

## Addendum to

Orendt C., Bendt, Th. (2021): **Orthocladiinae sensu lato (Orthocladiinae, Prodiamesinae, Diamesinae, Podonominae, Buchonomyiinae, Telmatogetoninae) (Diptera: Chironomidae). Keys to Central European larvae with respect to macroscopic characters.** - DGL-Arbeitshilfe (DGL Tools) 1-2021, 140 p. German Limnological Society (DGL) e. V., Essen. - ISBN 978-3-9818302-5-5.

Five years after publication, we revised the key for errors or improvements. It resulted in minor corrections or changes worth to be communicated to the readers. On one hand, a small number of details should be corrected or made clearer, on the other hand, only some drawings or photographs were replaced by more illustrative photographs, which became available in the meanwhile.

However, the book as it is can be used for correct determinations without restrictions, but it is advisable to the comments below into account.

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## General remarks

According to their investigations, Semechenko et al. (2024) suggested to elevate the Genus *Protanypus* (p. 18) to subfamily rank, which was before included in Diamesinae as a tribe. However, in this book, this was not aligned and included in this *Addendum* in order to keep the number of changes low.

Semenchenko, A.A., Cranston, P.S. & Makarchenko, E.A. (2024): A multi-locus phylogeny for the Diamesinae (Chironomidae: Diptera) provides new insights into evolution of an amphitropical clade. - Zoological Journal of the Linnean Society 202: 1–16.

## Corrections

| Page(s)    |                   |                                                                                                                                                                                                                  |
|------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>29</b>  | <b>Correction</b> | <b>Consideration and addition of <i>Corynoneura paludosa</i></b>                                                                                                                                                 |
| 36         | Exchange          | More illustrative photograph of antenna in 3rd row                                                                                                                                                               |
| <b>37</b>  | <b>Correction</b> | <b>Correct photograph of mentum of <i>Thalassosmittia</i></b>                                                                                                                                                    |
| 40         | Exchange          | Exchange of picture of posterior parapods of <i>Pseudosmittia</i> in 1st row                                                                                                                                     |
| 44         | Exchange          | Exchange of picture of <i>subnudus</i> gr.                                                                                                                                                                       |
| <b>51</b>  | <b>Correction</b> | <b>Exchange of picture of mentum of <i>Sympotthastia</i></b>                                                                                                                                                     |
| 62, 63     | Exchange          | Exchange of picture of mentum of <i>Psectrocladius calcaratus</i>                                                                                                                                                |
| 68, 70     | Exchange          | Exchange of picture of mentum and antenna of <i>Euryhapsis</i>                                                                                                                                                   |
| 76         | Exchange          | Exchange of picture of mentum of <i>Ch. femineus</i>                                                                                                                                                             |
| <b>77</b>  | <b>Correction</b> | <b>Addition of mentum of <i>P. smolandica</i>; correction of species name of <i>P. smolandica</i> (former and syn. <i>triquetra</i>)</b>                                                                         |
| 85         | Exchange          | Exchange of picture of antenna of <i>Heterotrissocladius</i> (2nd row)                                                                                                                                           |
| <b>90</b>  | <b>Correction</b> | <b>Change of the feature "Mandible" instead of "Eye spot"; change of text of mentum and anal setae in <i>Limnophyes</i> and <i>Mollerella</i>; change of pictures of mentum and antenna in <i>Mollerella</i></b> |
| <b>95</b>  | <b>Correction</b> | <b>Correction of "Labrum" in 1st row and correction of "<i>Cricotopus</i> (C.) <i>trifascia</i> gr." instead of "<i>Cricotopus</i> (I.) <i>trifascia</i> gr."</b>                                                |
| <b>96</b>  | <b>Correction</b> | <b>Correction of "<i>Cricotopus</i> (C.) <i>trifascia</i> gr." instead of "<i>Cricotopus</i> (I.) <i>trifascia</i> gr."</b>                                                                                      |
| 108        | Exchange          | Exchange of "Labrum" in 2nd and 3rd row                                                                                                                                                                          |
| <b>109</b> | <b>Correction</b> | <b>Exchange of "Mentum" in 2nd and 3rd row</b>                                                                                                                                                                   |
| <b>121</b> | <b>Correction</b> | <b>New arrangement of <i>N. rectinervis</i>, <i>dichromus</i> gr. and <i>parvulus</i> due to changes in "Anterior parapods"</b>                                                                                  |

# 13: Orthoclaadiinae

(long antennae)

29

## Head

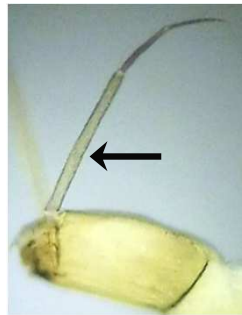
## Mentum

long, slender;

antenna **with 4 segments and longer** than head capsule



Bendt



***Corynoneura* sp.**

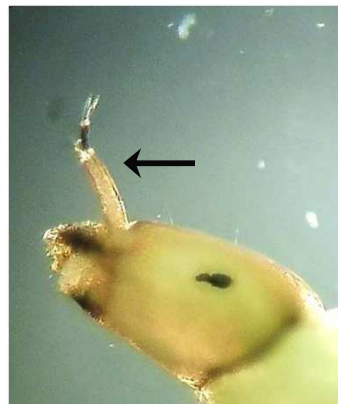
on various habitats in many sorts of water body types

longish, but not slender in appearance;

antenna with **5 segments and 1/2 to 3/4** head length



Bendt



the middle of the central teeth longer than the adjacent, or subequal, or only two central teeth;

bases of mentum **long**



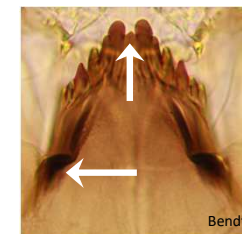
all Bendt

***Thienemanniella* sp.**

in flowing waters

the middle of the central teeth longer than the adjacent, or subequal, or only two central teeth;

bases of mentum **short**



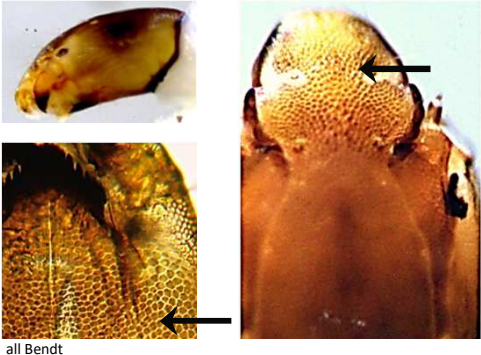
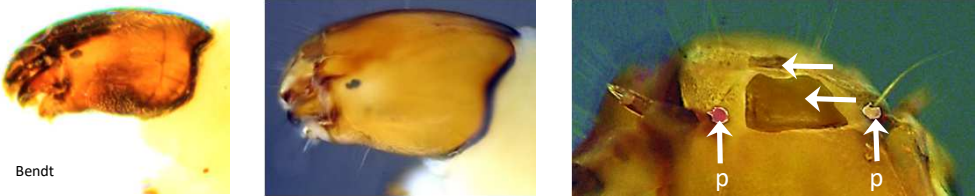
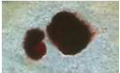
Bendt

***Corynoneurella paludosa***

## 20: Orthoclaadiinae (in part) - Telmatogetoninae

(no anal tubules, no procerci)

