A Key to the Larvae of British Aquatic Coleoptera

Version 4
April 2016

British water beetles do not spend their entire life cycle there, adults may fly between water bodies and pupation always occurs on land or at least in wet mud beside water. The larvae on the other hand depend on the aquatic environment for survival. Adults may be identified to species using published keys but I have yet to find a complete key to water beetle larvae. However identification at least to family level is useful when using various site quality indices such as BMWP, ASPT, PSYM etc. especially as larvae may be found when adults are not present.

The key presented here does not attempt to be totally comprehensive and has been compiled from a large number of sources which are credited at the end. It does attempt to identify the majority of larvae commonly found in British freshwater. For most this will give the family & often the genus, to which the larvae belongs. Only for some larvae will you arrive at an individual species. The key is still being developed and there are a few families which are not yet incorporated so you may find some larvae will not be resolved. There are also bound to be problems and errors and so any comments will be both helpful and welcome.

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In this key, solid boxes contain the family, genus or species of your larva.

A dotted box indicates that you need to continue the identification at a later page on the key.

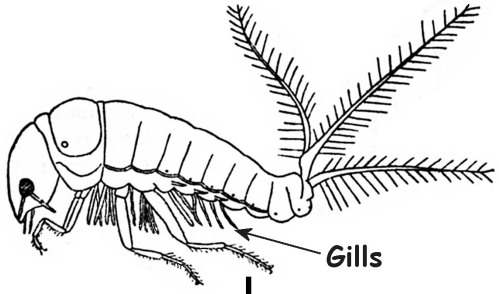
The number of species found within each family or genus is given wherever possible.

Glossary of some of the terminology used in this key

Anterior - Posterior	*the anterior is the front end, the posterior the back end*	**mandibles**	*the pair of jaws used to grasp, cut or crush food for an insect, the most anterior of the 3 pairs of mouthparts*
basal	*Relating to the base of something, e.g. the basal half of a femur is the half nearest the body*	**maxilla**	*the pair of mouthparts below the mandibles. Used to manipulate food, they also have sensory palps attached to them*
cerci *plural* **cercus** *singular*	*a pair of appendages at the rear of the abdomen of certain insects and other arthropods, serving as tactile organs*	**proximal** opposite of distal	*Nearest to the point of attachment or origin; e.g. the proximal end of the antenna of a larva would be the first segment*
distal opposite of **proximal**	*Furthest from the point of attachment or origin; e.g. the distal end of the antenna of a larva would be the last segment*	**setae** -plural **seta** -singular	*bristle or hair-like structures often with a sensory function*
dorsal - ventral	*the dorsal side of an insect is on the top, where the wings are attached, the ventral is underneath where the legs are*	stipes	*the basal segment of the maxilla of an insect or a crustacean*
labium	*one of the mouth parts of an insect, in beetles it is like a flat plate in form stretching between the jaws, used to manipulate food*	**sutures**	*lines or grooves formed where the different plates of the exoskeleton of invertebrates are joined together.*
labroclypeus	*a lip-like structure above the other mouth-parts with usually with teeth along the edge*	**ocelli**	*are simple light detecting organs, the simple eyes of invertebrates as opposed to compound eyes.*
ligula	*a small tongue like structure protruding out from the centre of the labium in some insects*	**operculum**	*an oval or circular lid like cover over a depression at the posterior end of a beetle larva, which may have gills underneath*

START

Thin, ventral gills hang in bunches under the thoracic and the first 3/4 abdominal segments.
The head and thorax are enlarged, the abdomen tapers towards the rear. Cerci are in the form of 3 hairy or feathery 'tails'.



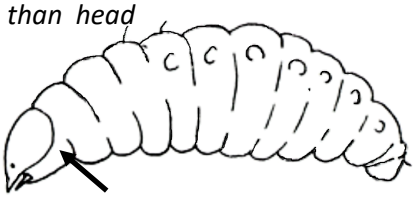
Family: **Paelobiidae (Hygrobiidae)**
1 species **Hygrobia hermani**
The Screech Beetle

No ventral gills, though dorsal or lateral gills may be present.

Head and thorax are not obviously enlarged, cerci may be present but not in the form of 3 hairy or feathery 'tails' so larva is not like the drawing on the left

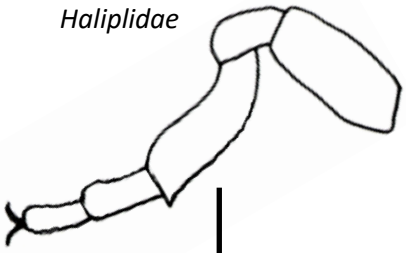
3 pairs of obvious Legs

No apparent legs, grub-like, fleshy with prothorax (arrowed) longer than head

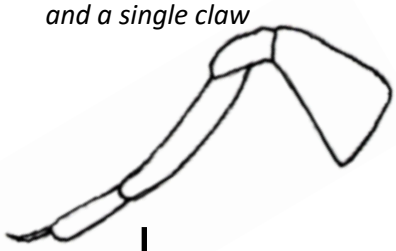


*Family: **Chrysomelidae***
94 species in 27 genera.

