated that this taxon may represent a group of closely related species. Pupae from N FL are variable in shagreenation and lateral setation, and indicate that more study is needed.

N. downesi - Not recorded from Florida, but occurs in N GA. Sæther (1977) gives an incorrect AR for this species; as illustrated and measured by Steffan (1965), the AR is around 1.80, not "about 2.3" as in Sæther's (1977) key; Epler (1986a) repeated the erroneous data. This species is a member of the subgenus N. (Plecoptera)acoluthus.

N. incomptus - Not recorded for Florida; a member of the balticus group.

N. minimus - Recorded for Florida by Hudson et al. (1990); I have not seen material of this species. The pupal thoracic horn is sharply pointed apically. Identifications based on isolated larvae must be regarded with extreme skepticism!

N. rectinervis - Sæther (1977) separated this species from N. alternantherae in the larval stage by the rounded caudal margin of the ventromental plate. However, the appearance of the plates is subject to mounting variations, etc. I have seen one specimen with rounded and straight caudal margins on its ventromental plates. Sæther's interpretation of N. alternantherae was apparently based solely on the description and figures in Dendy & Sublette (1959). My examination of paratype specimens of N. alternantherae indicates that some of their illustrations are inaccurate. Most importantly, the pupal thoracic horn is not smooth (Dendy & Sublette (1959): fig. 12) but bears spines. I can separate neither Florida adults, pupae or larvae nor N. alternantherae paratype material from Sæther's interpretation of N. rectinervis. I am therefore tentatively regarding N. alternantherae as a junior synonym of N. rectinervis. Sæther (1977) noted that, in North America, N. rectinervis was found in lentic and lotic situations, whereas Fittkau and Lehmann (1970) found it only in running waters. Because N. alternantherae was described from a lentic habitat, I investigated to see if Florida lentic specimens (which might equate with alternantherae) were different than specimens from lotic waters (which might equate with rectinervis). I could find no consistent differences between specimens from the two habitats. There is a wide range of size in Florida material. This may indicate more than one species, but the material available is not sufficient to draw any further conclusions. This is the most common Nanocladius I've seen from lakes in Florida.

N. spinipennis - Hudson et al. (1990) record this species from Florida but I have not seen Florida material of this taxon. Fourth instar larvae and a pupal association are necessary for proper identification.
Genus *Orthocladius*

**DIAGNOSIS:** Many larvae are difficult or impossible to distinguish from *Cricotopus* (*Cricotopus*) larvae. Most *Orthocladius* possess a bifid S I (simple in *O. (Symposiocladius)*); pecten epipharyngis of 3 scales; premandible simple or bifid; weak ventromental plates; beard very weak or vestigial; mentum with odd number of teeth; and body with or without setal tufts.

**NOTES:** There are five subgenera in the genus; two occur in Florida, each with a distinctive species. The larva of *O. (Symposiocladius) lignicola* is a wood borer; it is easily identified by its characteristic mentum and simple S I setae. *O. (Orthocladius) annectens* also has a distinctive mentum, with the median and appressed first lateral teeth projecting strongly forward; most larvae examined also bear well developed, distinctive Lauterborn organs. Both species key out in the generic key. At least two other species of *O. (Orthocladius)* may occur in Florida. Material resembling *O. oliveri* has been collected in southern GA (B.A. Caldwell, pers. comm.), and *O. obumbratus* may occur in the Florida panhandle. Both of these species must be reared for correct identification. The discovery of setal tufts on *O. annectens* (Fagnani & Soponis 1988) negates the use of that character in separating many *Orthocladius* larvae from those of *Cricotopus*. *O. annectens* is a common species of the rivers of northern Florida.

**ADDITIONAL REFERENCES:** Cranston & Oliver 1988b; Langton & Cranston 1991; Soponis 1977; 1990.
Genus *Parachaetocladius*

**DIAGNOSIS:** Larvae are distinguished by the distinctive mentum; simple premandible; mandible with 1 or 2 inner teeth; and procercus with one seta at least ¼ as long as the body.

**NOTES:** One species, *P. abnobaeus*, is known from Florida and the SE U.S.A.; other species may occur. I have seen larval and pupal specimens from the Perdido River basin and other areas in Florida. Larvae are found in lotic conditions and are often associated with spring-fed streams.

**ADDITIONAL REFERENCES:** Sæther & Sublette 1983.

*Parachaetocladius* sp., larval structures
Genus *Paracricotopus*

DIAGNOSIS: The apically serrated but almost simple S I seta; smooth inner margin of mandible; reduced ventromental plates; absence of beard; long, simple abdominal setae; and well developed procercal spurs separate this genus.

NOTES: This genus has not yet been recorded from Florida, but may eventually be found here. Three species are known from GA. Larvae are reported from algae and moss in bogs, streams and rivers.

ADDITIONAL REFERENCES: Caldwell 1985; Steiner 1983.

*P. mutilockensis*, larval structures
Genus *Parakiefferiella*

**DIAGNOSIS:** *Parakiefferiella* larvae are characterized by their six-segmented antennae, with the last segment hairlike; well developed ventromental plates which may or may not extend past the lateral margin of the mentum; no ventromental beard; and S I plumose (rarely bifid/trifid).

**NOTES:** *Parakiefferiella* is greatly in need of revision. Based on larvae, at least four species occur in Florida. Adults are difficult or impossible to identify; there are apparently several undescribed species in the SE. Larvae are found in lotic and lentic conditions. See also *Stilocladius*.

*Parakiefferiella*, larval structures
Key to Florida *Parakiefferiella*

1. Mentum with pale, dome-shaped median tooth; ventromental plates cover most of lateral teeth .................. *P. sp. A*

1'. Median tooth of mentum not as above; ventromental plates may extend past lateral margin of mentum, but do not cover most of lateral teeth ............... 2

2. Fourth antennal segment about twice the length of segment 3, or more .... *P. sp. C*

2'. Fourth antennal segment subequal to third ...................................................... 3

3 (2'). Third antennal segment less than ½ length of 2 .. *P. sp. B*

3'. Third antennal segment subequal to 2 ............ *P. sp. D*
Genus *Parametriocnemus*

DIAGNOSIS: This genus is characterized by the plumose S I; 5-segmented antenna; mentum with 2 median teeth; beard absent; large, distinctive ventromental plates; and lack of a pecten galearis on the maxilla.

NOTES: One species, *P. lundbeckii*, has been recorded from Florida, and apparently is the species most often collected. [ *P. lundbeckii* is the correct spelling; see Article 33(d) of the International Code Of Zoological Nomenclature (1985).] However, other species may also occur here. The taxon referred to as Orthocladiinae genus F in Epler (1992) belongs in *Parametriocnemus*, based on reared material from Costa Rica. This species, now called *P. sp. F*, is easily separated from other known U.S. *Parametriocnemus* by its distinctive mentum, the six-segmented antennae and the presence of a pecten galearis on the maxilla.

Larvae are found in springs, streams and rivers. I have reared *Parametriocnemus* larvae from a small bayhead stream which occasionally dries completely. Larvae of *P. lundbeckii* are apparently sensitive to organic pollution, but better empirical data, based on correct identification, are needed.

ADDITIONAL REFERENCES: Sæther 1969.
Genus *Paratrichocladius*

**DIAGNOSIS:** Larvae of this genus are difficult, if not impossible, to separate from some *Cricotopus* (*Cricotopus*) or *Orthocladius* (*Orthocladius*) larvae. *Paratrichocladius* larvae have a pecten epipharyngis of 3 scales; outer margin of mandible mostly smooth; first lateral tooth of mentum distinctly separated from median tooth and wider in middle that at its base; and lack setal tufts on the body. These characters also fit many *Cricotopus/Orthocladius* larvae.

**NOTES:** This genus has not yet been recorded from Florida. Because of the close resemblance of the larva to many *Cricotopus* or *Orthocladius* larvae, it may be overlooked. However, based on adult collections I've seen, it does not appear to be a common taxon. Isolated larvae of this genus can not be accurately identified at the generic level; an association with a pupa or an adult is necessary.

Larvae are known to occur in many aquatic habitats, including brackish water.

**ADDITIONAL REFERENCES:** Rossaro 1979; 1990.
Genus *Psectrocladius*

**DIAGNOSIS:** The palmate S I, with 3 (rarely 2) to many sharply pointed lobes; simple premandible; and well developed ventromental plates and beard distinguish larvae.

**NOTES:** Of the four subgenera, *P. (Psectrocladius)* and *P. (Monopsectrocladius)* occur in Florida. Three species are recorded, but several unidentified species exist. Our knowledge of the genus is poor. It is not possible to identify some adult males; the genus requires revision. Larvae have been confused with *Nanocladius* in some earlier works (Mason 1973; Roback 1957), but are easily separated by the palmate S I and bearded ventromental area. The S I is usually palmate with several deeply cut lobes, but on some larvae of an undetermined *P. (Monopsectrocladius)* species, the S I may be bifid or only slightly trifid (see figures below).

Larvae are found in lentic and lotic situations, and seem to prefer acidic conditions.

**ADDITIONAL REFERENCES:** Langton 1980; Sublette 1967.
Key to some *Psectrocladius* of Florida

1. Mentum with 2 large, distinctly separated median teeth .................. *P. vernalis*

1'. Mentum with single broad or pointed median tooth; or medially notched; or with 2 small, nipple-like median projections on closely set median tooth/teeth .................. 2

2 (1'). Mentum with single nipple-like median tooth; ventromental plates greatly extended laterally; S I may appear bifid or trifid ......... *P. (Monopsectrocladius) sp.*

2'. Mentum not as above; ventromental plates not greatly extended; S I deeply palmate
.................................................................................. 3

3 (2'). Mentum with single broad tooth (may appear notched medially); median "tooth" with lateral margins squared off ..........
.................................................................................. *P. elatus*

3'. Mentum with 2 small, nipple-like median projections on closely set median tooth/teeth; lateral margin of median tooth/teeth rounded ......................... other *Psectrocladius* sp.
Genus *Pseudorthocladius*

**DIAGNOSIS:** The 3 inner teeth of the mandible; simple premandible; and long anal setae serve to distinguish this genus.

**NOTES:** Based on adults, two species are known from Florida. Larvae can not be identified to species.

Larvae are found in moss, bogs, springs and along streams

**ADDITIONAL REFERENCES:** Cranston & Oliver 1988; Sæther & Sublette 1983; Soponis 1980b.

*Pseudorthocladius* sp., larval structures
Genus *Pseudosmittia*

**DIAGNOSIS:** This genus is identified by the bifid S I; antennae with the antennal blade greatly exceeding the flagellum and with last segment longer than that preceding; lack of procerci; and posterior parapods developed and with claws.

**NOTES:** Based on adults, two species are known from Florida. Dr. L.C. Ferrington, Jr., is currently revising this genus. At present, species identification of the larvae is not possible.

Larvae are found in vegetated marshy areas, pond and stream borders, and can also be found in semi-terrestrial or terrestrial conditions.

*Pseudosmittia* sp., larval structures
Genus *Psilometriocnemus*

**DIAGNOSIS:** The apically toothed (not plumose) S I; 6-segmented antenna (last segment vestigial/hairlike) with well developed Lauterborn organs; pecten epipharyngis of 3 short, simple spines; maxilla with pecten galearis; and mentum with bifid median tooth and with last lateral tooth adjacent to penultimate lateral tooth identify this genus.

**NOTES:** One species, *P. triannulatus*, is known from the Southeast; it has not yet been recorded from Florida. See also Orthocladiinae genus F.

Larvae are found in damp soil, seeps, springs and small streams.

**ADDITIONAL REFERENCES:** Sæther 1982.

*Psilometriocnemus* sp., larval structures
(adapted from Sæther 1982)
Genus *Rheocricotopus*

**DIAGNOSIS:** Larvae possess a bifid (usually) S I; mentum with median tooth bifid, notched or simple; and well developed beard and ventromental plates.

**NOTES:** Two species are known from Florida. *R. robacki*, with deeply bifid median tooth, apically rounded ventromental plates and no ventral tubercules on the head capsule, is a common, sometimes abundant species of the rivers and streams of northern Florida. *R. tuberculatus* is found in similar habitats, but is much less common. Larvae have a mentum with a single or slightly notched median tooth; elongate triangular ventromental plates; and a pair of well developed postero-ventral tubercules. All associated pupae of *R. tuberculatus* from Florida bear 4 lateral lamellar setae on tergite VII; type material bears only 3 setae on tergite VII. Some larvae also possess a slightly notched median tooth; others have a simple median tooth as originally described. This may indicate morphological variability, or another, cryptic, species may be involved. More reared material is needed. An unknown *Psectrocladius* (*Monopsectrocladius*) species may be confused with *R. tuberculatus*, but it lacks the ventral tubercules. See also *Doncricotopus*.

**ADDITIONAL REFERENCES:** Caldwell 1984; Sæther 1985b.
Genus *Rheosmittia*

DIAGNOSIS: The distinctive antennae, at least $\frac{1}{2}$ length of head capsule and with second segment (and sometimes the first segment) unevenly sclerotized; alternate Lauterborn organs along antennal segment 2; and the mentum semi-circular in outline and usually with 2 large hypopharyngeal scales dorsal to it will distinguish the genus.

NOTES: Several species of *Rheosmittia* may occur in the Southeast. Although larvae are known from Florida, I have not seen adults, necessary for species-level identification, from the state.

Larvae inhabit the shifting sand substrates of streams and rivers, and are difficult to rear.

ADDITIONAL REFERENCES: Cranston & Sæther 1986.
Genus *Smittia*

**DIAGNOSIS:** Larvae of this genus have a plumose S I; apically bifid premandible; antennal blade less than or equal to flagellum; and lack procerci and anal setae.

**NOTES:** Based on adults, two species are known from Florida. I have seen two larval taxa from Florida (figured below); neither are associated with adults. Larval species B is unusual because of the trifid median tooth of the mentum (unreported for the genus; the mentum usually bears a single domed tooth, as in larval sp. A); all other characters place this taxon in *Smittia*. Larval sp. A resembles *S. lasiops* as described by Webb (1982), but without associated adults identification is not possible.

Larvae are usually terrestrial, although aquatic species do exist. Webb (1982) found *S. lasiops* larvae in soil from corn fields in Illinois. Both of the Florida larval species have been collected from leaf litter in hardwood forests.

**ADDITIONAL REFERENCES:** Webb 1982.
Genus *Stilocladius*

DIAGNOSIS: The simple or apically toothed (bifid?) S I; weakly bearded ventromental plates; and 6-segmented antenna, with last segment hairlike, identify this genus. Distinctions between this genus and *Parakiefferiella* are not clear.

NOTES: One species, *S. clinopecten*, is described from the Southeast; I have not seen this species in Florida material.

A species, known only as a larva, occurs in Florida which may belong to *Stilocladius*. Specimens, partially illustrated below, possess a weak ventromental beard, bifid S I, and six-segmented antennae. However, the species has the general appearance, especially the mentum (which is dissimilar to *S. clinopecten*), of a *Parakiefferiella*, and may belong in an emended *Parakiefferiella*. I have tentatively identified this taxon as "*Stilocladius?* sp."

Genus *Symbiocladius*

DIAGNOSIS: The distinctive mentum, without median teeth and lateral teeth spine-like; vestigial procerci; and ectoparasitic habit distinguish this genus.

NOTES: *Symbiocladius* has not been reported from Florida; two species are known from the Southeast. Larvae are parasitic on mayflies.


*Symbiocladius* sp., larval structures
(adapted from Cranson et al. 1983)
Genus *Synorthocladius*

**DIAGNOSIS:** The simple S I; distinctive mentum with well developed ventromental beard bearing apically branched filaments; mandible without seta interna but bearing a large spine on inner margin; large seta subdentalis; and middle body segments with 2 pairs of plumose setae identify this genus.

**NOTES:** One species has been recorded from Florida, but conspecificity of Florida material with the one described Holarctic species might be considered doubtful. More than one species may be present in the Southeast; more work is needed on the genus. Larval specimens should be identified as *Synorthocladius* sp. The extent of sclerotization of the third antennal segment is variable; antennae may appear to be four- or five-segmented. Larvae were called "*Parorthocladius*" by Beck (1976;1979).

Larvae are most often found in running water, but also occur in springs and lentic situations.

*Synorthocladius* sp., larval structures
Genus *Thienemanniella*

**DIAGNOSIS:** The long (greater than 1/2 head length), well-sclerotized 5-segmented antennae; and simple subbasal setae of the posterior parapods identify this genus. The mentum may have 2 or 3 median teeth. See also *Corynoneura*.

**NOTES:** Based on adults, one species, *T. xena*, has been recorded from Florida. Many other species occur in the eastern U.S., many of which (at least three) are probably undescribed. Many specimens have been identified as "*T. xena*" because of the darkened antennal segment 2. However, at least three species with a darkened antennal segment 2, one undescribed, occur in the eastern U.S. (M. Bolton, pers. comm.). Thus, any previous identifications of *T. xena* based solely on larvae are suspect. It is not possible to identify a species solely by matching the specimen's mentum to an illustration. There are no published keys that will correctly identify Nearctic larvae. Thus, any species-level identifications based on unassociated larvae should be treated with a great deal of skepticism. The key that follows must be considered preliminary; to date I have reared only *T. xena* from Florida.

Larvae are found in streams and rivers, and may be found in "clean" or enriched habitats. A revision of the Holarctic members of the genus, utilizing all life stages, is necessary to determine which species, if any, might be useful as indicator species.

**ADDITIONAL REFERENCES:** Boesel & Winner 1980; Schlee 1968.
Preliminary Key to Florida *Thienemanniella*

1. Mentum with 3 large median teeth, central tooth more than ½ as long as outer median teeth .......................... 2

1'. Mentum with 2 large median teeth, central tooth absent, minute or ½ or less as long as outer median teeth ........................................................................................................... 3

2(1). Antennal segment ¾ to ¾ as long as segment 2; first lateral tooth of mentum partially fused to median tooth; antennal segment 2 usually pale (see Notes!) .......... *T. cf. similis*

2'. Antennal segment 3 equal to or longer than segment 2; first lateral tooth of mentum not partially fused to median tooth; antennal segment 2 usually dark brown (see Notes!) ........................................................................................................... *T. xena*
3(1') Central tooth of mentum absent or minute; granular appearance of integument of postmentum ends anteriorly in a concave line near setae submenti (visible with phase-contrast optics)(see Notes) ................................................................. T. sp. A

3' A small central tooth present between median teeth; integument of postmentum not granular or granularity extends on to mentum ................................................. 4

4(3') Antennal segment 3 subequal to segment 2 .................................................. T. sp. B

4' Antennal segment 3 ½ to ¾ as long as segment 2 ............................................. 5

5(4') First lateral tooth of mentum not partially fused to median tooth; longest seta on second body (thoracic) segment about 100 µm long ........................................ T. sp. C

5' First lateral tooth of mentum partially fused to median tooth; longest seta on second body (thoracic) segment about 150–180+ µm long ........................................ T. sp. D
Notes on species

*T. cf. similis* - This species was the second most abundant in the collections I examined. My determination of this species is based on data from an unpublished manuscript key by M. Bolton, Ohio EPA. I have not seen adults of *T. similis* from Florida.