36

| Head                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Eyes                                                                                                                                                                                                             | Antenna                                                                        |                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>colour yellow or brownish or with a darkening on the upper side;</p> <p>long central <b>sclerite with coarsely granulate areas</b>, e.g. anterior to the long central sclerite; without sclerites anterior to the long central sclerite and seta-carrying pedestals; also other parts of the head reticulated</p> <div>  <p>all Bendt</p> </div> | <p>large hind spot nearly completely fused with small front spot</p> <div>  <p>Bendt</p> </div> | <p>4 segments</p> <div>  <p>Bendt</p> </div>     | <p><b><i>Thalassomya frauenfeldi</i></b><br/>(Telmatogetoninae)</p> <p>marine, intertidal zone</p>                                                                                                                     |
| <p>colour yellow; sometimes with darkening on the upper anterior part;<br/><b>2 distinct unpaired sclerites</b> anterior to the long central sclerite; in front of either anterolateral corner of the long central sclerite, a pedestal carrying a <b>strong seta (p)</b>; <b>no granulated areas</b></p> <div>  <p>Bendt</p> </div>              | <p>2 spots broadly touching</p> <div>  </div>                                                 | <p>4 segments</p> <div>  <p>Bendt</p> </div>   | <p><b><i>Telmatogeton japonicus</i></b><br/>(Telmatogetoninae)</p> <p>marine, intertidal zone</p> <p>Another species, <i>T. pectinatus</i>, is known only from France and the British Isles (Moller Pillot, 2013).</p> |
| <p>colour brown or dark brown; with lighter areas around the eyes;<br/><b>no sclerites</b> anterior to the long central sclerite and <b>no granulated areas</b></p> <div>  <p>Dettinger-K. both Tempelman</p> </div>                                                                                                                            | <p>large hind, small front spot</p> <div>  </div>                                           | <p>5 segments</p> <div>  <p>Bendt</p> </div> | <p><b>→ 21</b><br/><b>Orthoclaadiinae</b><br/>(in part)</p>                                                                                                                                                            |

# 21: Orthocladiinae

(no anal tubules, no procerci)

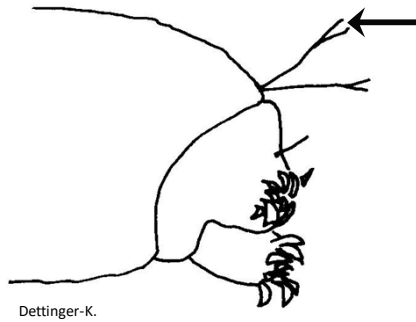
37

## Anal segment

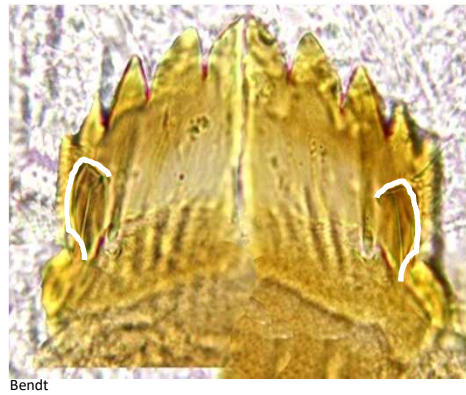
## Mentum

## Antenna

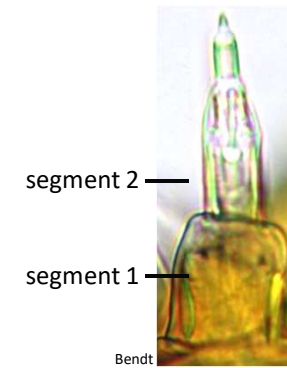
with 2-3 anal setae on either side of the dorsal midline



ventromental plates extended in a wing-like manner



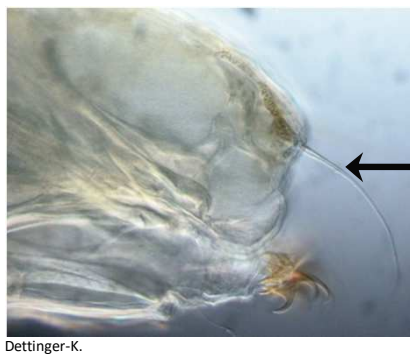
1st segment longer than wide, 2nd segment about as long as wide



***Thalassosmittia thalassophila***

marine, intertidal zone

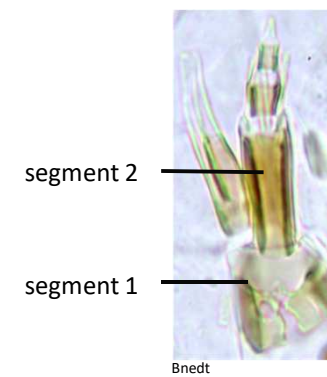
with 1 strong anal seta on either side



ventromental plates not extended



1st segment longer than wide, 2nd segment about as long as wide



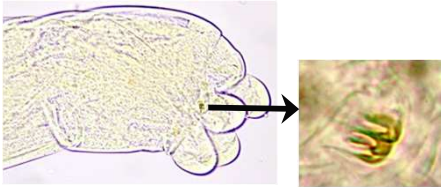
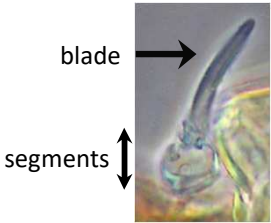
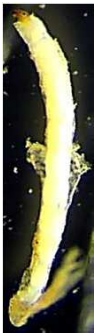
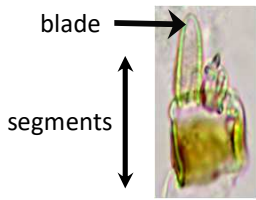
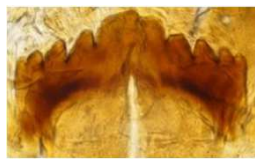
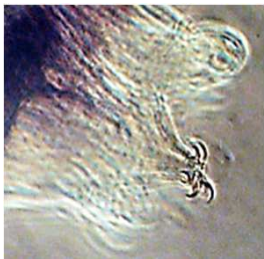
***Clunio sp.***

marine, intertidal zone

# 24: Orthocladiinae

(procerci absent, anal tubules present)

