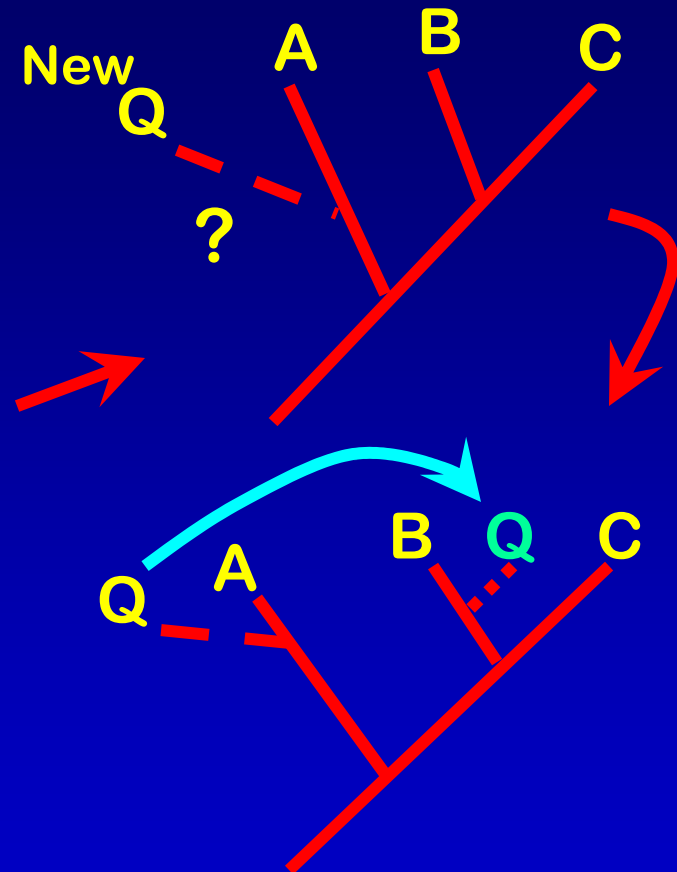
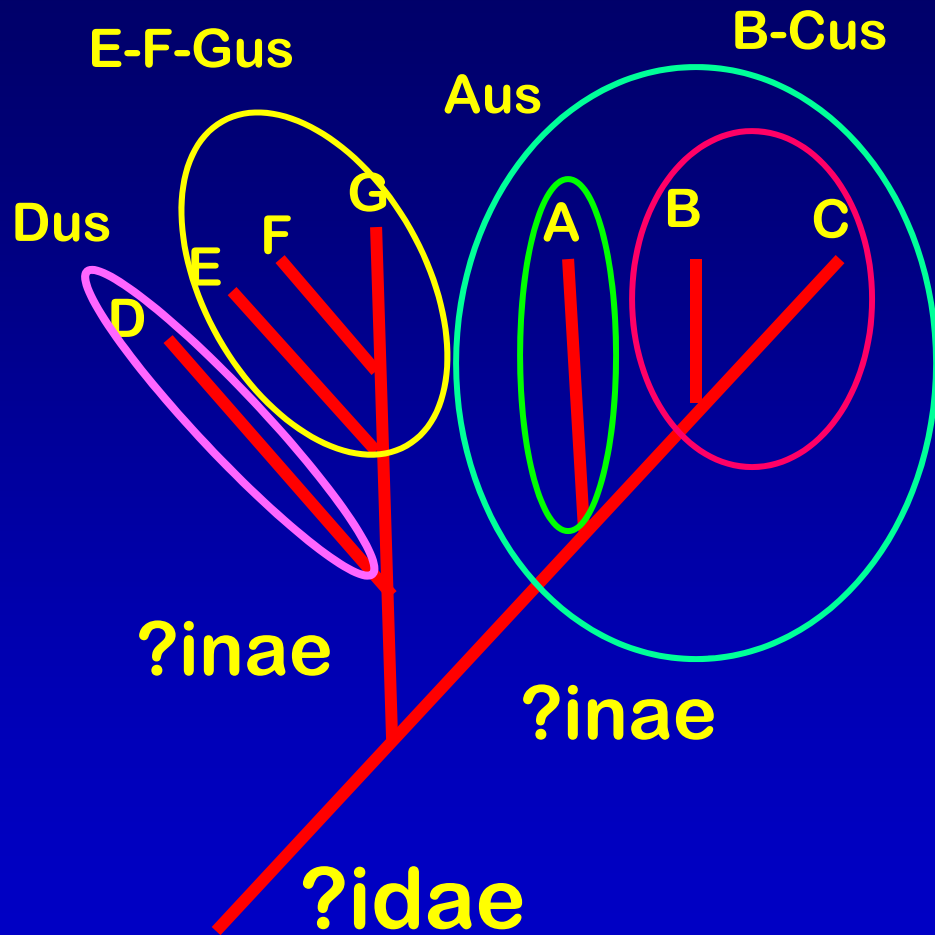


NEAEB 2010 E.P.T. Taxonomy Workshop: Updates and Assistance with Common Taxonomic Problems



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Southern Connecticut State University
New Haven, CT USA
Burians1@southernct.edu

Taxonomy and Phylogeny



Baetidae of New England and Atlantic Canada

**Acentrella turbida*

**A. parvula*

**Acerpenna*

macdunnoughi

**A. pygmaea*

**Baetis*

brunneicolor

**B. flavistriga*

**B. intercalaris*

**B. pluto*

B. rusticans

**B. tricaudatus*

Callibaetis

ferrugineus

C. fluctuans

C. pallidus

**C. pretiosus*

C. skokianus

Centroptilum

alamance

C. album

**C. minor*

**C. semirufum*

**C. triangulifer*

C. victoriae

Cloeon dipterum

**Dipheter hageni*

**Heterocloeon amplum*

**H. anoka*

**H. curiosum*

H. frivolum

Paracloeodes minutus

**Plauditius cestus*

**P. cingulatus*

**P. dubius*

**P. gloveri*

**P. punctiventris*

**P. virilis*

Procloeon bellum

P. fragile

P. ingens

P. intermediale

P. mendax

P. ozburni

P. pennulatum

**P. rivulare*

**P. rubropictum*

**P. rufostrigatum*

**P. simile*

**P. simplex*

P. viridoculare

Pseudocentroptiloides usa

**Pseudocloeon frondale*

P. propinquum

Regional Diversity = ~ 51 species

The Path of Changes

Changes Affecting *Heterocloeon*:

Previously new subgenera were designated in *Heterocloeon* by McCafferty *et al.* 2005. They erected *H. ss*, *Iswaeon*, and *Jubilatum* for species of *Heterocloeon*. In a 2008 paper on the mayflies of South Dakota, Guenther and McCafferty elevated *Iswaeon* to full genus status.

Heterocloeon →



Iswaeon

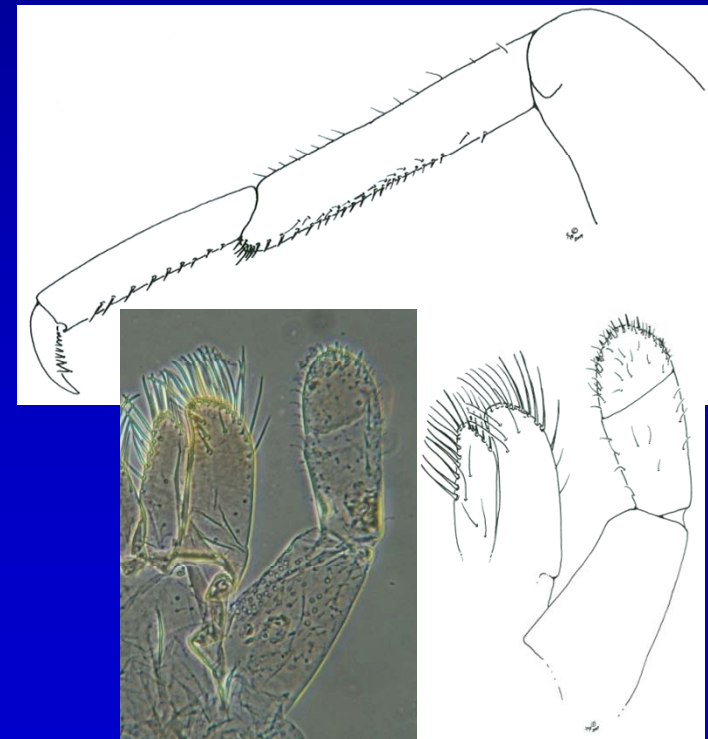
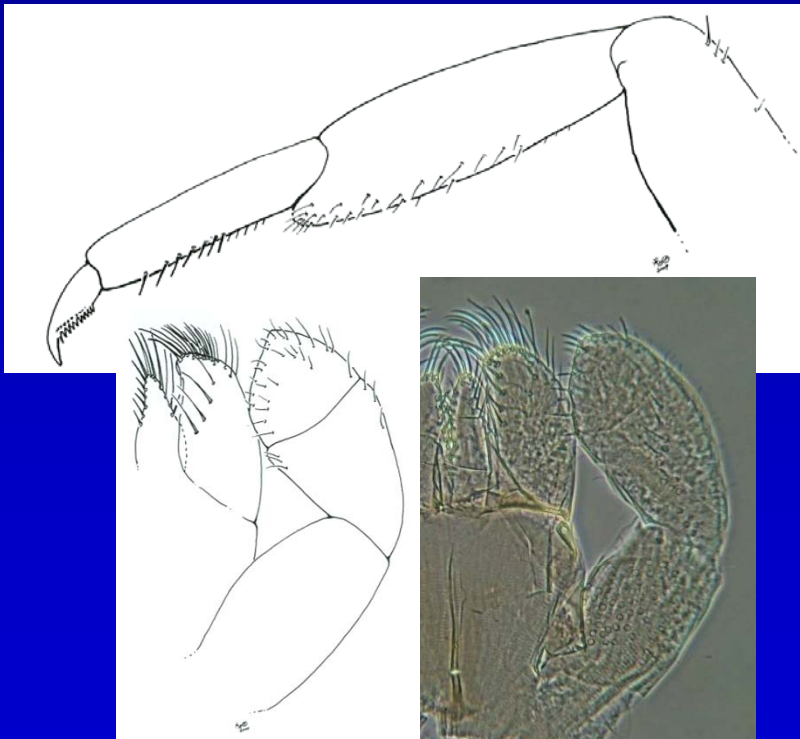
H. (Heterocloeon) s.s.