*T. xena* - This was the most abundant species, along with *T. cf. similis* and *T. sp. A*, that I found in collections I examined. Note that *T. xena* is not the only species known from the eastern U.S. with a darkened antennal segment 2; *T. partita*, recorded from South Carolina by Hudson, et al. (1990), has a brown second antennal segment. I have compared Florida material with the type specimens.

*T. sp. A* - This species is common in Florida and is easily recognized by its large bifid median teeth (the minute central tooth is often worn down) and by the granular appearance of the postmentum integument that ends anteriorly in a concave line near the setae submenti. This character is easily visible with phase-contrast optics. The length of the third antennal segment of this "species" varies from ½ to equal to the length of segment 2. This may indicate that more than one species is present. I have not reared this species. It may be the same as the "*Thienemanniella nr. fusca* (Kieffer)" of Simpson & Bode (1980); *T. fusca* is a junior synonym of *T. acuticornis* (Kieffer); it is not known from the Nearctic. *T. sp. A* has long (125+ μm) body setae (*T. spp. C* and *D* also have long body setae).

*T. sp. B* - This taxon is uncommon and was seen only from streams in northern Florida.

*T. spp. C* and *D* - These two taxa were rare in the material I examined.
Genus *Tvetenia*

**DIAGNOSIS:** The coarsely toothed or plumose S I; mandible with inner spines/serrations; narrow ventromental plates and lack of a beard; and the long, strong body setae (at least ½ length of segment) distinguish larvae of this genus.

**NOTES:** Larvae of this genus were formerly placed in *Eukiefferiella*, and will key to that genus in Beck (1976;1979). At least one species, unknown as an adult, occurs in Florida. Bode (1983) divided Nearctic larvae into two groups; the Florida larvae fit in the *T. discoloripes* group. However, data from all life stages indicate that the groups may have to be redefined (see Mason 1985c).

Larvae are found in rivers, and are apparently tolerant of high organic nutrient levels.

**ADDITIONAL REFERENCES:** Bode 1983; Mason 1985c.

*mentum*  
*antenna*  
*mandible*  

*body segments*  

*Tvetenia* sp., larval structures
Genus *Unniella*

**DIAGNOSIS:** The plumose S I; mentum with median tooth lower than second lateral tooth, and first lateral tooth reduced and fused to second; well developed ventromental plates which extend past the lateral margin of the mentum; and mandible with 4 inner teeth will identify *Unniella*.

**NOTES:** One species, *U. multivirga*, is known. Beck (1976;1979) called these larvae "Trissocladius". Larvae occur in streams and rivers.

**ADDITIONAL REFERENCES:** Caldwell 1986.
Genus **Xylotopus**

**DIAGNOSIS:** The heavily sclerotized, dark head capsule; distinctive mentum with 2 elongate median teeth; and lateral abdominal fringe of setal tufts characterize this genus.

**NOTES:** One species, *X. par*, is known from North America. The species was formerly placed in the genus *Brillia*.

Larvae mine in submerged, partially decomposed wood.

**ADDITIONAL REFERENCES:** Oliver 1982; 1985.

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*X. par*, larval structures
(adapted from Cranston et al. 1983)
Genus *Zalutschia*

**DIAGNOSIS:** Larvae possess a plumose S I (sometimes coarsely plumose); mentum with first lateral tooth reduced; ventromental plates well developed, with a weak beard beneath; and mandible with 3 inner teeth.

**NOTES:** One species, *Z. briani*, is described from Florida. In addition, at least one undescribed species (sp. A), known from a pharate male pupa and unassociated, but probably conspecific, larvae, occurs here. A third species, *Z. zalutschicola*, may also be found here.

Larvae of *Z. briani* are found on aquatic vegetation in lakes. Other species are also found in lentic habitats, but may be found in streams and rivers.

**ADDITIONAL REFERENCES:** Sæther 1976; Soponis 1979.
Orthocladiinae species C

DIAGNOSIS: The "mop-like" S I; mandible with inflated base; and distinctive mentum serve to distinguish this taxon.

NOTES: This taxon was briefly described by Sæther (1982). The S I setae appear to be constructed of several thickened filaments, similar to the head of a mop. The distinctive mentum resembles that of Acamptocladius. Associated pupae (in poor condition) are similar to Parakiefferiella, but apparently lack a thoracic horn. Reared material will be necessary to discover this taxon's identity.

Larvae are found in sand-bottomed streams.

Orthocladiinae genus D

DIAGNOSIS: The long (greater than ½ length of head capsule), apparently 3-segmented antennae and distinctive mentum distinguish this taxon.

NOTES: I have seen larvae from two streams in extreme western Florida. This taxon is probably a *Nanocladius*, and may be a member of the *balticus* group. Reared material is necessary to solve this issue.
Orthocladiinae genus E

DIAGNOSIS: The coarsely plumose S I; mentum with 4 median teeth; lack of beard; reduced ventromental plates; pecten epipharyngis with more than 12 teeth; well developed posterior parapods (with well developed claws); and the presence of procerci and anal tubules distinguish this taxon.

NOTES: This apparently terrestrial taxon is known from larvae collected from mixed hardwood leaf litter in Tallahassee, but I've recently seen a larva from the Santa Fe River, where it was probably washed in. The multi-toothed pecten epipharyngis is distinctive. One other orthoclad, Antillocladius, possesses a multi-toothed pecten epipharyngis, but lacks procerci and anal tubules. These structures are present in Orthocladiinae genus E.
Subfamily Chironominae

DIAGNOSIS: Antennae 4-8 segmented, never reduced. Labrum with S I simple, palmate or plumose; S II simple or plumose; S III simple; S IV normal or sometimes pedicellate. Labral lamellae usually well developed, reduced or absent in some taxa. Mentum usually with 8-16 well sclerotized teeth; sometimes central teeth or entire mentum pale or poorly sclerotized; rarely teeth fewer than 8 or modified as setal-like projections. Ventromental plates usually well developed and striated, but may be vestigial or smooth; beard absent. Prementum without dense brushes of setae. Body usually with procerci, anterior and posterior parapods well developed; sometimes with setal tufts. Penultimate segment sometimes with 1-2 pairs ventral tubules; antepenultimate segment sometimes with lateral tubules. Anal tubules usually present, reduced in brackish water and marine taxa.

NOTES: Usually the most abundant (in numbers of individuals and taxa) Chironomidae in most aquatic habitats in Florida. Found in fresh, brackish and salt water. Most larvae build silken tubes in or on substrate; some mine in plants and sediments; some are free-living; some build transportable cases. Many larvae feed by spinning silk catch-nets, allow them to fill with detritus, etc., and then ingest the net; some taxa are grazers; some are predacious.

Key to Florida Chironominae genera
(The larva of Klossia, which may occur in Florida, is undescribed)

1 Antennae mounted on distinct elongate base (at least as high as wide); Lauterborn organs well developed, may be sessile or on short or long pedicels; antennae with 5 segments; bases of S I fused; ventromental plates usually bar-like and almost touching medially (except in Constempellina, Steppellina, Steppellinella) ..........................................
........................................................................................................ Tribe Tanytarsini ................................................................. 2
1' Antennae not mounted on elongate base; Lauterborn organs weak or well developed but never on long pedicels; antennae with 4-8 segments; if bases of S I fused, then antennae with 6 segments and alternate Lauterborn organs at apex of segments 2 and 3; ventromental plates bar-like in Pseudochironomus .................................................. Tribes Pseudochironomini and Chironomini .......... 11

2 (1) Ventromental plates squat, about twice as wide as long and separated by at least width of 3 median mental teeth; larvae with portable sand cases .......................................................... 3

2' Ventromental plates wide, at least 3 times wider than long and narrowly separated medially; if larvae are in sand cases, they are not portable ....................................................... 5

3 (2) Antennal segment 2 with one Lauterborn organ arising apically, the other preapically ........................................ Stempellinella

3' Antennal segment 2 with both Lauterborn organs arising apically ........................................ 4

4 (3') Antennal base with large palmate process on inner side ................................ Stempellina

4' Antennal base with simple, non-palmate spur ........................................ Contempellina
5 (2') Mentum with 4 pairs of lateral teeth; exclusively marine ............. *Pontomyia*

5' Mentum with 5 (or sometimes apparently more) pairs of lateral teeth; usually in fresh water but may occur in estuarine habitats .............................................. 6

6 (5') Premandible with 3 or more apical teeth ........................................... 7

6' Premandible apically bifid ...................... 8

7 (6) Antennal segment 2 usually short, wedge-shaped, < segment 3; Lauterborn organs large and placed on short (less than length of Lauterborn organ) pedicels; some claws of posterior parapods with inner comb of teeth .................. *Cladotanytarsus*

7' Antennal segment 2 cylindrical (may be poorly sclerotized or annulated), longer than segment 3; Lauterborn organs small and placed on long pedicels (pedicels may be annulated); claws of posterior parapods simple ........................................ *Tanytarsus*  

*Includes Nimbataurus*
8 (6) Pecten epipharyngis a single broad multitoothed comb; ventromental plates often with row of block-like striae ............................................................ Rheolanytarsus

8' Pecten epipharyngis consisting of 3 or more teeth or scales; ventromental plates without row of block-like striae ........................................................................ 9

9 (8') Lauterborn organs on pedicels which greatly exceed antennal segments 3-5; pecten epipharyngis of 3 distally serrated/toothed scales .. Micropsectra

9' Lauterborn organs sessile or on pedicels which do not greatly exceed antennal segments 3-5; pecten epipharyngis consists of 3-5 simple lobes .......... 10

10 (9') Lauterborn organs extending to or beyond antennal apex; mandible with pronounced hump on outer margin; mentum with 3 median teeth which project strongly forward .......................................................... Sublettea

(not recorded from Florida)
10' Lauterborn organs sessile or on short pedicels which do not extend to antennal apex; mandible with normal outer margin; mentum without strongly projecting median teeth ........................................... *Paratanytarsus*

11' Ventromental plates absent/vestigial; mentum strongly concave and well sclerotized ........................................... 12

11' Ventromental plates well developed; if mentum concave, then not well sclerotized ........................................... 13

12 (11) Mentum with 10-12 teeth (see couplet 11); antennal blade extends to apex of segment 2; anal tubules with 0-2 constrictions .......... *Stenochironomus*

12' Mentum with 8 teeth; antennal blade extends past apex of segment 3; anal tubules with 4-5 constrictions ................................................................. *Xestochnironomus*
13 (11') S I simple (deeply dissected in some *Parachironomus*, couplet 21); mandible without dorsal tooth/teeth; pecten epipharyngis rounded or subtriangular, consisting of a single plate or scale which may be simple, serrated, notched or toothed .................................................. 14

13' S I plumose or fringed on at least 1 margin; mandible usually with dorsal tooth/teeth; pecten epipharyngis a wide multitoothed comb or of 3 plates which are usually apically toothed (but may be simple) .................................................................................................................. 29

14 (13) Mentum toothless, with about 15 anteriorly directed seta-like projections; mandible with dense fringe of setae on outer margin .................. *Harnischia* complex genus B

14' Mentum with teeth; mandible without dense fringe of setae on outer margin ........... 15
15 (14') Mentum concave, with broad pale median tooth flanked by dark well sclerotized teeth which point inward; ventromental plates at least 3X wider than long .......................... 16

15' Mentum convex or linear, or if concave then mentum completely pale; ventromental plates less than 2x as wide as long ........................................................................ 18

16 (15) Antennae with 7 segments .......... 
........................................... Demicryptochironomus

16' Antennae with 5 segments ................. 17

17 (16') Pecten epipharyngis a large, deeply trilobed triangular scale with serrated margins, S I well developed, at least half as long as S II; premandible with weak brush .......................... 
..................... Cryptochironomus

17' Pecten epipharyngis a small, weakly trilobed rounded plate with entire margins; S I minute, less than 1/5 length of S II; premandible without brush ................. Gillotia

(not recorded from Florida)
18 (15') Mandible without inner teeth (or rarely with 1 inner tooth); mentum pale, concave; 7 anterior body segments apparently subdivided, giving appearance of a 20 segmented body ....................................................... *Chernovskiia*

18' Mandible with at least 2 inner teeth or notches indicating teeth; mentum convex or linear; anterior body segments not appearing subdivided ........................................ 19

19 (18') Antennae with 5 segments ..................................................................................... 20

19' Antennae with 6-7 segments ....................................................................................... 25

20 (19) Pecten epipharyngis a wide plate with numerous teeth (trifid in 1 sp.); premandible without brush .......... ................................................................. *Parachironomus*

20' Pecten epipharyngis a simple plate with or without weak distal lobes, or triangular, distally trifid or laterally serrate; premandible with brush ........................................ 21

21 (20') Premandible bifid ..................................................................................... 22

21' Premandible with more than 2 teeth .......... 24

22 (21) General outline of mentum linear, median tooth trifid; antennal blade as long as or longer than flagellum (segments 2-5) ......................................................... *Microchironomus*
22' General outline of mentum strongly arched, with median tooth single or medially notched, double, or broad and laterally notched (may appear trifid) (see below); antennal blade shorter than flagellum, extending at most to apex of segment 4 .......... 23

23 (22') Median tooth broadly rounded or laterally notched to appear trifid, set well forward from remaining teeth so that outline of central mentum slopes sharply; basal segment of antenna about 2-2.5X longer than wide ............................................ Cryptotendipes

23' Median tooth usually double or notched medially, may be broadly rounded but not extending well forward of remaining teeth, not appearing sharply sloped; basal segment of antenna about 2.8-4.0X longer than wide ............................................ Cladopelma

24 (21') Antennal segments 2 and 3 subequal; ventromental plates weakly striated .......... Harnischia

24' Antennal segment 2 much longer than 3; ventromental plates coarsely striated ............... Paracladopelma
25 (19') Mentum strongly arched, resembling a circular saw blade; ventromental plates with notch on anterior margin .......... *Harnischia* complex genus A

25' Mentum and ventromental plates not as above .................................................. 26

26 (25') Antenna 7 segmented; mandible without seta interna ..................................... 27

26' Antenna 6 segmented; mandible with seta interna ................................................ 28

27 (26) Mentum with odd number of teeth: median tooth broad or trifid, with 4 pairs of lateral teeth .......................................................... *Beckidia*

(no recorded from Florida)

27' Mentum with even number of teeth (14) .............................................................. *Robackia*

28 (26') Mentum with rounded median tooth; style at apex of antennal segment 3 < 4+5+6; ventromental plates coarsely striated ...................... *Saetheria*
28' Mentum with pointed median tooth; style at apex of segment 3 subequal to 4+5+6; ventromental plates finely striated .................................................. Harnischia complex genus C

29 (13') Antennae with 6 segments .................................................................................. 30

29' Antennae with 5 segments ......................................................................................... 39

30 (29) Ventromental plates separated medially by less than width of medial teeth; with transportable case ........................................................................................................... 31

30' Ventromental plates separated medially by width of median tooth/teeth or more; without transportable case ........................................................................................................ 32

31 (30) Setae submenti simple and apparently placed on ventromental plates; frontoclypeal apotome present; lateral tubules long and broad; hump on penultimate body segment directed anteriorly ......................... Zavreliella

31' Setae submenti plumose and placed posteromedially to ventromental plates; frontal apotome and clypeus present; lateral tubules short and pointed; hump on penultimate body segment directed posteriorly ...................... Lauterborniella
32 (30') Lauterborn organs small and located at apex of segment 2 only; mentum with 2 deeply sunken median teeth; seta subdentalis long and broad .......... Chironomini genus A

32' Lauterborn organs well developed, placed alternately on segments 2 and 3; mentum and seta subdentalis not as above ......................................................... 33

33 (32') Mentum with single pale median tooth ................................................................. 34

33' Mentum with 2 or more pale or dark median teeth ..................................................... 35

34 (33) Median tooth lower than first lateral teeth; mandible with dorsal tooth ............... .................................................................................................................. Beardius (in part)

34' Median tooth higher than first lateral teeth; mandible without dorsal tooth ................ Paralauterborniella
35 (33') Mentum with 2-3 pale median teeth which are subequal to 2nd lateral teeth ............ 36

35' Mentum with dark median teeth or with 4 pale median teeth which are lower than 2nd lateral teeth .................................................. 37

36 (35) Mentum with 2 pale median teeth; maxillary plate striae usually well developed and more noticeable than ventromental plate striae; frontoclypeal apotome present; bases of S I fused ........................................... *Apedilum*

36' Mentum with 3 pale median teeth (central tooth may be minute, as in couplet 35); ventromental plate striae coarse, maxillary plate striae difficult to discern; frontal apotome separated from clypeus by straight suture; bases of S I separate or contiguous ...................... *Microtendipes*

37 (35') 4 median teeth of mentum dark and at least outer pair higher than remaining mental teeth ..................... *Stictochironomus*

37' Median teeth of mentum pale or dark, lower than 2nd lateral teeth ......................... 38

38 (37') Central pair of the 4 median teeth lower and more slender than outer median teeth; bases of S I separate; 2 dorsal teeth on mandible ...................... *Omisus*
38' Central pair of the 4 median teeth equal to or higher than outer median teeth; bases of S 1 fused or located on a common triangular plate; 1 dorsal tooth on mandible ......................... Paratendipes

39 (29') Mentum with broad median tooth and 1st lateral teeth lower than 2nd laterals; labrum with large brush of setae on each side; dorsum of head with 3 median labral sclerites anterior to frontoclypeal apotome; mines in freshwater sponges ........................................... Xenochironomus

39' Mentum not as above; labrum without large brush of setae on each side; dorsum of head with at most 2 median labral sclerites anterior to frontal or frontoclypeal apotome; not restricted to freshwater sponges ................................................................. 40

40 (39') Antennae with large alternating Lauterborn organs, one at base of segment 2, other at apex; mentum with pale median tooth much lower than adjacent lateral teeth ............... Beardius (in part)

40' Antennae with small Lauterborn organs at apex of segment 2; mentum not as above. 41
41 (40') Median tooth/teeth of mentum deeply sunken (Note: median teeth may be worn, creating a U-shaped central portion of mentum) ........................................ 42

41' Median tooth/teeth of mentum not deeply sunken .................................................. 43

42 (41) Mentum with 2 median teeth, first lateral tooth strongly projecting (median teeth may be worn); dorsum of head with 2 medial labral sclerites anterior to frontal apotome (some specimens of Polypedilum braseniae could key here; note the apotome) .......................... Hyporhygma

42' Mentum with single median tooth, first lateral tooth lower than 2nd; dorsum of head with 1 medial labral sclerite anterior to frontal apotome ....................... Stelechomyia

43 (41') Mentum (or at least median tooth) and mandibular teeth pale; mandible with 4 or more inner teeth and 1-2 dorsal teeth ........................................................................ 44