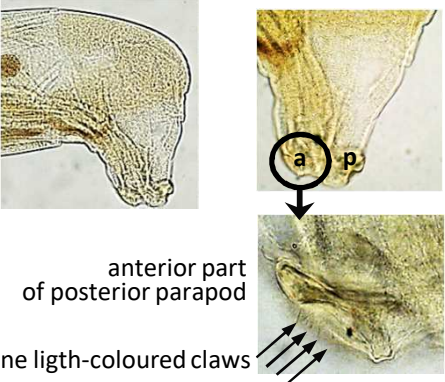
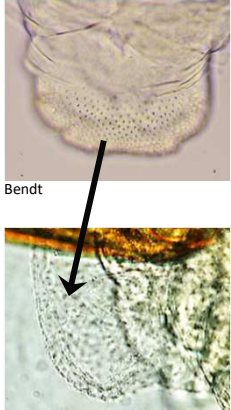
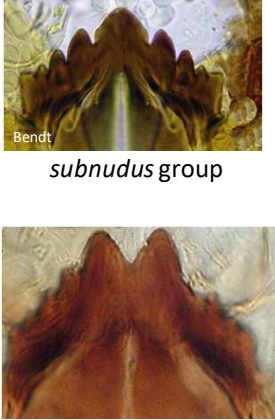
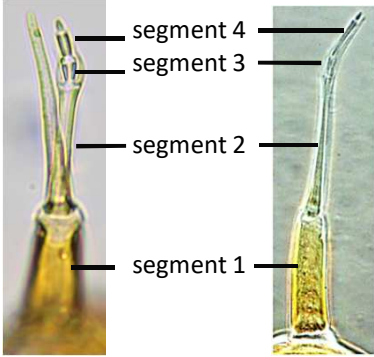
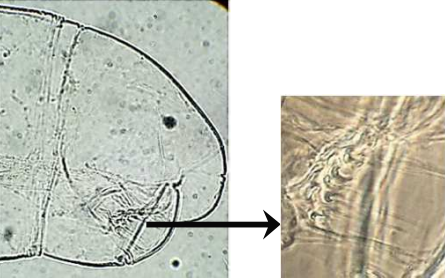
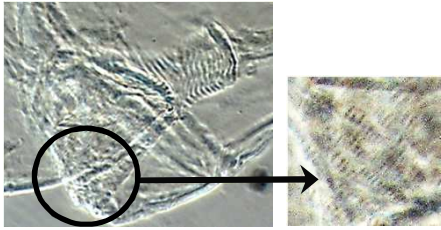
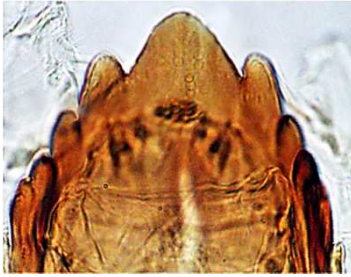
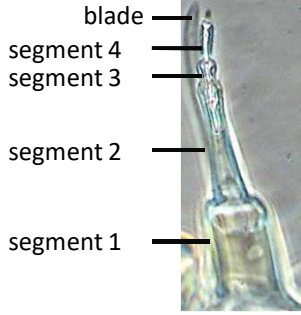
40

| Posterior parapods                                                                                                                                                                                                                                                       | Antenna                                                                                                                                                                            | Body                                                                                                                                         | Mentum (  )                                                                                                                                                   |                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <p>absent or not discernable;<br/>with 0-5 claws</p>                                                                                                                                     | <p>blade <b>much longer</b> than<br/>segments 2-4 together</p>                                                                                                                     | <p>pale</p>                                               |                                                                                                                                                               | <p><b><i>Pseudosmittia</i> sp.</b></p> <p>wet grassland, near water-air interface and above; also common in brackish waters</p> |
| <p>present, with 7-12 claws</p>  <p>Namayandeh et al.</p>  <p>from Ferrington &amp; Sæther (2011)</p> | <p>antennal blade <b>extending beyond flagellum</b>; half as broad as 1st segment</p>                                                                                             | <p>pale</p>                                                                                                                                  |  <p>from Ferrington &amp; Sæther (2011)</p>  <p>Namayandeh &amp; Culp</p> | <p><b><i>Hydrosmittia</i> sp.</b></p> <p>springs and wet grassland, near water-air interface and above; semiterrestrial</p>     |
| <p>present, with 7-12 claws</p>                                                                                                                                                       | <p><b>very small</b>; not detectable with dissection microscope; 1st segment wider than high; blade as long as width of basal segment and a little longer than last segment</p>  | <p>pale, with darker reddish colouration on thorax</p>  |                                                                                                                                                             | <p><b><i>Allocladius</i> sp.</b></p> <p>wet grassland, near water-air interface and above; semiterrestrial</p>                  |

# 28: Orthocladiinae

(no proceri, anal setae and anal tubules)

44

| Posterior end                                                                                                                                                                                                                                                                                        | Anterior parapods (  )                                                             | Mentum                                                                                                                                | Antenna                                                                                                                                                                                                                                                  |                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| <p><b>bent 90°;</b><br/>parapods <b>present</b>, divided in 2 parts (a, p), the anterior (a) of them sometimes with small fine claws</p>  <p>anterior part of posterior parapod</p> <p>fine ligth-coloured claws</p> | <p><b>present</b> and fused,<br/><b>no claws, but fine setae</b></p>  <p>Bendt</p> | <p><b>1 (subnudus group) or 2</b><br/>median teeth with conspi-<br/>cuous ventromental plates</p>  <p>Bendt</p> <p>subnudus group</p> | <p>segment 1 <b>longer than wide</b>;<br/>segment 2 as long as 1;<br/>segment 4 subequal to, or<br/>much longer than 3</p>  <p>segment 4</p> <p>segment 3</p> <p>segment 2</p> <p>segment 1</p>                                                          | <p><b><i>Gymnometrio-<br/>cnemus</i> sp.</b></p> <p>semi-terrestrial</p> |
| <p><b>straight</b>, not bent 90°;<br/>parapods short but separate, bearing<br/>few simple claws</p>                                                                                                                | <p><b>present</b> and fused with few simple<br/>claws</p>                       | <p><b>1</b> median tooth;<br/>ventromental plates small</p>                                                                         | <p>segment 1 <b>as long as wide</b>;<br/>segment 2 as long as 1 or a<br/>little longer; segment 4<br/>longer than 3; blade a little<br/>longer than last segment</p>  <p>blade</p> <p>segment 4</p> <p>segment 3</p> <p>segment 2</p> <p>segment 1</p> | <p><b><i>Mesosmittia<br/>flexuella</i></b></p> <p>semi-terrestrial</p>   |

# 35: Diamesinae

(Proceri and anal tubules present, antennal segment 3 annulated)

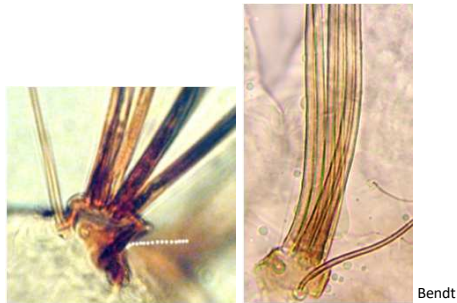
51

Proceri

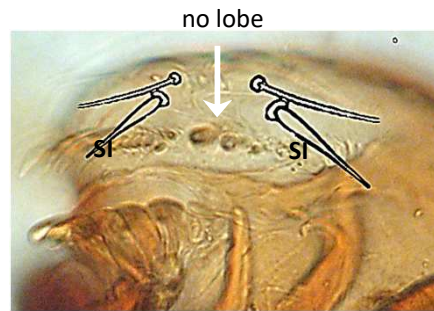
Labrum 

Mentum 

sclerotized or not



**no lobes** under the SI setae



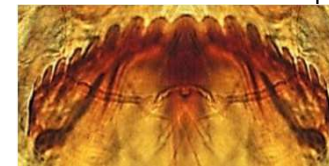
*Syndiamesa hygropetrica*

of **pale** colour, nor or only proximal part of the ventral side of the head darkened;

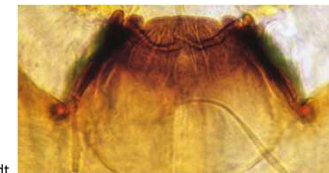


*Diamesa* sp.

