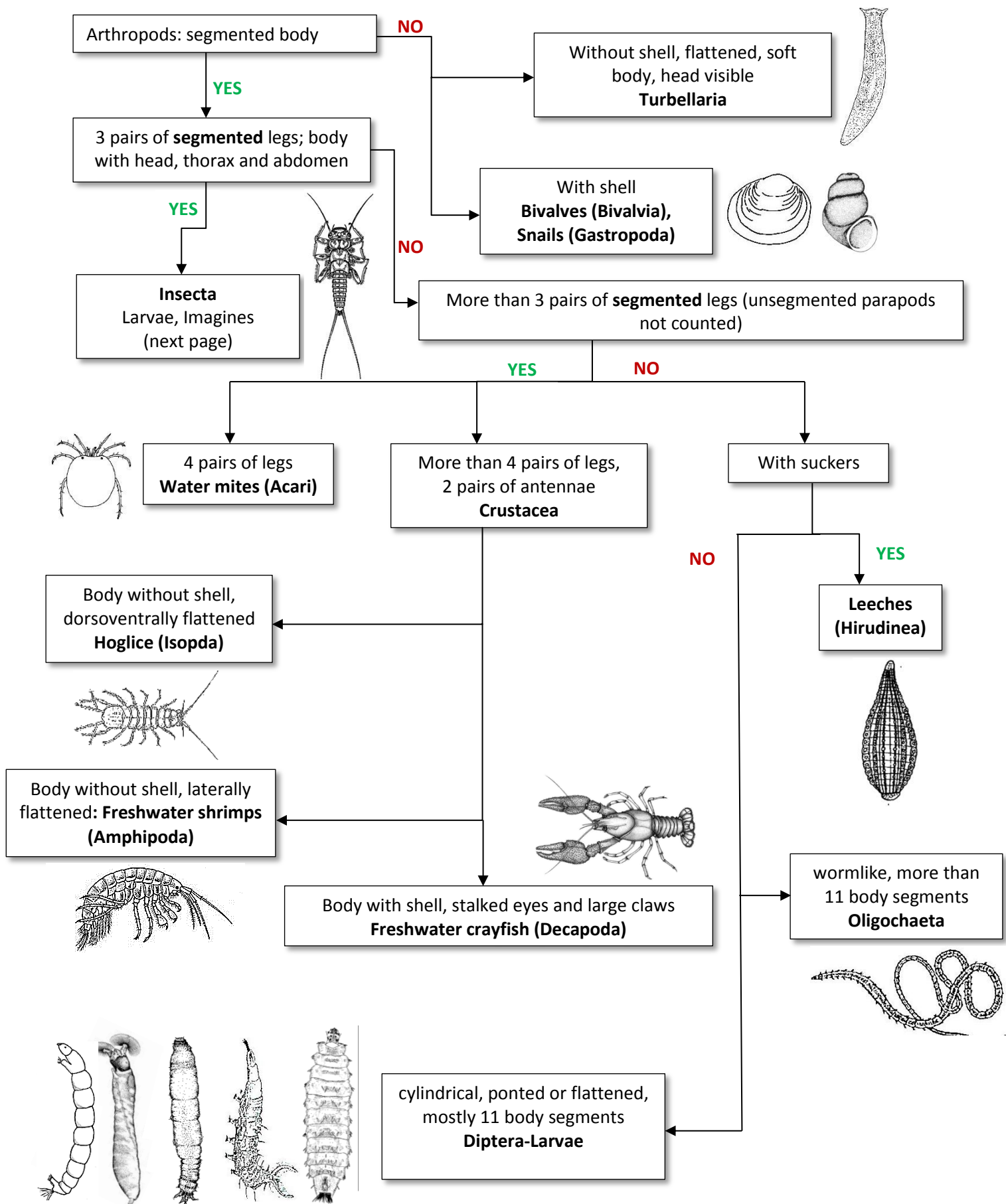


Key to freshwater invertebrates from streams and rivers



Insect orders in streams and rivers

Only few mm long, with furca on abdomen:

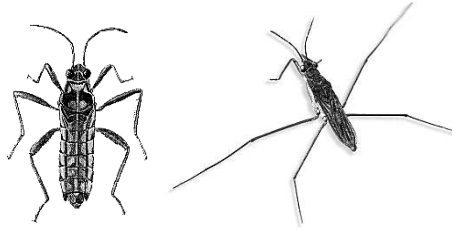
Springtails (Collembola)



No

With sucking mouthparts:

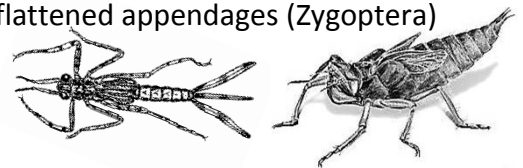
Water bugs (Heteroptera)



No

Mouthparts with modified labium, tip of abdomen with 3 flattened appendages (Zygoptera) or 5 pointed appendages (Anisoptera):

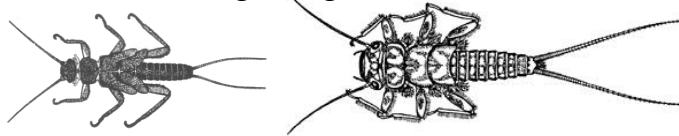
Dragonfly larvae (Odonata)



No

Tip of abdomen with 2 tail filaments, without abdominal gills, legs with 2 claws:

Stonefly larvae (Plecoptera)



No

Tip of abdomen with 3 (seldom 2) tail filaments, with abdominal gills, legs with 1 claw:

Mayfly larvae (Ephemeroptera)



No

Tip of abdomen with long or short anal prolegs; with or without case:

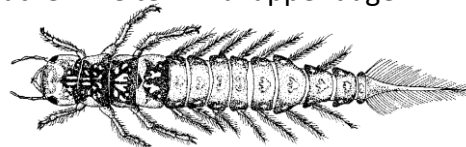
Caddisfly larvae (Trichoptera)



No

Abdomen with paired, feather-like gills and feather-like terminal appendage:

Alderfly larvae (Megaloptera)



No

Body shape different, without wings (larvae) or with hard wing sheets (elytra)

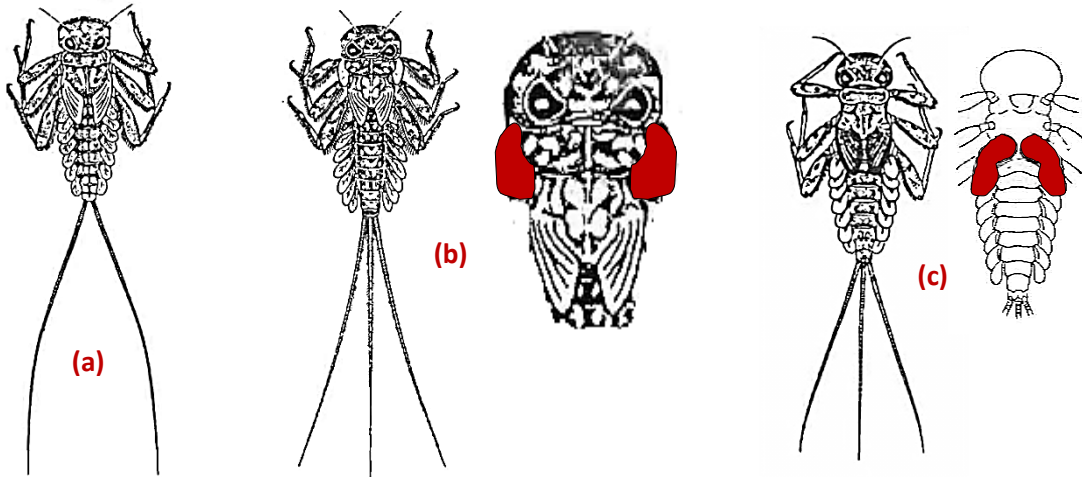
Beetles (Coleoptera)



