FIELD KEY FOR SELECTED BENTHIC INVERTEBRATES FROM THE HKH REGION

DRAFT VERSION FEBRUARY 2007

prepared by Anne Hartmann

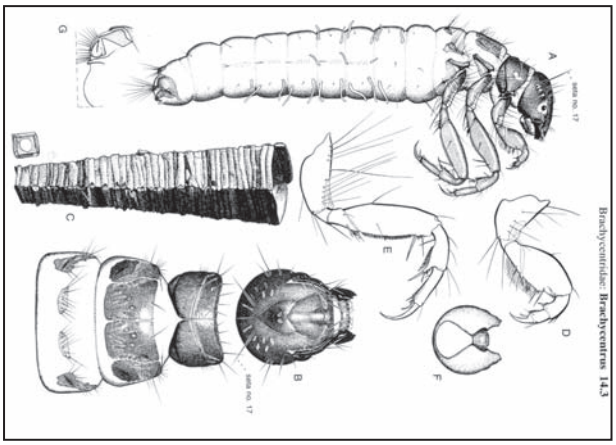
Family Brachycentridae

- Cylindrical case of plant or mineral material
- Small to medium sized
- Pronotum sometimes with rim

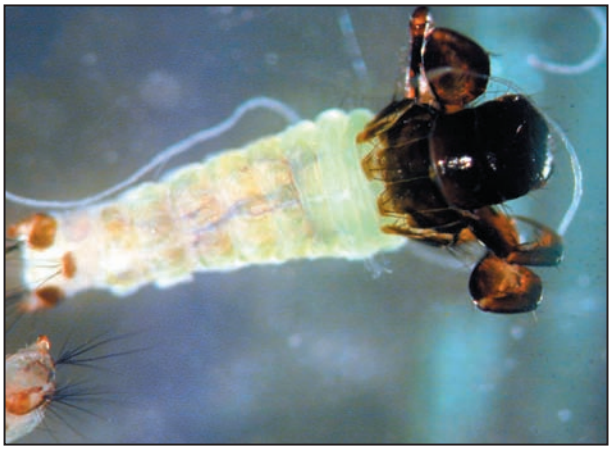
2 Genera: Micrasema & Brachycentrus

Brachycentrus sp.

- Pro- & mesonotum fully sclerotised
- 9th tergit sclerotized
- mid- & hind legs elongated
- medium sized



Brachycentridae: Braychycentrus



Brachycentridae: Braychcentrus

Micrasema sp.

- Pro- & mesonotum fully sclerotised
- 9th tergit sclerotized
- mid- & hind legs normal
- case with necking
- small sized

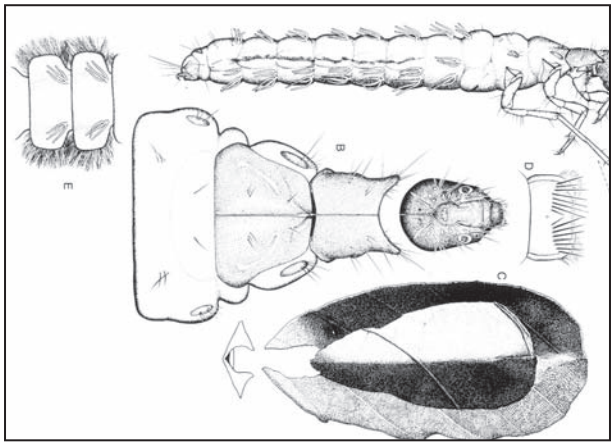
Brachycentridae: Micrasema „Typ1“

Brachycentridae: Micrasema „Typ2“

Family Calamotoceridae

Anisocentropus sp.

- Case made of 2 leaves
  Hind legs elongated and tibiae subdivided
- Pronotum pointed on anterior margin



Calamotoceridae: Anisocentropus

Calamotoceridae: Anisocentropus

Calamotoceridae: Anisocentropus

Calamotoceridae: Anisocentropus

Family Glossosomatidae

- Turtle- like case

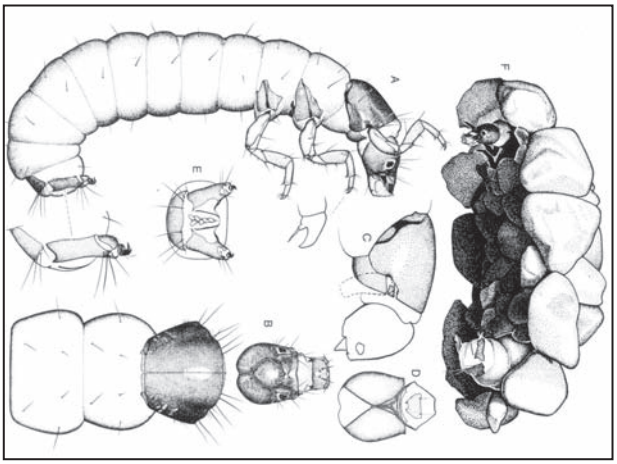
2 Subfamilies: Glossosomatinae & Agapetinae