with 3 or 4 (also fused to 1 broad) median teeth and 8-10 pairs of lateral teeth;



ventromental plates small

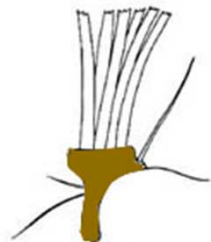


Bendt

→36

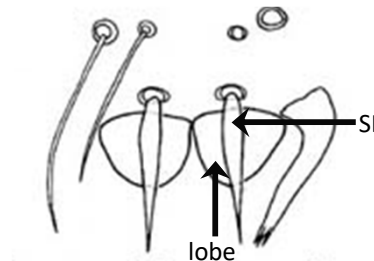
*Syndiamesa* sp.  
*Diamesa dampfi* group

normally strongly sclerotized



from Andersen et al. (2013)

**2 transparent lobes** under the SI setae



from Andersen et al. (2013)

of **brown or black** colour;  
with 2 median teeth and 8-10 pairs of lateral teeth;  
ventromental plates conspicuous, partially covering the posterior lateral teeth



Schiffels



Wenzl



Wenzl

***Sympotthastia* sp.**

springs and cool flowing waters (Andersen et al., 2013)

# 46: Orthocladiinae

62

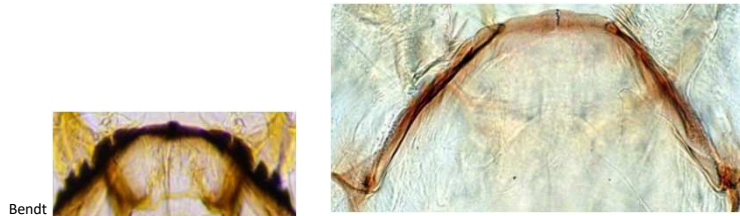
(Abdominal setae simple or inconspicuous, 1 median tooth on mentum, beard present, procerci with projections)

## Mentum

## Labrum

## Mandible ( )

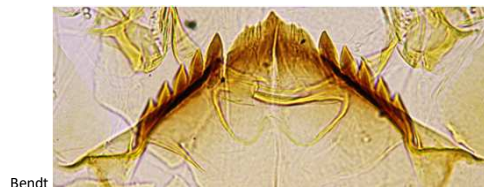
**2 very broad and flat** median teeth, narrowly separated by a small incision (sometimes appearing as 1 very broad tooth)



**2 broad** median teeth, narrowly separated, but **appearing as 1 very broad tooth** (sometimes more incisions)



**or 1** median tooth with a **tip**



**or 1** median tooth apically notched



SI with 3-4 teeth



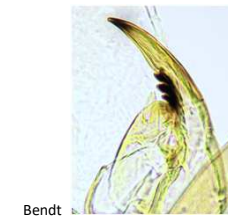
SI with 6-9 teeth or palmate



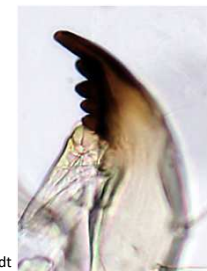
frontal view



apical tooth **long** compared to combined inner teeth (approx. 2.5 x as long)



apical tooth **short** compared to combined inner teeth (approx. 1.8 as long or shorter)



## *Psectrocladius* (*Allopsectrocladius*) sp.

P. (A.) platypus: mandible with seta interna  
P. (A.) obivus: mandible without seta interna  
Both species on plants and in detritus in slowly flowing or stagnant water;  
P. (A.) platypus frequently also in acidic waters

## →47

*Psectrocladius* (in part)

# 47: Orthocladiinae

63

(Abdominal setae simple or inconspicuous, 1 median tooth on mentum, beard present, procerci with projections)

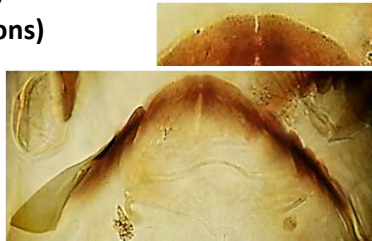
Mentum 

Procerci (  )

Labrum 

Mandible (  )

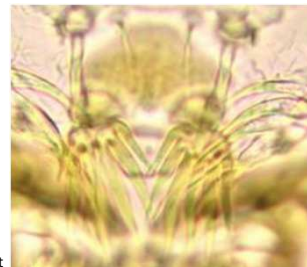
**2 broad** median teeth, narrowly separated, but **appearing as 1 very broad tooth** (sometimes more incisions)



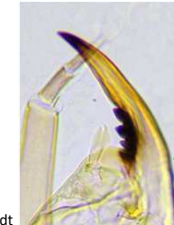
1-4 large dark spurs



SI with 6-9 teeth



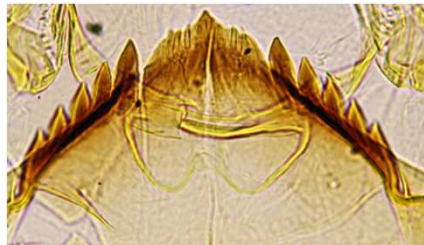
apical tooth **long** compared to combined inner teeth (approx. 1.8 x as long)



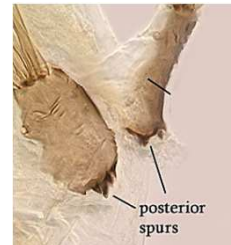
***Psectrocladius***  
**(*Mesopsectrocladius*)**  
***barbatipes***

oligotrophic lakes and pools

**1 median tooth with a tip**



some small spurs or tubercles  
sometimes difficult to see



SI palmate



apical tooth **short** compared to combined inner teeth (< 1.8 x as long)



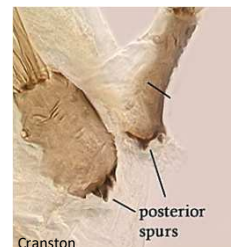
***Psectrocladius***  
**(*Monopsectrocladius*)**  
***calcaratus***

northern, montane, and submontane lakes, also moorland waters

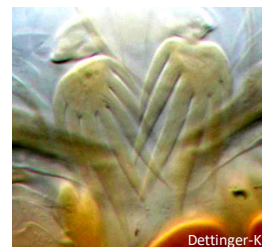
**1 median apically notched tooth**



some small spurs or tubercles  
sometimes difficult to see



SI palmate



apical tooth **short** compared to combined inner teeth (< 1.8 x as long)



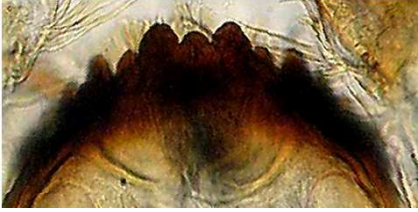
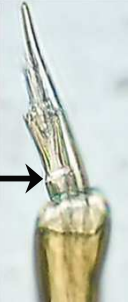
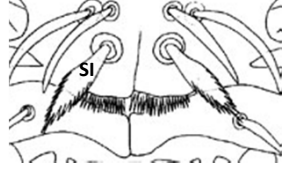
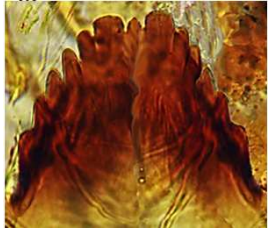
***Psectrocladius***  
**(*Psectrocladius*)**  
***psilopterus* group**

on bottom and plants of slow-flowing and standing waters of various size, also temporary pools

# 52: Orthocladiinae

(Abdominal setae simple or inconspicuous, 1 median tooth on mentum)