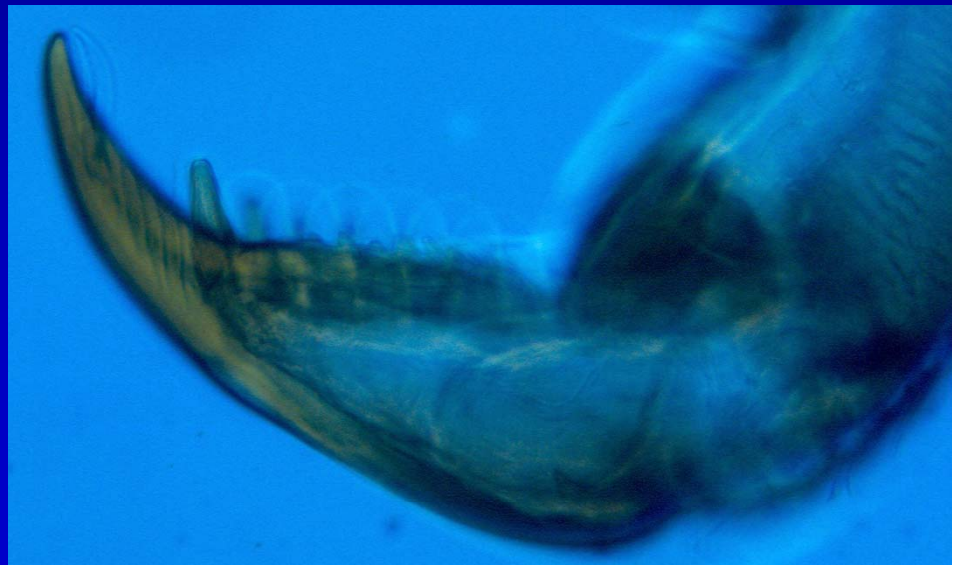
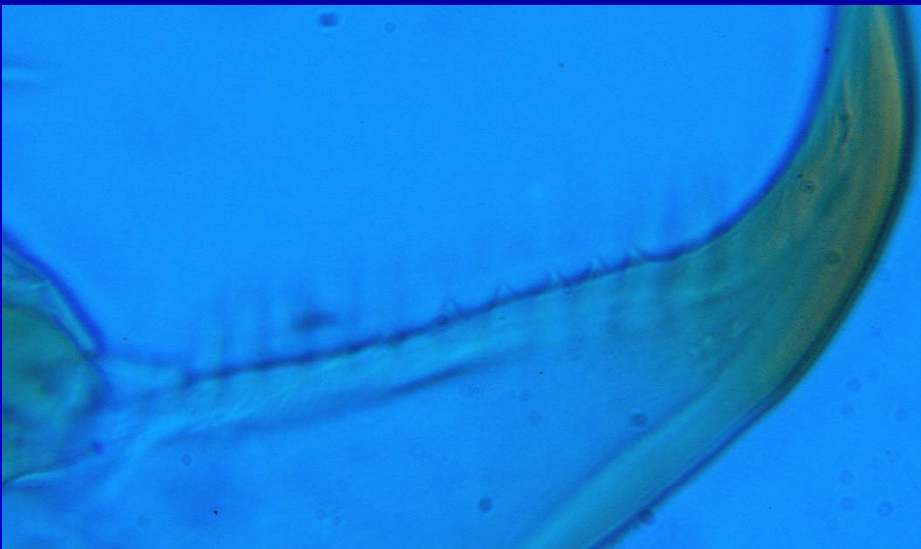
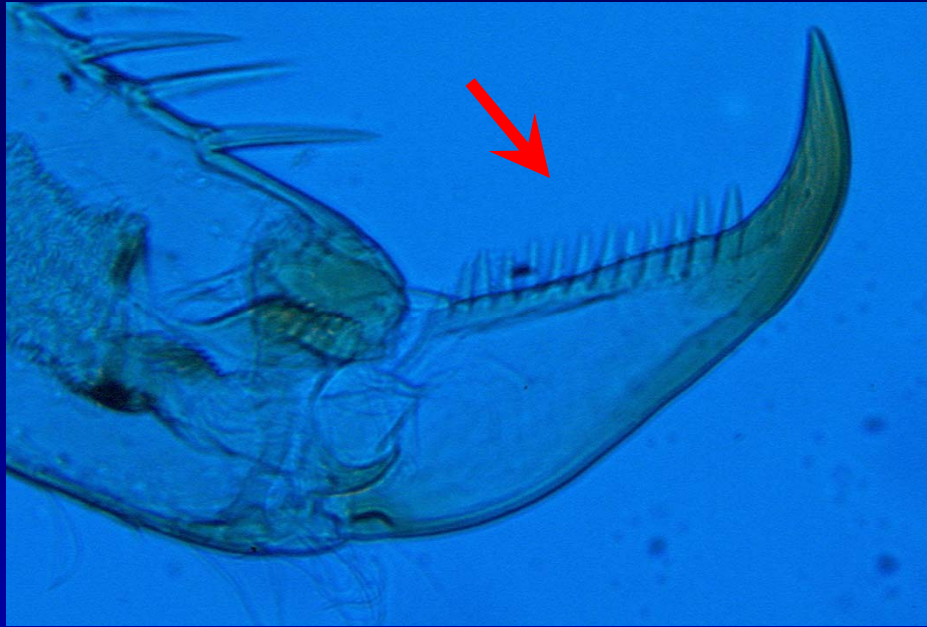
H. (Jubilatum)

Key Patches Nymphs

New Couplet 37a to start insert after couplet 37 – at end of line of couplet 37(36), which used to read*Heterocloeon*” change to read “37a”.

37a(37) Labial palp segment 2 narrow basally and widened at apical end (Fig. 1); tibiae expanded or bowed distally (Fig. 2); tarsal claws with primary row of denticles subequal in length (except for basalmost first or second denticles) (Fig. 3); hind wing pads absent; coxal gills absent; cerci with dark median band.....*Iswaeon*