Glossosomatinae

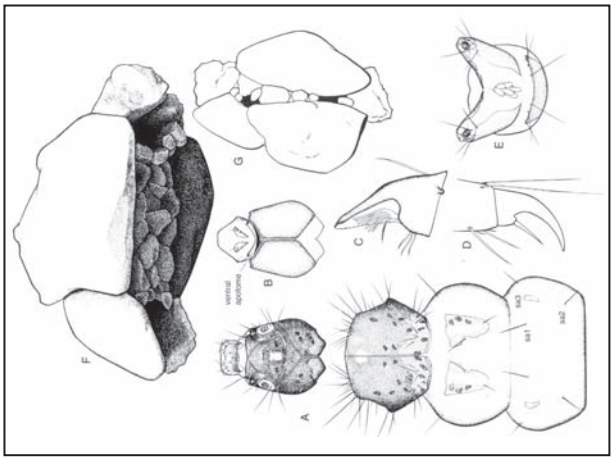
sclerites on pronotum only

Agapetinae

with sclerites on meso- & metanotum



Glossosomatidae: Glossosomatinae



Glossosomatidae: Agapetinae

Glossosomatidae: Glossosomatinae

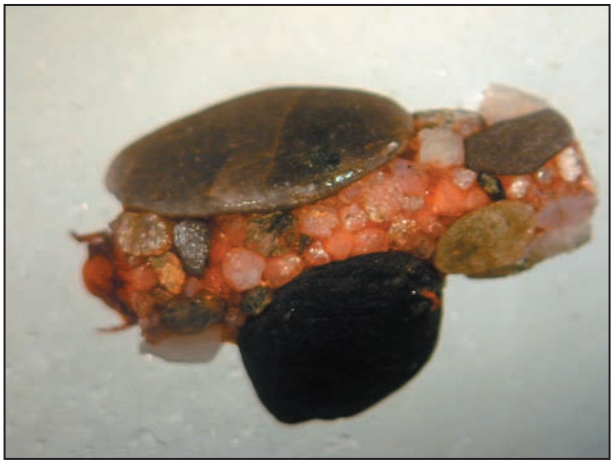
Glossosomatidae: Agapetinae

This figure means, that for identifying the taxon in the field the use of a magnifying glass is recommended

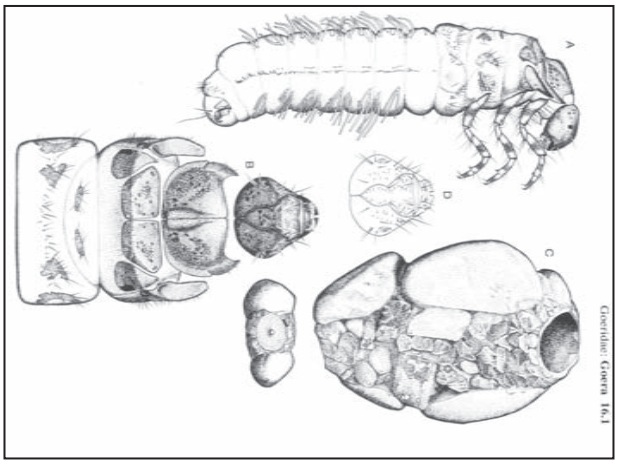
Family Goeridae

- 9th tergite not sclerotized with prosternal horn
- mesonotum fully sclerotised,
- epipleuron with large process
- metanotum with 6 small sclerites

1 genus: Goera sp.



Goeridae

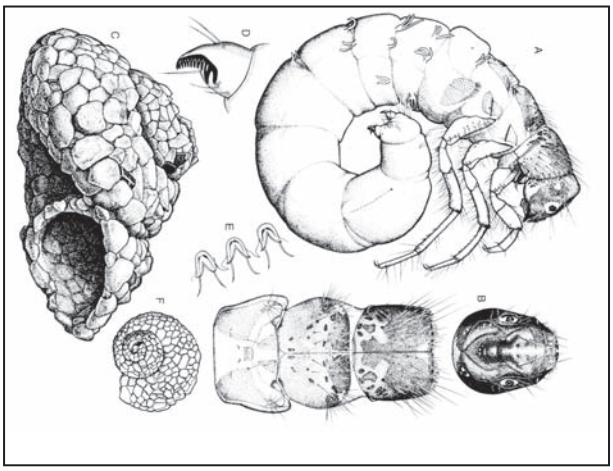


Goeridae: Goera

Family Helicopsychidae

- case snail-like

1 genus: Helicopsyche sp.



Helicopsychidae: Helicopsyche

Helicopsychidae

Family Hydropsychidae

- All thoracic nota sclerotized
- Abdomen with ventrolateral gills

Hydropsychidae

Hydropsychidae: Cheumatopsyche

Family Hydroptilidae

- small size
- case sheath-like

Hydroptilidae: Stactonbiini

Hydroptilidae

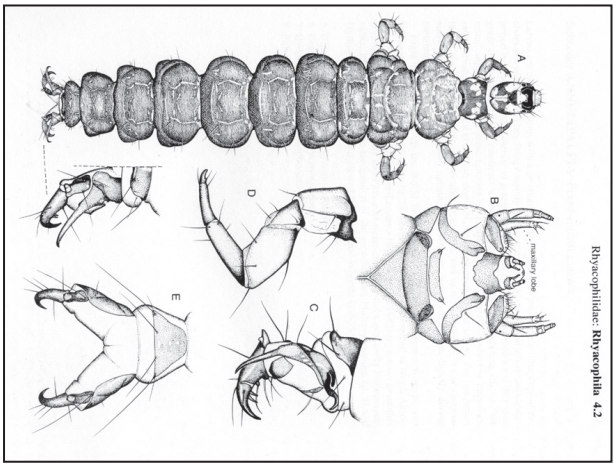
Family Rhyacophilidae

- Pronotum fully sclerotised
- No gills/with gills
- 9th tergite sclerotised

2 genera: Rhycophila sp. & Himalopsyche sp.