68

| Antenna                                                                                                                                                                                                                                                                                                            | Head                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Mentum (  )                                                                                                                                                                                           | Labrum                                                                                                                                                                                                                                                                                          |                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| segment 1 ca. <b>6 x</b> the length of segment 2; segment <b>2 not separated</b> into 2 parts; blade reaching end of segment 3<br>                                                                                                | of stout outline; ventrally and dorsally <b>of the same light</b> colour; 2 small eyespots in front of 1 large hind spot<br><br><br>Dettinger-K.                                                                                                                                                                                            | median tooth ca. 1/2 as wide as 1st lateral teeth<br>                                                                                                                                                  | seta SI <b>bifid</b><br><br>Dettinger-K.                                                                                                                                                                     | <b><i>Orthocladius (Pogonocladus) consobrinus</i></b><br><br>on plants and mineral sediments of the littoral and subitonal zone of lakes, rare in running waters |
| segment 1 ca. 2,5 x the length of segment 2; segment <b>2 separated into 2 parts</b> ; blade as long as segment 2-4 or longer →<br>                                                                                              | <b>longish</b> in outline; ventrally and dorsally <b>of the same colour</b> or <b>dark ventrally</b> ; 1 small eye spot in front of 1 large hind spot<br><br><br><br> | median tooth ca. 1/2 as wide as 1st lateral teeth <b>or less</b><br><br>                                          | seta SI <b>plumose</b><br><br>from Andersen et al. (2013)                                                                                                                                                   | <b><i>Brilia</i> sp.</b><br><br>→53                                                                                                                              |
| segment 1 ca. 1 or 3 x the length of segment 2; segment <b>2 not separated</b> into 2 parts; blade (b) 1/2 the length of segment 2 <b>or much longer</b> than segments 2-4<br><br>Bendt<br><br>both from Andersen et al. (2013) | head <b>uniformly</b> pale to brown; 1 small eye spot in front of 1 large hind spot                                                                                                                                                                                                                                                                                                                                                                                                                           | median tooth less than ca. 1/2 as wide as 1st lateral teeth<br><br>from Andersen et al. (2013)<br><br>Bendt<br> | seta SI <b>plumose, with comb-like labral lamellae</b><br><br><br><b>or simple</b><br><br>from Andersen et al. (2013) | <br><br>→54<br><br><i>Euryhopsis</i><br><i>Eurycnemus</i>                                                                                                        |

# 60: Orthocladiinae

(Abdominal setae simple or inconspicuous, 1 median tooth on mentum)

76

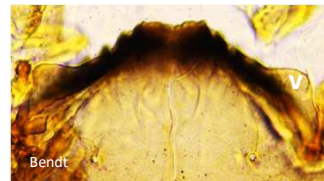
## Mentum ( )

5 pairs of lateral teeth; all teeth of the **same dark colour**;  
with **large or very large ventromental plates (v)**



*Ch. dentiforceps gr.*

This is an abraded variety.  
2 close median, if not abraded;  
see table 75.



*Ch. femineus*

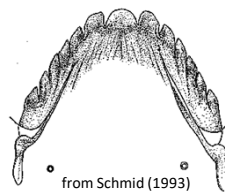
4 or 5 pairs of lateral teeth; all teeth of the **same dark colour**



**6 or more** pairs of lateral teeth;  
all teeth of the same dark colour



Dettinger-K.



from Schmid (1993)



Dettinger-K.

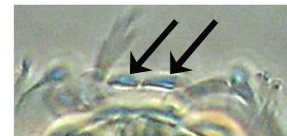


## Labrum ( )

SI serrated **or** bushy,  
**with 2 small scales**  
in between



*Chaetocladius piger*



*Ch. femineus*

*Ch. dentiforceps gr.*  
(frontal view)

from Moller Pillot (2009)



***Chaetocladius***  
***dentiforceps* group**

***Chaetocladius***  
***femineus***

syn. *Ch. sp.* Herkenbosch in  
Moller Pillot (1984) accord-  
ing to Moller Pillot (2013);  
acid upper courses or pools

SI simple



from Schmid (1993)

***Eukiefferiella* sp.**  
(in part)

➔ **B1** *Eukiefferiella*

SI simple or seeming so  
(i. e. with the 2nd branch  
hardly visible)



from Schmid (1993)

**or**

bifid



Berndt

***Cricotopus* and**  
***Orthocladus***

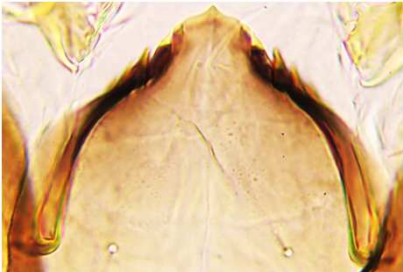
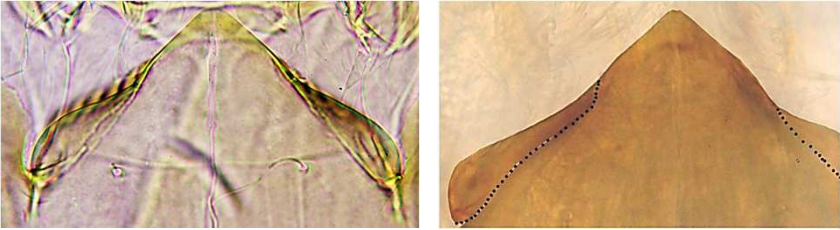
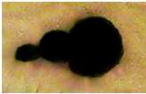
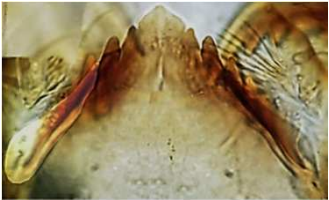
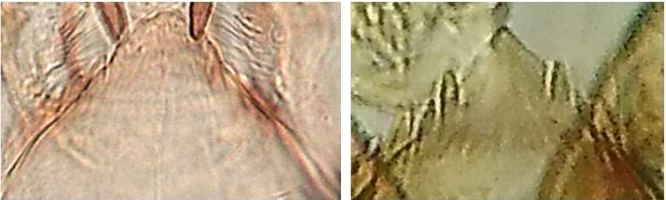
➔ **A1** *Cricotopus*/  
*Orthocladus*

Experience and thorough  
examination is needed,  
for further identification!  
For northwest European  
species see Cuppen &  
Tempelman (2018)

# 61: Orthocladiinae

(Abdominal setae simple or inconspicuous, 1 median tooth on mentum)

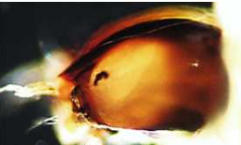
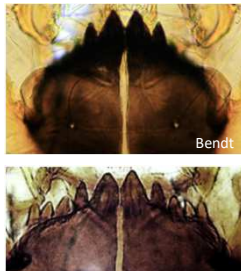
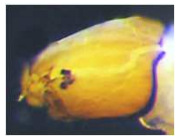
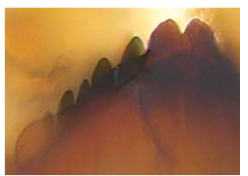
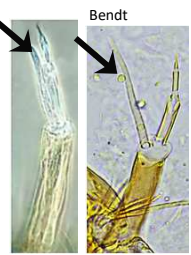
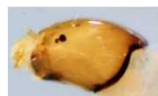
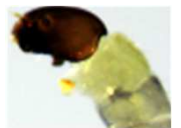
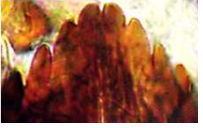
77