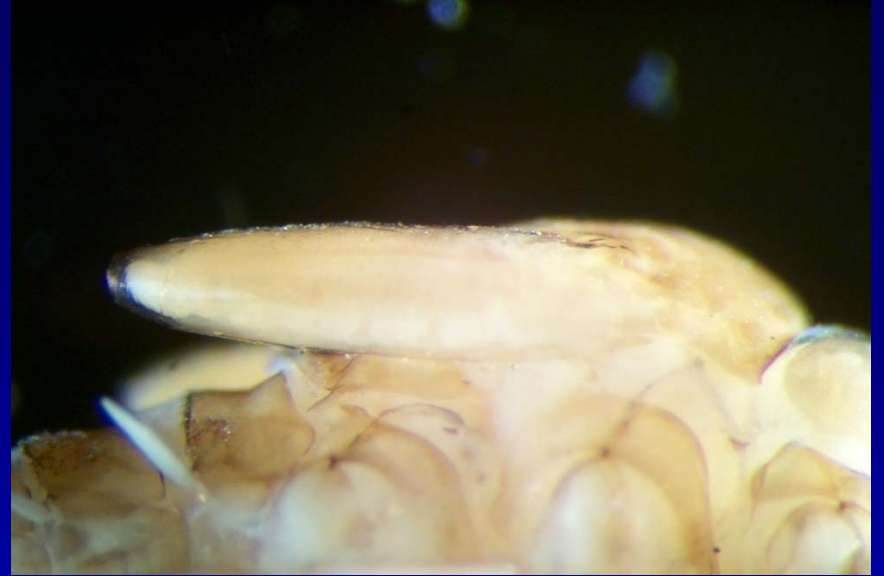




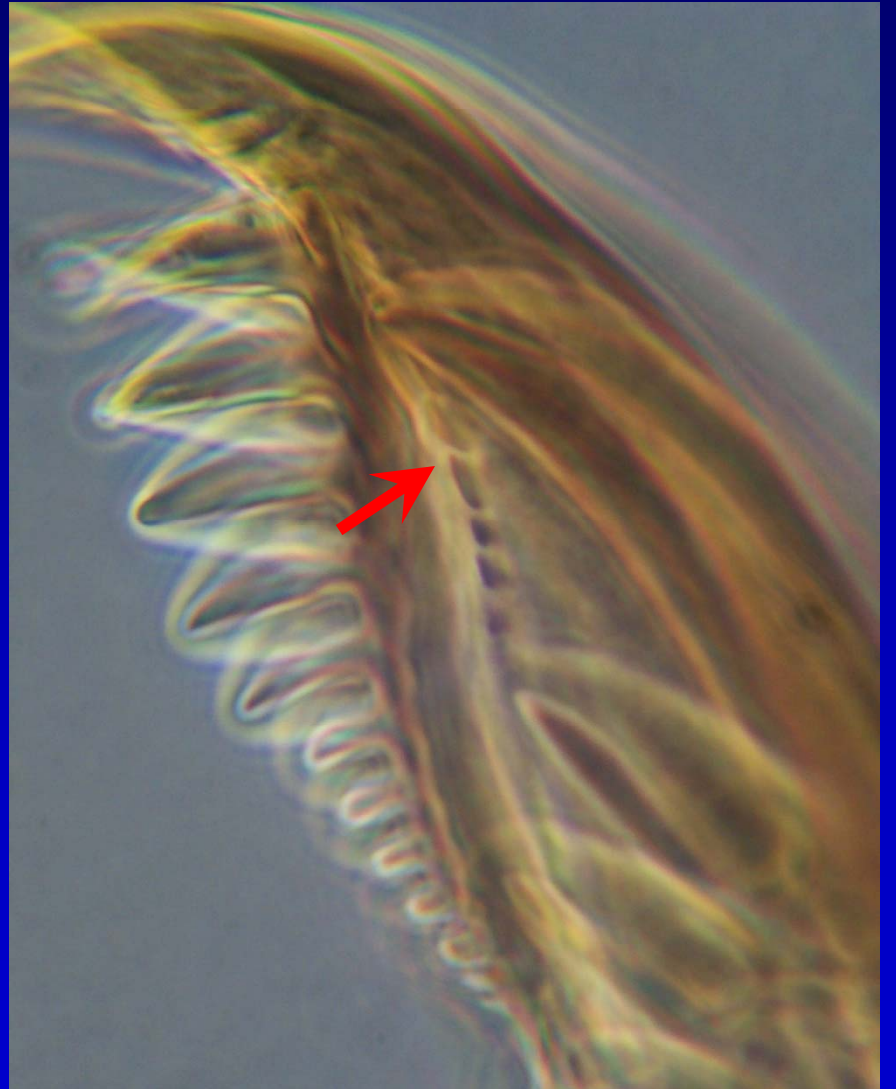
I. anoka

H. curiosum

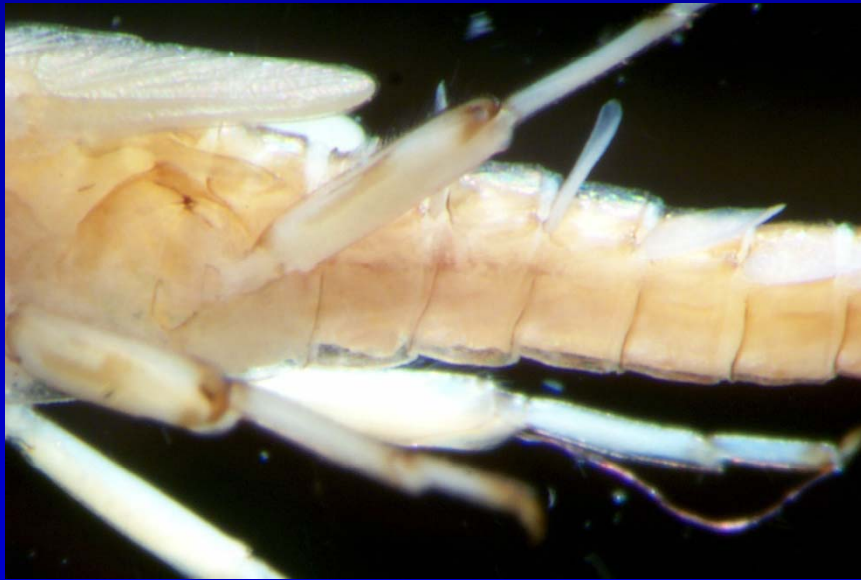
Heterocloen curiosum

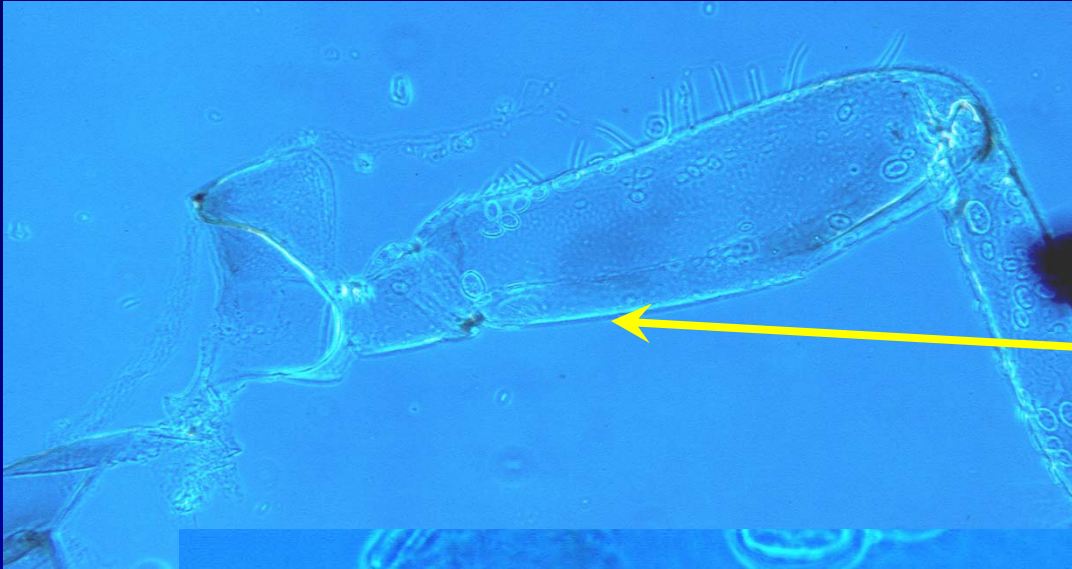


H. amplum

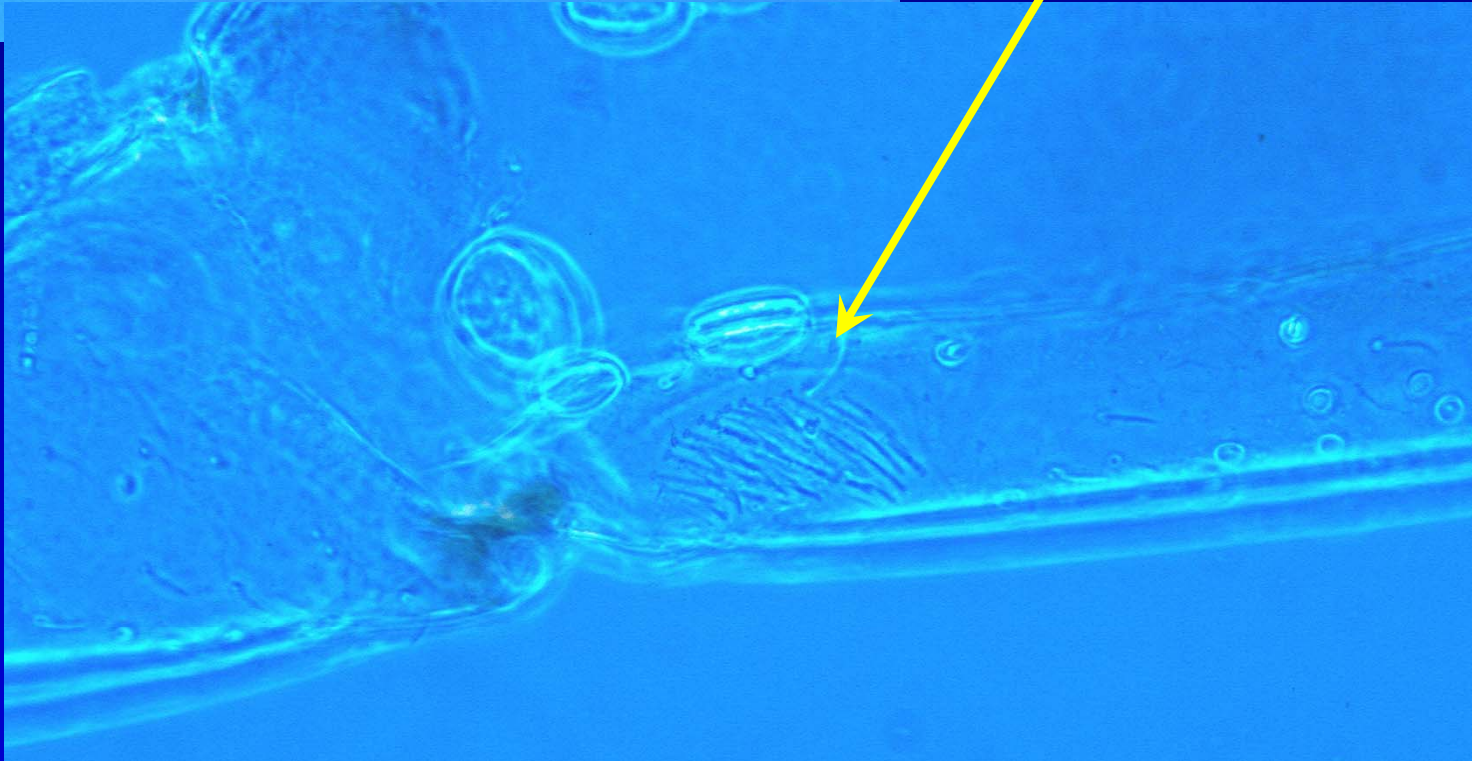


Heterocloeon amplum





Plauditus sp.
villopore



A. turbida



A. parvula



Plauditus dubius



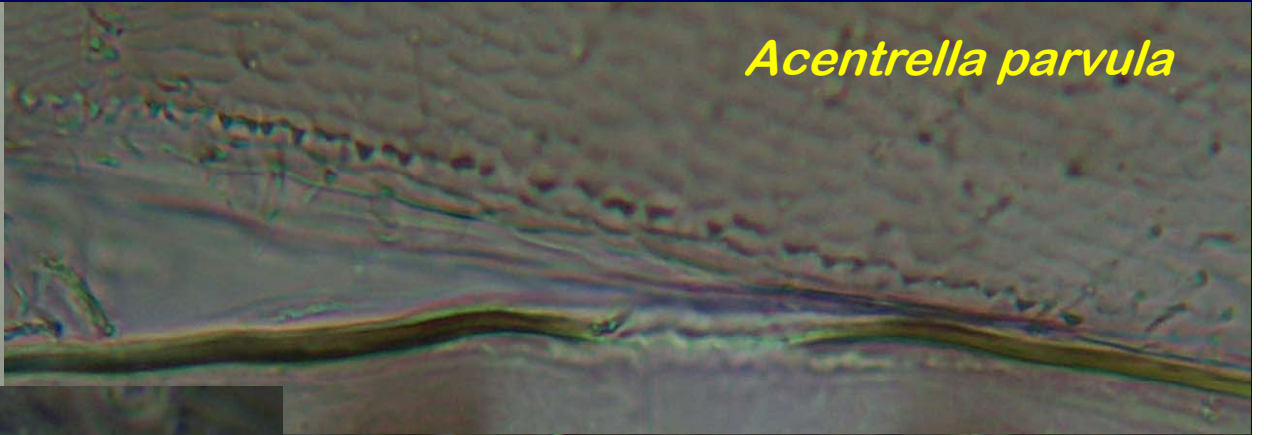
Acentrella parvula



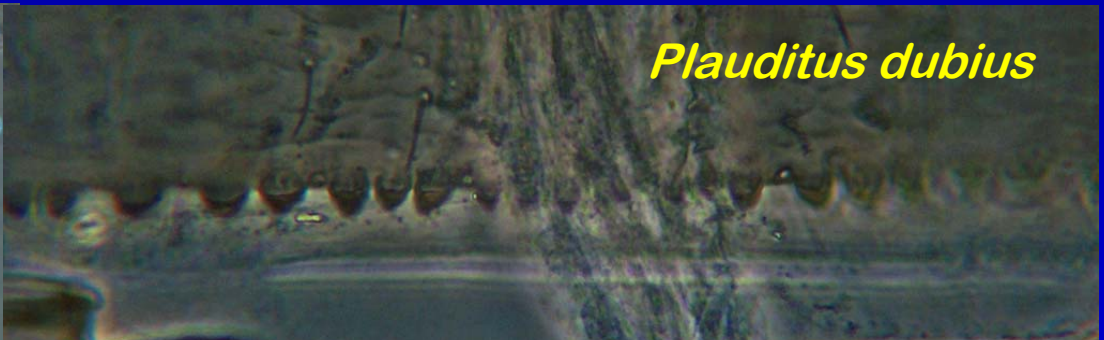
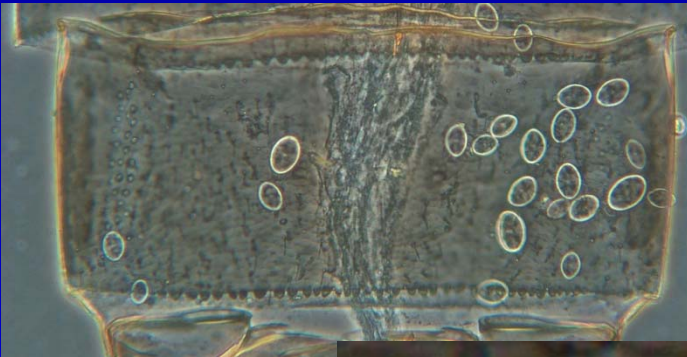
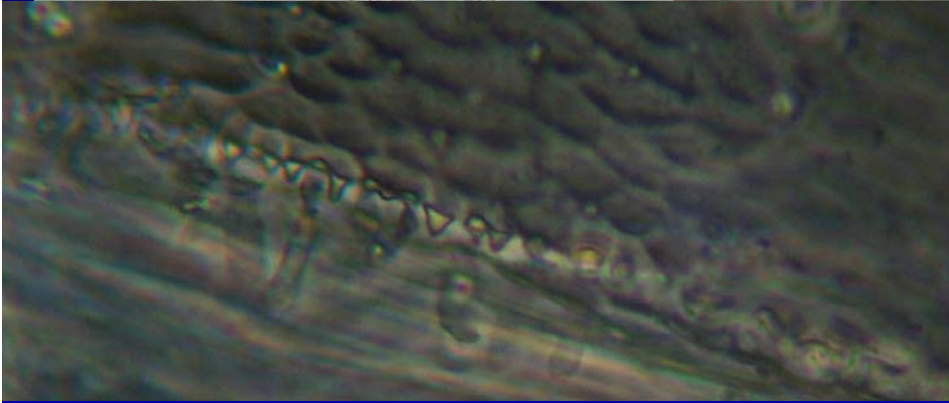
Florida



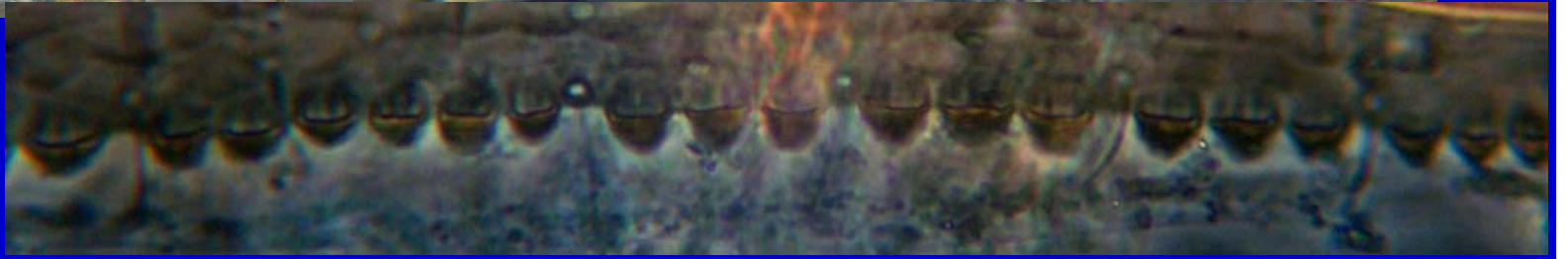
Connecticut



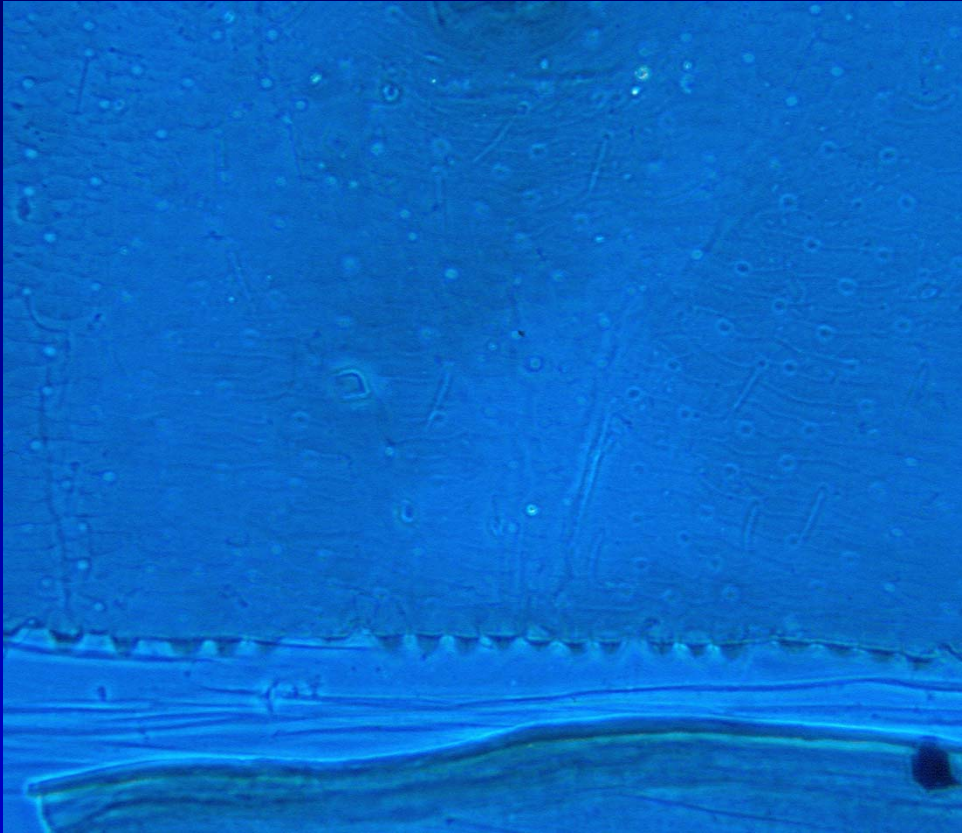
Acentrella parvula



Plauditus dubius

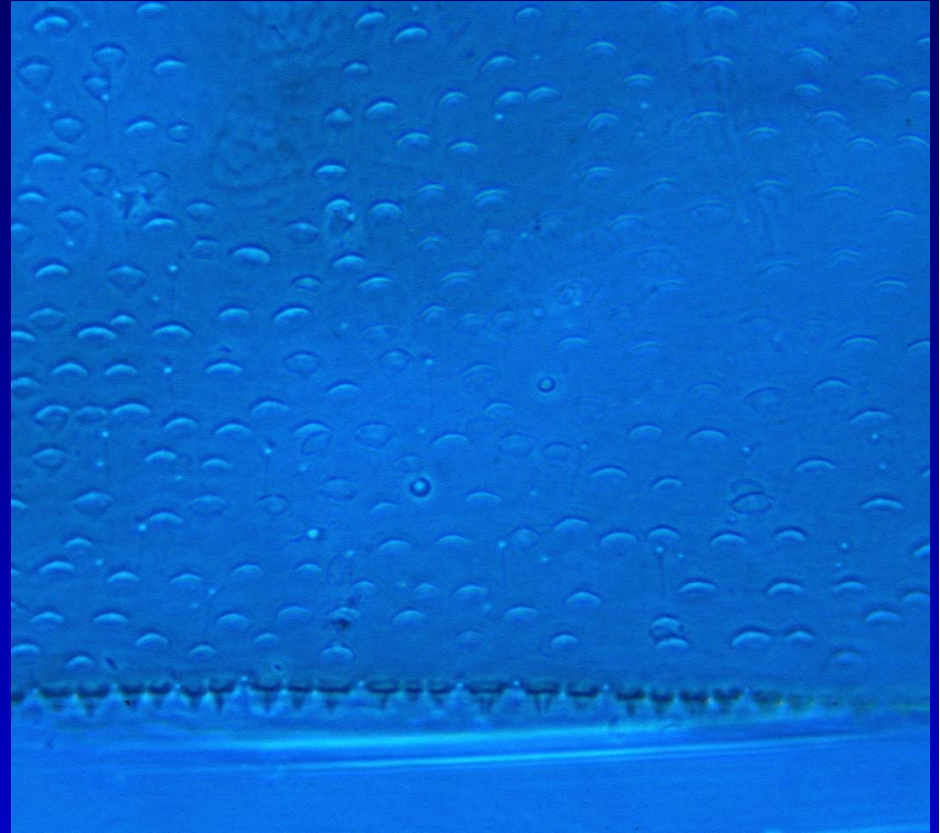


Plauditus sp.