Rhacophila sp.

- Pronotum fully sclerotised
- with or without gills
- 9th tergite sclerotised



Rhyacophilidae: Rhycophila

Himalopsyche sp.

- Big organisms with gills on meso- & metathorax

Rhyacophilidae: Himalopsyche „TypA“

Rhyacophilidae: Rhyacohila (with and without gills)

Rhyacophilidae: Himalopsyche „Typ B“

Family Stenopsychidae

- Only pronotum sclerotised
- Head extremely elongated
- Fore-trochantin bifurcated
- large size

Stenopsychidae

Stenopsychidae

Family Philopotamidae

- head yellow-orange
- pronotum fully sclerotised
- no gills
- 9th tergite not sclerotised
- labrum membraneous

Philopotamidae

Philopotamidae: Chimarra

Family Polycentropodidae

- Pronotum fully sclerotised
- No gills
- 9th tergite unsclerotised
- Fore-trochantin acute

Plectrocnemia sp.

- dark spots on head capsula

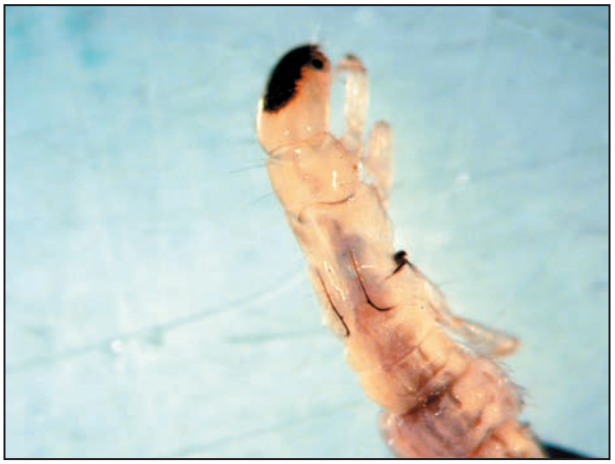
Polycentropodidae: Plectrocnemia

Polycentropodidae: Plectrocnemia, head capsula

Pseudoneureclipsis sp.

- Metanotum with two distinct dark lines

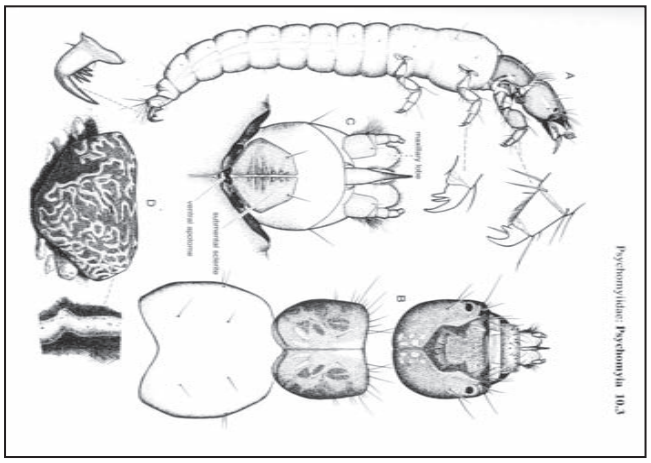
Polycentropodidae: Pseudoneureclipsis



Polycentropodidae: Pseudoneureclipsis

Family Psychomyiidae

- Pro-, meso- metanotum fully sclerotised
- No gills
- 9th tergite unsclerotised
- Fore-trochantin blunt



Psychomyiidae

Psychomyiidae

Family Limnocentropodidae

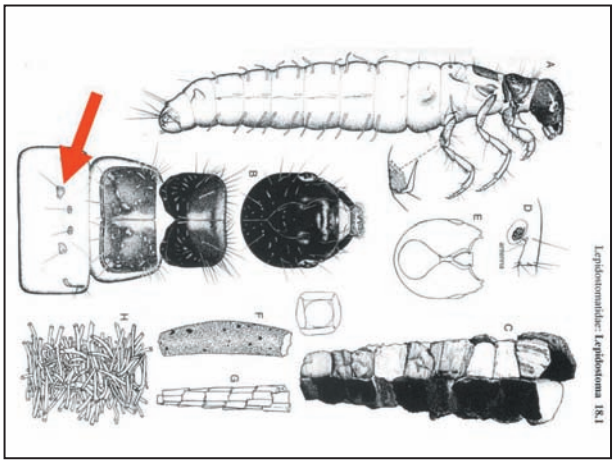
- Large spiny legs
- 1st abd. segment with large plate
- case with silken stalk

Limnocentropodidae

Limnocentropodidae

Family Lepidostomatidae

- with prosternal horn
- 9th tergit without sclerite
- metanotum with 6 sclerites
- antero- & posteromedian
- mulitormed cases of different materials