| Eyes                                                                                                                                                | Mentum (  )                                                                                                                                                                                                                                                                                                                                  | Head colour                                                                                                                            | Labrum                                                             |                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <p>small front nearly fused with large hind spot</p>  <p>Bendt</p> | <p>median tooth with a pointed tip or rounded (if abraded), very broad and high; 5-6 pairs of lateral teeth; ventromental plates large, extending to outermost lateral teeth</p>  <p>Bendt</p>                                                                                                                                              | <p>pale, light brownish to yellow</p>  <p>Bendt</p> | <p>S1 pectinate</p>  <p>from Schmid (1993)</p>                     | <p><b><i>Stilocladius montanus</i></b></p> <p>Alpine mountain springs, brooks, and rivers</p>                          |
| <p>3 completely fused spots</p>                                    | <p>median tooth very wide, at least 1/3 of the mentum width, triangular and paler than the hidden lateral teeth</p>                                                                                                                                                                                                                        | <p>yellow to brown</p>  <p>Bendt</p>               | <p>S1 branched or serrated</p>  <p>from Andersen et al. (2013)</p> | <p><b><i>Parakiefferiella smolandica</i></b><br/>syn. <i>triquetra</i><br/>(see Moller Pillot, 2013)</p> <p>brooks</p> |
| <p>3 completely fused spots</p>                                  | <p>median tooth approx. as wide as 3 lateral teeth or less; paler than lateral or of the same colour; rounded with rather small lateral notches or with an apical nose</p> <div> <div> <i>P. bathophila</i>  </div> <div> other species  </div> </div> | <p>brown</p>  <p>Bendt</p>                        | <p>S1 branched or serrated</p>  <p>Bendt</p>                     | <p><b><i>Parakiefferiella</i> sp.</b><br/>(other species)</p> <p>→ F <i>Parakiefferiella</i></p>                       |

# 69: Orthocladiinae

85

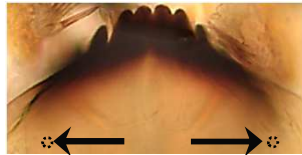
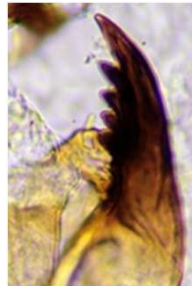
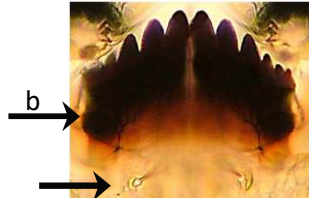
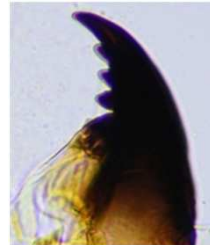
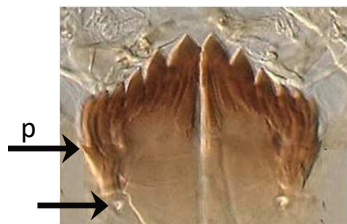
(Abdominal setae simple or inconspicuous, 2 median teeth on mentum, no conspicuous beard)

| Head                                                                                                                                                                                                                                                                                                             | Mentum                                                                                                                                                                                                                                                                                                                                                                                  | Antenna                                                                                                                                       | Body                                                                                                                                                                                                                                                                                                                                   | Labrum                                                                                                                                                                                                                                      |                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>dark brown, with pale 'cheeks'</p>                                                                                                                                                                                           | <p><b>4 pairs of lateral teeth; 2 median teeth</b> wider than the 1st laterals</p>                                                                                                                                                                                                                                                                                                      | <p><b>blade subequal to</b> segment 2-5 combined; 7 segments; <b>the last very thin</b> (examine thoroughly)</p>                              | <p>pale</p>                                                                                                                                                                                                                                         | <p>no lamellae between SI</p>                                                                                                                                                                                                               | <p><b><i>Paratrissocladius excerptus</i></b></p> <p>upper reaches of streams of mountain and hilly regions, rarely recorded from large rivers and lakes</p>                |
| <p>uniformly yellow (if ventral side dark: <i>H. marcidus</i> group, see table 6)</p>                                                                                                                                          | <p><b>5 pairs of lateral teeth; 2 median teeth</b> wider than the 1st laterals</p>                                                                                                                                                                                                                                                                                                     | <p><b>blade longer or shorter than</b> segment 2-5 combined; 7 segments; <b>the last very thin</b> (examine thoroughly)</p>                  | <p>pale</p>                                                                                                                                                                                                                                        | <p>with small lamellae (II) between SI</p>  <p>from Schmid (1993)</p>                                                                                                                                                                      | <p>→70</p> <p><i>Heterotrissocladius</i> (in part)</p>                                                                                                                     |
| <p>uniformly dark, pale or with brownish shadows</p>    | <p><b>5 pairs of lateral teeth; 2 median teeth</b>, wider, equal or as small as than the 1st laterals</p>   <p>abraded</p>   | <p><b>blade longer or shorter than</b> segment 2-5 combined or subequal; 5-6 segments, <b>the last not very thin</b> (easy to observe)</p>  | <p>pale or with red-dish, brown or grey stains</p>    <p>both Bendt</p> | <p><b>with or without</b> small lamellae (II) between SI</p>    | <p>→71</p> <p><i>Eukiefferiella</i><br/> <i>Tokunagaia</i><br/> <i>Hydrobaenus</i><br/> <i>Limnophyes</i><br/> <i>Mollerella</i><br/> <i>Chaetocladius piger</i> group</p> |

# 74: Orthocladiinae

90

(Abdominal setae simple or inconspicuous, 2 median teeth on mentum, no conspicuous beard)

| Posterior end                                                                                                                                                                                                                    | Mentum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Antenna                                                                                                                                                                    | Mandible                                                                                        |                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>procerci <b>well developed</b>; as high as wide; sclerotized; setae ca. as long as the segment bearing them or longer</p>                    | <p><b>4 smaller median teeth</b>; when abraded, appearing as 1 broad tooth;<br/>6 pairs of lateral teeth, but the outermost not easy to discern;</p> <p>ventromental plates <b>conspicuous</b>; setae submenti placed <b>between the bases</b> of the ventromental plates (as in <i>Chaetocladus piger</i>)</p>  <p><i>H. lugubris</i> group</p>  <p><i>H. pilipes</i> group<br/>from Moller Pillot (2009)</p> | <p>6 segments;<br/>blade as long as segment 2-5 combined;<br/>ring organ (r) close to base,<br/><b>1</b> setae mark (s) ca. in the middle of the segment</p>  <p>Bendt</p> | <p>3 inner teeth</p>                                                                            | <p><b><i>Hydrobaenus</i> sp.</b></p> <p>on sand, stones, or plants in small brooks (<i>pilipes</i>); small temporary water bodies, esp. in inundated floodplains (<i>lugubris</i>)</p>                                                                                                |
| <p>procerci <b>well developed</b>; as high as wide; sclerotized on backside; setae ca. as long as the segment bearing them (150 - 450 µm)</p>  | <p><b>2 median teeth</b>, at least as wide as the 1st laterals;<br/>5 pairs of lateral teeth, but only the uppermost easy to discern;</p> <p>no small process, laterally;</p> <p>ventromental plates <b>narrow</b>, with a <b>bulbous swelling (b)</b>; setae submenti placed <b>below the bases</b> of the ventromental plates</p>                                                                                                                                                             | <p>5 segments;<br/>blade a little <b>longer</b> than or subequal to segments 2-5 combined;</p> <p>ring organ and <b>2</b> setae marks close together</p>  <p>Bendt</p>    | <p>3 (sometimes 4) inner teeth</p>                                                             | <p><b><i>Limnophyes</i> sp.</b></p> <p>living larvae with only weak greenish, blue or violet streaks on abdomen (Klink et al., 2020)</p> <p>hygropetric, semi-terrestrial or terrestrial in temporary water bodies, springs, wet soil, wet grassland, near or above the waterline</p> |
| <p>procerci <b>small</b>; not sclerotized; setae shorter as the segment bearing them (66 - 117 µm)</p>  <p>Klink</p>                           | <p><b>2 median teeth</b>, ca. as wide as the 1st laterals;<br/>5 pairs of lateral teeth, but only the uppermost easy to discern;</p> <p>laterally, a <b>small process (p)</b>; ventromental plates <b>narrow</b>, but <b>not swollen</b>; setae submenti placed <b>below the bases</b> of the ventromental plates</p>  <p>Schiffels</p>                                                                                                                                                        | <p>5 segments;<br/>blade &gt; 2 x length of the flagellum or <b>longer</b> than segments 2-5 combined;<br/>3 large ring organs, the basal ones higher than wide</p>      | <p>4 inner teeth; the innermost may be small and/or fused with the base</p>  <p>Schiffels</p> | <p><b><i>Mollerella calcarella</i></b></p> <p>living larvae with violet spots on both thorax and abdomen (Klink et al., 2020)</p> <p>woodland waters near or above the waterline (Klink et al., 2020)</p>                                                                             |