Ephemeroptera genera in the Upper Lunzer Seebach (larvae)

1 Body dorsoventrally flattened, eyes dorsally (a-c) 2

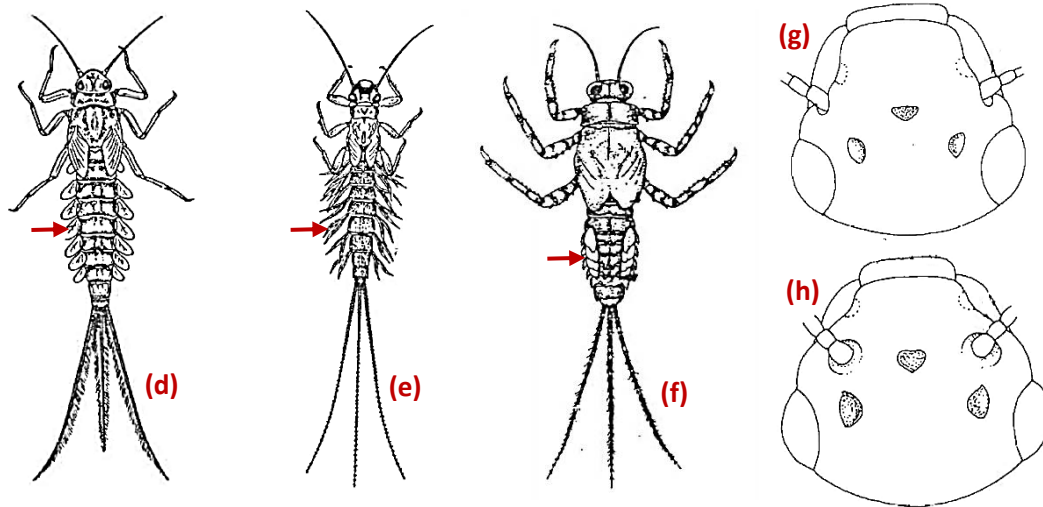
- Body cylindrical, eyes laterally (d-f) 4



2 Two tail filaments (a): *Epeorus* sp. (1,1; Scr 10)

- Three tail filaments (b-c)

3



3 Pronotum laterally enlarged (b):

Ecdyonurus sp. (1,6; Scr 5 – Det 5)

- Pronotum laterally not enlarged; first pair of gills enlarged, almost in contact medially (c):

Rhithrogena sp. (1,2 x; Scr 10)

4 Gills laterally (d-e)

5

- Gills dorsally on abdomen; larvae stocky (f):

Ephemerella sp. (1,8; Scr 5 – Det 5)

5 Gills ovoid (d):

Baetis sp. (1,7; Scr 5 – Det 5)

- Gills bifurcate (e):

Antennal base inserting on lateral head margin (g): *Habroleptoides* sp. (1,4 x; Det 10)

Antennal base inserting dorsally on head (h): *Paraleptophlebia* sp. (1,6; Det 10)

Plecoptera genera in the Upper Lunzer Seebach (larvae)

- 1 Thorax and abdomen with dorsal spines (a):



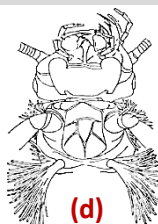
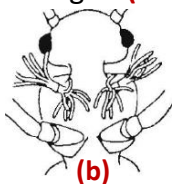
Taeniopteryx sp. (1,0 x; Shr 2 - Scr 3 - Det 5)

- Larva without dorsal spines

2

- 2 With gills (b-d)

3



- Gills lacking

6

- 3 Gills between head and thorax (b-c)

4

- Gills between legs (d)

5

- 4 With tufted gills (b):