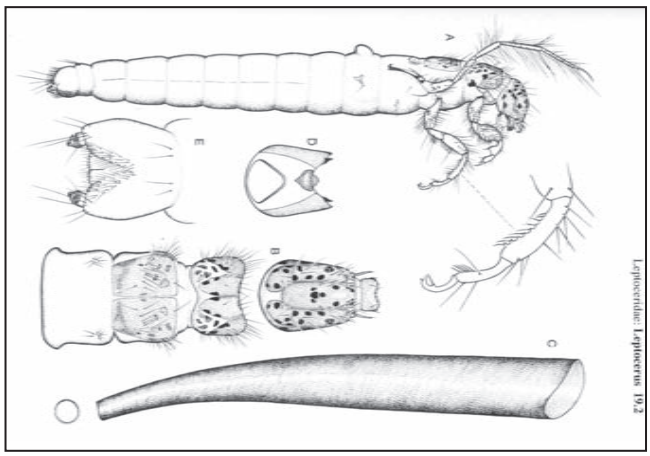


Lepidosomatidae: Lepidostoma

Lepidosomatidae

Family Leptoceridae

- 9th tergite sclerotized
- no prosternal horn
- antennae very long (6 x their width)
- or mesonotum with 2 dark lines
- medium sized
- cases made of small sized grains



Leptoceridae: Oecetis

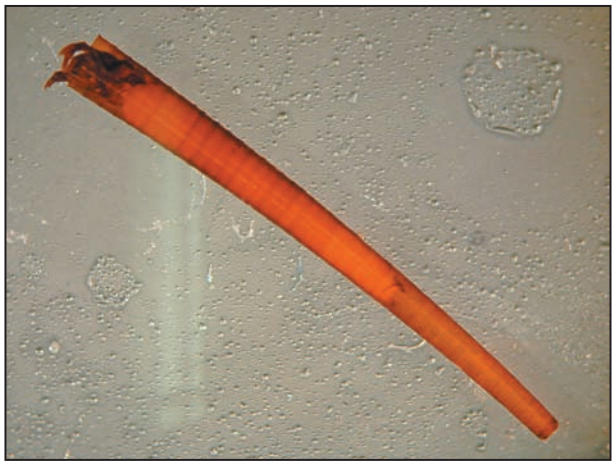
Leptoceridae: Oecetis

Family Uenoidae

- 9th tergite sclerotized
- with prosternal horn
- mesonotum with emargination
- medium sized

Uenoa sp.

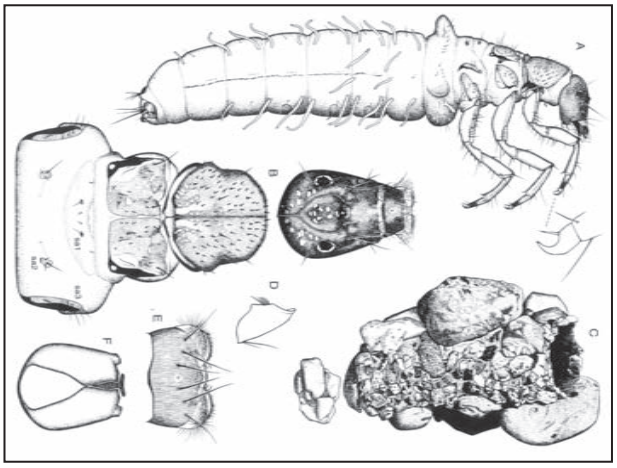
- long, thin cylindrical case made of silk only



Uenoidae: Uenoa

Neophylax sp.

- cases resembling case of Goeridae



Uenoidae: Neophylax

Uenoidae: Uenoa

Family Chloroperlidae

- thorax of larvae without gills
- last segment of maxillary palp much more thinner than the preceding segments

Chloroperlidae

Chloroperlidae

Family Peltoperlidae

- larvae markedly flattened and cockroach-like in general appearance with the
- thorax much wider than the head and abdomen

Peltoperlidae

Peltoperlidae

Family Perlidae

- thorax of larvae with branched lateral gills

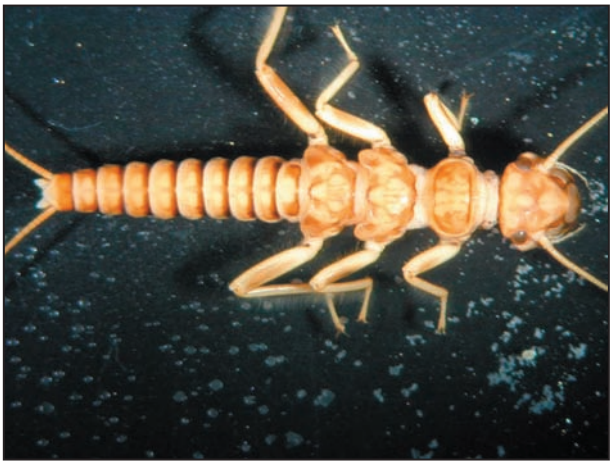
Perlidae

Perlidae

Family Perlodidae

- thorax of larvae without branched lateral gills

Perlodidae



Perlodidae

Family Nemouridae

- larvae small, stout, femora of hind legs longer or as long as the abdomen
- cervical gill present or not and of different shape

Amphinemoura sp.

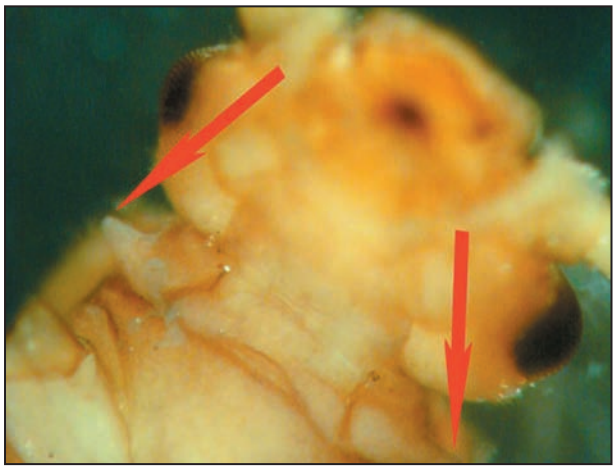
- cervical gills highly branched

Nemouridae: Amphinemoura

Nemouridae habitus

Mesonemoura sp.