43' Mentum and mandibular teeth brown to black; mandible usually with 2-3 inner teeth and 0-2 dorsal teeth; if mandible with 4 inner teeth, then dorsal tooth absent and ventromental plates touching medially ................................................. 45
44 (43) Inner mandibular teeth grouped closely together; basal antennal segment shorter than segments 2-5; setae submenti placed posteriorly to ventromental plates; labral sclerite 5 simple ......................................................... Nilothauma

44' Inner mandibular teeth spread along inner margin of apical tooth; basal antennal segment longer than segments 2-5; setae submenti placed on ventromental plates; labral sclerite 5 toothed apically ......................................................... Pagastiella

45 (43') Penultimate body segment with 1-2 pairs of well developed ventral tubules ............. 46

45' Penultimate body segment without ventral tubules, although rudimentary knob-like swellings may be present ................................................................. 53

46 (45) With 2 pairs of ventral tubules ............................................................................. 47

46' With 1 pair of ventral tubules .................................................................................. 48
47 (46) Seta subdentalis with toothed/fringed inner margin; mandible without basal row of radially arranged striae; dorsum of head with 2 medial labral sclerites anterior to frontoclypeal apotome. ....................... Goeldichironomus (in part)

47' Seta subdentalis simple; mandible with basal row of radially arranged striae; dorsum of head with 1 medial labral sclerite anterior to frontoclypeal apotome. ....................... Chironomus (in part)

48 (46') Premandible with 5 or more teeth. ..................... Kiefferulus

(Lipiniella, not known from Florida, may key here. It can be distinguished by its lack of a frontal pit on the apotome)

48' Premandible with 2-4 teeth, apically bifid. ......................................................... 49

49 (48') Mandible with 2 inner teeth. ................................................................. 50

49' Mandible with 3 inner teeth. ................................................................. 51

50 (49) Mandible with basal row of radially arranged striae; pecten epipharyngis of 3 scales covered with minute spinules; benthic, usually in sediments/muck. ................................. Einfeldia (in part)
50' Mandible without basal row of radial striae; pecten epipharyngis a single plate with multiple teeth; mining in Bryozoa, sponges, Sparganium ...................... Demeijerea

51 (49') Pecten epipharyngis with fewer than 10 usually blunt lobes (most often 3-6 lobes are present); width of 1 ventromental plate less than width of mentum ................................. Dicrotendipes (in part)

51' Pecten epipharyngis with more than 10 usually sharply pointed teeth; width of ventromental plate greater than or equal to width of mentum ........................................ 52

52 (51') Dorsum of head with 1 median labral sclerite anterior to apotome; frонтолый apotome usually with large oval-cordate anteromedian depression .... Einfeldia (in part)

52' Dorsum of head with 2 median labral sclerites anterior to apotome; frontal apotome without anteromedian depression ................................................................. Glypotendipes (in part)

53 (45') Mentum distinctive, with first lateral teeth lower than median teeth and 2nd lateral teeth ........................................ Polypedilum (in part)

53' Mentum not as above ........................................ 54

54 (53') Ventromental plates wide, contiguous medially or separated by less than width of median tooth/teeth ................................................................. 55

54' Ventromental plates not contiguous medially, separated by more than width of median tooth/teeth ................................................................. 59
55 (54) Ventromental plates narrowly separated medially; premandible with 2-3 teeth  ..... 56
55' Ventromental plates contiguous medially; premandible with more than 4 teeth  ..... 58

56 (55) Ventromental plates short and wide, bar-like
.............................................. Pseudechironomus

56' Ventromental plates not as above ................................................................. 57

57 (56') Seta subdentalis elongate with toothed or fringed inner margin; ventromental plates with
inner angle directed caudad ............................................. Goeldichironomus (in part)

57' Seta subdentalis short, mostly simple; ventromental plates not directed caudad
................................................................. Glyptotendipes (in part)

58 (55') Mandible with 4 flattened inner teeth, dorsal tooth lacking; premandible with 6 teeth;
dorsum of head with 2 medial labral sclerites anterior to frontal apotome ........... Axarus
58' Mandible with 3 triangular inner teeth, dorsal tooth present; premandible with 5 teeth; dorsum of head with 1 medial labral sclerite anterior to frontoclypeal apotome ................
............................................................................................................. Lipiniella

(not recorded from Florida)

59 (54') Mentum with odd number of teeth ................................................................. 60

59' Mentum with even number of teeth or median tooth bifid ................................. 65

60 (59) Pecten epipharyngis of 3 toothed plates ....................... 61
(1 species of Glyptiotendipes has tripartite p.e. with apical notches)

60' Pecten epipharyngis a single plate with multiple lobes or teeth .......................... 63

61 (60) Mandible with deep concavity along inner margin between basal tooth and seta subdentialis; mentum strongly arched, with 11-13 teeth ....................... Endotribelos

61' Mandible without deep concavity; mentum not strongly arched, with 15 teeth ....... 62
62 (61') Anterior margin of cardo tuberculate .......... 
........................................... Endochironomus (in part)

62' Anterior margin of cardo smooth .......... 
............................................... Chironomini genus III

63 (60') Dorsum of head with 1 median labral sclerite anterior to frontoclypeal apotome; mandible with basal row of radially arranged striae .......... Chironomus (in part)

63' Dorsum of head with 2 median labral sclerites anterior to frontal apotome; mandible without basal row of radially arranged striae ............................................. 64

64 (63') Pecten epipharyngis with fewer than 10 usually blunt lobes (most often 3-6 lobes present); width of 1 ventromental plate less than width of mentum; frontal apotome usually with frontal pit or large quadrate anteromedian depression (pit is absent in 1 species) ................................................................................ Dicrotendipes (in part)
64' Pecten epipharyngis usually with 10 or more teeth (1 sp. with tripartite p.e.); width of ventromental plate greater than width of mentum; frontal apotome without frontal pit (posterior margin of labral sclerite 1 may have small semicircular pit) or if a depression is present, it is elongate-oval ........................................... *Glyptotendipes* (in part)

65 (59') Four median teeth of mentum separated from remainder of mentum by a line which runs posteriorly to the anteriorly produced median ends of the ventromental plates .............. 69

65' Four median teeth of mentum not separated from rest of mentum; ventromental plates not as above ........................................................................................................... 66

66 (65') Ventromental plates 3X or more wider than long and rounded laterally .......... *Asheum*

66' Ventromental plates less than 3X as wide as long and pointed laterally, or tear drop shaped .............................................................. *Polypedilum* (in part)
67 (65) Ventromental plates about 3+ times wider than long, the anterior and posterior margins of each plate more or less parallel until meeting at lateral margin; central 2 teeth of mentum may appear partially fused .......... Endochironomus (in part)

67' Ventromental plates less than 3x as wide as long, appearing broadly triangular laterally; central teeth of mentum never appearing fused .................................................. 68

68 (67') With 1 median labral sclerite anterior to apotome ............... Phaenopsectra (in part)

68' With 2 median labral sclerites anterior to apotome ........................................... 69

69 (68') Distance from basal notch of inner mandibular teeth to insertion of seta subdentalis (a) usually at least 3/4 distance from basal notch to apical notch (b); molar area of mandible usually without serrations, except sometimes 1 near seta subdentalis; anterior margin of apotome or clypeus (labral sclerite) convex ........ Phaenopsectra (in part)

69' Distance from basal notch of inner mandibular teeth to insertion of seta subdentalis usually less than 3/4 distance from basal notch to apical notch; molar area of mandible with 1 or 2 serrations separated from seta subdentalis; anterior margin of labral sclerite mostly straight ...... Tribelos
Genus *Apedilum*

**DIAGNOSIS:** The frontoclypeal apotome; S I with bases fused; six-segmented antennae, with alternate Lauterborn organs; pale bifid median tooth of the mentum; well developed maxillary plate striations; and mandible with dorsal teeth distinguish this genus.

**NOTES:** Two species are recorded from Florida; *A. elachistus* is the species most often encountered in Florida. Both species were formerly included in *Paralauterborniella*, but were demonstrated to be generically distinct by Epler (1988a). Fourth instar larvae can be separated by maxillary plate strial counts: 90-105 in *A. elachistus*, 110-125 in *A. subcinctum*. (When viewed from a ventral aspect, the maxillary plate lies below the ventromental plate.)

Larvae are found in fresh and brackish water where they occur on submerged vegetation. Magy et al. (1970) reported *A. subcinctum* as a pest species due to mass emergences.

**ADDITIONAL REFERENCES:** Epler 1988a.
Genus *Asheum*

**DIAGNOSIS:** The even teeth of the mentum and the wide ventromental plates with rounded lateral margins distinguish this genus in Florida.

**NOTES:** One species, *A. beckae*, is described from the Nearctic; it was formerly called *Pedionomus beckae*. Other species occur in the Neotropics. The genus is closely related to *Polypedilum*; Florida species of *Polypedilum* with even teeth on the mentum have ventromental plates with pointed lateral margins.

Larvae are found in lentic and lotic situations. *A. beckae* can occur in water with high organic nutrient levels (i.e., below pulp mill plants) as well as in oligotrophic areas such as the Everglades.

**ADDITIONAL REFERENCES:** Sublette 1964.
Genus *Axarus*

**DIAGNOSIS:** The frontal apotome with 2 anteromedial labral sclerites; contiguous ventromental plates; mandible with 4 flattened inner teeth and no dorsal tooth; premandible with 6 teeth identify this genus.

**NOTES:** Based on adult records, three species are known from Florida. Members of this genus were formerly placed in *Xenochironomus (Anceus)*; they are closely related to the genus *Lipiniella*, which is not recorded from Florida. Although Roback (1963) offered a key for larvae, it was based on unassociated specimens and relies mainly on antennal measurements. Species identification of larvae is possible only with associated reared adults.

Larvae are found in bottom sediments of lakes and rivers.

**ADDITIONAL REFERENCES:** Roback 1963; Ferrington 1992.
Genus *Beardius*

**DIAGNOSIS:** The larvae are distinguished by the 5-6 (7 in described Neotropical species) segmented antennae, with alternate Lauterborn organs; mentum with pale median tooth lower than first lateral teeth; and mandible with two inner teeth and a dorsal tooth.

**NOTES:** Based on adults, two species of *Beardius* occur in Florida. Associated larvae/pharate pupae of *B. truncatus*, which occurs throughout Florida, have been collected from the Suwannee River basin. I have a male specimen of *B. breviculus* from the northern Everglades; this represents a significant range extension for this species, originally described from Panamá. The larva of *B*. sp. A, illustrated below, is probably this species. Larvae of the two species are separated by the number of antennal segments: *B. truncatus* has 5 segments; *B*. sp. A has six. Note also the differences in the frontal apotome illustrated below.

**ADDITIONAL REFERENCES:** Reiss & Sublette 1985.
Genus *Beckidia*

**DIAGNOSIS:** The 7 segmented antennae; mandible without seta interna; and distinctive mentum with odd number of teeth, median tooth broad or trifid identify this genus.

**NOTES:** Not recorded from Florida, but may eventually be found here. Larvae are recorded from the sand bottoms of large rivers.

**ADDITIONAL REFERENCES:** Sæther 1977.

*Beckidia* sp., larval structures
(adapted from Pinder & Reiss 1983)
Genus *Chernovskiiia*

**DIAGNOSIS:** The 8 segmented, weakly sclerotized antennae; concave, pale mentum; distinctive coarse ventromental plates; mandible with single large apical tooth; and some body segments with apparent subdivisions distinguish this genus.

**NOTES:** Although larvae occur in Florida, adults have not yet been identified; it is not known which species is/are represented. Although Pinder & Reiss (1983) state that the mandible lacks a seta interna, this organ is well developed in larvae assignable to this genus collected from the Suwannee River.

Larvae are found in sand substrates in running water.

**ADDITIONAL REFERENCES:** Sæther 1977.
Genus *Chironomus*

**DIAGNOSIS:** Larvae can usually be diagnosed by the following characters: frontoclypeal apotome and 1 medial labral sclerite present; mandible with basal radially arranged striae and simple seta subdentalis; 0, 1 or (usually) 2 pairs of ventral tubules.

**NOTES:** Four subgenera are present in the Nearctic; three are found in Florida (there are no records for the subgenus *Camptochironomus*). Larvae are very difficult to distinguish and much work remains to be done with the genus. European workers utilize both morphological and karyological characters to identify species (see Webb & Scholl 1985). Larvae formerly placed in *Einfeldia* species groups B and C in Pinder & Reiss (1983) are now considered members of *Chironomus*.

Larvae are usually found in sediments, and may occur in extremely polluted conditions or relatively pristine habitats. Larvae of *C. riparius*, *C. stigmatanus* and the *C. decorus* group are most often associated with high nutrient and/or low oxygen levels.


*Chironomus* sp., larval structures
Key to *Chironomus* of SE U.S.A.
(several Florida species are undescribed as larvae)

1 A pair of caudolateral tubules present on segment anterior to ventral tubules (best seen on larvae *before* mounting) ............ 4

1' Caudolateral tubules not present ........................................................................................................ 2

2 (1') Length of antennal segment 1/segment 2 < 3.5 .......................................................... *C. ochreatus*

2' Length of antennal segment 1/segment 2 > 3.5 ............................................................................. 3

3 (2') Length of antennal segment 1/segment 2 < 4.5; body length about 30 mm; in lakes ......
....................................................................................................................................................... *C. major*

3' Length of antennal segment 1/segment 2 > 4.5; body length much less than 30 mm; in sewage treatment plants and streams below them ......................................................... *C. riparius*

4 (1) Anteromedial margin of ventromental plate with fine teeth ............................................. 5

4' Anteromedial margin of ventromental plates smooth (minute teeth *may* be present beneath plate, but margin is smooth; outer (lateral) margin of plate may be faintly crenulated) ............................................................................................................. 7

5 (4) Mandible with 3 dark inner teeth ......................................................................................... *C. plumosus*

5' Mandible with 2 dark inner teeth (third tooth is light or not present) ............................. 6
6 (5') Inner apex of ventromental plate directed medially .......... *C. staegeri*  
(occurrence in FL uncertain)

6' Inner apex of ventromental plate directed caudad .... *C. crassicaudatus*

7 (4') **Head** usually with dark dorsal stripe; basal portion of median mental tooth usually constricted; length of antennal segment 1 about 5X length of segment 2 .......... *C. stigmaterus*

7' Head without dorsal stripe; basal portion of median mental tooth straight or constricted; length of antennal segment 1 at most 4X length of segment 2 ........................................ 7

8 (7') Length of antennal segment 1 < 2.5X its width; length of segment 2 slightly less than 2X combined lengths of segments 3 & 4 ................................. *C. decorus* group

8' Length of antennal segment 1 > 2.5X its width; length of segment 2 slightly more than combined lengths of segments 3 & 4 ................................. *Chironomus* sp.  
(includes *C. (Lobochironomus)* sp., some *C. decorus* grp. sp. and other *Chironomus*)

*Be aware that any specimen not fitting the couplets above will key to this point. You must have a 4th instar larva associated with an adult or pupa to identify *C. (Lobochironomus)* and some *C. decorus* grp. specimens! Antennal characters may be environmentally influenced and may vary greatly from instar to instar; reared material is your only resort. Otherwise, identify your specimen as "*Chironomus* sp."!!*
Notes on species

*C. crassicaudatus* - A large species of lakes, it can be confused with *C. plumosus*. Larvae may have two or three inner teeth. It was considered a nuisance species by Beck & Beck (1969a).

*C. decorus* group - A common and widespread taxon, this group may include several species (*C. anonymus, C. decorus* and maybe others) which are difficult to separate in any life stage. Note that *C. decorus* grp. larvae may key to either part of couplet 8. Specimens of *C. anonymus*, not recorded from Florida but known from Texas and the West Indies, may possibly be separated from *C. decorus* by their three dark inner mandibular teeth. *C. decorus* supposedly has 2 dark and 1 light teeth, but without reared associations, any identification beyond "C. decorus group" is unwise. Some larvae may have only two inner teeth. Larvae are often found in "polluted" habitats; some body parts (antennae, mentum) may be abnormal due to toxins and/or stressed conditions. *C. decorus* was previously known as *C. attenuatus*.

*C. major* - This large species was described from Georgia (Wülker & Butler 1983); it is not known from Florida.

*C. ochreatus* - A member of the subgenus *C. (Chaetolabis)*. Specimens in the Beck collection at FAMU identified as *Chaetolabis arc Dicroendipes simpsoni*.

*C. plumosus* - Another large species of lakes; common in Lake Munson near Tallahassee.

*C. riparius* - This species is often associated with sewage treatment plants and/or enriched streams below such plants or other sources of high organic nutrients.

*C. staegeri* - A map in Sublette & Sublette (1911: fig. 59) indicates that this species has been recorded from the state, but no concise records were given. I can find no specimens or other published accounts of this species for Florida.

*C. stigmaterus* - A common species of organically enriched or low oxygen habitats. I have reared larvae of *C. stigmaterus* from sulfurous Newport Springs in Wakulla Co. Specimens which lack the dorsal head stripe may key to *Chironomus* sp. Most larvae possess a basally constricted median tooth on the mentum, but this is not always apparent.

*C. (Loboachironomus) sp.* - Larvae can not be placed in this taxon without associated adults. I have seen several associations of this taxon from Georgia to the northern Everglades. The identity of the species is unknown.

![C. (Loboachironomus) sp., mentum](image)

Additional species: Two other species, described only as adults, are also recorded from Florida (see Appendix A). Also, Wülker & Morath (1989) record two additional undescribed species, based on chromosomal analysis, from Winter Haven. Based upon new reared material, the species *C. pungens* is moved to *Kiefferulus*. 
Genus *Cladopelma*

**DIAGNOSIS:** The mentum, with outer lateral teeth enlarged and with median tooth simple, notched or bifid, and not projecting strongly forward from remainder of mentum; premandible with brush; and antennae with basal segment length usually 2.8X to > 4X width will distinguish Florida members of this genus.

**NOTES:** Six species of *Cladopelma* are recorded from Florida, based on adult males. Although Beck & Beck (1969b) described the immature stages of five species (as *Harnischia*), the descriptions and illustrations are not sufficient to identify the species, and I have been unable to locate much of their reared material. Species identifications are possible with reared material; *C. galeator* appears to be a common species in Florida. Note that *C. boydi* is now considered a junior synonym of *C. forcipis* (cf. Sublette & Sasa 1994). Also, see *Parachironomus alatus*, a species which closely resembles a *Cladopelma*.

Larvae are usually found in bottom sediments in lakes and rivers; some species are tolerant of low oxygen conditions.

**ADDITIONAL REFERENCES:** Beck & Beck 1969b; Sæther 1977; Townes 1945.
Genus *Cladotanytarsus*

**DIAGNOSIS:** The multi-toothed premandible; antennae with segment 2 usually wedge-shaped and bearing large Lauterborn organs on very short pedicels; and the presence of pectinate claws on the posterior parapods will identify this genus.