Scale seta Absent

Baetis sp.

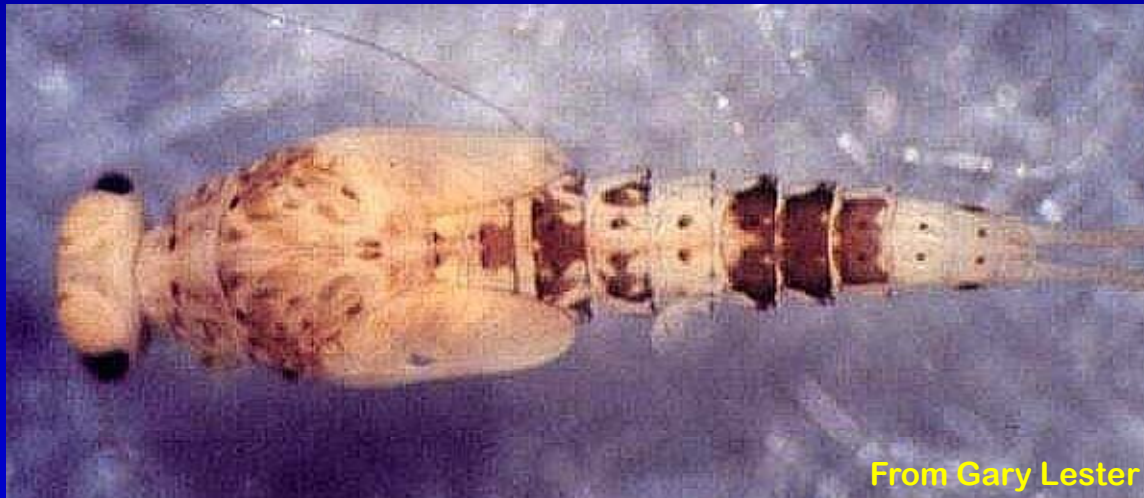


Scale seta Present

Plauditus dubius



Plauditus virilis

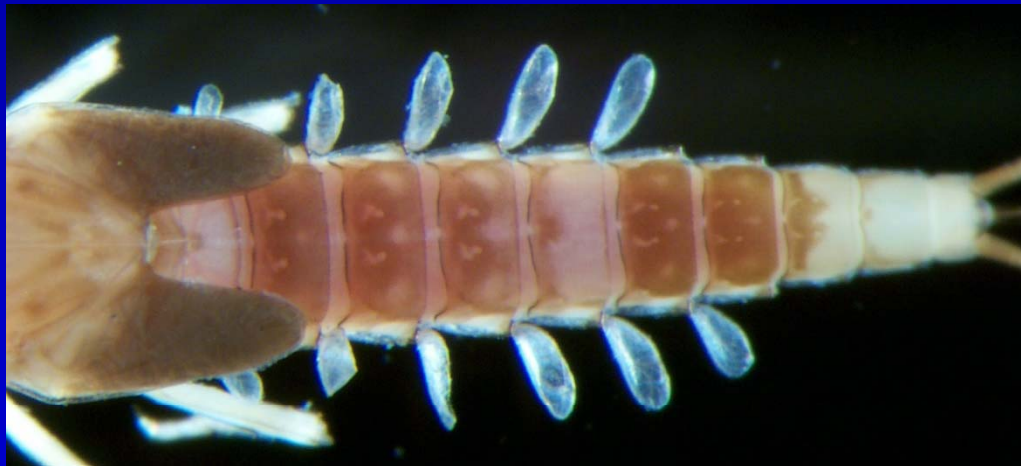


Beware of *P. gloveri* !

Baetis flavistriga



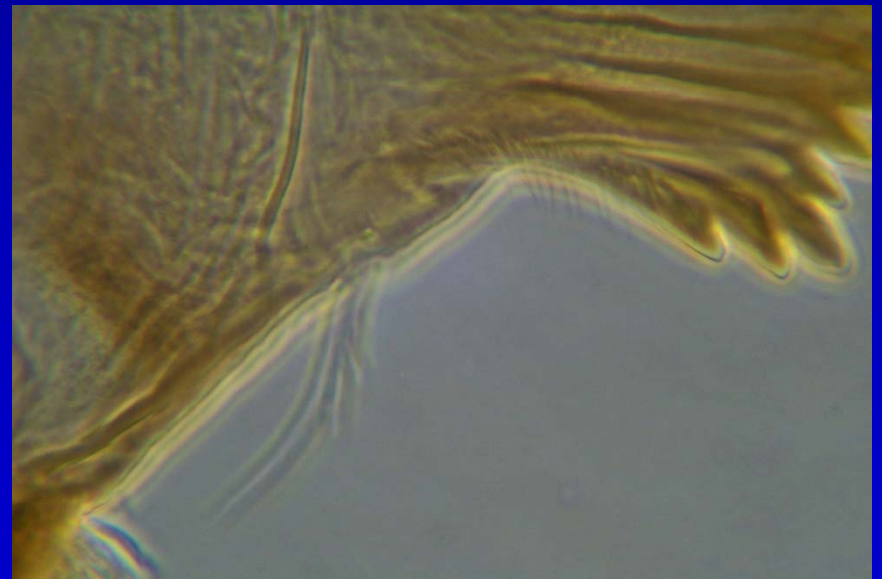
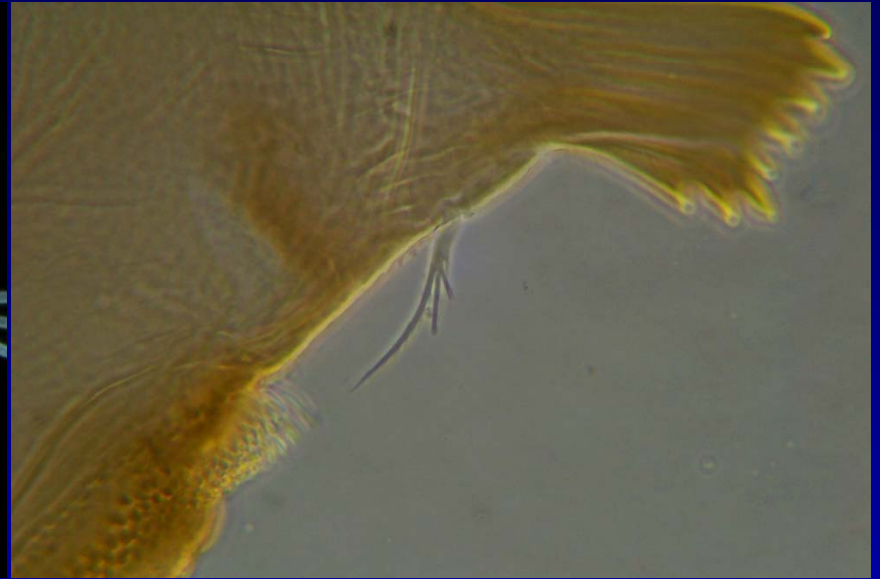
Baetis intercalaris



Baetis pluto



Diphetero hageni



Pseudocloeon frondale



Pseudocloeon propinquum



Pseudocloeon sp.