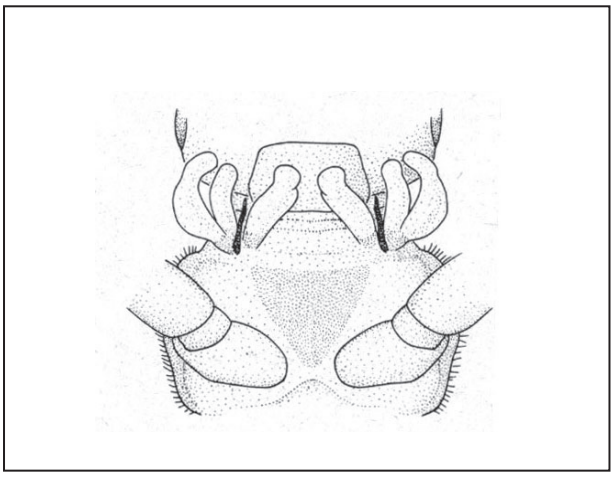
- 1 sharply pointed cervical gill on each side



Nemouridae: Mesonemoura

Protonemura sp.

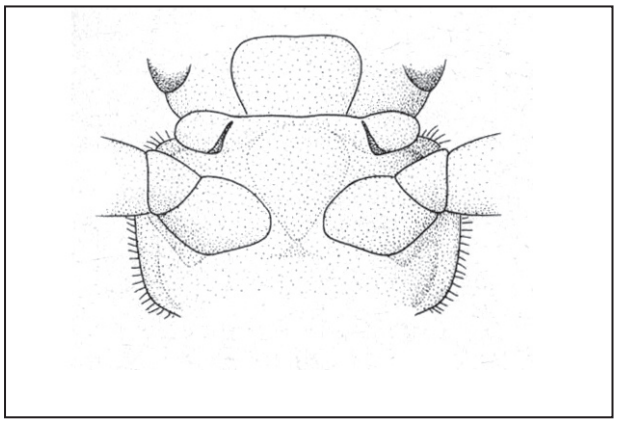
- 3 cervical gills on each side



Nemouridae: Protonemura

Indonemoura sp.

- 1 blunt knob-like cervical gill on each side



Nemouridae: Indonemoura

Sphaeronemoura sp.

- 2 cervical gills on each side

Nemouridae: Sphaeronemoura

Family Leuctridae

- larvae small to medium sized, slender, often pale
- femora of hind legs shorter as the abdomen
- complete separation of sternites and tergites of abdominal segments 1 to 4/6/7

Leuctridae

Family Heptageniidae

- larvae distinctly flattened dorsoventrally
Several Genera

Iron sp.

- Terminal filament reduced
- Gills on first abdominal segment enlarged, meet or almost meet beneath abdomen to form a ventral disc

Epeorus sp.

- Terminal filament reduced
- Gills on first abdominal segment <u>not</u> enlarged, equal to subequal to other gills in size

Heptagenidae: Iron

Heptageniidae: Epeorus

Heptagenidae: Iron, enlarged gills

Heptagenidae: Epeorus, gills not enlarged

Family Heptageniidae

Rhithrogena sp.

- Terminal filament not reduced
- Gills on first abdominal segment enlarged, meet or almost meet beneath abdomen to form a ventral disc

Heptageniidae: Rhithrogena

Heptageniidae: Rhithrogena, enlarged gills

Ecdyonurus s.l.

- locomotive gills
- lateral margins of pronotum dilated

Heptageniidae: Edcdyonurus s.l.

Cinygmula sp.

- Front of head distinctly emarginated medially
- maxillar palpi normally partially visible at sides of head from dorsal view

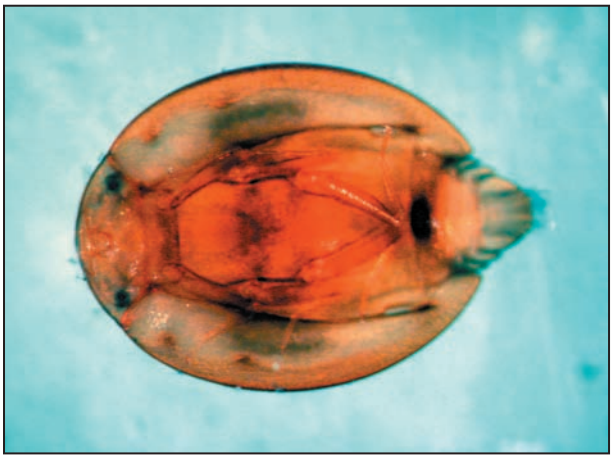
Heptageniidae: Cinygmula

Family Prosopistomatidae

- Pro- and Mesonotum fused and enlarged to form a shield
- Wing pads and legs not visible in dorsal view

1 genus: Prosopistoma

Prosopistomatidae: Prosopistoma



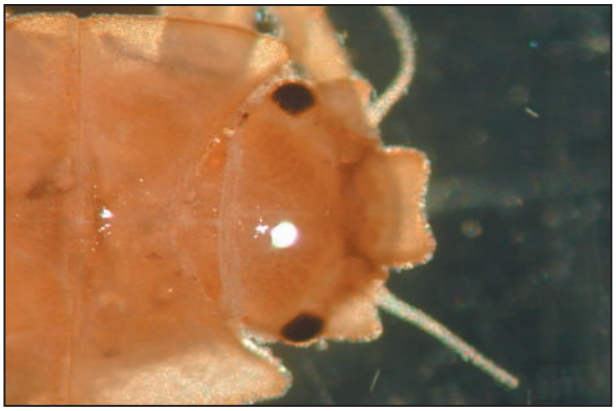
Prosopistomatidae: Prosopistoma

Family Neoepehmeridae

- Mesonotum with distinct rounded lobe on anterolateral corners
- Operculate gills, fused medially
- larger sized than Caenis sp.