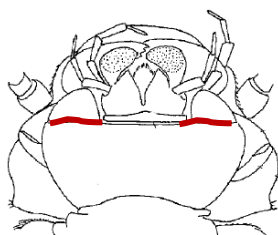
Amphinemura sp. (1,2 x; Shr 2 - Scr 5 - Det 3)

- with 6 sausage-like gills (c):

Protonemura sp. (1,2 x; Shr 5 - Scr 3 - Det 2)

- 5 Submentum consisting of 3 parts (e):

Dinocras sp. (1,2; Scr 1 - Pre 9)

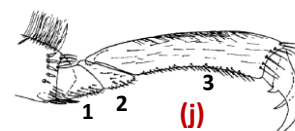
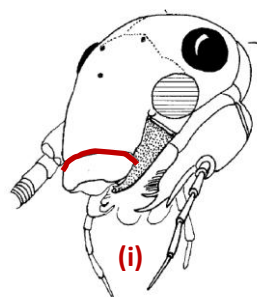
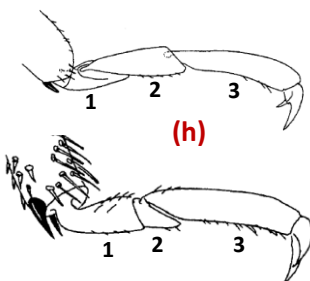
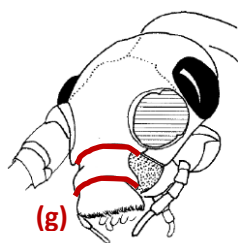


- Submentum undivided (f):

Perla sp. (1,2 x; Scr 1 - Pre 9)

- 6 Frons, clypeus and labrum separated by two sutures (g); terminal leg section not longer than first and second section together (h)

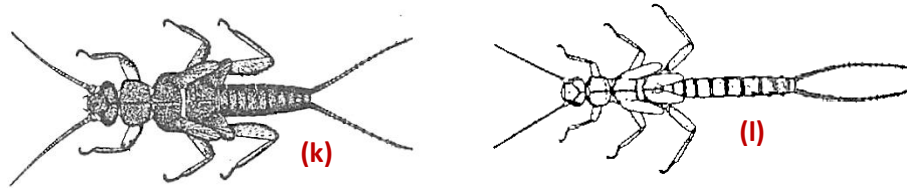
7



- Frons and clypeus fused, only labrum separated by a suture (i); terminal leg section twice as long as first and second section together (j)

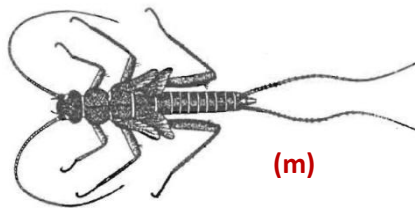
10

- 7 Hind legs longer than abdomen; Hindwing sheets oblique to body main axis **(k)** 8



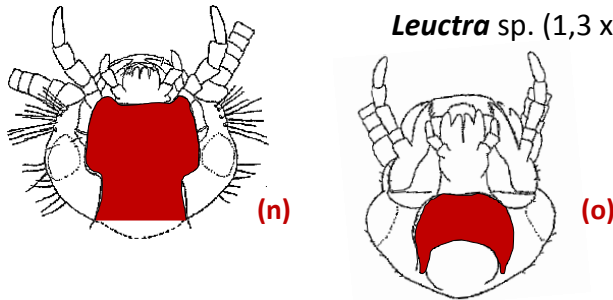
- Abdomen longer than legs; Hindwing sheets parallel to body main axis **(l)** 9

- 8 With long legs: when legs are folded, tip of tibia reaches coxa; cerci as long as body **(m)**:
Nemurella pictetii (1,0 x; Shr 2 - Scr 3 – Det 5)