**NOTES:** Based on adults and pupae, two species are recorded from Florida. However, it is certain that many more species occur here. Bilyj & Davies (1989) described seven new species from Canada; they found that the pupae provided the best characters for species separation and provided identification keys for the pupae of 20 Holarctic species. The larva of *C. aeiparthenus*, which I have reared from southern Florida, will key to the "mancus group" in Pinder & Reiss (1983). However, the pupa does not key there and represents an additional "type" not keyed in Pinder & Reiss (1986). The genus *Lenziella* (used in Coffman & Ferrington (1984)) is a subgenus of *Cladotanytarsus*, following Sublette & Sublette (1979).

Larvae are found in many types of water bodies, including brackish water and hot springs. Bilyj & Davies (1989) found that some species were intolerant to acidification, but noted that *C. aeiparthenus* was apparently acidophilic.

**ADDITIONAL REFERENCES:** Bilyj & Davies 1989.
Genus *Constempellina*

**DIAGNOSIS:** The granulose head capsule; widely separated, squat ventromental plates; Lauterborn organs arising from apex of antennal segment 2; and antennal base with simple spur serve to distinguish the genus.

**NOTES:** I have seen a single larval specimen from northwestern Florida, where it occurred in a drift sample with specimens of *Stempellina* and *Stempellinella*. The specimen bears moderately large tubercles anterolaterally on the head capsule.

Larvae are stream dwellers; they construct portable sand cases, similar to those of *Stempellina*.

*Constempellina* sp., larval structures
Genus *Cryptochironomus*

**DIAGNOSIS:** The five segmented antennae; well developed S 1; trifid pecten epiphrayngis; premandible with weak brush; and mentum with clear rounded median tooth flanked by dark, pointed lateral teeth which point inward identify the genus.

**NOTES:** Eight species are recorded from Florida, based on adults. It is not possible at this time to identify most larvae; a revision of the genus is greatly needed. Adults are difficult to separate; the pupae may provide the best characters for species recognition. Although Curry (1958) provided keys to separate some larvae and pupae, identifications of Florida larvae made with those keys can only be considered tentative (some the taxa used by Curry may consist of more than one species). Members of the *C. fulvus* group are most often encountered; the group currently consists of at least seven described species (Mason 1985b).

Larvae are usually found in bottom sediments.

**ADDITIONAL REFERENCES:** Curry 1958; Mason 1985b; Townes 1945.
Genus Cryptotendipes

DIAGNOSIS: The mentum, with outer lateral teeth enlarged and with median tooth simple or notched laterally and projecting strongly forward from remainder of mentum; premandible with brush; and antennae with length of the basal segment usually about 2-2.5 X its width, will identify the larvae.

NOTES: Two species are recorded from Florida. Preliminary investigation indicates that the C. casuarius of Beck & Beck (1969b) is probably C. emorsus; separating these two species is difficult unless specimens are prepared correctly. Insufficient material is available to construct a key.

Larvae are found in lentic and lotic conditions where they are apparently most often found in sediments.

Genus *Demeijerea*

**DIAGNOSIS:** The mandible, with 2 inner teeth and lacking basal row of striae; bifid premandible; pecten epipharyngis a single plate with multiple teeth; and single pair of ventral tubules identify this genus.

**NOTES:** One species is recorded from Florida. Species were formerly placed in *Glyptotendipes*. There is some uncertainty in the literature regarding the morphology of Nearctic *Demeijerea* larvae. Pinder & Reiss (1983) stated that the frontoclypeal apotome had a large long to oval depression, but it is not illustrated as such for two Nearctic species (figs. 10.15D, E); and that the mandible lacks a dorsal tooth, yet one is illustrated in fig. 10.15C.

Larvae are reported to mine in Bryozoa and sponges; M. Heyn (pers. comm.) has found the larvae of *D. atrimanus* mining in the stems of Bur-reed, *Sparganium americanum*.

**ADDITIONAL REFERENCES:** Townes 1945.
Genus *Demicryptochironomus*

**DIAGNOSIS:** The 7 segmented antennae; and mentum with clear rounded median tooth flanked by dark, pointed lateral teeth which point inward will separate larvae of this genus.

**NOTES:** Two species are known from the eastern U.S. I have seen Florida larvae, but adults are necessary for species identification.

Larvae are found in sediments, and are predators.

**ADDITIONAL REFERENCES:** Sæther 1977; Townes 1945.

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*Demicryptochironomus* sp., larval structures
(Pennsylvania specimen)
Genus *Dicrotendipes*

**DIAGNOSIS:** Florida *Dicrotendipes* larvae possess a frontal apotome with an anteromedian pit or large depression and with 2 medial labral sclerites anterior to it; pecten epipharyngis with fewer than 12 teeth/lobes (usually 3-6); narrow triangulum occipitale; and the ventromental plate width is less than the width of mentum.

**NOTES:** Ten described species are recorded from Florida; one additional undescribed species (sp. A) has been reared and another probably new species also occurs in south FL. Species of this genus have often been misidentified due to incorrect keys in the literature (Beck 1976, 1979; Webb & Brigham 1982). Several species are distinctive, but others must be associated with pupae or adult males for correct identification.

Larvae are found in brackish and fresh water, in lotic and lentic conditions, in pristine or degraded habitats. Larvae occur in sediments but are most often encountered on vegetation.

**ADDITIONAL REFERENCES:** Epler 1987, 1988b.
Key to Florida *Dicrotendipes*

1. Apotome with large oval-quadrat area on anterior portion; ventromental plates usually with more than 40 strial ridges ........................................... *D. leucoscelis*

1'. Apotome without large oval-quadrat area, but with anteromedian pit; ventromental plates usually with less than 40 strial ridges ........................................... 2

2 (1'). Mentum with second lateral tooth fused or closely appressed to first lateral tooth for most of its length ............................... 3
2' Mentum with second lateral tooth not fused or closely appressed to first lateral tooth for most of its length .................. 6

3 (2) Anterior margin of ventromental plate smooth; anal tubules reduced; brackish water/estuarine species .................. *D. latus*

3' Anterior margin of ventromental plate at least partially crenulated; anal tubules normal; mostly freshwater species ............. 4

4 (3') 6th lateral tooth of mentum rounded and fused/appressed to 5th lateral tooth; central and south FL ........................... *D. sp. A*

4' 6th lateral tooth distinct, not fused/appressed to 5th lateral tooth ............................... 5
5 (4') Large species (4th instar only!): postmentum length > 250 μm; mentum width > 150 μm; pecten mandibularis with more than 12 setae (usually 14); head capsule integument appears coarsely granular at 400X; first lateral teeth turn out slightly; uncommon/rare in FL .......................................................... D. fumidus

5' Smaller species (4th instar only!): postmentum length < 250 μm; mentum width < 150 μm; pecten mandibularis with 12 or fewer setae (usually 9); head capsule integument usually not coarsely granulated or granularity restricted to bands/spots; first lateral teeth usually not directed outward; common in running water . D. neomodestus

6 (2') Ventromental plates coarsely scalloped and with less than 22 strial ridges; head capsule usually pale yellow with strong reticulations ........................................... D. thanatogrates

6' Ventromental plates not as coarsely scalloped, with more than 22 strial ridges; head capsule color variable, if pale yellow then without strong reticulations ......................... 7

7 (6') Mandible with giant seta subdentalis . D. sp. B

7' Mandible with normal seta subdentalis .......... 8
8 (7') Proximal tooth of mandible saddle-shaped or with 2 points OR with inner surface of mandible adjacent to proximal tooth with deep semicircular incision ........................................ 9

8' Proximal tooth of mandible mostly triangular in outline ......................................................... 10

9 (8) 6th lateral tooth of mentum rounded and fused/appressed to 5th lateral tooth; inner surface of mandible adjacent to proximal tooth with deep semicircular incision .................... D. simpsoni

9' 6th lateral tooth of mentum pointed; mandible without deep incision ...... ............................................. D. lucifer

10 (8') 6th lateral tooth of mentum rounded and fused/appressed to 5th lateral tooth ....................... D. nervosus
(3rd instar D. simpsoni will key here)

10' 6th lateral tooth of mentum pointed, not appressed to 5th ....................................................... 11
11 (10') Large species (4th instar only!): postmentum length > 250 μm; mentum width > 150 μm; pecten mandibularis with more than 12 setae (usually 14); head capsule integument appears coarsely granular at 400X; first lateral teeth turn out slightly; uncommon/rare in FL ................................................................. D. fumidus
(see couplet 5)

11' Smaller species (4th instar only!): postmentum length < 250 μm; mentum width < 150 μm; pecten mandibularis with 10-15 setae (usually 10-11); head capsule integument usually not coarsely granulated or granularity restricted to bands/spots; first lateral teeth usually not directed outward; common in FL .................................................. 12

12 (11') Ventromental plate with 28-36, mean 32, strial ridges; postmentum often darkened, occasionally pale ............ D. modestus

12' Ventromental plate with 23-29, mean 25, strial ridges; postmentum usually pale, occasionally darkened near posterior margin .................. D. tritomus

Notes on species

D. fumidus - I have not seen this species from Florida; it was recorded by Beck & Beck (1959).
D. leucoscelis - Uncommon. This species sometimes develops a pair of ventral tubules. I have seen a specimen that, according to collection data, was reared from water held by a bromeliad. It is not keyed correctly in Beck (1976,1979); identifications of this species made using those keys are most probably incorrect.
D. lobus - A brackish water-estuarine species. It is not keyed correctly in Beck (1976,1979); the taxon referred to as D. lobus in that key is probably D. thanatogratus.
D. lucifer - A member of the nervosus group. Usually not common. This is D. nervosus Type I of Simpson & Bode (1980)
D. modestus - Probably the most common Dicrotendipes in Florida. Many specimens bear dark markings on the postmentum and/or the dorsum of the head, but this species is often found without any dark markings. Note that many other species of Dicrotendipes often have dark markings on the postmentum and head. Specimens are sometimes encountered which appear to be intermediate between this species and D. neomodestus.
Larval *D. modestus* are difficult to separate from *D. tritomus*; specimens from populations with pale submenta should be reared for proper identification. Larvae are found in a variety of lentic (usually) water habitats, including brackish water, and can tolerate moderate levels of organic pollution.

*D. neomodestus* - A common species of rivers, often abundant on Hester-Dendy samplers. It is often found in areas with high nutrients/organic wastes. Although most specimens bear darkened areas on the postmentum and the dorsum of the head, specimens are sometimes encountered (as in the Apalachicola River) without the dark dorsal stripe.

*D. nervosus* - A rare species in Florida. Most previous records for this species refer to *D. simpsoni* or *D. lucifer*. Note that some second and third instar larvae of these two species lack the modifications of the proximal mandibular teeth, and will key to *D. nervosus*. Identification of this species must be confirmed with reared adult males!

*D. simpsoni* - A common species almost always associated with high nutrient levels or low dissolved oxygen. Early instar larvae sometimes do not display the modifications of the proximal mandibular teeth, and will key to *D. nervosus*. Some larvae develop ventral tubules. This species was called *Einfeldia* in Mason (1973) and *D. nervosus* Type II in Simpson & Bode (1980).

*D. thanatogratus* - An uncommon species of rivers and streams; most specimens I have examined are from the Panhandle. It will key to *D. lobus* in Beck (1976,1979).

*D. tritomus* - Formerly called *D. incurvus*; it was also misidentified as *D. aethiops* in Beck & Beck (1959). Specimens are difficult to separate from some *D. modestus*. Identification should be confirmed by rearing!

*D. sp. A* - An undescribed species common in Lake Okeechobee. I have reared this species; it will be described in all life stages in a forthcoming publication.

*D. sp. B* - This may represent another undescribed species; only larvae are known. It has been found in central and southern FL.
Genus *Einfeldia*

**DIAGNOSIS:** A difficult genus to diagnose. Larvae may or may not have radial striae near the base of the mandible; a frontoclypeal apotome with or without an anteromedian oval to subquadrate area; a pecten epipharyngis of three spinule covered plates, or a simple comb, or a weakly trifid comb with minute spinules; and none, one or two pairs of ventral tubules.

**NOTES:** *Einfeldia* is a taxonomic mess, and is in drastic need of revision. Of the three species recorded from the state, two may not belong in the genus: *E. austini* may be a *Chironomus*, and *E. natchitocheae* may deserve separate generic status. Note that some *E. austini* may key to *Glyptotendipes* in the generic key, but *Glyptotendipes* larvae possess two medial labral sclerites; *E. austini* has one. *Einfeldia* species groups B and C of Pinder & Reiss (1983) are now placed in *Chironomus*. The undescribed *Einfeldia* sp. A illustrated below has a weakly tripartite pecten epipharyngis covered with minute spinules; this taxon may be confused with "E." species group B (= *Chironomus*), but it has a frontoclypeal apotome with a large anteromedian oval/quadrate area, the pecten epipharyngis is weakly trifid and radially arranged striae near the base of the mandible are lacking. This new species will be described in a forthcoming publication.

Larvae are most often found in eutrophic lentic habitats, but can occur in flowing water.

**ADDITIONAL REFERENCES:** Beck & Beck 1970; Oliver 1971; Sublette 1964.

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*E. natchitocheae*, *Einfeldia* sp. A, *E. natchitocheae*, mentum

*Einfeldia* spp., larval structures
Key to Florida *Einfeldia*
*(the larva of *E. brunneipennis* is unknown)*

1. Median tooth of mentum strongly projects beyond lateral teeth; pecten epipharyngis of 3 plates bearing spinules .................. *E. natchitocheae*

1'. Median tooth of mentum subequal to first pair of lateral teeth; pecten epipharyngis consists of single plate or comb, or weakly tripartite .............................................. 2

2 (1') Mandible with radially arranged striae near base ....................... *E. austini*

2' Mandible without basal striae ........ 3

3(2') Pecten epipharyngis a simple multitoothed comb ........... *E. pagana*
*(not recorded from Florida)*

3' Pecten epipharyngis weakly tripartite and covered with minute spinules ........................................... *E. sp. A*
Genus *Endochironomus*

**DIAGNOSIS:** Florida larvae are diagnosed by the mentum with an even number of teeth (some species, not recorded from Florida, have an odd number of teeth on the mentum), with the median teeth separated from remainder of mentum by a line which runs posteriorly to the anteromedial margin of the ventromental plates; ventromental plates with anterior and posterior margins parallel for most of their length; and anterior margin of cardo tuberculate.

**NOTES:** Two species are known from Florida; *E. nigricans* is by far more common. The two species may be separated by the amount of darkened area on the mentum: in *E. subtendens* only the teeth and the area near them are darkened; in *E. nigricans* the darkened area is much larger. Also, the first lateral tooth of the mentum may appear larger and the second lateral tooth appear lower (in relation to its neighbors) in *E. nigricans*. *Endochironomus* species with an odd number of teeth on the mentum have not been recorded from Florida.

Both Florida *Endochironomus* species are often found in eutrophic conditions, most often in running water; I've seen larvae of *E. nigricans* from the northern Everglades.

**ADDITIONAL REFERENCES:** Grodhaus 1987a.
Genus *Endotribelos*

**DIAGNOSIS:** The distinctive strongly arched mentum, with 3 large central teeth, and with second lateral teeth very small and mostly fused to first; and the mandible, with large incised area at base of inner teeth, will distinguish this genus in Florida.

**NOTES:** One species, *E. hesperium*, is recorded from Florida. Larvae are associated with aquatic macrophytes; Grodhaus (1987a) found larvae inside the leaves of *Sagittaria* and *Typha* in California. Several other species are known from Central America (Sublette & Sasa 1994), including one that has a mentum with an even number of teeth and a mandible that lacks the deep incision; and another, undescribed species that closely resembles *E. hesperium*.

**ADDITIONAL REFERENCES:** Grodhaus 1987a; Sublette & Sasa 1994.

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*E. hesperium*, larval structures
(adapted from Grodhaus 1987a)
Genus *Gillotia*

**DIAGNOSIS:** The minute S1; small, weakly trilobed, plate-like pecten epipharyngis; brushless premandible; and mentum with pale median area and obliquely arranged dark lateral teeth will identify this genus.

**NOTES:** This genus has not been recorded from Florida; it may eventually be found here.

**ADDITIONAL REFERENCES:** Sæther 1977.

*G. alboviridis*, larval structures
(adapted from Pinder & Reiss 1983)
Genus *Glyptotendipes*

**DIAGNOSIS:** Florida larvae are identified by the frontal apotome (with 2 medial labral sclerites anterior to it); usually simple seta subdentalis (may be notched or roughly serrate, but never fringed with small teeth); mentum with 13 teeth, width usually less than width of one ventromental plate; wide triangulum occipitale; ventral (ventrolateral) tubules absent, rudimentary or one pair.

**NOTES:** *Glyptotendipes* is currently being revised by Michael Heyn, Clemson University. He has graciously provided material and comments regarding the genus. Heyn (1992) established three subgenera within *Glyptotendipes*. With the exception of *G. amplus* and *G. seminole*, all Florida species are placed in the subgenus *G. (Glyptotendipes)* (see Notes). Several undescribed species occur in Florida; records of *G. lobiferus* and *G. meridionalis* based solely on larvae probably refer to undescribed species. Larvae and adults are confusingly similar; pupae provide the best characters for species identification. The key which follows must be considered tentative, pending the publication of Heyn’s study. Material should be reared to confirm species level identifications for many taxa!

*Larvae occur* in standing and running water and are found in or on sediments and aquatic plants. Several species are miners in plants or decaying wood. At least one species, *G. paripes*, is considered a nuisance because of large emergences.

**ADDITIONAL REFERENCES:** Townes 1945; Heyn 1992.
Key to Florida *Glyptotendipes*

1 Anterior margin of ventromental plate smooth or almost so (tiny points may be visible near margin at high magnification) .................. 2

1' Anterior margin of ventromental plate noticeably crenulate .................................. 4

2 (1) Mandible with proximal inner tooth reduced/vestigial and distal tooth appressed to apical tooth; frontal apotome with subapical elongate oval area .................. *G. amplus*

2' Mandible with 3 well developed inner teeth; apotome without subapical elongate oval area ................................................................. 3
3 (2') Ventromental plates separated by less than width of median tooth of mentum; at most only rudimentary ventrolateral tubules present; with internal dark structure posterolaterad to ventromental plate; common in FL lakes .......................... *G. paripes*

3' Ventromental plates separated by width of median tooth (or more); well developed ventrolateral tubules present; without internal dark structure; not recorded from FL .................................................. *G. barbipes*

4 (1') Proximal inner tooth of mandible larger than middle tooth; pecten epipharyngis with blunt teeth and apparently tripartite; S FL ...................... *G. sp. E*

4' Proximal inner tooth of mandible smaller than middle tooth; pecten epipharyngis a comb with irregular or sharply pointed teeth; widespread ... 5
5 (4')  3 central teeth of mentum project forward from other lateral teeth; posterior margin of labral sclerite 1 deeply concave ......................................................... G. seminole

5'  Mentum with teeth in even arch; posterior margin of labral sclerite 1 with small concave notch ................................................................. 6

6 (5')  Well developed ventrolateral tubules present (at least twice as long as wide) ............... 7

6'  Ventrolateral tubules absent or rudimentary ................................................................. 8
7 (6) Subapical lateral margin and dorsal surface of mandible smooth; ventrolateral tubules at least 2X length of anal tubules; mines in decaying wood ....................... *G. testaceus*

7' Subapical lateral margin and dorsal surface of mandible wrinkled or set with low, mound-like tubercules; ventrolateral tubules subequal to length of anal tubules; not restricted to decaying wood ............................................. *G. sp. F*

8 (6') Width of median tooth of mentum subequal to distance between ventromental plates .............. *G. sp. B*

8' Width of median tooth of mentum about 0.5 - 0.7 distance between ventromental plates ................................................................. 9

9 (8') 4th instar only: mentum width < 200 μm; postmentum length about 300 μm .............. .......................................................... *G. meridionalis*

9' 4th instar only: mentum width > 200 μm; postmentum length about 400 μm .......................................................... *G. sp. G*
Notes on species

*G. amplus* - I have seen a single Florida larva which is indistinguishable from reared Ohio material of this species. Following Heyn's (1992) paper on the subgenera of the genus, this taxon is a member of the subgenus *G. (Trichotendipes)*. This equates with Pinder & Reiss' (1983) species group C.