Antennal lobe

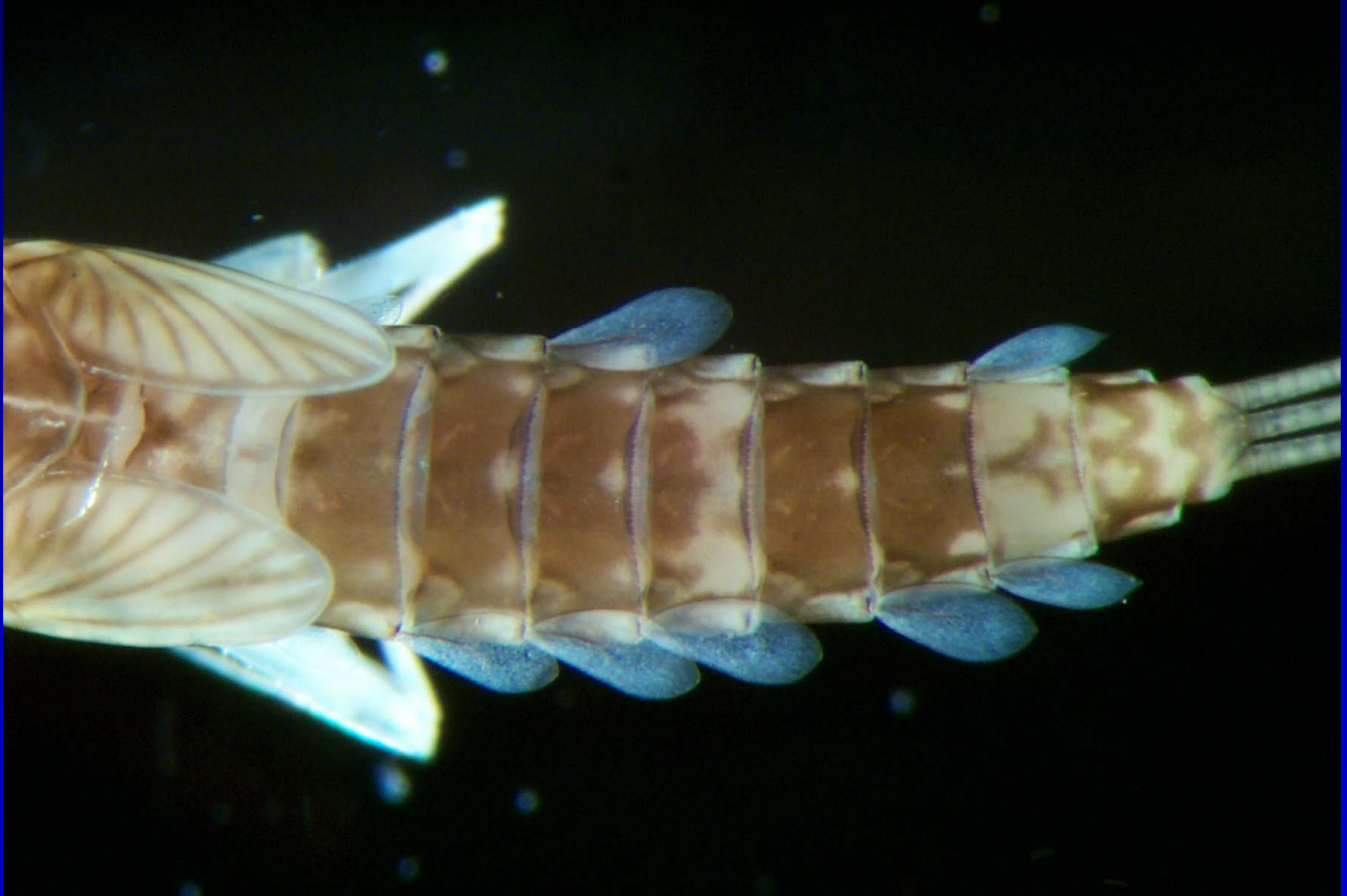


Pseudocloeon propinquum

Acerpenna pygmaea



Acerpenna macdunnoughi



Procloeon simplex



Procloeon rivulare





*Procloeon
rivulare*

Centroptilum triangulifer

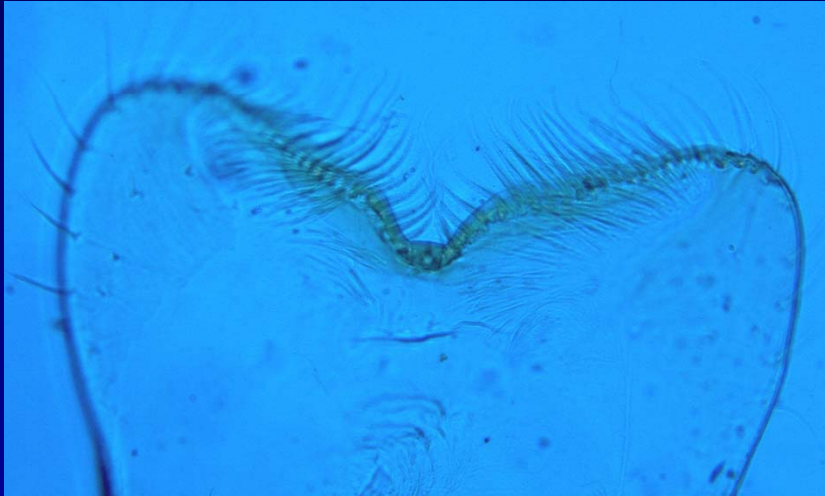


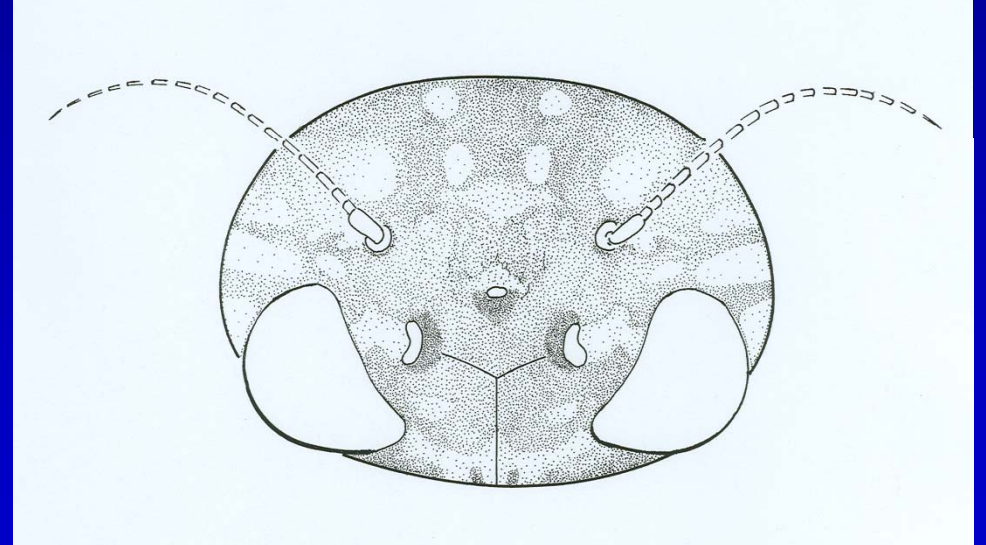
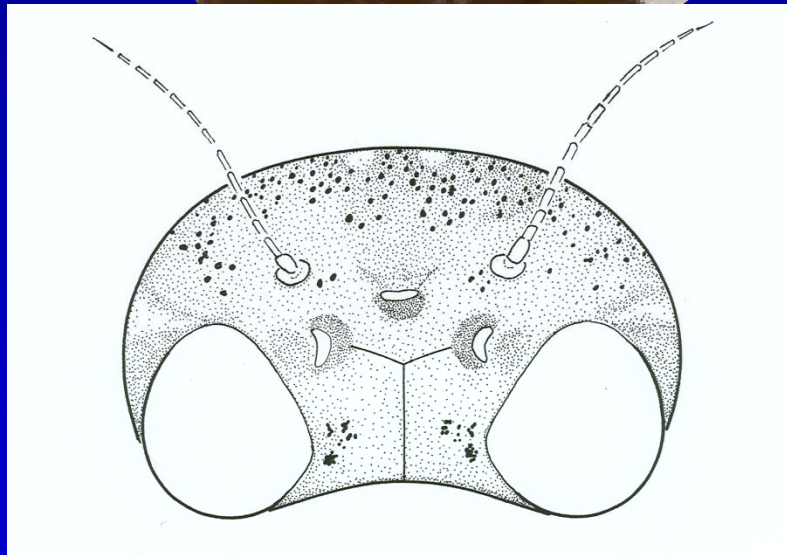
D. Funk



*Centropetalum
conturbatum*

Pseudocentropiloides usa





Leucrocuta hebe

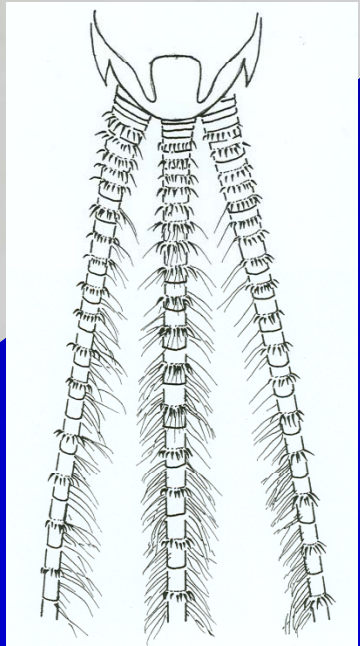


Nixe lucidipennis

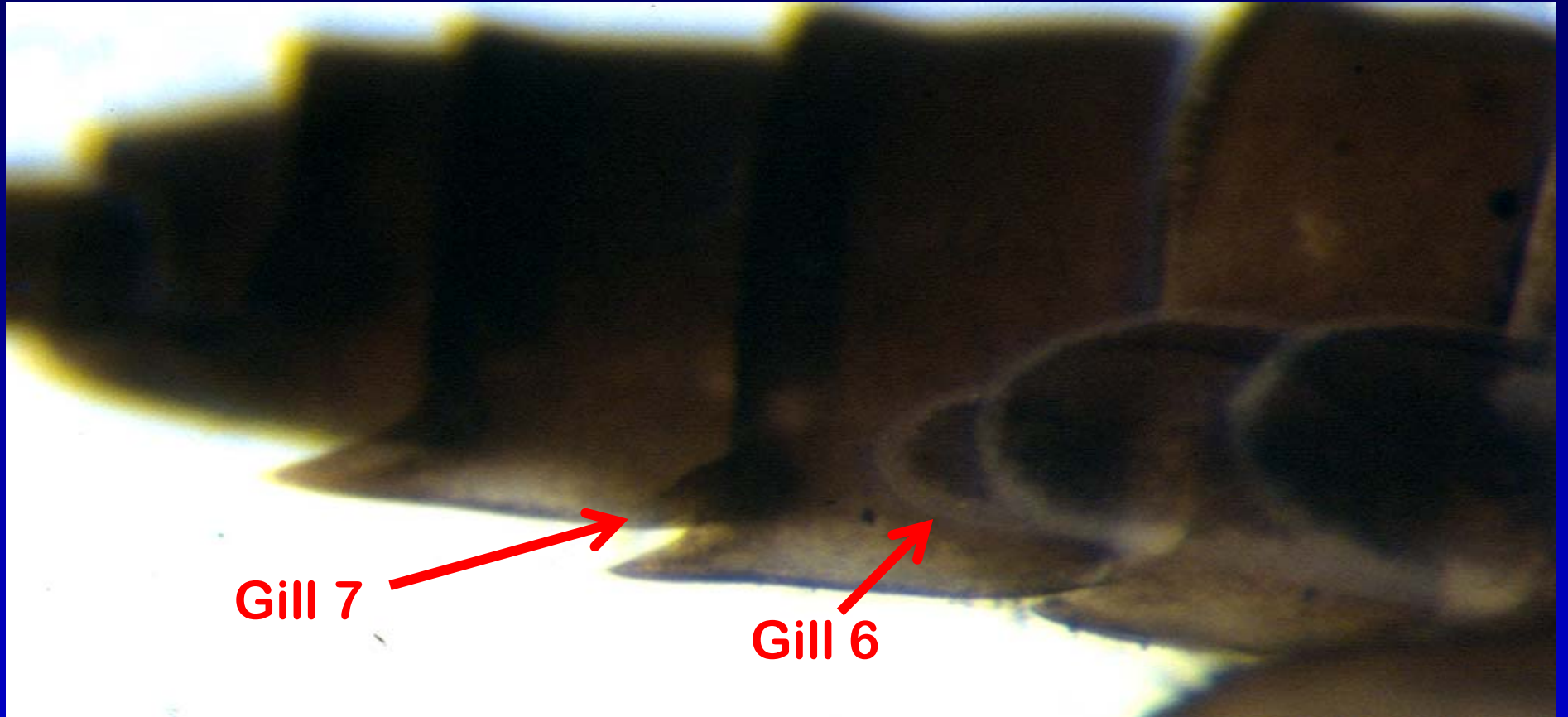


By : D. Chandler

By : D. Chandler

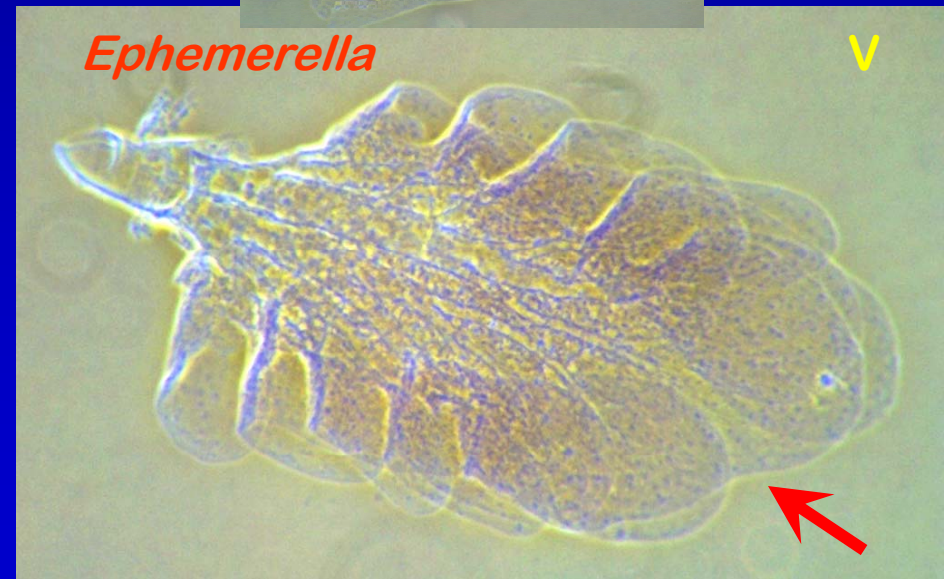
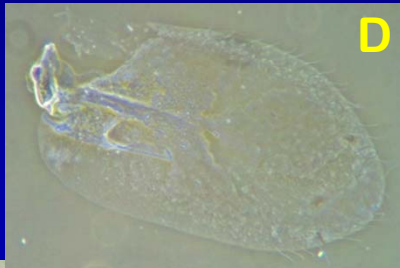