1 genus: Potamanthellus

Neoephemeridae



Neoephemeridae: Potamanthellus

Family Ephemeridae

Ephemeridae: Ephemera

Ephemeridae: Ephemera

Family Isonychiidae

Isonychidae

Isonychidae

Family Ephemerellidae

Several genera: e.g. Uracanthella, Serratella, Torleya, Crinitella - those can not be easily identfied in the field

Cincticostella sp.

- Prothorax produded anteriorly into rounded or bluntly pointed anterolateral pro-

Ephemerellidae: Cincticostella

Ephemerellidae: Cincticostella

Drunella sp.

- Femora of forelegs enlarged, anterior margin of femota mostly with pointed teeth

Ephemerellidae: Drunella

Ephemerellidae: Drunella

Family Baetidae

Several genera

Baetiella sp.

- Adbomen, head and thorax armoured with tubercles
- terminalfilum reduced

Baetidae: Baetiella

Acentrella sp.

- Body smooth surface without tubercles
- terminalfilum reduced

Baetidae: Acentrella

Cloeoninae

- Tarsal claws always lomg and slender, only slightly bent at apex

Baetidae: Cloeoninae

Baetis sp.

- Body cylincdrical or flattened bilaterally
- Body <u>not</u> armoured with tubercles

Baetidae: Baetis

EPHEMEROPTERA

Family Caenidae

Operculate gills not fused medially

Brachycercus sp.

- Head with three prominent ocellar tubercles

Caenidae: Brachycercus

Caenidae: Brachycercus

Caenis sp.

- Head without ocellar tubercles

Caenidae: Caenis

Family Elmidae

several genera

Grouvellinus sp.

- large sized, stout body
- Antenna eleventh-segmented

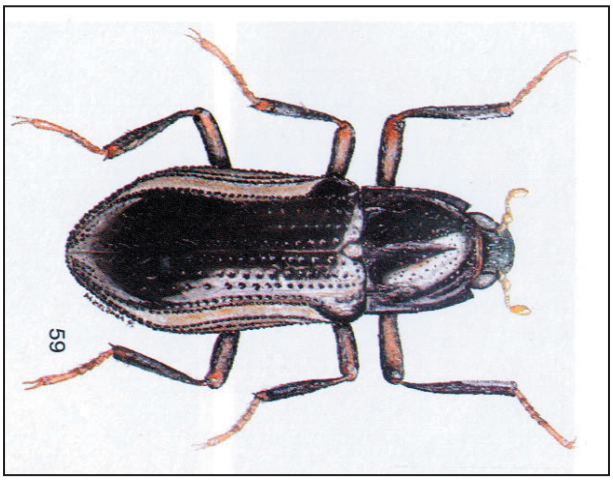
Elmidae: Grouvellinus

Elmidae: Grouvellinus Larva

Zaitzevia sp.

- middle sized, body long, slender
- body surface not shiny
- Antenna eigth-segmented

other larvae are not known



Elmidae: Zaitzevia

Family Elmidae

Stenelmis sp.

- large sized, body long, slender
- Antenna eleventh-segmented

Elmidae: Stenelmis

Indosolus sp.

- small sized,
- body dorsoventrally flattened
- shiny body surface

Elmidae: Indosolus

from left to right:
Indosulus - Stenelmis - Grouvellinus

Family Dryopidae

Adult:

- second segment of antenna enlarged

Dryopidae

Larva:

- Abdomen with 9 segments, 9th segment with operculum

Dryopidae Larva

Family Scirtidae

Larva

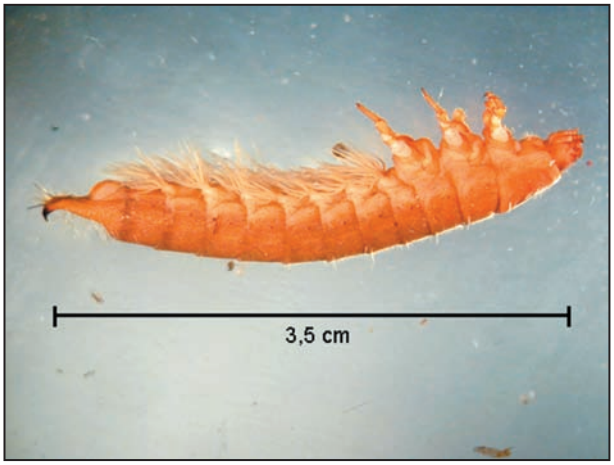
- very long antennae
- Imagines terrestrial

Scirtidae Larva

Family Eulichadidae

Larva

- very larged sized - up to 4cm



Scirtidae Larva

Family Psephenidae

three subfamilies
imagines terrestrial

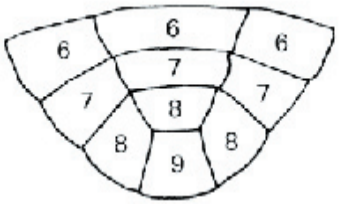
Eubriinae:

- abdominal segments not fused laterally
- last segment often forked

Eubriinae

Eubrianacinae

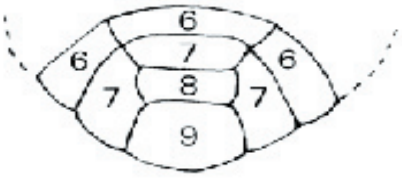
-8th segment expanded laterally, not enclosed by 7th segment



Eubrianacinae

Psepheninae:

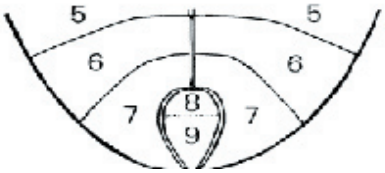
- 8th segment not expanded laterally, enclosed by 7th segment

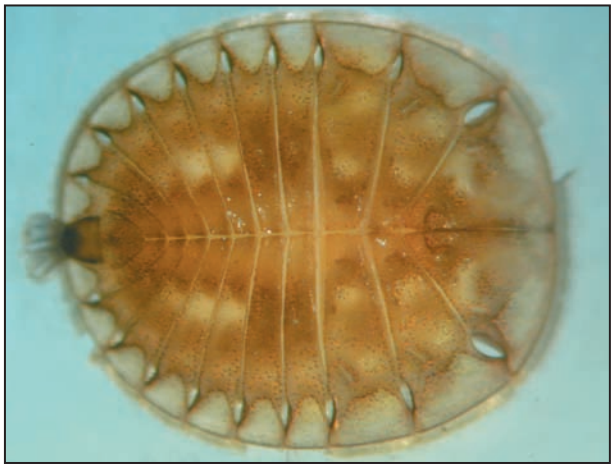


Psepheninae

Psephenoidinae:

- 8th and 9th.abdominal segments completely enclosed by 7th segment





Psephenoidinae

COLEOPTERA

Family Gyrinidae

Adult:

- two pairs of eyes, below and above water level

Gyrinidae

Larva:

-Abdomen with 10 segments, gills laterally

Gyrinidae Larva

Family Dytiscidae

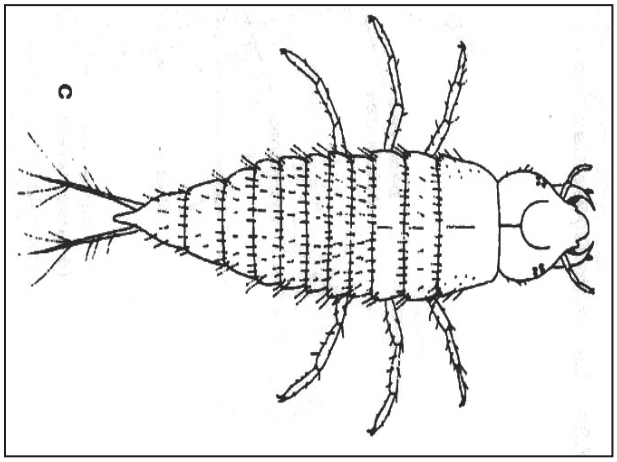
Adult:

-body small to big, belly rounded

Dytiscidae

Larva:

- last segmentt with 2 long appen-daces



Dytiscidae Larva

Family Hydrophilidae

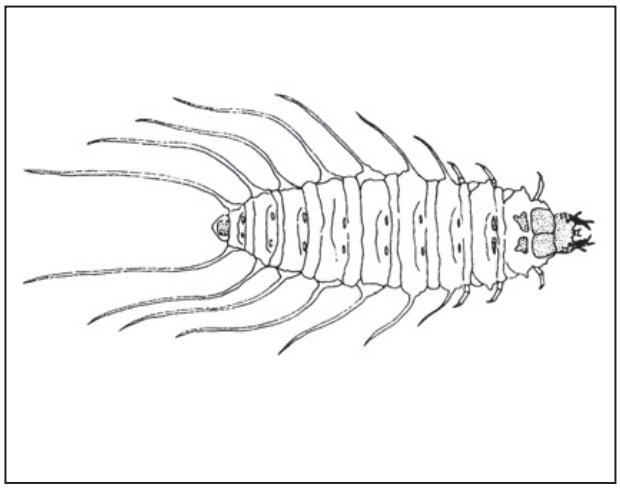
Adult:

- Antennae rather short, often hidden beneath the eye, last three segment clublike
- Maxillary palps easily visible from above, longer than antennae
- small to big, various designs and body shapes

Larva:

- Legs three segmented with one claw
- some species with long gills

Hydrophilidae: Berosus



Hydrophilidae Larva

Family Euphaeidae

- Three caudal gills that are sac-, leaf- or blade-like
- filamentous gills on the under-side of abdominal segments II-VIII

Euphaeidae

Family Epiophlebiidae

Epiophlebia sp.