*G. barbipes* - This species has not been recorded from FL, but may be found here. I have seen material from a sewage lagoon in GA.

*G. meridionalis* - Unassociated larvae of this species are difficult to separate from *G. sp. G*. Pupae provide better separation characters, but are undescribed. Heyn's revision, when published, should make separation of these species possible.

*G. paripes* - A large, common species of many lakes in FL.

*G. seminole* - An unusual species; it belongs to the subgenus *G. (Caulochironomus)*; this equates with species group B of Pinder & Reiss (1983).

*G. testaceus* - A large species with elongate ventrolateral tubules. It is an apparently obligate miner of decaying wood (Heyn, pers. comm.).

*G. sp. B* - An undescribed species; it is common.

*G. sp. E* - An undescribed species known from Highlands Co.

*G. sp. F* - This taxon is what Manuel (1976) called *G. meridionalis*. Heyn (pers. comm.) believes it represents an undescribed species.

*G. sp. G* - This species was called *G. lobiferus* by Beck & Beck (1969a). Heyn (pers. comm.) believes it represents an undescribed species. It is difficult or impossible to separate unassociated larvae of this species from *G. meridionalis*. 
Genus *Goeldichironomus*

**DIAGNOSIS:** The frontal apotome (with 2 medial labral sclerites anterior to it); ventromental plates with inner angle directed caudad; elongate seta subdentalis with toothed or fringed lower margin; and 0, 1 or 2 pairs of ventral tubules will identify this genus.

**NOTES:** Seven taxa are recorded in this genus from Florida. The genus is mostly Neotropical, but many species apparently reach their northern limit in Florida. The species most often encountered are *G. carus* and *G. holoprasinus*.

Larvae are found mostly in lentic habitats, and may occur in sediments, in or on plants and in floating mats of vegetation and wood, under conditions ranging from oligotrophic to hypereutrophic.

**ADDITIONAL REFERENCES:** Reiss 1974; Wirth 1979.
Key to Florida *Goeldichironomus*

1 Ventral tubules absent or rudimentary (length usually < 5X width) ......................... 2
1' At least 1 pair of well developed ventral tubules present (length > 5X width) .......... 3

2 (1) Sixth lateral tooth of mentum small; labral sclerites 3 & 4 unconsolidated; anal tubules reduced; usually brackish water/salt marsh/estuarine species ........ *G. devineyae*  
(some *G. holoprasinus* may key here; see Notes)

2' Sixth lateral tooth of mentum large; labral sclerite 3 present; anal tubules normal; usually freshwater species ......................................................... *G. fluctuans*

adapted from Reiss (1974)
3 (1') Anterior pair of ventral tubules forked; labral sclerites 3 & 4 unconsolidated ..............
................................................................................................................. *G. holoprasinus*

3' Anterior pair of ventral tubules simple; labral sclerite 3 or sclerites 3 & 4 present .......... 4

4 (3') 4th lateral tooth of mentum smaller than its neighbors ......................... 5

4' 4th lateral tooth subequal .......... 6
5 (4') Mentum with 15-17 teeth; labral sclerites 3 & 4 present; postmentum without tubercles; common in organically enriched habitats ................................................... *G. carus*

5' Mentum with more than 17 apparent teeth; labral sclerite 3 present, 4 unconsolidated; postmentum with pair of tubercles near hind margin (best seen in lateral view); more common in floating vegetation ................................................... *G. pictus*

6 (4') Labral sclerite 4 partially consolidated on inner side .............................. *G. amazonicus*

6' Labral sclerite 4 unconsolidated, composed of rounded granules .................. *G. cf. natans*
Notes on species

G. amazonicus - Found in peninsular Florida, this benthic species can easily be confused with G. cf. natans. Be sure to observe the labral sclerites. Formerly called Siolimyia amazonica.

G. carus - Formerly placed in Chironomus, this widespread species was considered a nuisance species by Beck & Beck (1969a). Larvae are indicative of low dissolved oxygen, organically enriched habitats. I have collected larvae from small pools of water in an estuarine swamp.

G. devineyae - Formerly placed in Nilodorum, this species is apparently restricted to salt marshes/estuaries. However, B.A. Caldwell has collected an adult in inland GA. Larvae of G. holoprasinus may be confused with this species, especially if the posterior body segments have been lost or damaged. See below.

G. fluctuans - This uncommon species' presence in Florida has been confirmed by Dr. F Reiss (pers. comm.).

G. holoprasinus - A common to abundant species, especially in organically enriched habitats, it was considered a nuisance species by Beck & Beck (1969a). It is a pioneer species, often invading temporary water bodies. Specimens with lost or damaged posterior body segments may be confused with G. devineyae, a species which also lacks consolidated labral sclerites 3 & 4. However, G. holoprasinus larvae bear an additional dorsal tooth near the inner teeth of the mandible. Also, earlier instar larvae may bear two pairs of simple gills; rely on the absence of labral sclerites 3 & 4 and the dorsal "fourth inner" tooth of the mandible to identify this species. Formerly called Chironomus fulvipilus.

G. cf. natans - The identity of this taxon is unsure; only larvae have been seen. It is an uncommon species I have seen from the northern Everglades north to the Fenholloway River.

G. pictus - Hudson et al. (1990) list this species for Florida; I have not seen specimens.

At least three additional species occur in the Neotropics. See Reiss (1974) and Strixino & Strixino (1991) for more information.
Genus *Harnischia*

**DIAGNOSIS:** This member of the *Harnischia* complex is distinguished by the premandible with more than 3 teeth; the scale-like, distally trifid pecten epipharyngis; antennal segment 2 subequal to segment 3; and the weakly striated ventromental plates.

**NOTES:** One species, *H. curtillamellata*, is recorded from Florida. However, this does not mean that any *Harnischia* larva encountered in the state is that species. At least one other species, *H. incidata* occurs in the Southeast; I have seen adult specimens from SE Alabama; the larva is undescribed.

The *Harnischia* complex is a group of closely related genera initially proposed by Beck & Beck (1969b); further work was done on the group by Sæther (1977). The genera, which comprise couplets 14-28 in the generic key, are linked by several morphological characters in all life stages. All species placed in *Harnischia* by Beck & Beck (1969b) are now placed in *Cladopelma*.

Larvae occur in lakes, rivers and streams; they may be limited to relatively clean waters (Simpson & Bode 1980)

**ADDITIONAL REFERENCES:** Sæther 1977; Townes 1945.

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*Harnischia* sp., larval structures
Genus *Hyporhygma*

**DIAGNOSIS:** The mentum, with glossy blackish-brown teeth and distinctive shape; frontal apotome with 2 medial labral sclerites anterior to it; and the leaf-mining habit will distinguish the genus.

**NOTES:** One species, *H. quadripunctatum*, is known. It was formerly placed in *Tribelos* and *Endochironomus*.

Larvae mine in the leaves and stems of *Nuphar* and *Nymphaea*.

**ADDITIONAL REFERENCES:** Reiss 1982.

*Hyporhygma quadripunctatum*, larval structures
(adapted from Pinder & Reiss 1983)
Genus *Kiefferulus*

**DIAGNOSIS:** The anteromedian oval-circular pit on the apotome; premandible with 5 or more teeth; and single pair of ventral tubules identify this genus in Florida.

**NOTES:** Four species are known from Florida; two of these, *K. dux* and *K. pungens*, are described. A confusing blend of character states makes it necessary to have associated material to distinguish species. *Kiefferulus dux* is widespread and belongs in the nominotypical subgenus, as does *K. sp. A*, which is apparently restricted to south Florida. *Kiefferulus pungens* and *K. sp. B* are members of the subgenus *K. (Wirthiella)*. The pupae of *K. (Wirthiella)* species bear groups of needle-like spinules on sternites I-III; *K. (Kiefferulus)* pupae lack these spinules (see Pinder & Reiss 1986). Characters in the adults used to separate these subgenera (Cranston et al. 1989) do not appear to be substantiated by material from the southeast U.S.

Larvae are found in or on sediments and vegetation; they can tolerate low dissolved oxygen conditions.
Key to Florida Kiefferulus

1. Ventromental plates touching medially or nearly so; anterior margin of plates smooth .................................. K. sp. A

1'. Ventromental plates well separated medially; anterior margin of plates crenulate ...................................... 2

2(1) Ventromental plate with about 100 striae .......................................................... K. sp. B

2'. Ventromental plate with fewer than 75 striae ........................................... K. dux; K. pungens

(At present, these two species cannot be separated in the larval stage without associated pupae or adult males)

Notes on species

*K. dux* - Although often recorded in studies, at present this species cannot be separated from *K. pungens* without an associated pupa or adult male. Size may play a role in separating the larvae of the two species, but a larger database of reared material will be necessary to ascertain this. Adults and pupae of *K. dux* are very similar to those of *K. sp. A.*

*K. pungens* - Formerly placed in *Chironomus*, reared material indicates that this taxon belongs with *Kiefferulus* (*Wirthiella*). Larvae are apparently inseparable from *K. dux*, but the distinctive pupa of *K. pungens*, with its massive caudalateral comb on tergite VIII and needle-like spinules on sterna I-III, is easily separated from that of *K. dux*, which possesses a much smaller comb and lacks the sternal spinules. The species ranges at least from the Everglades to Washington, D.C.

*K. sp. A* - This species is known from Indian River Co. and southward; it is common in the northern Everglades, where it occurs with *K. pungens* and probably *K. dux*. I have reared this species; it will be described in a forthcoming publication. It is the only known *Kiefferulus* with ventromental plates that touch medially. Adults and pupae of this species are very similar to those of *K. dux*.

*K. sp. B* - This taxon is known from a single larval/pupal exuviae association collected from Lake Annie, Highlands Co. The adult stages are unknown. The presence of needle-like spinules on sterna I-III of the pupa places it in the subgenus *K. (Wirthiella)*. The pupa differs from that of *K. pungens* in having much smaller caudalateral spurs on tergite VIII.
Genus *Lauterborniella*

**DIAGNOSIS:** The frontal apotome, with 2 medial sclerites (clypeus and labral sclerite 2) anterior to it; 6-segmented antennae with alternating Lauterborn organs on 2 & 3; plumose setae submenti placed posteromedially to ventromental plates; short pointed lateral tubules on body segment 10; and segment 11 with posteriorly directed hump will distinguish this genus.

**NOTES:** One species, *L. agrayloides*, is known from North America. Other species formerly placed in *Lauterborniella* are now placed in *Stelechomyia* or *Zavreliella*.

Larvae live in transportable cases resembling those of the caddisfly *Hydroptila*; they are found among aquatic vegetation.

*L. agrayloides*, larval structures
(adapted from Pinder & Reiss 1983)
Genus *Lipiniella*

**DIAGNOSIS:** The frontoclypeal apotome, with 1 medial sclerite anterior to it; contiguous ventromental plates; mandible with 3 normal inner teeth and a dorsal tooth; and premandible with 5 teeth identify this genus.

**NOTES:** The genus *Lipiniella* has not been recorded from Florida; drawings below are of a North Carolina specimen. Species of this genus were formerly placed in *Xenochironomus*; see Pinder & Reiss (1983).

Larvae occur in sandy sediments.
Genus *Microchironomus*

DIAGNOSIS: The linear mentum, with outer teeth enlarged and trifid median tooth; bifid premandible with brush; and antennal blade as long as or longer than the flagellum identify the larvae of this member of the *Hannischia* complex.

NOTES: One species, *M. nigrovittatus*, is recorded from the Southeast. Hudson et al. (1990) believed another species may be present in the Southeast; hence, unassociated larvae should be identified as "*Microchironomus* sp." This genus was referred to as *Leptochironomus* in Beck (1976, 1979).

Little is known of the larval habitat of *M. nigrovittatus*. Larvae occur in lakes, large rivers and ditches.

Genus *Micropsectra*

**DIAGNOSIS:** The tripartite pecten epiphranyngis, with numerous distal teeth/serrations; bifid premandible; and antenna with Lauterborn organs on pedicels which greatly exceed the flagellum (segments 3-5) will identify this member of the tribe Tanytarsini.

**NOTES:** Oliver et al. (1990) record one species of this genus from Florida. There are probably at least two additional species in the state. Larvae can not be identified to species. The spur of the antennal base is not always developed in *Micropsectra*; this structure is also found on some *Tanytarsus* and can not be used as a character to separate the two genera.

Larvae occur in a wide range of aquatic habitats.

**ADDITIONAL REFERENCES:** Oliver & Dillon 1994a; Säwedal 1982.
Genus *Microtendipes*

**DIAGNOSIS:** This genus is identified by the frontal apotome with straight anterior border separating it from the clypeus; bases of S 1 separate or contiguous; antennae 6-segmented with alternate Lauterborn organs on 2 & 3; mentum with 3 pale median teeth (middle tooth may be minute); and the coarsely striated ventromental plates.

**NOTES:** Although *Microtendipes* had been undergoing revision by a graduate student at the U. of Minnesota, this revision has been abandoned. There are several undescribed species in the Southeast; larvae can not be identified to species. Larvae can be separated into two groups, named after European species: 1) the *rydalensis* group is distinguished by 3 large median teeth on the mentum, premandible with 5 teeth and pecten epipharyngis with numerous apical teeth; 2) the *pedellus* group has a minute median tooth, and a 3-toothed premandible and pecten epipharyngis.

Larvae occur in streams and rivers.
Genus *Nilothauma*

DIAGNOSIS: The simple labral sclerite 5; antenna with basal segment shorter than segments 2-5; mandible with inner teeth grouped closely together and single dorsal tooth; mentum with pale usually rounded median tooth; and setae submenti placed posterior to ventromental plates (as in most Chironomini) will distinguish larvae of this genus.

NOTES: *Nilothauma* is represented by at least four species in Florida; only three are described. I have associated larvae of the three described species and an unassociated fourth larval type; however, available material is too limited to separate species based only on larvae. Nearctic *Nilothauma* larvae differ somewhat from the European species illustrated and diagnosed in Pinder & Reiss (1983). Most larvae I've seen possess a rounded median tooth not divided into four parts; labral lamellae are better developed in some Nearctic species; and one larva reaches 8 mm in length (most *Nilothauma* larvae are less than 5 mm).

Larvae occur in standing and flowing water.

ADDITIONAL REFERENCES: Townes 1945 (as *Kribioxenus*).
Genus *Omisus*

**DIAGNOSIS:** Larvae are identified by the broad plumose S I setae with separate bases; 6-segmented antennae with Lauterborn organs on segments 2 & 3; mandible with 2 dorsal teeth; and mentum with central pair of median teeth lower and more slender than outer median teeth.

**NOTES:** One species, *O. pica*, has been recorded from Florida. However, B.A. Caldwell has reared a second species from Georgia that also occurs in Florida. This species (*O*. sp. A) is most easily distinguished from *O. pica* by its 16-toothed mentum; following Beck & Beck (1970), *O. pica* has a 14-toothed mentum. I have been unable to locate the Beck's reared material of *O. pica*.

Larvae are found in humic (peat) water habitats.

**ADDITIONAL REFERENCES:** Beck & Beck 1970.
Genus *Pagastiella*

**DIAGNOSIS:** The apically toothed labral sclerite 5; antenna with basal segment longer than segments 2-5; mandible with inner teeth spread along inner margin of apical tooth; distinctively shaped pale mentum; and setae submenti placed on the ventromental plates distinguish this genus.

**NOTES:** The identity of larvae from Florida is uncertain. Oliver et al. (1990) recorded *P. orophila* (Edwards) from FL; Hudson et al. (1990) recorded *P. ostansa* (Webb) from FL. These two species may be identical, in which case the name *P. orophila* has precedence. Hudson et al. (1990) also stated that an undescribed species occurs in the SE. Florida larvae should be identified as "*Pagastiella sp*".

Larvae are found in sediments of lakes, ponds and slower reaches of streams and rivers.

**ADDITIONAL REFERENCES:** Webb 1969.
Genus *Parachironomus*

**DIAGNOSIS:** The simple or, in a few species, multitoothed S I; 5-segmented antenna; lack of a premandibular brush; and multitoothed pecten epipharyngis will distinguish most members of this genus in Florida.

**NOTES:** Fifteen species are known from Florida: one (*P. potamogeti*) is apparently unknown as a larva; another two (sp. B and sp. C) are undescribed; and two (*P. monochromus* and *P. tenuicaudatus*) are inseparable as larvae, based on material at hand. A problem also exists with the species *P. chaetolaus* and *P. hirtalatus* (see Notes below). Although Beck & Beck (1969b) produced a workable key to species known to them, many specimens I've examined from several collections (including the Beck collection of larvae at FAMU) are misidentified. An excellent study on the Neotropical species has recently been published (Spies, et al. 1994).

Larvae are found in variety of water bodies under a wide range of conditions.