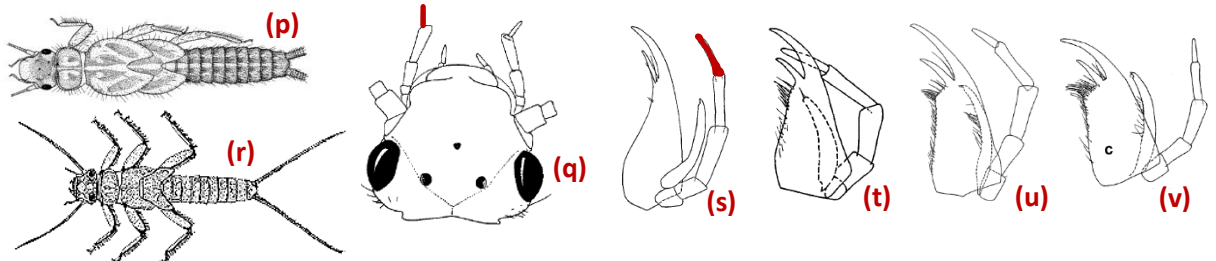
- Legs shorter; cerci shorter than body **(k)**:
Nemoura sp. (1,4; Shr 7 - Det 3)

- 9 Mentum plate-like, covering base of maxillae **(n)**:
Leuctra sp. (1,3 x; Shr 3 - Scr 3 – Det 4)



- Mentum small, other mouthparts plainly visible **(o)**:
Capnia sp. (1,3; Shr 6 - Scr 2 – Det 2)

- 10 Wing sheets rounded **(p)**; terminal segment of maxillary palp much narrower than penultimate segment **(q)**: *Chloroperla* sp. (1,3 x; Shr 1 - Scr 1 - Det 2 - Pre 6)



- Wing sheets straight **(r)**; terminal segment of maxillary palp proximally almost as broad as penultimate segment **(s)**. Genera determination according to maxilla shape **(s-v)**:

(s): *Perlodes* sp. (1,2; Shr 1 - Scr 1 - Det 2 - Pre 6)

(t): *Isoperla* sp. (1,5; Scr 2 - Pre 8)

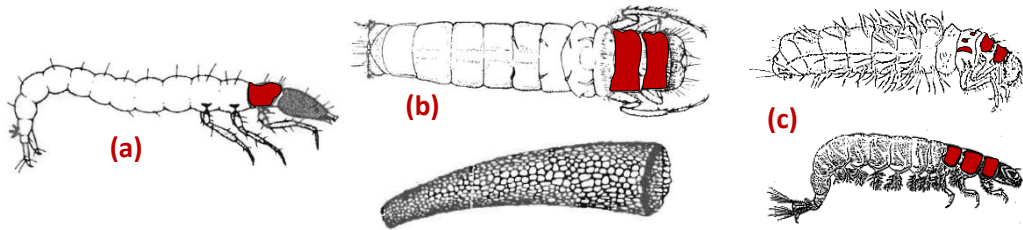
(u): *Dictyogenus* sp. (1,0 x; Pre 10)

(v): *Besdolus* sp. (nicht eingestuft; Pre 10)

The most abundant Trichoptera genera in the Upper Lunzer Seebach (larvae)

1 Only Pronotum sclerotized; without transportable cases (a)

2



- Pronotum and mesonotum sclerotized; case conical, smooth, made from sandgrains (b): *Sericostoma* sp. (1,4; Shr 10)

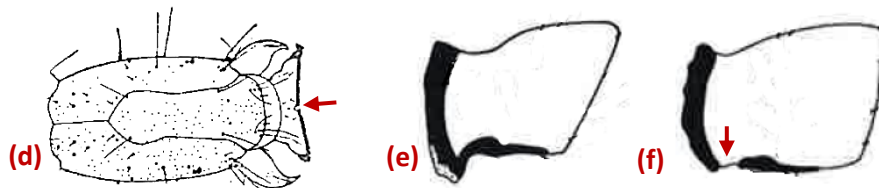
- Pronotum, mesonotum and metanotum sclerotized (c)