- Larvae somewhat slender and elongate
- antennae with five segments
- body covered with tubercles, but lacking bristles

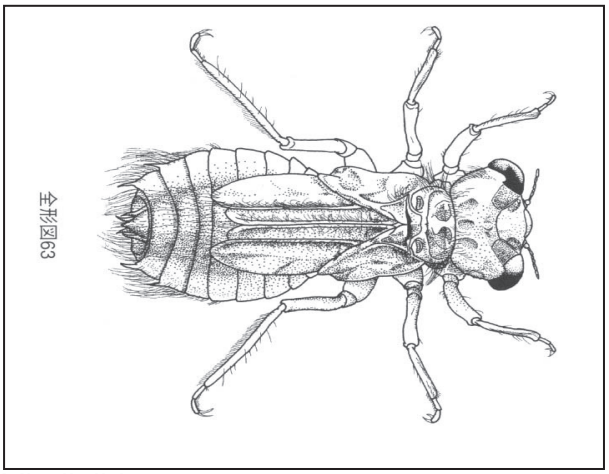
Epiophlebiidae

Epiophlebiidae

Family Libellulidae / Corduliidae

Libellulidae:

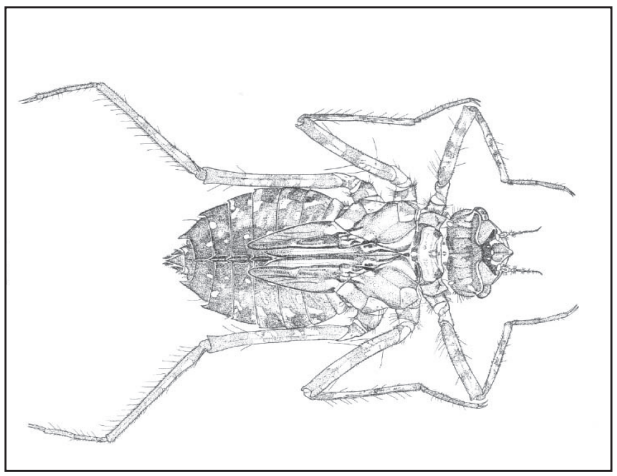
- Cerci generally not more than one-half as long as paraprocts



Libellulidae

Corduliidae:

- Cerci generally more than one-half as long as paraprocts



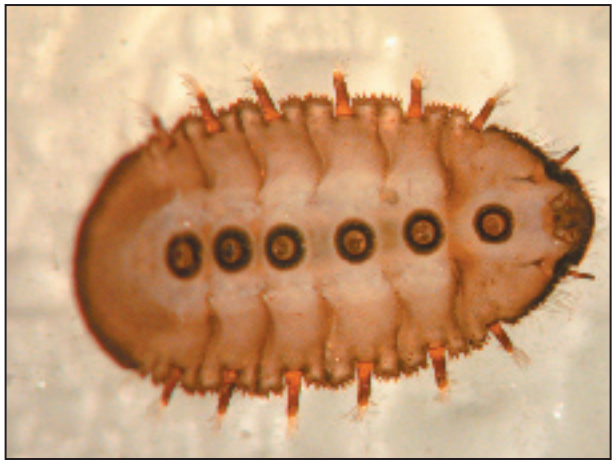
Corduliidae

Family Gomphidae

- Antennae four-segmented, with the 3. segment enlarged

Gomphidae

Diptera: Blephariceridae: Blepharicera



Diptera: Blephariceridae:Horaia

Diptera: Deuterophlebiidae

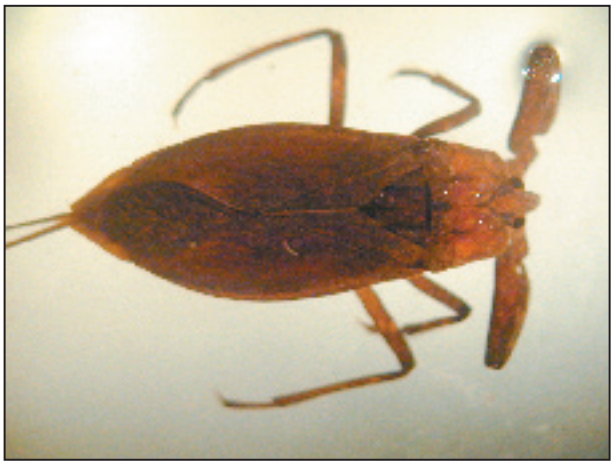
Diptera: Psychodidae, cf. Psychoda white

Diptera: Tabanidae, cf. Tabanus

Diptera: Syrphidae

Diptera: Chironomidae

Heteroptera: Aphelocheiridae



Heteroptera: Nepidae: Nepa

Heteroptera: Nepidae: Ranatra

Heteroptera: Notonectidae

Heteroptera: Pleidae

Heteroptera: Belostomatidae

HETEROPTERA

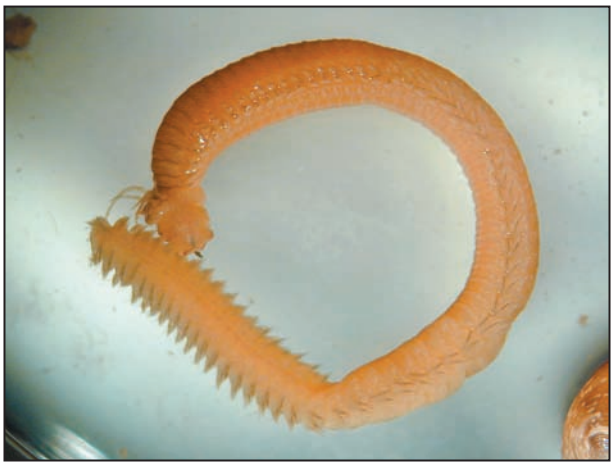
Bivalvia: Unionidae

Crustacea: Potamidae

Megaloptera: Corydalidae

Lepidoptera

Oligochaeta: Tubificidae



Polychaeta