**ADDITIONAL REFERENCES:** Beck & Beck 1969b; Spies, et. al. 1994; Townes 1945.
Key to Florida *Parachironomus*
(the larva of *P. potamogeti* is unknown)

1  Median tooth of mentum simple ........ 3

1'  Median tooth of mentum bifid .......... 2

2 (1') First lateral tooth of mentum equal to 2nd lateral (see 1' above); premandible with 4 large teeth ........................................ *P. frequens*

2' First lateral tooth of mentum lower than 2nd lateral; premandible with 3 large teeth ....................................................... *P. pectinatellae*

3 (1) Penultimate tooth of mentum longer than tooth at each side ............ 4

3' Penultimate tooth of mentum not longer than teeth to each side ......................... 5
4 (3) Mentum outline strongly convex; anterior margin of ventromental plates smoothly scalloped ................... *P. alatus*

4' Mentum outline not as arched; anterior margin of ventromental plates with blunt points .......... *P. hirtalatus* (see Notes)

5 (3') Mandible with 3 well developed, dark inner teeth ................................................................. 6

5' Mandible with 2 well developed inner teeth (if third inner tooth is present it is small and pale) ..................................................................................................................... 7

6 (5) Third antennal segment longer than fourth .................................................. *P. sublettei*

6' Fourth antennal segment longer than third ..................................................... *P. supparilis*

7 (5') Outer margin of mentum serrate; ventromental plates without apparent recurved striae or transverse ridges posterolaterally ....................... 8

7' Outer margin of mentum smooth (last tooth may be finely dissected); ventromental plates with apparent recurved striae or transverse ridges posterolaterally ..................... 9
8 (7) Anterior margin of ventromental plate smoothly crenulated; antennal segment 3 and 4 approximately equal .......................... *P. directus*

8' Anterior margin of ventromental plate with blunt points; antennal segment 4 longer than 3 ......................................................... *P. carinatus*

9 (7') Anterior margin of ventromental plate with long sharp points; outer tooth of mentum dissected into fine points ................... *P. sp. B*  
(see Notes)

9' Anterior margin of ventromental plate with blunt points; outer tooth of mentum simple  
(see couplet 7' figure on opposite page) ................................................................. 10

10 (9') Premandible dark; antennal segments 1-3 usually brown; antennal segment 1 about 5X length of 2 ................................................................. *P. schneideri*

10' Premandible light; antennal segment 1 may be dark yellow; antennal segment 1 about 4X length of 2 ................................. *P. monochromus, P. tenuicaudatus*  
(These 2 species are inseparable as larvae; they must be associated with adult males for correct identification.)

Notes on species

*P. alatus* - An unusual species, for the mentum appears to be that of a *Cladopelma*. However, the premandible lacks a brush, and the pecten epipharyngis is trifid; also note the antennae with long 4th segment and recurved striae on the ventromental plates (lacking in *Cladopelma*). The pupa and adult male also fit the concept of *Parachironomus*, but more work is needed to assess this taxon's position.

*P. carinatus* - A common species, but often misidentified.
P. chaetoalus - Epler (1992) was mistaken when he stated that the larva of this species was unknown; it was figured and keyed by Darby (1962). I have seen Florida and Indiana material identified as this species by Dr. J.E. Sublette, who originally described this species from California (Sublette 1960); the adults are not clearly separable from P. hiralatus. A single pupal exuviae from Indiana is inseparable from P. hiralatus paratype specimens I've examined; both Indiana and Florida specimens possess a long, dark, horn-shaped prealar tubercle. The mentum of P. chaetoalus from California as illustrated by Darby (1962: fig. 84) is similar to that of Florida P. hiralatus. If the species are synonymous, the name P. chaetoalus would take precedence. However, until reared California material is compared against reared Florida specimens, it may be best to consider these as separate species and to consider larvae that key to couplet 4' as P. hiralatus.

P. directus - A relatively common species.

P. frequens - This species may be more common in Florida than previously thought; many specimens I've examined were misidentified as P. pectinatellae.

P. hiralatus - A common species. This may be a junior synonym of P. chaetoalus (see above).

P. monochromus - Apparently uncommon. The larva is inseparable from P. tenuicaudatus as recognized in this manual.

P. pectinatellae - This species was originally described by Dendy & Sublette (1959) from material taken from the bryozoan Pectinatella magnifica.

P. potamogeti - Adults of this species are very similar to P. chaetoalus and P. hiralatus; all these species (along with P. spp. B and C) possess wings with apical setae on the membrane in cells r_{4+5} and m_{1+2}. With the exception of the apex of the gonostylus, which in P. potamogeti is slightly enlarged and straight at the medial apex, the genitalia of this species are very similar to those of P. chaetoalus and P. hiralatus. The immature stages of P. potamogeti were described by Hamilton (1965), but the description and figures provided are not sufficient to allow identification. It will take comparison of reared material of all five of these species to determine specific limits and any synonymies.

P. schneideri - The brown antennae and dark premandible are the only characters found which may separate this species from P. monochromus and P. tenuicaudatus. Teneral (recently molted) specimens would be unidentifiable.

P. sublettei - A species with pale mentum and ventromental plates. Although Beck & Beck (1969b) stated that "recurred striae" were not present, such structures are visible on the ventromental plates under high magnification. This species can also be found in brackish water.

P. supparilis - This taxon was called P. sp. A in Epler (1992). Martin Spies has confirmed that this species, originally described from Argentina, occurs in the U.S. In North America it is found at least as far north as Georgia. Spies et al. (1994) consider this taxon to be a "superspecies". It is widespread in the Neotropics, being found from the Amazon basin to high Andean Bolivia, to Tierra del Fuego. Florida specimens fit the centralis form.

P. tenuicaudatus - Beck & Beck (1969b) recorded this species for Florida based on a Miami specimen and a reared male from Lake St. Clair in Polk Co. However, the Polk Co. specimen is a P. monochromus. I have seen only one reared specimen of P. tenuicaudatus, from Ohio. It does not resemble the larva as described by Johannsen.
(1937) or Roback (1957); those descriptions may be based on missassociated specimens, or more than one taxon may be involved. Based on material I've examined, the larva is not separable from *P. monochromus*.

**P. sp. B** - This is a new species which will be described in a future publication. It was included in Epler (1992) as "*P. chaetoalus*". I have seen a single reared male from Ohio and numerous Florida adult specimens that may be conspecific. I have not seen this larva from Florida.

**P. sp. C** - Another new species which will be described in a future publication; the immature stages are unknown.
Genus *Paracladopelma*

DIAGNOSIS: Larvae are distinguished by the 5-segmented antennae with second segment much longer than third; premandible with 4 or more teeth; coarsely striated ventromental plates; and mentum pale or with at least a broad, pale median tooth/teeth.

NOTES: Four species are recorded from Florida; an additional two species, described only as larvae, may also occur here. Other species may also be present; *Harnischia* complex genus B may be a *Paracladopelma*.

Larvae are found in sand substrata, usually in running water. Some species may be sensitive to eutrophication (Pinder & Reiss 1983).

ADDITIONAL REFERENCES: Jackson 1977; Sæther 1977.

*Paracladopelma* sp., larval structures
(adapted from Jackson 1977)
Key to Florida *Paracladopelma*

1 Ventromental plates with 25 or fewer full length striae ........................................... 2
1' Ventromental plates with more than 25 full length striae ........................................ 4

2 (1) Median tooth of mentum bifid (may require observation at 1000X) .................
     ......................................................... *P. undine*
     (adapted from Jackson 1977)

2' Median tooth simple ................................................................................................. 3

3 (2') Mentum strongly arched, median tooth broad and dome-like ...................... *P. sp. 2*
     (not recorded from Florida)
     (adapted from Jackson 1977)

3' Mentum more linear, median tooth not as broad .............................................. *P. doris*
     (adapted from Sether 1977)

4 (1') Mentum with dome-shaped median tooth which projects strongly forward ........
     ................................................................. *P. loganae*
     (adapted from Jackson 1977)

4' Mentum without dome-shaped median tooth ......................................................... 5
5 (4')  Median tooth and first lateral teeth clear; ventromental plates with about 30 striae

..................... P. nereis

5' Median tooth only clear, first lateral tooth darkened; ventromental plates with about 38 striae

..................... P. sp. 1

(not recorded from Florida)

(both figs. adapted from Jackson 1977)

Notes on species

P. doris - Recorded for Florida by Hudson et al. (1990). I have not seen material of this species from Florida; it should be considered rare. This taxon was described as "Cryptochironomus" near rolli Kirp. in Sæther (1977:117).

P. loganae - One of the more common species of Paracladopelma in Florida. It often requires observation at 1000X to see the outline of the lightly sclerotized mentum.

P. nereis - An apparently uncommon species in Florida.

P. undine - A common species. It may require observation at 1000X to see the bifid median tooth of the lightly sclerotized mentum. This species may be confused with P. nais (Townes), a species which is not known from Florida. P. nais has about 40 full length striae on each ventromental plate; P. undine about 20.

Paracladopelma spp. 1 and 2 were described from larvae only by Jackson (1977); they may occur in Florida. P. sp. 2 was described from a GA specimen.
Genus *Paralauterborniella*

**DIAGNOSIS:** The 6-segmented antennae, with alternate Lauterborn organs on segments 2 & 3; distinctive mentum, with broad pale median tooth; and mandible without a dorsal tooth will distinguish this genus.

**NOTES:** One species, *P. nigrohalteralis*, is known from North America, although Hudson et al. (1990) reported an undescribed species from North Carolina. Other Nearctic species formerly placed in this genus have recently been transferred back to the genus in which they were originally described, *Apedilum* (see Epler 1988a).

Although Pinder & Reiss (1983) describe the S II as simple, it is fringed.

Larvae occur in streams and rivers.

**ADDITIONAL REFERENCES:** Epler 1988a.
Genus *Paratanytarsus*

**DIAGNOSIS:** This tanytarsine is identified by the pecten epipharyngis with 3-5 lobes; apically bifid premandible; sessile, or nearly so, Lauterborn organs at the apex of segment 2; and "normal" mandible, without pronounced hump on outer margin.

**NOTES:** Oliver et al. (1990) listed one species, *P. dubius*, as occurring in Florida; nine other species are listed for North America (mostly Canadian records). The Nearctic fauna is poorly known. Palaearctic species (as in most other Tanytarsini genera) are much better known; some may occur in Florida. Based on larvae, apparently three species (*P. sp. A, B and C*) are present in Florida. I have reared *P. sp. A*, but without examination of type material, it can not be ascertained if it is *P. dubius*.

Larvae of the three Florida "species" are separated by the length of antennal segment 2: in *P. sp. A* antennal segment 2 is longer than segments 3-5; in *P. sp. B* segment 2 is shorter than segments 3-5; in *P. sp. C* segments 3-5 are subequal to segment 2. These taxa do not appear to be a series in which the antennal segment lengths are a continuous variable.

Larvae occur in a variety of aquatic habitats, including brackish water.

**ADDITIONAL REFERENCES:** Langton et al. 1988; Reiss & Sävedal 1981.
Genus *Paratendipes*

**DIAGNOSIS:** The S I setae with bases fused or located on a common triangular plate; 6-segmented antenna, with alternate Lauterborn organs on segments 2 & 3; mentum with central pair of median teeth equal to or higher than outer median teeth; and mandible with 1 dorsal tooth will distinguish the *larvae in Florida*.

**NOTES:** Three species are known from Florida. If one assumes that only these three species occur here, all are easily separated by their distinctive *menta* and ventromental plates illustrated below, although I have seen unassociated, early instar specimens somewhat intermediate between *P. albimanus* and *P. basidens*. Dr. L. C. Ferrington, Jr., provided associated material of *P. basidens*; this species has been known as "*Paratendipes connectens* group". *P. subaequalis* appears to be the most commonly collected species in Florida.

Larvae occur in a wide variety of aquatic habitats.

**ADDITIONAL REFERENCES:** Epler & Ferrington 1994; Townes 1945.
Genus *Phaenopsectra*

**DIAGNOSIS:** Larvae possess an apotome with 1 or 2 medial sclerites anterior to it; mentum with a line running from the posterior margin of the outermost median tooth back to the anteromedial corner of the ventromental plate; molar area of mandible usually without spines, except sometimes 1 present near seta subdentalis; and distance from basal notch of inner mandibular teeth to insertion of seta subdentalis usually at least 3/4 the distance from the basal notch to the apical notch.

**NOTES:** A difficult genus taxonomically, *Phaenopsectra* is in need of revision. Distinguishing larvae from some *Tribelos* is difficult. One species, *P. flavipes*, was considered to be identifiable as a larva (Simpson & Bode 1980), but it is apparently inseparable from the larva of *P. punctipes*, a species which has not been recorded from Florida (but may occur here). *Phaenopsectra* larvae may be identified as species groups: the *punctipes* group, with 14-toothed mentum (usually, but subject to wear, especially on outermost teeth) and mandible with large notch at base of inner teeth (species in this group resemble *Endotribelos hesperium*); and the *obediens* group, with 16-toothed mentum and normal mandible. Reliable identifications are possible only with associated adults; however, Hudson et al. (1990) reported that additional undescribed adults occur in the Southeast. Note that the *P. dyari* of Simpson & Bode (1980) may not be correctly identified (Grodhaus 1987b).

Larvae are usually found in streams; some western U.S. species are resistant to drought and can withstand drying by remaining in silk and silt cocoons.

**ADDITIONAL REFERENCES:** Grodhaus 1976, 1987b; Townes 1945.
Genus *Polypedilum*

**DIAGNOSIS:** The distinctive mentum, with median and second lateral teeth longer than first lateral teeth, will distinguish most members of the genus. Other Florida larvae may be identified by the frontoclypeal apotome with straight anterior margin expanded laterally to include S3 setae; 5-segmented antennae (4-segmented in 2 taxa); and ventromental plates teardrop shaped or less than 3X as wide as long and with pointed lateral margins.

**NOTES:** A heterogeneous genus as currently defined, at least 23 described species of *Polypedilum* occur in Florida. In addition, about six undescribed taxa also occur. Three Nearctic subgenera have been established, based on adult morphology. Maschwitz (1976), in an unpublished Ph.D. thesis, revised the subgenus *P. (Polypedilum)*. He described several new species, two or three of which occur in Florida. However, his work has not been officially published and the new species names are not available (ICZN 1985: Articles 8 and 9).

The taxonomy of the genus remains in an unsatisfactory state. Larvae of many species groups are currently not separable to species, but can be differentiated in the adult stage. Boesel (1985) placed several species in synonymy, but these have not been accepted by most workers (see Hudson et al. (1990) and Notes on species). Rossaro (1985) has begun a revision of the European species, which may help settle some matters for the Nearctic fauna.

Larvae are found in a wide range of habitats under a variety of environmental conditions.

**ADDITIONAL REFERENCES:** Boesel 1985; Maschwitz 1976; Rossaro 1985; Soponis 1983; Soponis & Russell 1982; Soponis & Simpson 1992; Townes 1945.

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*P. illinoense*, mentum

*P. sp. A*, mentum

*Polypedilum* sp., larval structures

frontoclypeal apotome
**Key to Florida *Polypedilum***

(several FL species are known only as adults)

1. Mentum with median and second lateral teeth higher than first lateral teeth ........ 8

1'. Mentum with median teeth lower than lateral teeth, or subequal, or apparently missing

2 (1'). Mentum with median teeth lower than lateral teeth, or missing; pecten epipharyngis with 3 blunt teeth; mining in *Brasenia* or *Nymphaea* ........ *P. brasseniae*

   - mentum variations
   - pecten epipharyngis

2'. Mentum with median teeth subequal or higher than lateral teeth; pecten epipharyngis with 3 lobes, with at least the outer 2 with apical teeth; not restricted to *Brasenia* or *Nymphaea* ................................................................. 3

3 (2'). Mentum somewhat round in outline; ventromental plates teardrop shaped, with posterolateral margin broadly rounded ................................................. *P. ontario*

   (not recorded from Florida)

   (from Finder & Reiss 1983)

3'. Mentum more linear; ventromental plates semi-circular, posterolateral margins pointed ................................................. 4
4 (3') Ventromental plates with well developed posterior lobes ........................................ 9

4' Ventromental plates without well developed posterior lobes ........................................ 5

5 (4') Mentum with 14 teeth; central 4 teeth distinctly higher than lateral teeth .......... ................................................................. P. sp. C

5' Mentum with 16 teeth; 6 central teeth slightly higher, or all teeth subequal ........ 6

6 (5') Antennal segment 2 subequal to segments 3 + 4 + 5; head capsule usually dark yellow-brown ................................. P. fallax

6' Antennal segment 2 shorter than segments 3 + 4 + 5; head capsule usually yellow ... 7

7 (6') Antennal segment 4 > 3; N. FL only (?) .. P. laetum

7' Antennal segment 3 and 4 subequal; central to southern FL ................................. P. sp. A

P. laetum
(after Rossaro 1985)
8 (1) Ventromental plate without well developed posterior lobe .................. 10

8' Ventromental plate with well developed posterior lobe .......................... 9

9 (4, 8') Antennal segment 2 about twice as long as segments 3, 4 & 5 combined; first lateral tooth of mentum may be slightly shorter or equal to second lateral (see couplet 8'); median teeth not basally constricted ....................... *P. aviceps*

9' Antennal segment 2 no more than 1.5X segments 3, 4 & 5 combined; first lateral tooth of mentum always shorter than second lateral; median teeth usually basally constricted .................................................. *P. convictum group*

(includes 2 species in FL)

10 (8) Third antennal segment 1/3 or less the length of the second segment .................. 11

10' Third antennal segment at least 1/2 or more the length of the second segment .......... 12
11 (10) Antennal segment 4 subequal to segment 2; antennae always with 5 segments .................................................. *P. halterale* group
(includes 4 species in Florida)

11' Antennal segment 2 much longer than 4; antennae with 4 or 5 segments .................................................. *P. scalaenum* group
(includes 2 species in Florida)

12 (10') Width of 1 ventromental plate 2.5X or less the distance between the plates ... 14

12' Width of 1 ventromental plate more than 2.5X the distance between the plates (see below) .................................................. 13

13 (12') Mentum usually with 4th lateral tooth lower than 3rd and 5th; antennal segment 2 usually about twice as long as 3; antennal blade longer than flagellum; Lauterborn organs large and distinct .......................... *P. trigonus*

13' Mentum with 4th tooth subequal to 3 and 5; antennal segment 2 subequal to 3; antennal blade shorter than flagellum; Lauterborn organs minute .............. *P. tritum*
Notes on species

*P. aviceps* - Generally a stream species, it often occurs in leaf packs, snags etc. The height of the first lateral tooth of the mentum is variable: in some specimens it is slightly lower than the median teeth and second laterals; in others it may be subequal. See Soponis & Russell (1982) for more information.

*P. braseniae* - Larvae mine in the leaves of several aquatic plants, but are usually associated with *Brasenia* and *Nymphaea*. Differences in the mentum have been attributed to wear associated with mining. Contrary to Maschwitz (1976), the premandibles ("tormae") were bifid in 8 of 9 specimens examined.

*P. convictum* group - This group consists of 2 species in FL: *P. convictum* and *P. obtusum*. The larvae are apparently inseparable. Maschwitz (1976) indicated that they may be separated by the length of the Lauterborn organs; however, this character is untested and I have not seen any reared material of *P. obtusum*. Boesel (1985) considered the two synonymous. And just to complicate matters further, the taxon called *P. convictum* in North America is probably not that species. Note the illustrations of larvae in Rossaro (1985) and Pinder & Reiss (1983). The correct name for the species in this country probably is *P. flavus* (Johannsen).

*P. fallax* - Relatively common in some FL streams. Best identified by antennal morphology and the darkish yellow-brown head capsule, this species has no doubt been confused with several other taxa with subequal mental teeth.