4

2 Labrum membranous (d); black lateral stripe on pronotum either continuous (e) or discontinuous (f):

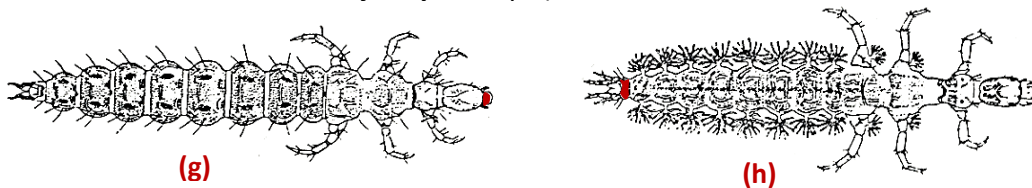
(e) *Philopotamus* sp. (1,0 x; Fil 10)

(f) *Wormaldia* sp. (1,0 x; Fil 10)



- Labrum sclerotized (g); ninth abdominal segment with dorsal sclerite (h):

Rhyacophila sp. (1,7 x; Pre 10)

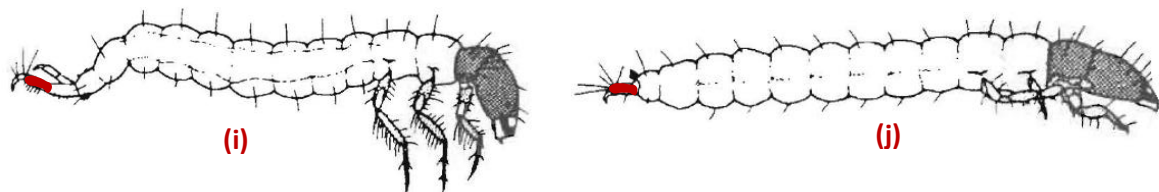


- Labrum sclerotized; ninth abdominal segment without dorsal sclerite

3

3 Basal section of anal proleg membranous, terminal section sclerotized (i):

Plectrocnemia sp. (1,5; Fil 1 – Pre 10)



- Whole anal proleg sclerotized (j):

Tinodes sp. (1,5 x; Scr 8 - Fil 1 – Det 1)

4 Pronotum, mesonotum and metanotum totally sclerotized (k, l) 5

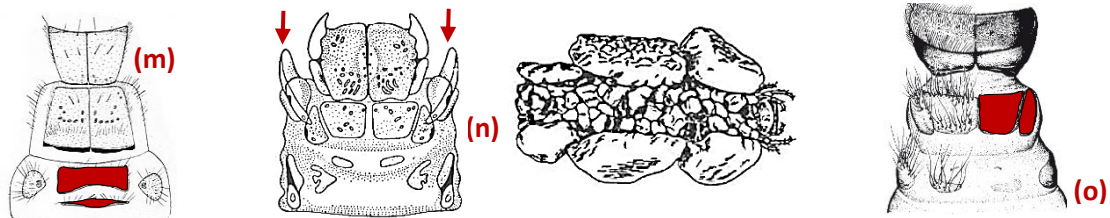


- Metanotum partially sclerotized (m) 6

5 Large larvae without cases, with tufted gills (k), construct filtering nets
Hydropsyche sp. (2,1; Scr 2 - Fil 5 - Pre 3)

- Small larvae, with transportable, flattened cases (l):
Hydroptila sp. (1,8; Det 5 - Oth 5)

6 Metanotum with 2 parallel, transverse sclerites (m):
Odontocerum sp. (1,0 x; Shr 3 - Scr 3 - Det 4)



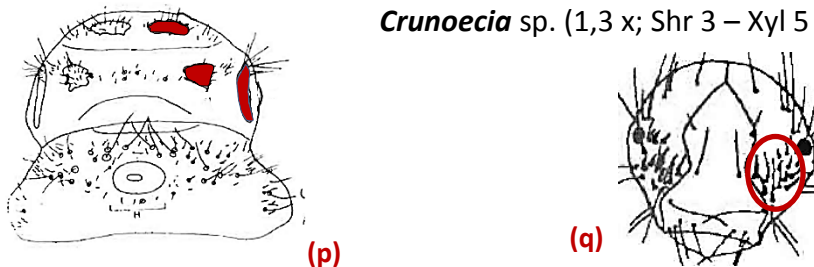
- Metanotum different; sclerite dorsally of midleg (epipleura) with anterior tip; case with lateral ballast stones (n):
Silo sp. (1,0 x; Scr 9 - Det 1)