Macdunnoa brunnea, Florida



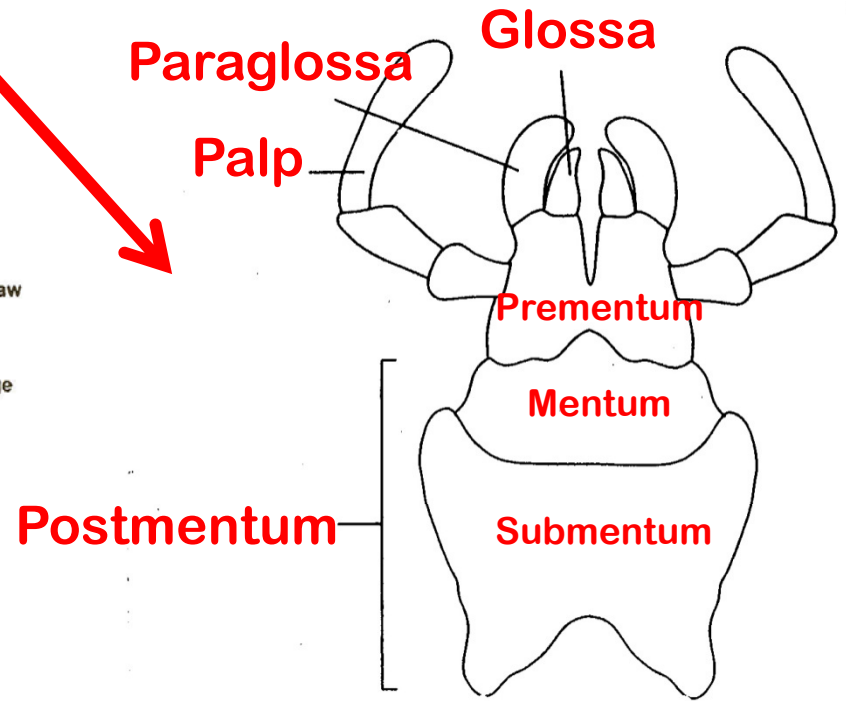
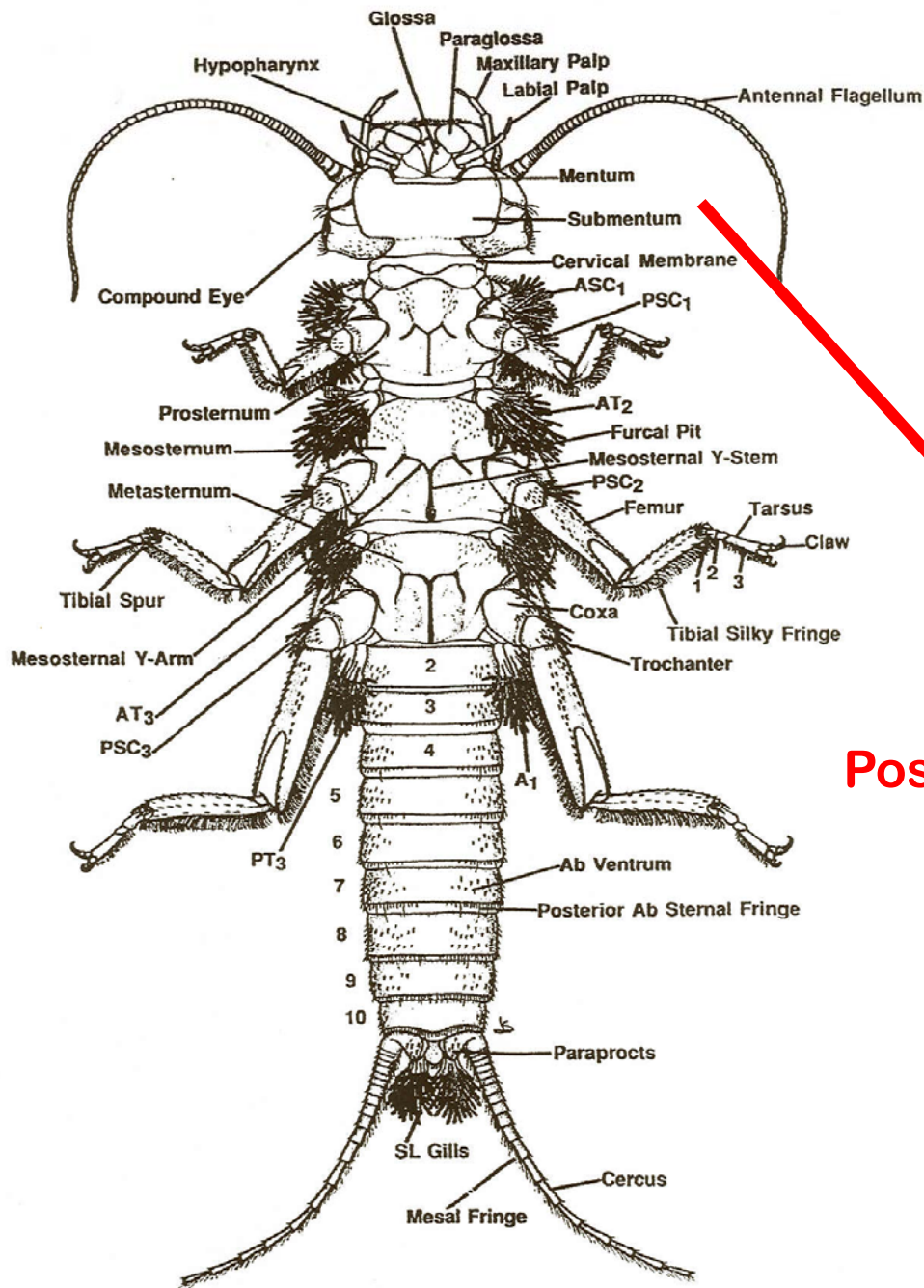
80f(80e') Median dorsal lobe of ventral lamella of abdominal gill 6 deeply divided (Fig. 15); maxillary palps usually short, extending to no more than one-half the length of the galea-lacinia.....*Serratella*

80f' Median dorsal lobe of ventral lamella of abdominal gill 6 not as above with only a shallow medial division or only a slight apical medial indentation (Fig. 16); maxillary palps usually long, extending two-thirds or more the length of the galea-lacinia (Fig. 11.87).....*Ephemerella* (in part)



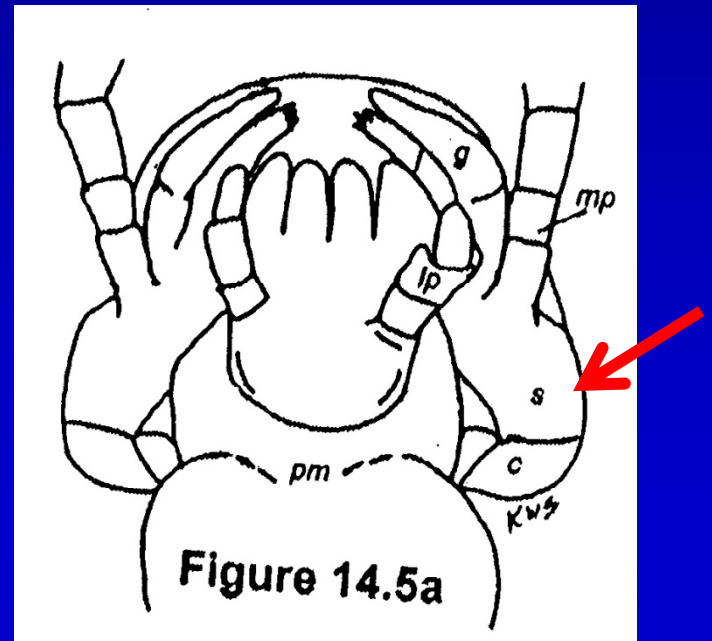
Plecoptera





Capniidae:

Characters [Nymph] – No gills; elongate body with extended hind legs **not** reaching past the tip of the abdomen; midline of hind wing pads nearly parallel with body midline; hind wing pads separated by about same distance as fore wing pads; 2nd tarsal segment much shorter than first tarsal segment; abdomen with segments 1-9 separated laterally by a membranous pleural fold; abdominal terga with **posterior setal fringe**; **postmentum of labium small** such that bases of maxillae are completely exposed (sensu P. Zwick)



Capniidae (10 gen., 151 spp.)

SLENDER WINTER STONEFLIES (Capniidae)

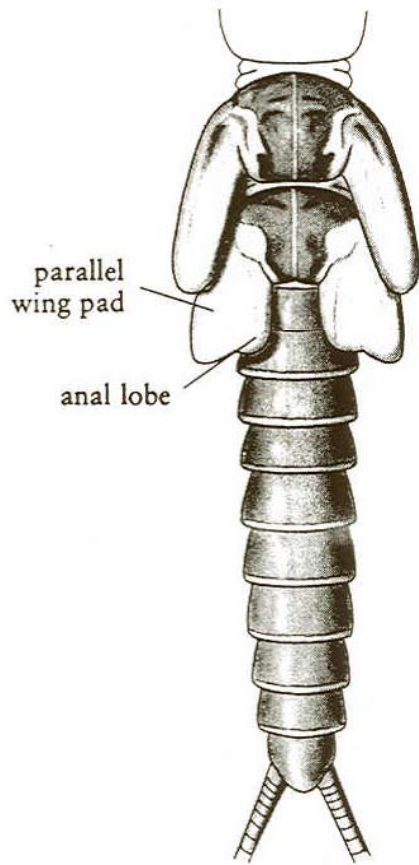


Figure 9.10. *Allocapnia* larva,
thorax and abdomen

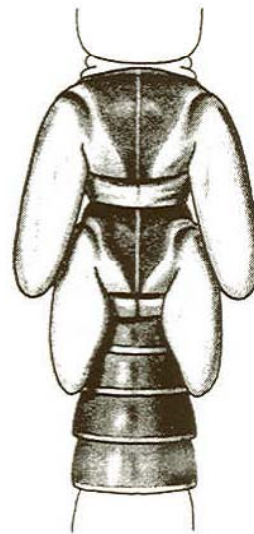


Figure 9.11. *Capnia* larva,
thorax and base of abdomen



Leuctridae:

Characters [Nymph] - Abdomen with segments 3-7 separated laterally by a membranous pleural fold; elongate body with extended hind legs **not** reaching past the tip of the abdomen; midline of hind wing pads nearly parallel with body midline; hind wing pads distinctly closer together than fore wing pads; abdominal segments more parallel sided in dorsal and lateral views compared to capniids; **postmentum of labium large covering the bases of maxillae (sensu P. Zwick);** abdominal terga lack posterior setal fringe; head with long antennae.



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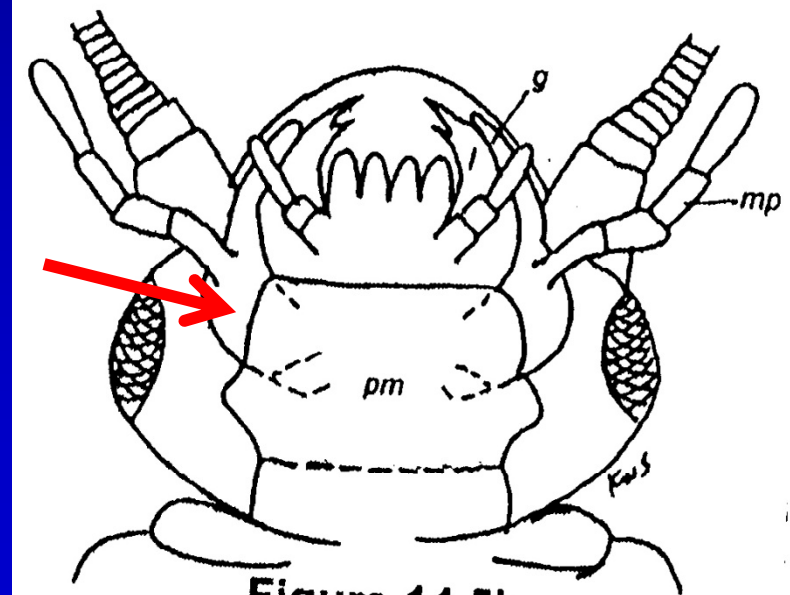
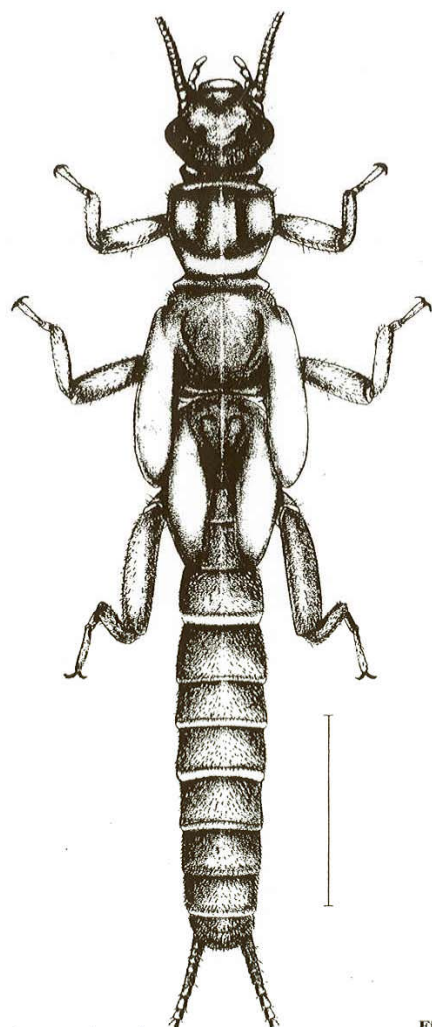


Figure 14.5b

Leuctridae



Leuctridae

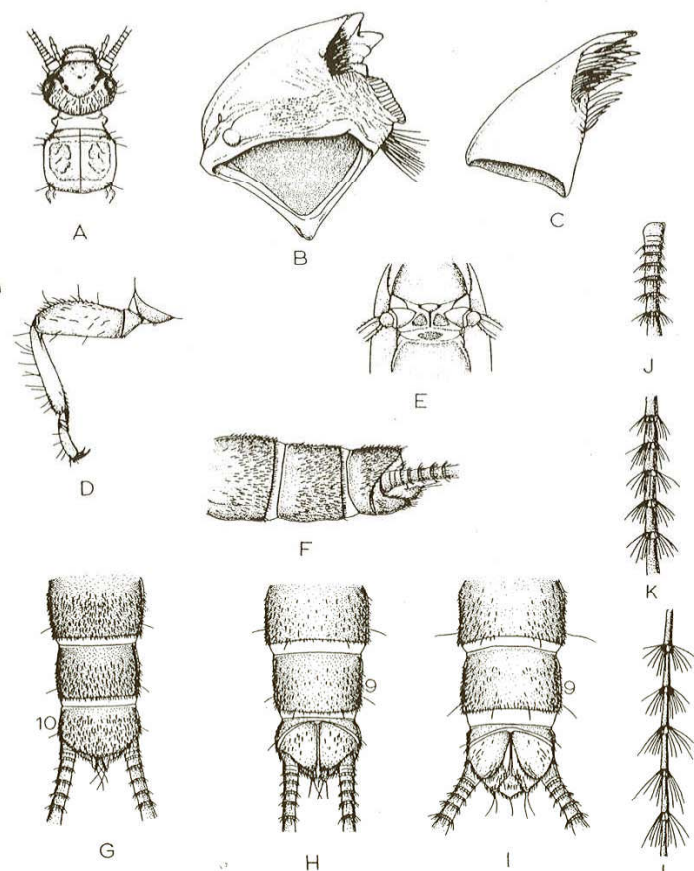


Fig. 8.6. *Leuctra sibleyi*, nymph characters. (A). Head-pronotum. (B). Right mandible, ventral. (C). Right lacinia, ventral. (D). Right front leg, dorsal. (E). Mesosternum. (F). Male terminalia, ventral. (J, K, L). Basal, middle, and apical sections of right cercus, lateral.