*P. halterale* group - A complex of 4 species in FL: *P. digitifer*, *P. griseopunctatum*, *P. halterale* and *P. simulans*. At present, the larvae must be considered inseparable; only adult males may be identified. Boesel (1985) considered all these species as synonyms of *P. halterale*, but his study was limited and did not make extensive use of reared material. Soponis & Simpson (1992) described all stages of *P. digitifer* and *P. griseopunctatum* and refuted Boesel's (1985) synonymies. Although they could separate larvae of the two species from each other, they did not offer methods to separate all four species of this group. Benthic biologists can contribute greatly by attempting rearings of these taxa. Based on reared material, I have found *P. simulans* to be the most commonly encountered member of this group throughout most of Florida; it is common in Lake Okeechobee.

*P. illinoense* group - A common and apparently extremely variable taxon, this group includes 1 described species and 2 "undescribed" species in Florida, plus 2 other species (1 "undescribed") not recorded from the state but which will probably be found here. The "undescribed" taxa are species named in Maschwitz's (1976) thesis: *P. "angulum"* and *P. "nymphaeorum"* were described from Florida material; in addition, R.A. Caldwell has reared specimens similar to *P. "falcoforme"* from GA. These "species" are only tentatively separable as adult males. Unfortunately, these names can not be used because they were never officially published. Use of these names will create *nomina*
The species names must be published with descriptions. Another
described species, *P. ophioides*, probably occurs in FL; I've seen adults from AL.
Although Maschwitz (1976) separated larvae of *P. ophioides* and *P. illinoense* by
antennal characters, these differences have not held with the examination of
additional specimens. In addition, larvae of this group have been confused with *P. trigonus* and *P.
tritum*. All this has led to a confused taxonomy for the "species" *P. illinoense*. Are
these differences attributable to species level distinctions, or are they merely reflections
of the larva's environment? Will subtle changes in an environment produce different
"species"? Much work may be required to produce a satisfactory answer. Larvae of
the *P. illinoense* group are found in a wide variety of environmental conditions,
including the high organic loading associated with pulp mills.

*P. laetum* - I have seen 2 adults of this species from northwestern FL; I have not seen reared
material from FL and characters utilized in the key were derived from the descriptions
of Maschwitz (1976) and Rossaro (1985). This species has been confused with *P.* sp.
A (Rudolph & Strom 1990) in southern FL, where it apparently does not occur.

*P. ontario* - This species has not been recorded from FL, but its occurrence in AL and GA
indicates that it will eventually be found here. Bolton (1991) showed that pupal
Chironomini genus C of Pinder & Reiss (1986) is this species; larvae were collected
from the pupal retreats of the hydropsychid caddisfly *Cheumatopsyche*. This taxon
probably deserves separate generic status.

*P. scalaenum* group - In FL, this group consists of 2 species identifiable only as adults: *P.
parascaenum* and *P. scalaenum*. Although Beck & Beck (1964) hypothesized that
antennal characters might separate the 2 taxa, these characters have not proven to be
reliable. Most reared specimens of FL *P. scalaenum* I've examined had 4-segmented
antennae with the blade much longer than the flagellum. Larvae are also found with
5-segmented antennae. This group seems to be common in areas of lower water
quality.

*P. trigonus* - This species is found throughout the state; it is one of the more common species
(along with *P. sp. A*) of the northern Everglades. Most specimens can be identified by
the distinctive mentum; however, not all specimens have the distinctive small 4th lateral
tooth. Antennal characters given in the key will separate most specimens. More than
one species maybe involved, but there is insufficient reared material to come to a
conclusion.

*P. tritum* - A common species of the Southeast; this species and *P. trigonus* have often been
misidentified as *P. illinoense*.

*P. sp. A* - A common species of S FL, it has been misidentified as *P. laetum*. Associated pupae
do not resemble that species. *P. sp. A* has not yet been reared; it may be the larva of
one of the several species known only as adults.

*P. sp. B* - This taxon is a new species; I have seen one pharate male pupa with distinctive male
genitalia; larvae are unknown.

*P. sp. C* - Known only as a larva, this taxon has been found to date only in extreme western FL.
The larva resembles a *Phaenopspectra*, but possesses the anteriorly widened fronto-
clypeal apotome attributed to *Polypedilum* (but also found in *Asheum*).

Additional species, known only as adults, are recorded from FL; see Appendix A.
Genus *Pontomyia*

**DIAGNOSIS:** This tanytarsine is easily distinguished by the premandibles with more than 3 teeth; mentum with only 4 pairs of lateral teeth; and its marine habitat.

**NOTES:** Larvae of *Pontomyia* are truly marine; they have been found at depths of 30 meters (Bretschko 1981). I have seen specimens from the Florida Keys. The species' identity is unknown.

Little is known of the ecology of *Pontomyia* other than that they occur in tidal rock pools and offshore sediments.

**ADDITIONAL REFERENCES:** Bretschko 1981.
Genus *Pseudochironomus*

**DIAGNOSIS:** The S I setae with separate bases; antennae not mounted on elongate bases; apically bifid premandible; and bar-like ventromental plates which almost touch medially will distinguish this genus.

**NOTES:** *Pseudochironomus* is the only member of the tribe Pseudochironomini in the Nearctic. Three species are recorded from Florida; an additional four species may also occur. Although Sæther (1977) provided a key to larvae, the key fails to identify the majority of larvae encountered in Florida. Larvae must be reared for correct identification. One apparently new species (with a pupal stage similar to that of *P. richardsoni*) is common throughout Florida.

Larvae are found in sandy substrates of lakes and rivers, and can occur in brackish/estuarine water.

**ADDITIONAL REFERENCES:** Sæther 1977.
Genus *Rheotanytarsus*

DIAGNOSIS: This tanytarsine is distinguished by the pecten epipharyngis being a single, broad multitoothed comb (rarely deeply trisected); Lauterborn organs on short pedicels; apically bifid premandible; and ventromental plates often with apparent block-like strial markings.

NOTES: A common and often abundant tanytarsine, *Rheotanytarsus* species are poorly known. As with other Tanytarsini, our knowledge of the taxonomy of this genus lags far behind that of the Palaeartic members. Simpson & Bode (1980) placed larvae known to them in two groups: the *R. distinctissimus* group with AR < 2.0 and the larval case attached to the substrate by a long petiole; and the *R. exigus* group with AR > 2.0 and the larval case attached to the substrate lengthwise along one side. Although both of these groups occur in FL, some specimens encountered appear to be intermediate. There are probably several undescribed species in Florida. Note that specimens are easily confused with *Paratanytarsus* and *Sublettea*.

Larvae are usually found in streams and rivers, and are often associated with aquatic plant communities. Larvae can also be found in lakes, where wave action near shore can simulate flowing water conditions. Larvae attach their cases to a number of surfaces including plants, boats, and alligators; I have seen a case on the barbel of a catfish.

Genus *Robackia*

**DIAGNOSIS:** The 7-segmented antennae; mandible without seta interna and with modified proximal inner teeth; 14-toothed mentum; and coarsely sculptured ventromental plates will distinguish *Robackia* larvae.

**NOTES:** Two species are known from Florida: *R. claviger* is identified by the enlarged proximal inner teeth of the mandible and in most specimens the median teeth of the mentum are somewhat truncate and distinctly lower than most of the median teeth; *R. demeijerei* has smaller proximal inner teeth on the mandible and the median mental teeth are more pointed and subequal to remaining teeth. Contrary to the key in Sæther (1977), the menta of both species have 14 teeth. The genus is currently being revised by Dr. F. Reiss (Zoologische Staatssammlung, Munich, Germany).

Larvae are found in sand substrates of streams and rivers. Note that the mandibles of early instars may not display the modifications of the inner proximal teeth. Do not confuse the enlarged style for an antennal segment!

**ADDITIONAL REFERENCES:** Sæther 1977.
Genus *Saetheria*

DIAGNOSIS: This member of the *Harnischia* complex has 6-segmented antennae with small style at apex of segment 3 not exceeding apex of segment 5; mandible with seta interna; and coarsely striated ventromental plates.

NOTES: One species, *S. tylus*, has been found in Florida. Two other species, known only from their immature stages, occur in the South. All can be distinguished by their menta, illustrated below. *Saetheria* is very close to *Paracladopelma*, which has 5-segmented antennae. Separation of the two genera may not be justified; more work is needed. An expanded *Paracladopelma* would include *Saetheria* and probably *Harnischia* complex genera B and C.

Larvae are found in sandy substrata, usually in running water.

ADDITIONAL REFERENCES: Jackson 1977; Sæther 1983a.
Genus *Stelechomyia*

DIAGNOSIS: The frontal apotome, with 1 medial labral sclerite anterior to it; distinctive mentum, with deeply sunken single median tooth; long seta submenti; and rectangular, dark yellow-brown head capsule will distinguish this genus.

NOTES: One species, *S. perpulchra*, is known. It was formerly placed in *Lauterborniella*.

Larvae occur on dead wood in streams and rivers; they are often found on Hester-Dendy samplers.

ADDITIONAL REFERENCES: Reiss 1982.
Genus *Stempellina*

**DIAGNOSIS:** This tanytarsine is identified by the palmate spur on the inner side of the antennal base; both Lauterborn organs arising at the apex of antennal segment 2; the squat ventromental plates, separated medially by at least the width of the 3 median mental teeth; and its portable sand case.

**NOTES:** This genus is very similar to *Constempellina*, with which it may occur (as well as with *Stempellinella*). The most apparent difference between the two genera is the palmate spur of the antennal base. At least one species, apparently undescribed, occurs in Florida.

Larvae live in portable sand cases, and can be found in lentic and lotic situations.

**ADDITIONAL REFERENCES:** Webb 1969.
Genus *Stempellinella*

**DIAGNOSIS:** This tanytarsine is distinguished by its antennae, with one set of Lauterborn organs arising apically, and the other near the base of segment 2; pecten epipharyngis of three long, thin spines; premandible with 2-4 teeth; squat ventromental plates separated medially by at least the width of the 3 median mental teeth; and its portable sand case.

**NOTES:** At least one species occurs in Florida. Larvae are similar to those of *Zavrelia*, a taxon which apparently does not occur in Florida. Differences between the two genera are slight. Pinder & Reiss (1983) pointed out that antennal characters previously used to separate the genera were invalid, and used characters of the premandible and pecten epipharyngis to distinguish them. Florida larvae (confirmed as *Stempellinella* by associated pupae and adults) possess four teeth on the premandible, and have a pecten epipharyngis of three long, slender spines. *Zavrelia* larvae have five teeth on the premandible, arranged at almost a right angle to the long axis of the structure, and a pecten epipharyngis of three short spines (see Pinder & Reiss 1983: fig. 10.81). Maintaining the two as separate genera may not be justified.

Larvae construct portable cases of sand, and are found in streams, rivers and lakes.
Genus *Stenochironomus*

**DIAGNOSIS:** The dorsoventrally flattened and apically tapered head capsule; antennae with blade extending to apex of segment 2; concave mentum with 10-12 teeth; vestigial ventromental plates; and anal tubules with 0-2 constrictions will identify the larvae of this genus.

**NOTES:** Seven species are recorded from Florida, based on adults. The genus was recently revised by Borkent (1984), who provided a preliminary key to Nearctic fourth instar larvae and established two subgenera. However, the key relies on size (larvae must be fourth instar) and exact habitat location of the larvae, and identifications need to be confirmed by reared adults. Borkent (1984) also noted that the differences between *S. aestivalis* and *S. cinctus* larvae described by Beck & Beck (1970) were not recognizable.

Larvae mine in submerged dead leaves (subgenus *Petalopholeus*) or in submerged dead wood (subgenus *Stenochironomus*).

**ADDITIONAL REFERENCES:** Borkent 1984.
Genus *Stictochironomus*

**DIAGNOSIS:** The 6-segmented antennae, with alternate Lauterborn organs on segments 2 and 3; and mentum with at least the outer pair of 4 median teeth higher than remaining lateral teeth will distinguish this genus.

**NOTES:** Based on adults, two species are known from Florida; *S. devinctus* is by far the more common; the larva of *S. palliatus* is undescribed. However, it is incorrect to identify any *Stictochironomus* larvae collected as *S. devinctus*; I have seen adults of another species in Alabama that also may occur here. The Chironominae genus B larva of Pinder & Reiss (1983) and pupal Chironominae genus F of Pinder & Reiss (1986) has been shown to be *S. caffrarius* (Reiss, pers. comm.), a Palaearctic and Afrotropical species. A similar larva occurs in the Southeast; this may be the larva of *S. palliatus*. Specimens can be called "*S. caffrarius* group" until an association is made. Mason (1985a) offered a larval key for several species, but of Florida species, only *S. devinctus* was included.

Larvae are generally found in sand sediments of streams, rivers and lakes. Many larvae bear menta and mandibles which have been worn by sand abrasion.

**ADDITIONAL REFERENCES:** Mason 1985a; Townes 1945
Genus *Sublettea*

DIAGNOSIS: This tanytarsine is identified by the pecten epipharyngis of 3 simple lobes; bifid premandible; antennae with Lauterborn organs extending to or beyond antennal apex; mandible with pronounced hump on outer margin; and mentum with 3 median teeth strongly projecting.

NOTES: One species, *S. coffmani* (Roback), is described from North America. It has not yet been recorded from Florida, but may eventually be found here. Pinder & Reiss (1983) stated that the Lauterborn organs did not extend beyond the antennal apex. However, on a Pennsylvania specimen I've examined and figured below, the Lauterborn organs clearly extend beyond the apex.

Larvae are recorded from lotic habitats.

ADDITIONAL REFERENCES: Roback 1975.

*Sublettea* sp., larval structures
Genus *Tanytarsus*

**DIAGNOSIS:** This tanytarsine is distinguished by the premandible with 3 or more teeth; antennal segment 2 cylindrical (when sclerotized); Lauterborn organs small and placed on long pedicels; and simple claws on the posterior parapods.

**NOTES:** A very common and widespread genus, the taxonomy of *Tanytarsus* is poorly known. Dr. J.E. Sublette has been working on the Tanytarsini for over thirty years; one paper (Sublette 1964) has been published to date with descriptions of a few *Tanytarsus*. Thus, even if specimens are reared, most do not yet have published names. Based on described adults, at least nine species are known from the state. There are more than twice that many recognizable larval taxa. Based on associations from Florida and Costa Rica, the species formerly placed in *Nimbocera* are now considered to be members of *Tanytarsus* (see Notes).

Larvae are found in varied aquatic habitats, including brackish water.

Using a broad definition of the genus, 20 taxa are presented in the key beginning on the following page. Some of these taxa may represent undescribed genera (*T. sp. F*) or may consist of several species (spp. A, C, G, and L). Bear in mind that there are no doubt several taxa that I have not seen, but will key out anyway! If you are not sure, identify your specimens as "*Tanytarsus sp." Rearming larvae will greatly assist systematists to solve the taxonomic complexities of this genus.

**ADDITIONAL REFERENCES:** Steiner & Hulbert 1982; Sublette 1964.
Key to Florida *Tanytarsus*

1 Antennal segment 2 long and annulated .............................. *T. sp. F*

1' Antennal segment 2 not annulated (although pedicels of Lauterborn organs may be annulated) ................................................................. 2

2 (1') Antennal segment 2 with narrow ring near base separated from remainder of segment by narrow unsclerotized area ........................................ 3

2' Antennal segment 2 with base solidly sclerotized, or entire segment poorly sclerotized ................................................................. 5

3(2) Pedicels of Lauterborn organs annulated; 3 inner teeth on mandible ........................................ *T. limneticus* *(Formerly placed in Nimbocera)*

3' Pedicels not annulated; 2 inner teeth on mandible .......... 4

4(3') Median tooth of mentum deeply trifid .................................................. *T. sp. O*

4' Median tooth of mentum simple ............................................................. *T. sp. B*
5(2') Antennal segment 2 for the most part unsclerotized (at most a small section near the base may be sclerotized) ........................................................................................................... 6

5' Antennal segment 2 for the most part (at least 60%) sclerotized ................................................. 9

6 (5) Clypeus (sclerite anterior to bases of antennae) with a pair of simple setae (there may be one or more fine lateral "hairs" present) ......................... 7

6' Clypeus with coarsely branched or plumose setae ............................................................. 8

7(6) Mandible with 3 inner teeth ....................................................................................... T. sp. L

7' Mandible with 2 inner teeth ....................................................................................... T. sp. V

(some T. sp. O may key here, but note the deeply tridid median tooth)

8 (6') Clypeal setae plumose, finely dissected ............. T. sp. A

8' Clypeal setae with coarse, flattened branches .... T. sp. S

9 (5') Mandible with 2 inner teeth ....................................................................................... 10

9' Mandible with 3 inner teeth ....................................................................................... 14
10 (9) Antennal base with long spur .................................................. *T. sp. M*
(Note that the long spur may be difficult to discern if it is pointed directly at the observer.)

10' Antennal base without long spur .................................................. 11

11(10') Clypeal setae branched .................................................. *T. sp. W*

11' Clypeal setae simple .................................................. 12

12(11') Median tooth margined; supraanal setae longer than anal tubules ........................................ 13

12' Median tooth simple; supraanal setae less than or equal to anal tubules .......... *T. sp. J*

13 (12) Clypeal setae arise from pointed pedestals ...... *T. sp. K*

13' Clypeal setae do not arise from pedestals (there may be a raised area near base of seta) .................................................. *T. sp. R*
14(9') Antennal segment 2 more than ½ length of segment 1 ........................................ T. sp. P

14' Antennal segment 2 less than ½ length of segment 1 ................................................. 15

15(14') Mentum with 3 dark central teeth which project forward ........................................ 16

15' Mentum not as above ........................................................................................................ 18

16 (15) Clypeal setae simple .................................................................................................. T. sp. C

16' Clypeal setae branched ..................................................................................................... 17

17 (16') Mandible with 2 or more dorsal teeth ........................................ T. sp. D

17' Mandible with 1 dorsal tooth ......................... T. sp. U
18(15') Supraanal setae shorter than anal tubules; premandibles usually darkened apically ................................................................. T. sp. G

18' Supraanal setae much longer than anal tubules; premandibles usually light ....... 19

19(18') Antennal base usually with a small spur; sclerotized portion of antennal segment 2 less than 0.3 length of segment 1 ................................................................. T. sp. T

19' Antennal base without a small spur; sclerotized portion of antennal segment 2 more than 0.3 length of segment 1 ................................................................. T. sp. E

Notes on species

T. limneticus - This species, originally described only from adults, was formerly (Epler 1992) considered a member of the genus Nimbocera. However, rearings of this species and a Central American species, T. pandus Sublette & Sasa, and associations of some other Florida taxa (e.g. T. sp. A), indicate that the taxon Nimbocera can not be considered a valid genus. A mix of supposedly generic-defining characters, such as the distinctive larval antennae and the forward directed spines on pupal tergite IV, occur in several species in different combinations throughout the genus Tanytarsus. Thus "Nimbocera limnetica" is returned to Tanytarsus; its correct name now is Tanytarsus limneticus; it remains a senior synonym of N. pinderi Steiner & Hulbert. Other species placed in Nimbocera (see Trivinho-Strixino & Strixino 1991) may also deserve placement in Tanytarsus.
Genus *Tri belos*

**DIAGNOSIS:** The frontal apotome with 2 medial labral sclerites anterior to it; anterior margin of labral sclerite 1 mostly straight; mentum with a line running from the posterior margin of the outermost median tooth back to the anteromedial corner of the ventromental plates; mandible with distance from basal notch of inner tooth to insertion of seta subdentalis usually less than 3/4 distance from basal notch to apical notch; and molar area of mandible with 1 or 2 serrations separated from the seta subdentalis should identify members of this genus. See also *Phaenopsectra*.