- Metanotum different; without enlarged and pointed epipleura 7

7 Mesonotum with four sclerites (o); with dorsal sclerite on ninth abdominal segment:
Micrasema sp. (1,2 x; Shr 5 - Scr 5)

- Mesonotum with two sclerites 8

8 Antennae close to anterior margin of eye:
Crunoecia sp. (1,3 x; Shr 3 - Xyl 5 - Pre 2)



- Antennae halfway between eye and anterior head margin; Metanotum with 6 sclerites (Limnephilidae) (p) 9

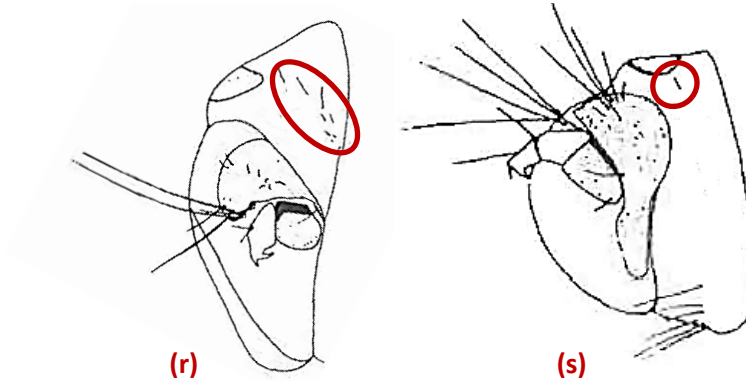
9 Mandibles without terminal teeth:
Ecclisopteryx sp. (with head spines: (q) (1,0 x; Shr 1 - Scr 8 - Det 1)

Drusus sp. (without head spines) (1,0 x; Shr 1 - Scr 8 - Det 1)

- Mandibles with terminal teeth 10

- 10 Several dorsolateral setae present on ninth abdominal segment **(r)**:

Potamophylax sp. (1,0; Shr 6 – Scr 2 – Pre 2)

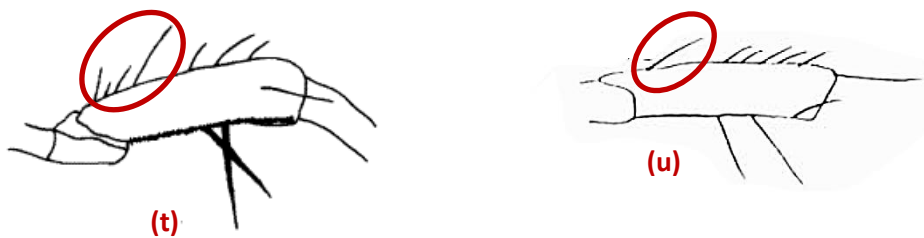


- Only one dorsolateral seta present on ninth abdominal segment **(s)** 11

- 11 Several proximodorsal setae present on third femur **(t)**:

Halesus sp. (1,6; Shr 7 – Scr 1 - Pre 2)

- Only one proximodorsal seta present on third femur **(u)** 12

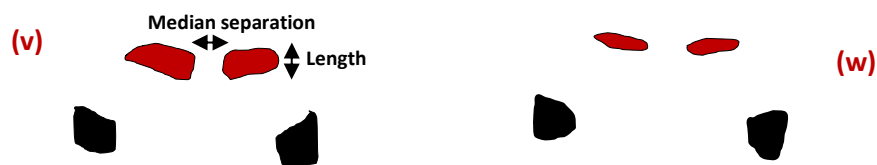


- 12 Anteromedian metanotal sclerites longer or as long as their median separation **(v)**:

Allogamus sp. (1,0 x; Shr 4 – Scr 2 - Fil 2 – Pre 2)

- Anteromedian metanotal sclerites shorter than their median separation **(w)**:

Chaetopteryx sp. (1,2; Shr 6 – Scr 2 - Pre 2)



Turbellaria in the Upper Lunzer Seebach

only *Crenobia alpina* (1,0 x; Pre 10)



Hirudinea in the Upper Lunzer Seebach

only *Glossiphonia* sp. (2,7; Pre 10)



Mollusca in the Upper Lunzer Seebach

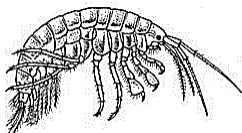
only *Bythinella* sp. (1,0 x; Scr 10)



Crustacea in the Upper Lunzer Seebach

Amphipoda:

With eyes: *Gammarus* sp.
(1,8; Shr 7 - Scr 1 - Det 2)

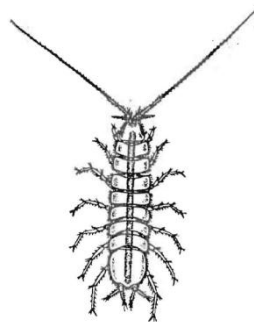


Blind, from groundwater: *Niphargus* sp.
(1,0 x; Shr5 – Det 5)



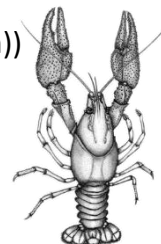
Isopoda:

only *Proasellus* sp. (1,0 x; Oth 10 (carrion))



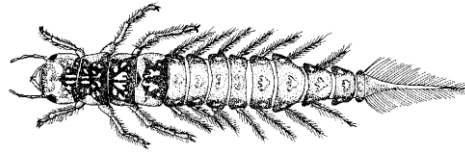
Decapoda:

only *Austropotamobius* sp. (1,5; Det 3 – Pre 3 - Oth 4 (carrion))



Megaloptera in the Upper Lunzer Seebach

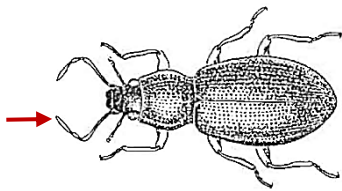
only *Sialis* sp. (1,2 x; Pre 10)



Coleoptera in the Upper Lunzer Seebach

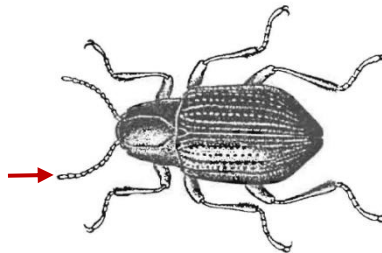
Maxillary palps longer than antennae:

Hydraena sp. (1,4; Scr 10)



Antennae longer than maxillary palps:

Riolus sp. (1,4; Scr 10)

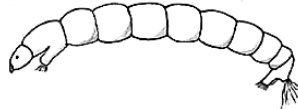


Larva

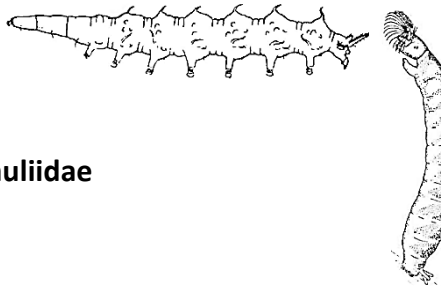


Diptera in the Upper Lunzer Seebach (larvae)

with 2 pairs of parapods: **Chironomidae**



with 8 pairs of parapods: **Athericidae**



without parapods, labrum fan-like: **Simuliidae**

without parapods, body encrusted with calcium carbonate: **Stratiomyidae**



without parapods; with terminal respiratory disc surrounded by lobes: **Tipulidae** and **Limoniidae**



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