# A1: Cricotopus/Orthocladius

95

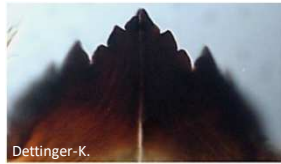
## Mentum

## Labrum

## Antenna

## Body setae (abdomen)

the 1st, 2nd and 6th of the 6 pairs of lateral teeth strongly reduced **or** the first 3 or 5 pairs protruding



pecten epipharyngis with 3 or 5 simple narrow scales **or** one conical and 2 reduced toothlets joined proximally to the conical scale

*obnixus* gr.,  
*brevipalpis*



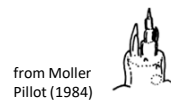
*trifascia* gr.



*pilitarsis*



1st segment 1x, 1.5 x or >2 x as long as wide



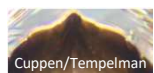
posterior end of segment, with a **bundle** of 8-15 long or very short setae; **or absent**



→ A2

*Cricotopus (C.) trifascia* gr.  
*Cricotopus (I.) pilitarsis*  
*Cricotopus (I.) obnixus* gr.  
*Cricotopus (I.) brevipalpis* gr.

6 lateral teeth; 2nd lateral very small, fused with the 1st lateral **or** very broad middle tooth and reduced 1st lateral **or** all laterals of the same size



pecten epipharyngis with 3 simple narrow scales (*O. holsatus*) **or** 3 broad scales, central one with 2 lateral incisions or teeth (arrow)



1st segment 2 x and > 2 x as long as wide



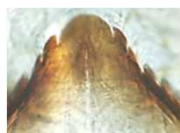
posterior end of segment, with a **bundle** of 3-30 long or short setae



→ A3

*Cricotopus (Isocladius)* (in part)  
*Orthocladius* (*Symposiocladius*)  
*holsatus*

6 lateral teeth or more; all laterals of the same size



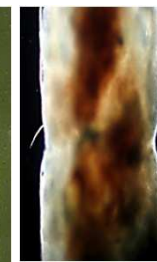
scales of pecten epipharyngis simple, equally narrow or broader **or** 1 narrow central and 2 outer broad brownish scales (*C. lygropis*)



1st segment 2 x or >2x as long as wide ; or shorter than 0.4 x length of mandible



**only single or no setae**

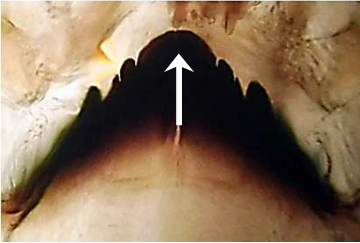
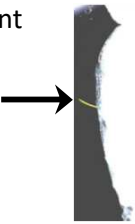
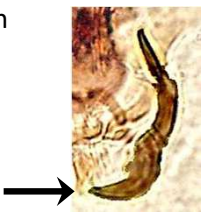
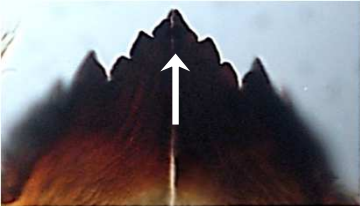
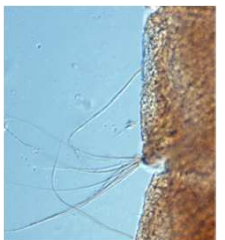
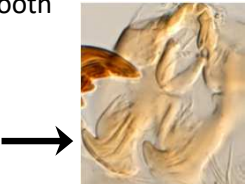


→ A6

*Cricotopus (Cricotopus)*  
*Orthocladius*

# A2: Cricotopus/Orthocladius

96

| Mentum                                                                                                                                            | Antenna                                                                             | Body setae (abdomen)                                                                                                  | Labrum                                                          |                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>the 1st, 2nd and 6th of the 6 pairs of lateral teeth strongly reduced; median tooth up to 6 x wider than 1st laterals</p>                      | <p>1st segment &gt;2 x as long as wide; 2nd segment somewhat medially widened</p>  | <p>setae at the posterior end of the segment <b>very short or absent</b></p>                                          | <p>premandible with 1 tooth</p>                                 | <p><b><i>Cricotopus (C.) trifascia</i> group</b></p> <p>hard substrates, rheophilic</p>                                                        |
| <p>the 1st, 2nd and 6th of the 6 pairs of lateral teeth strongly reduced; median tooth up to 3 x wider than 1st laterals</p>  <p>Dettinger-K.</p> | <p>1st segment &gt;2 x as long as wide; 2nd segment not widened</p>  <p>Bendt</p>  | <p>posterior end of segment with a bundle of setae, as long as the segment</p>  <p>Bendt</p>                          | <p>premandible with 2 teeth</p>  <p>Dettinger-K.</p>            | <p><b><i>Cricotopus (I.) pilitarsis</i></b><br/>(= sp. 'Jasmunder Bodden' in Orendt et al., 2013)</p> <p>lakes and brackish coastal waters</p> |
| <p>5 uppermost teeth protruding</p>  <p>Cuppen/Tempelman</p>                                                                                     | <p>1st segment 1.5 x as long as wide</p>  <p>from Moller Pillot (1984)</p>       | <p>a bundle of 8-15 setae, as long as the segment</p>  <p>Cuppen/Tempelman</p>                                       | <p>premandible with 1 tooth</p>  <p>Cuppen/Tempelman</p>      | <p><b><i>Cricotopus (I.) obnixus</i> group</b></p> <p>water plants<br/>(Moller Pillot, 2009)</p>                                               |
| <p>3 uppermost teeth protruding</p>  <p>from Hirvenoja (1973)</p>                                                                               | <p>1st segment as long as wide</p>  <p>from Hirvenoja (1973)</p>                 | <p>posterior end of segment with a bundle of ca. 10 setae, as long as the segment</p>  <p>from Hirvenoja (1973)</p> | <p>premandible with 1 tooth</p>  <p>from Hirvenoja (1973)</p> | <p><b><i>Cricotopus (I.) brevipalpis</i> group</b></p> <p>mining in <i>Potamogeton</i> leaves<br/>(Moller Pillot, 2009)</p>                    |