**NOTES:** Three species are known from Florida; Hudson et al. (1990) noted an undescribed species from South Carolina. This genus is sometimes difficult to separate from *Phaenopsectra*; however, the two common species in Florida, *T. fuscicorne* and *T. jucundum*, are usually easily recognized. Grodhaus (1987a) recently revised *Tri belos* and other genera; the key on the following page is modified from his paper.

Larvae are most often found in streams and rivers, where they may be abundant on vegetation and Hester-Dendy samplers. They appear to be tolerant of organically enriched conditions.

**ADDITIONAL REFERENCES:** Grodhaus 1987a.
Key to Florida *Tribelos*

1. Blade of antenna much longer than flagellum .. *T. jucundum*

1'. Blade of antenna subequal to flagellum .......................... 2

2 (1') Length of basal segment of maxillary palp at least 2X width; ventromental plate striae distinct ....................... *T. fuscicorne*

2'. Length of basal segment of maxillary palp less than 2X width; ventromental plate striae indistinct ....................... *T. atrum*

(All figs adapted from Groshouse 1987a)
Genus *Xenochironomus*

**DIAGNOSIS:** The large setal brush on the labrum; dorsum of head with 3 labral sclerites anterior to the apotome; distinctive mentum; and freshwater sponge mining habit will identify this genus.

**NOTES:** One Holarctic species is known, *X. xenolabis*. Other Nearctic species formerly placed in the genus are now in *Axarus* or *Lipiniella*.

The larvae are obligate miners of freshwater sponges. The larva illustrated below was collected from sponge on the case of the leptocerid caddisfly *Ceraclea*.

**ADDITIONAL REFERENCES:** Roback 1963.
Genus *Xestochironomus*

DIAGNOSIS: The dorsoventrally flattened and apically tapered head capsule; antennae with blade extending past the apex of segment 3; concave mentum with 8 teeth; vestigial ventromental plates; and anal tubules with 4-5 constrictions will identify the larvae of this genus.

NOTES: Borkent (1984) revised *Xestochironomus* and described the larva. One species, *X. subletti*, is known from Florida. However, the genus has many Neotropical species; it would not be surprising to find additional species in south Florida. Unassociated larvae should be identified as "*Xestochironomus* sp."

Larvae mine in dead, submerged wood in lotic habitats.

Genus *Zavreliella*

**DIAGNOSIS:** The frontoclypeal apotome, with 1 medial labral sclerite anterior to it; 6-segmented antennae with alternate Lauterborn organs on segments 2 & 3; simple setae submenti placed on the ventromental plates; long ventrolateral tubules on body segment 10; and segment 11 with anteriorly directed hump will distinguish this genus.

**NOTES:** One species, *Z. marmorata*, is known from the Nearctic. Reiss (1990) recently revised the genus; an additional 12 species are known from northern South America. *Z. marmorata*, formerly called *Lauterborniella variipennis*, is found throughout most of the world; some European populations are parthenogenetic.

*Z. marmorata* larvae are found in marshes and vegetation choked, eutrophic ponds and lakes, where they swim around in their hydroptilid caddisfly-like cases. The case differs from that of *Lauterborniella* in that it has a circular opening; the case of *Lauterborniella* has a slit-like opening.

**ADDITIONAL REFERENCES:** Reiss 1990.
**Chironomini genus A**

**DIAGNOSIS:** The 6-segmented antennae, with Lauterborn organs at apex of segment 2 only; mentum with deeply sunken pair of median teeth; long setae submenti which extend beyond the mentum; and mandible with large seta subdentalis, but without pecten mandibularis and seta interna distinguish this taxon in Florida.

**NOTES:** The pupa and adult of this taxon are undescribed. I have seen specimens from the Suwannee River and Escambia Co. in Florida. Other species occur in Central and South America.

Larvae are reported from sediments of rivers and lakes. Although I have collected a larva, apparently a different species from Florida specimens, from near the mouth of a river in Costa Rica, further collecting in the same area indicated that the larva was washed in from riverside streams.

![Diagram of Chironomini genus A, larval structures]
Chironomini genus III

DIAGNOSIS: The 15-toothed mentum; and cardo with smooth anterior margin will separate this taxon from its apparent relatives \textit{Endochironomus}, \textit{Phaenopsectra} and \textit{Tribelos}.

NOTES: I have seen specimens of this taxon, known only as a larva, from sites throughout peninsular and northern Florida, including a bayhead in St. Johns Co., a roadside ditch in Flagler Co. and a canal in Highlands Co. It appears to be closely related to \textit{Tribelos}, but without associated life stages it is not possible to place this larva. Some \textit{Endochironomus} larvae have a 15-toothed mentum, but have a cardo with a tuberculate anterior margin.
**Harnischia complex genus A**

**DIAGNOSIS:** The 6-segmented antennae, with alternate Lauterborn organs on segments 2 & 3; ventromental plates with notch on anterior margin; and distinctive mentum, which resembles a circular saw blade, will distinguish this taxon.

**NOTES:** I have seen specimens of this larva in core samples from the Chipola River system. It is apparently the same larva Roback (1953) called "unknown gen. & sp. near Microtendipes".

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**Harnischia complex genus A, larval structures**
*Harnischia* complex genus B

**DIAGNOSIS:** The 6-segmented antennae; mandible with extensive lateral fringe of setae and poorly sclerotized, lamellar teeth; and mentum bearing long, anteriorly directed seta-like projections distinguish this taxon.

**NOTES:** This bizarre larva has been collected in core samples from northwestern Florida. It may be an aberrant *Paracladopelma.*

---

*Harnischia* complex genus B, larval structures
**Harnischia complex genus C**

**DIAGNOSIS:** The 6-segmented antennae, with style at apex of segment 3 subequal to 4-6; mentum with pointed middle tooth; and semi-circular ventromental plates with fine striae distinguish this taxon.

**NOTES:** I have seen this taxon in core and drift samples from northwestern Florida. It may belong in *Saetheria* (it somewhat resembles *S.- hirta*) or an expanded concept of *Paracladopelma.*
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Kowalyk, H. E. 1985. The larval cephalic setae in the Tanypodinae (Diptera: Chironomidae) and


(Diptera: Chironomidae) larvae ectoparasitic on pupae of Hydropsychidae (Trichoptera). Environ. Ent. 8: 808-809.


Sæther, O.A. 1983a. *Oschia dorsenna* n. gen. n. sp. and *Saetheria hirta* n. sp., two members of the *Harnischia* complex (Diptera: Chironomidae).


34:309-313.


APPENDIX A: CHECKLIST OF FLORIDA CHIRONOMIDAE

This checklist registers species known to occur in Florida, based on literature citations and material examined by the author. It also includes species which may occur in Florida; many of these species occur on the Southeastern Coastal Plain but have not been positively identified from Florida. Note also that some literature records may be considered doubtful; some species recorded in earlier literature but misidentified are not listed. Only important synonyms pertaining to Florida Chironomidae are listed. Genera and species are arranged in alphabetical order; for tribes and subgenera see Oliver et al. (1990), Hudson et al. (1990) or text.

KEY: [ ] = synonym  * = may occur in FL  ? = recorded from FL, but identification doubtful, not confirmed or incorrect  + = additional, probably undescribed species  L = larva known  A = larva unknown  LU = larva cannot be identified to a described species without associated life stages

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<tr>
<th>TELMATOGETONINAE</th>
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<td>Telmatogoton Schiner</td>
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| Larisia Fittkau         |             |             |
| *berneri* Beck & Beck   | L           |             |
| *decolorata* (Malloch)  | L           |             |
| [*lurida* Beck & Beck]  |             |             |
| *indistincta* Beck & Beck |         |             |

| Meropelopia Roback      |             |             |
| *americana* (Fittkau)   | L           |             |
| *flavifrons* (Johannsen) | L           |             |
| [*fittkaui* Beck & Beck] |             |             |

| Monopelopia Fittkau     |             |             |
| *bolitaeae* Beck & Beck | L           |             |
| *tenuicalcar* (Kieffer) | L           |             |
| *tilandsia* Beck & Beck | L           |             |

| Natarsia Fittkau        |             |             |
| *baltimoraea* (Macquart) | iL          |             |
| sp. A Roback            | L           |             |

| Nilotanypus Kieffer     |             |             |
| *americanus* Beck & Beck | L           |             |
| *fimbriatus* (Walker)   | L           |             |

| Paramerina Fittkau      |             |             |
| *anomala* Beck & Beck   | LU          |             |
| *fragilis* (Walley)     | *LU         |             |
| *testa* Roback          | LU          |             |

| Pentaneura Philippi     |             |             |
| *inconsipua* (Malloch)  | L           |             |
| [*inculta* Beck & Beck] |             |             |

| Procoelus Skuse          |             |             |
| *velius* (Loew)          | LU          |             |
| [*pusillus* Loew]        |             |             |
| *curtus* Roback          | A           |             |
| *freemanii* Sublette     | LU          |             |
| *sublettea* Roback       | LU          |             |

| Psectrotanypus Kieffer   |             |             |
| *dyari* (Coquillett)     | L           |             |

| Rheopelopia Fittkau      |             |             |
| *paramaculipennis* (Roback) | *LU      |             |
| *perda* (Roback)          | *LU         |             |
| sp. A Eppler             | LU          |             |

| Tanyus Meigen            |             |             |
| *carinatus* Sublette     | L           |             |
| *clavatus* Beck          | L           |             |
| *neopunctipennis* Sublette | L       |             |
| *punctipennis* Meigen    | L           |             |
| *stellatus* Coquillett   | L           |             |
| *telus* Roback           | A           |             |

| Zavrelimyia Fittkau      |             |             |
| *sinuosa* (Coquillett)   | LU          |             |
| [*carneosa* Fittkau]     |             |             |

| Diamesinae               |             |             |
| *Diamesa* Meigen         | *LU         |             |
| *Pothastia* Kieffer      | LU          |             |
| *longimana* Kieffer group| LU          |             |
| genus *P* Doughman       | LU          |             |

| Prodiamesinae            |             |             |
| *Compteromola Sæther     | *A          |             |
| *Odoniomesa Pagast       | L           |             |
| *fulva* (Kieffer)        |             |             |
| *Prodiamesa* Kieffer     | *           |             |
| *olivacea* (Meigen)      | *L          |             |

| Orthocladiinae           |             |             |
| *Antilocladius* Sæther   | LU          |             |
| *Brilliata* Kieffer      |             |             |
| *flavifrons* (Johannsen) | L           |             |
| *Bryophanocladius* Thienemann | LU   |             |
| *Camptodcladius* Wulp    |             |             |
| *stercorarius* (De Geer) | L           |             |
| *Cardiocladius* Kieffer  |             |             |
| *obscursus* (Johannsen)  | L           |             |
| *Chaetocladius* Kieffer  | *LU         |             |
| *Clunio* Haliday         |             |             |
| *marshalli* Stone & Wirth| L           |             |
| *Compteromismitia Sæther | *A          |             |

| Corynoneura Winnertz     |             |             |
| *fittkaui* Schlee        | *LU         |             |
| *lobata* Edwards         | *LU         |             |
| *scutella* Winnertz      | LU          |             |
| *taris* Roback           | L           |             |
| sp. B Eppler             | LU          |             |
| sp. C Eppler             | LU          |             |
| sp. D Eppler             | LU          |             |
| sp. E Eppler             | LU          |             |
| sp. F Eppler             | LU          |             |

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| <em>belkini</em> Sublette       | *A          |             |
| <em>bicinctus</em> Meigen       | L           |             |
| <em>festivellus</em> (Kieffer)  | *LU         |             |
| <em>fugax</em> (Johannsen)      | *LU         |             |
| <em>luciae</em> LeSage &amp; Harrison | *LU        |             |
| <em>nostocicola</em> Wirth      | *L          |             |
| <em>politus</em> (Coquillett)   | LU          |             |
| <em>slossonae</em> Malloch      | <em>LU         |             |
| <em>sylvestris</em> (Fabricius) | LU          |             |
| <em>triannulatus</em> (Macquart) | LU       |             |
| [exilis</em> Johannsen]      |             |             |
| <em>tricinctus</em> (Meigen)    | <em>LU         |             |
| [lebetis</em> Sublette]      |             |             |
| <em>trifascia</em> Edwards      | LU          |             |</p>
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<td>Zalutschia Lipina</td>
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<td>briani Soponis</td>
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Zalutschia
  sp. A Epler A
  Orthocladiinae sp. C Sæther LU
  Orthocladiinae genus D Epler LU
  Orthocladiinae genus E Epler LU

CHIRONOMINAE

Apedilum Townes
  elachistus Townes L
  subincunctum Townes LU

Asheum Sublette & Sublette
  becquae (Sublette) L

Axarus Roback
  dorneri (Malloch) A

Axarus
  *festivus (Say) *LU
  rogersi (Beck & Beck) LU
  taenionotus (Say) LU

Beardius Reiss & Sublette
  brevicus Reiss & Sublette LU
  truncatus Reiss & Sublette L

*Beckidia Sæther
  *LU

Chernovskiiia Sæther LU

Chironomus Meigen
  *anonymus Williston *LU
  crassicaudatus Malloch L
  decorus Johanssen group LU
  [attenuatus Walker]
  longipes Staeger LU
  [dorsalis auct.] LU
  *major Wülker & Butler L
  ochreatus (Townes) L
  plumosus (Linnaeus) L
  riparius Meigen L
  † Staegeri Lundbeck †L
  stigmaurus Say L
  tuxis Curran A

+ Cladopelma Kieffer
  amachaeum (Townes) LU
  forcipis (Rempel) LU
  [boydi Beck] LU
  collator (Townes) LU
  edwardsi (Kruseman) LU
  galeator (Townes) LU
  viridium (Linnaeus) LU

Cladotanytarsus Kieffer
  aeipathenus Bilyj LU
  viridiventris (Malloch) LU

+ Constempellina Brundin LU

Cryptochironomus Kieffer
  blartina Townes LU
  digitatus (Malloch) LU

fulvus (Johanssen) LU
  parafulvus (Beck & Beck) LU
  ponderosus (Sublette) LU
  psittacinus (Meigen) A
  [styliferus (Johanssen)]
  scimitarus Townes A
  sorex Townes LU
  Cryptotendipes Lenz
  †casuarius (Townes) LU
  emorsus (Townes) LU
  Demejereja Krusemann
  atrimana (Coquillett) A
  *brachialis (Coquillett) *A
  Demicryptochironomus Lenz
  *cuneatus (Townes) *LU
  Dicrotendipes Kieffer
  fumidus (Johanssen) L
  leucoscelis (Townes) L
  lobus (Beck) L
  lucifer (Johanssen) L
  modestus (Say) L
  neomodestus (Malloch) L
  nervosus (Staeger) L
  simpsoni Epler L
  thanatogratus Epler L
  tritomus (Kieffer) L
  [incurvas Sublette]
  sp. A Epler L
  sp. B Epler LU

Einfeldia Kieffer
  austini Beck & Beck L
  brunneipennis (Johanssen) A
  nathchiochea (Sublette) L
  *pagana (Meigen) *LU
  sp. A Epler L

Endothrichomus Kieffer
  nigricans (Johanssen) L
  subtendens (Townes) L

Endotribelos Grodhaus
  hesperium (Sublette) L
  *Gillotia Kieffer

Glyptotendipes Kieffer
  amplus Townes L
  *barbipes (Staeger) LU
  †lobiferus (Say) LU
  meridionalis Dundy & Sublette LU
  paripes Edwards L
  seminole Townes L
  testaceus L
  sp. B Epler LU
  sp. E Epler LU
  sp. F Epler LU
  sp. G Epler LU
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<td>[fulvipilus (Rempel)]</td>
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Polypedilum

  vibex Townes A
  sp. A Epler LU
  sp. B Epler A
  sp. C Epler LU

+ Pontomyia Edwards

Pseudechironomus Malloch

  *articaudus Sæther *A
  *banksi Townes *A
  fulviventris (Johannsen) LU
  *julii (Curran) *A
  middlekaufi Townes A
  *rex (Hauber) *A

Pseudechironomus

  richardsoni Malloch LU

Rheotanytarsus Thiennemann & Bause

  distinctissimus (Brundin) group LU
  exigus (Johannsen) LU

+ Robackia Sæther

  claviger (Townes) L
  demejerei (Kruseman) L

Saetheria Jackson

  *hirta Sæther *L
  tylus (Townes) L

Stelechomyia Reiss

  perpulchra (Mitchell) L

Stempellina Thiennemann & Bause

Stempellinella Brundin

Stenochironomus Kieffer

  aestivalis Townes LU
  brownii Townes A
  cinctus Townes LU
  hilaris (Walker) LU
  macavei (Malloch) LU
  poecilopterus (Mitchell) LU
  unicus Townes LU

Stictochironomus Kieffer

  caffarius group sp.
    [Chironomini genus B Pinder & Reiss]
    devincius (Say) LU
    palliatus (Coquillett) A
    *varius (Townes) *A
    *Sublettea Roback *
    [pinderi Steiner & Huibert] LU

Tanytarsus Wulp

  buckleyi Sublette A
  confusus Malloch A
  dendyi Sublette A
  guerius (Roback) A
  limneticus Sublette L

mendax Kieffer

  [xanthus Sublette] A
  neoflavellus Malloch A
  quadratus Sublette A
  recens Sublette A
  sp. A Epler LU
  sp. B Epler LU
  sp. C Epler LU
  sp. D Epler LU
  sp. E Epler LU
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  sp. P Epler LU
  sp. R Epler LU
  sp. S Epler LU
  sp. T Epler LU
  sp. U Epler LU
  sp. V Epler LU
  sp. W Epler LU

+? Tribelos Townes

  atrum (Townes) L
  fuscicorne (Malloch) L
  jucundum (Walker) L

Xenochironomus Kieffer

  xenolabis (Kieffer) L

Xestochnichromus Sublette & Wirth

  subletti Borkent

Zavreliella Kieffer

  marmorata (Wulp) L
    [varipennis Coquillett]

Chironomini genus A Roback

  Chironomini genus III Epler

Harnischia complex genus A Epler

Harnischia complex genus B Epler

Harnischia complex genus C Epler