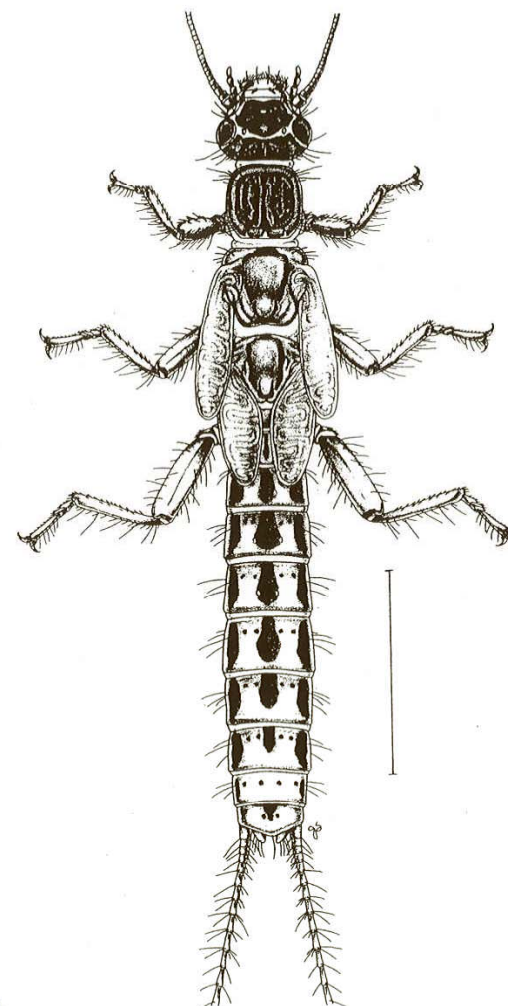


Fig. 8.11. *Paraleuctra occidentalis*, habitus. MT, Flathead County, Flathead River, 14-IV-19 J. Stanford. Scale line = 2 mm.

Fig. 8.5. *Leuctra sibleyi*, habitus. WV, Logan County, Frogtown Hollow of Copperas Mine
k, 9-IV-1977, R. Kirchner. Scale line = 2 mm.

Leuctri dae

pleural fold

Leuctri dae



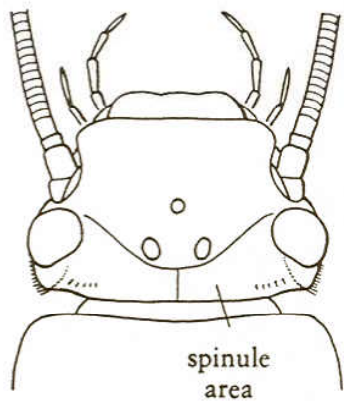


Figure 9.26. Acroneuriinae, larval head

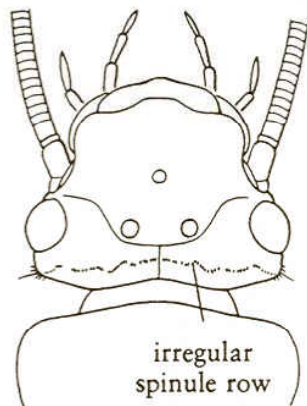


Figure 9.27. Acroneuriinae, larval head

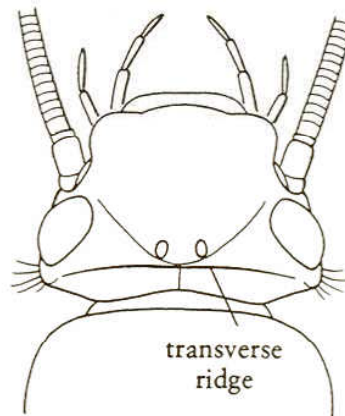


Figure 9.28. Perlinae, larval head

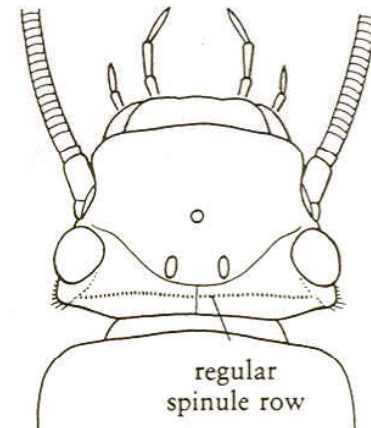
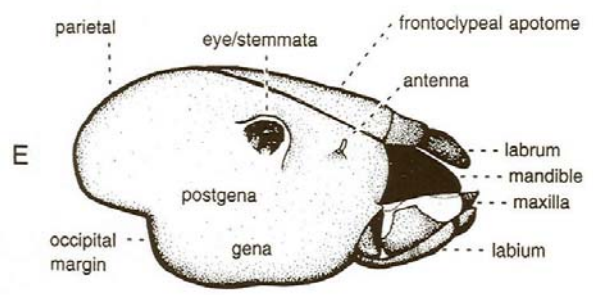
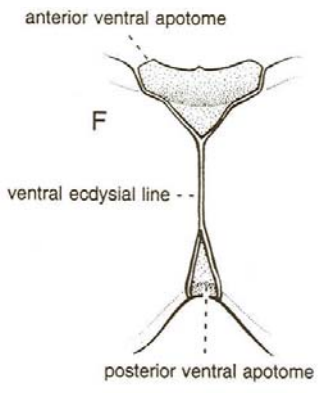
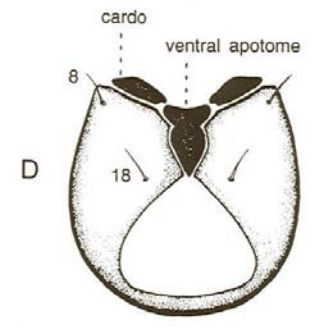
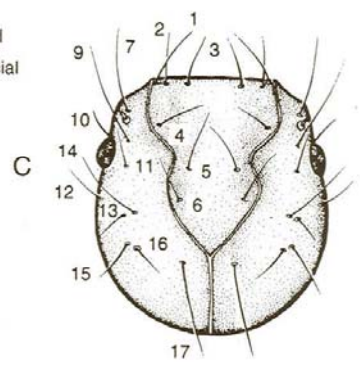
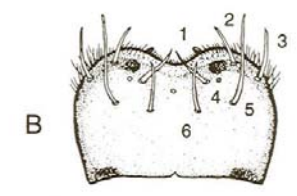
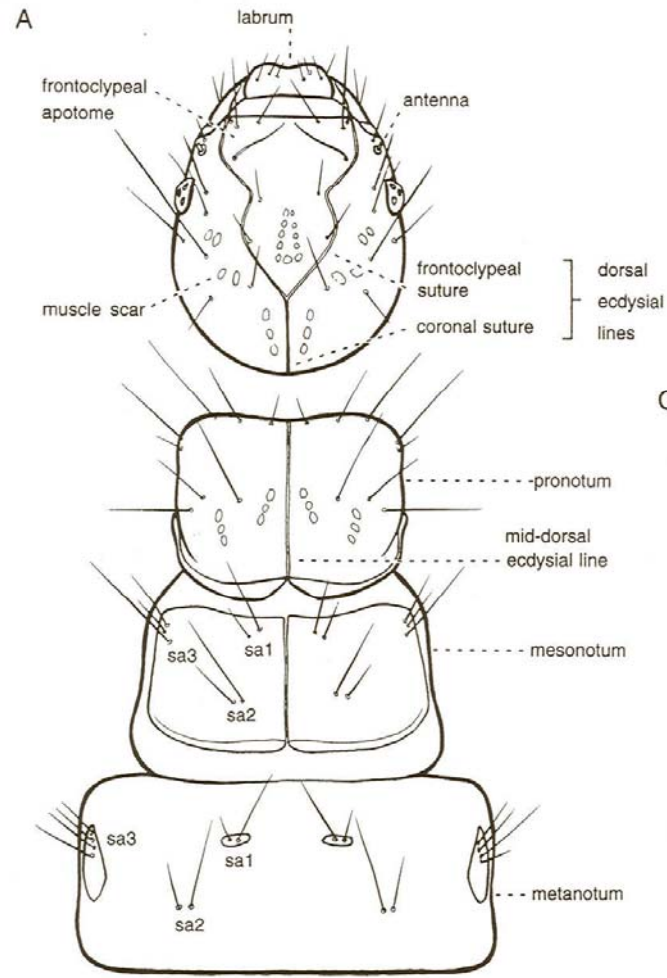


Figure 9.29. Perlinae, larval head

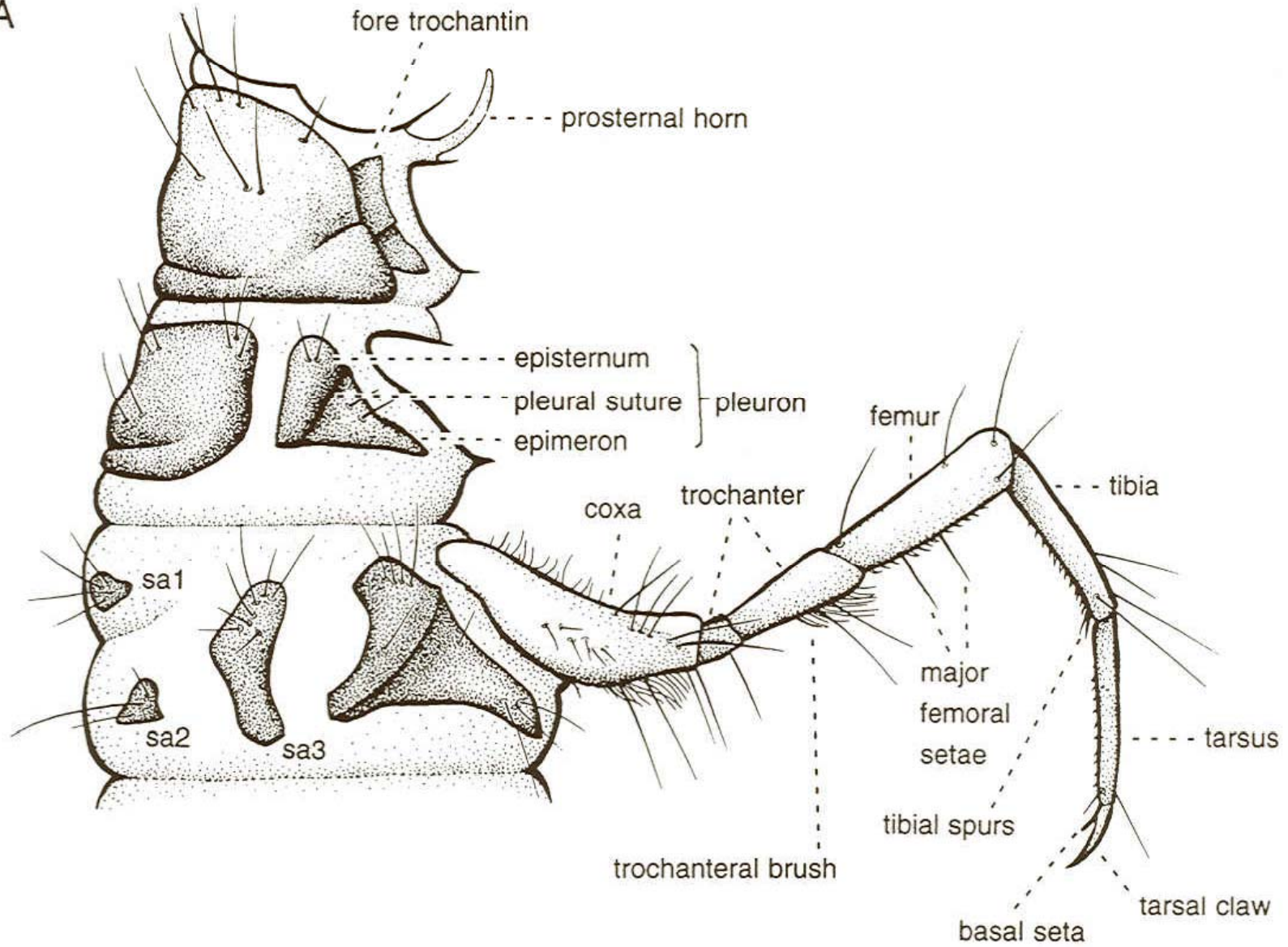


Trichoptera





A



Suborders and Families of North American Trichoptera

Annulipalpia (7 fam.):

- Dipseudopsidae (1 gen., 5 spp.)
- Ecnomidae (1 gen., 2 spp.)
- Hydropsychidae (11 gen., 158 spp.)
- Philopotamidae (3 gen., 42 spp.)
- Polycentropidae (6 gen., 71 spp.)
- Psychomyiidae (4 gen., 17 spp.)
- Xiphocentronidae (2 gen., 2 spp.)