# B1: Eukiefferiella

(1 median tooth on mentum)

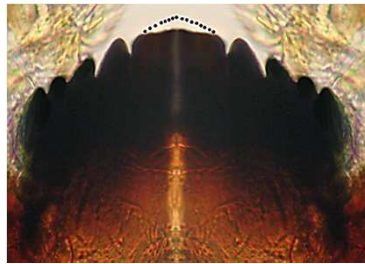
108

Mentum 

Labrum 

Head

4 lateral teeth



SIII bifid



stout;

light to dark brown



***Eukiefferiella devonica* group**

on plants, stones and gravel, mainly brooks and small rivers, but also collected in large rivers and lakes, occasionally

5 lateral teeth;  
median tooth >3 x as wide as 1st laterals



SIII simple



slender;

yellow with dark brown margin



or brown

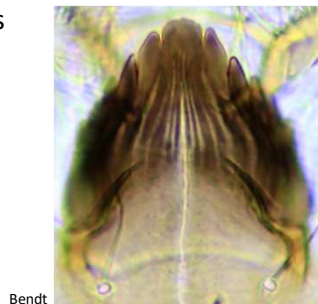


→B2

***Eukiefferiella gracei* group**

confusing taxon (mentum, head colour, habitat): *Cardiocladius*  
Discerning characters are the procercal setae : in *C.*: 2 strong and some small; in *E. gracei* gr. all of +/- the same size

5 lateral teeth;  
median tooth <2.5 x as wide as 1st laterals



SIII simple



stout;

brown



***Eukiefferiella brevicar* group**

on plants and stones in running waters and springs, occasionally hygropetric

## B2: Eukiefferiella

(1 median tooth on mentum)

109

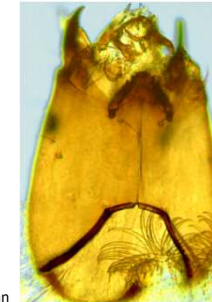
Mentum 

Head colour

median tooth  $>4$  x as wide as 1st lateral



yellow;  
posteriorly, a broad dark  
margin



Termelman

*Eukiefferiella gracei*

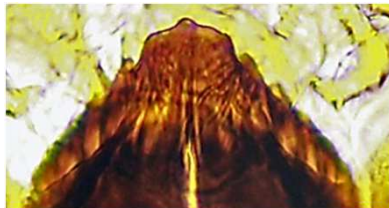
mainly on gravel and stones  
overgrown with moss and  
Aufwuchs in brooks, rare in  
rivers and lakes

median tooth  $<4$  x as wide as 1st laterals;  
with a distinct **hump** in the middle  
(may be abraded!)



abraded

both Bendt



brown to dark brown

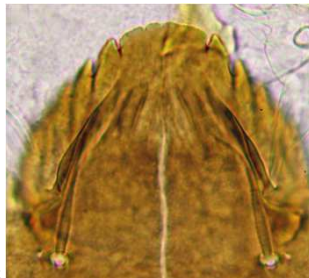


Bendt

*Eukiefferiella similis*

fast flowing streams

median tooth  $>4$  x as wide as 1st laterals;  
without a distinct hump  
in the middle



Bendt

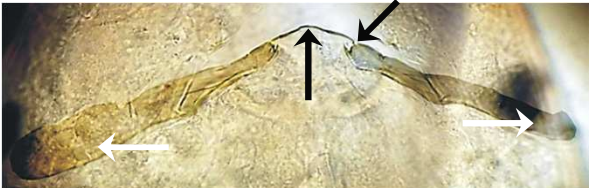
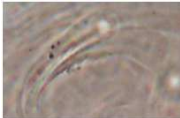
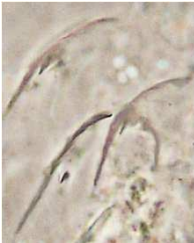
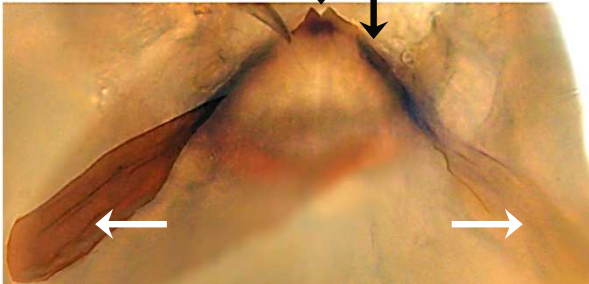
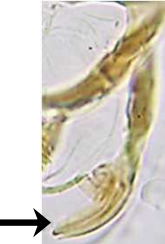
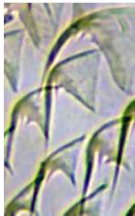
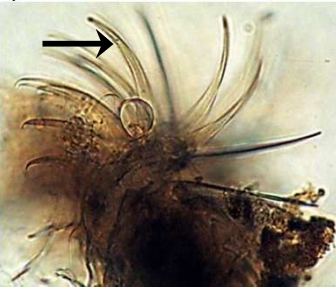
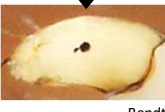
brown to dark brown



Bendt

*Eukiefferiella  
minor/fittkaui*

on stones and mosses in fast  
flowing mountain brooks; in  
northern and probably montane  
regions rare in lakes

| Mentum                                                                                                           | Labrum                                                               | Anterior parapods                                                                                                              | Antenna                                                                                                | Head                                                                                                                            |                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <p>ventromental plates <b>strongly transverse</b>; median and lateral teeth very small, hard to discern</p>       | <p>premandible with <b>3-5</b> apical teeth</p>  <p>frontal view</p> | <p>claws weakly serrated or smooth</p>       | <p>1st segment 1.5 x the length of the combined following segments</p> <p>or shorter</p>  <p>Bendt</p> |                                                                                                                                 | <p><b><i>Nanocladius balticus</i></b></p> <p>lakes</p>                                                               |
| <p>median and lateral teeth <b>strong, easy to discern</b>; ventromental plates in a more diagonal position</p>  | <p>premandible with <b>1</b> apical tooth</p>  <p>Bendt</p>        | <p><b>claws strongly serrated</b>; the longest inner tooth nearly as long as the apical</p>                                    | <p>1st segment 1.35-1.6 x the length of the combined following segments</p>                            | <p>dorsally rounded</p>  <p>Bendt</p>        | <p><b><i>Nanocladius rectinervis</i></b></p> <p>in flowing water</p>                                                 |
|                                                                                                                                                                                                   |                                                                                                                                                       |                                                                                                                                                                                                                   | <p>1st segment 2.35 x the length of the combined following segments</p>                                                                                                                   |                                                                                                                                 | <p><b><i>Nanocladius parvulus</i></b></p> <p>crenal, epirhital (Janecek, 2007)</p>                                   |
|                                                                                                                                                                                                   |                                                                                                                                                       | <p>claws weakly serrated or smooth</p>   | <p>1st segment 1.7-2.1 x the length of the combined following segments</p>                           | <p>dorsally sharply bent</p>  <p>Bendt</p> | <p><b><i>Nanocladius dichromus</i> group</b></p> <p>potamal (rarely metarhital), standing waters (Janecek, 2007)</p> |