Spicipalpia (4 fam.):

- Glossosomatidae (6 gen., 76 spp.)
- Hydrobiosidae (1 gen., 3 spp.)
- Hydroptilidae (16 gen., 250+ spp.)
- Rhyacophilidae (2 gen., 128 spp.)

Integripalpia (15 fam.):

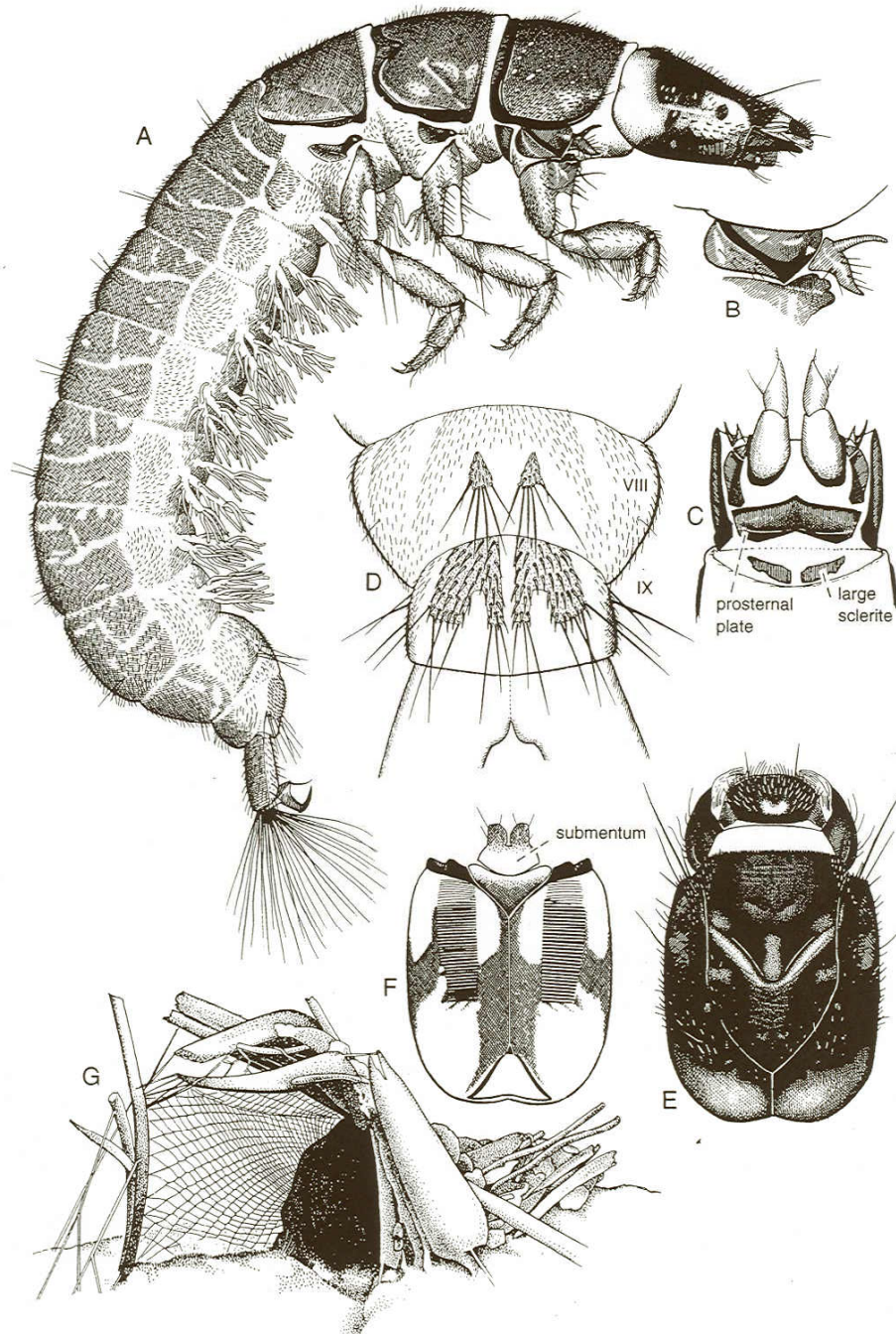
- Apataniidae (5 gen., 33 spp.)
- Beraeidae (1 gen., 3 spp.)
- Brachycentridae (5 gen., 34 spp.)
- Calamoceratidae (3 gen., 5 spp.)
- Goeridae (4 gen., 11 spp.)
- Helicopsychidae (1 gen., 4 spp.)
- Lepidostomatidae (2 gen., 82 spp.)
- Leptoceridae (8 gen., 113 spp.)
- Limnephilidae (39 gen., 243 spp.)
- Molannidae (2 gen., 7 spp.)
- Odontoceridae (6 gen., 13 spp.)
- Phryganeidae (10 gen., 28 spp.)
- Rossianidae (2 gen., 2 spp.)
- Sericostomatidae (3 gen., 15 spp.)
- Uenoidae (5 gen., 46 spp.)

Families that have a single genus

**Suborder:
Annulipalpia:
Hydropsychidae**



Hydropsychidae: Hydropsyche 7.5



Characters [Larva] – Body size up to 30 mm; each thoracic segment ; abdomen, meso and metathorax sterna with gills; posterior margin of meso and metanota distinctly lobed; prolegs long and distinctive with a tuft of long setae



Parapsyche sp.

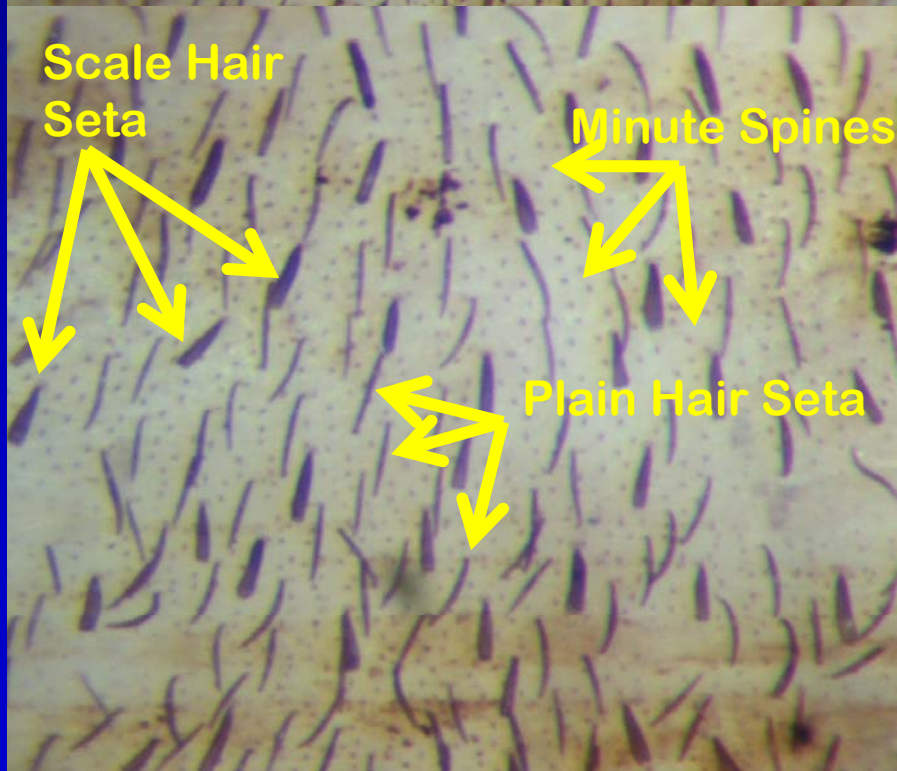
D. Chandler

Hydropsyche sp.

D. Chandler

Hydropsyche sp.

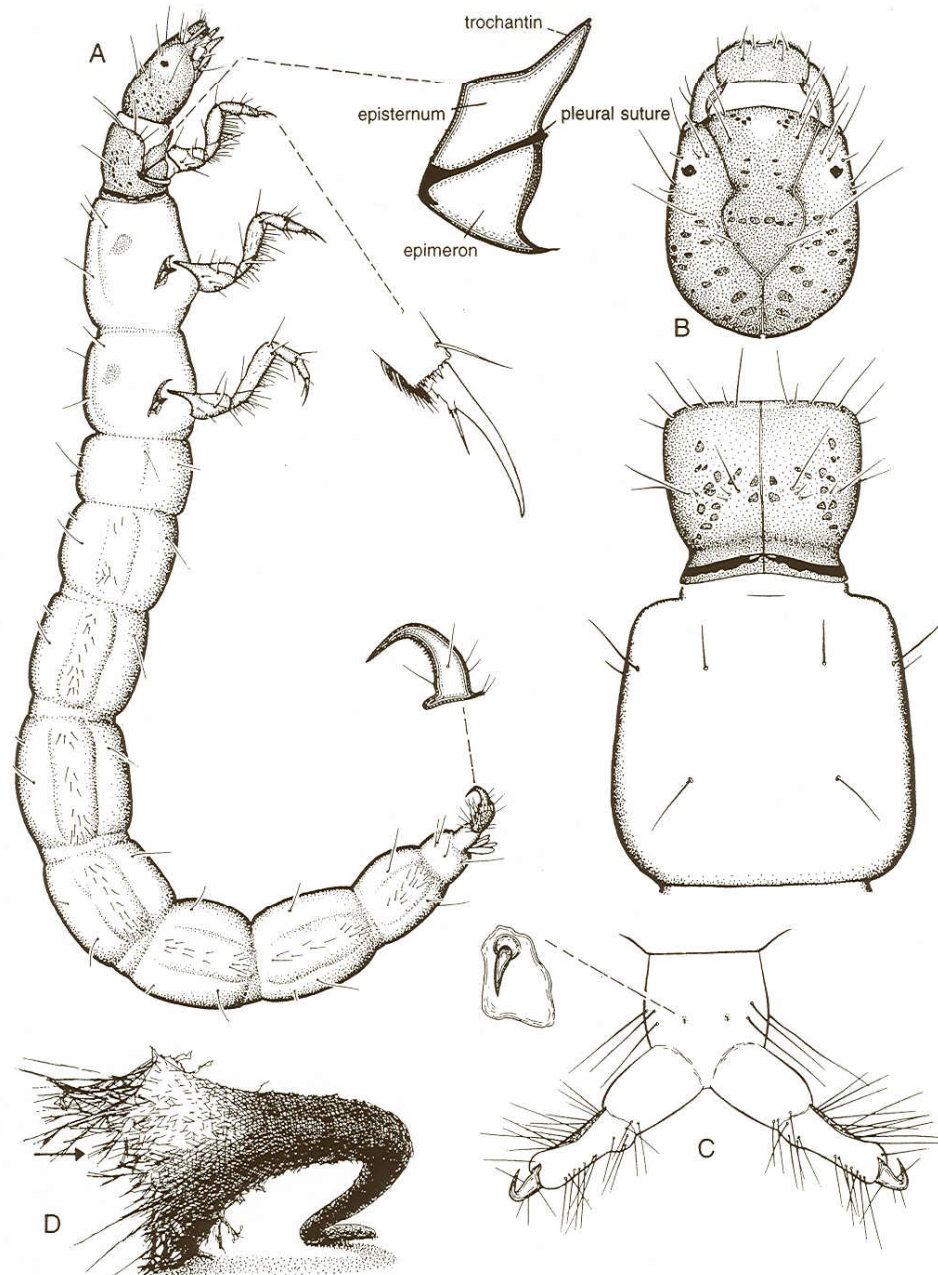
Ceratopsyche sp.



Suborder:
Annulipalpia:
Polycentropodidae



Polycentropodidae: Neureclipsis 9.3



Characters [Larva] – Body length up to 25 mm; only the prothorax with distinctive large dorsal sclerotized notum; protrochantin pointed and directed anteriorly; abdomen lacks gills; anal prolegs long and claws usually have accessory dorsal hooks (and sometimes teeth on the inner claw surface); labrum is completely sclerotized and non-retractile.

D. Chandler



Polycentropus sp.

D. Chandler



Cernotina sp.

That's All For Now!

Credits For Some Images and Figures Not Marked:

Some slides are from teaching presentations used in my aquatic entomology course and contain composite images from the internet and the following sources:

McCafferty, W.P., 1981. Aquatic Entomology, The Fisherman's and Ecologists' Guide to Aquatic Insects and Their Relatives. Jones and Bartlett Publishers, Inc. Boston.

Stewart, K.W. and B.P. Stark, 2002. Nymphs of North American Stonefly Genera (Plecoptera), 2nd Edition. The Caddis Press, Columbus, Ohio.

Wiggins, G.B. 1996. Larvae of the North American Caddisfly Genera (Trichoptera), 2nd Edition. University of Toronto Press, Toronto.

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