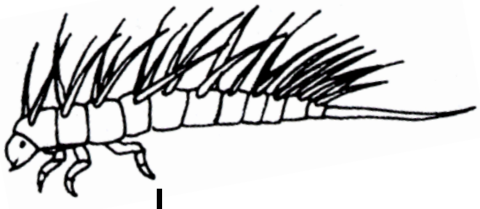
Legs have 5 segments and usually two claws, though the second claw is very small in Haliplidae



Legs have 4 segments, and a single claw



Long dorsal and lateral gills on the abdomen

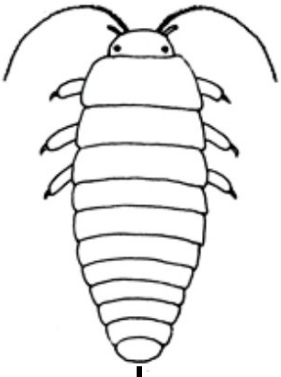


*Family: **Haliplidae***
*Genus: **Peltodytes***
1 species
Peltodytes caesus

Abdomen has either no gills or short lateral gills

Continues at **A** on page 3

Long antennae much longer than the head.



*Family: **Scirtidae***
21 species in 7 genera e.g.
Elodes, Cyphon, Scirtes etc.

Short antennae, not longer than the head.

Continues at **B** on page 3

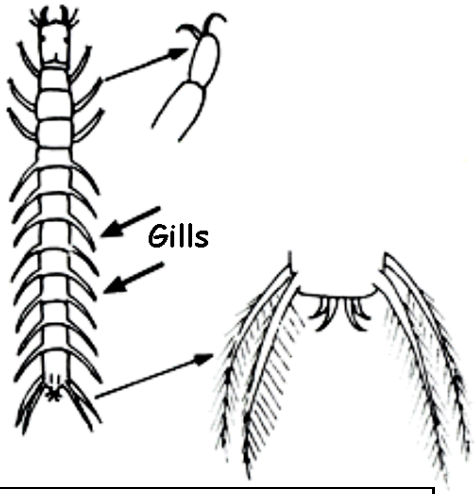
Larvae with 5 segmented legs, short lateral gills or none

A
from page 2

Each leg clearly has two claws of similar size. → Continues at C on page 5

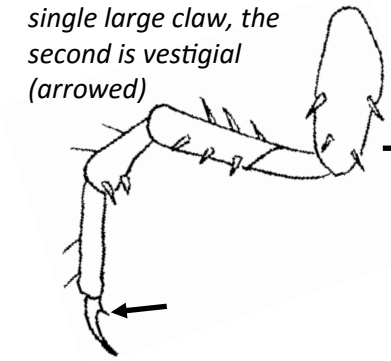
Short lateral gills. Legs have obvious double claws. Four hooks at end of the abdomen.

No gills.



Family: ***Gyrinidae*** *Whirligigs ...*
*2 genera (****Gyrinus*** *11 species,*
Orectochilus *1 species)*

Appears to have a single large claw, the second is vestigial (arrowed)



Antennae: 3rd segment about 3x as long as second segment.

Family: ***Haliplidae***
Genus: ***Brychius***
1 species
Brychius elevatus

Antennae: 3rd segment shorter than second

Family: ***Haliplidae***
Genus: ***Haliplus***
17 species

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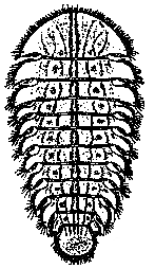
4 segmented legs,antennae never much longer than head.

B
from page 2

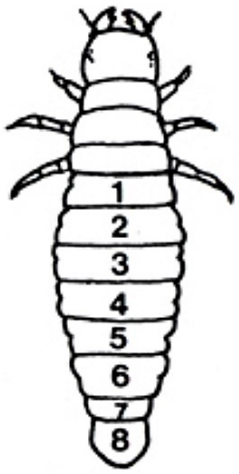
Body not flattened & legs visible

Body flattened legs hidden



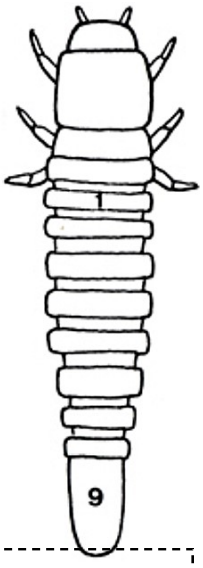
Family:
Psephenidae
Genus ***Eubria***
1 species
Eubria palustris

Abdomen with 8 segments: body usually soft



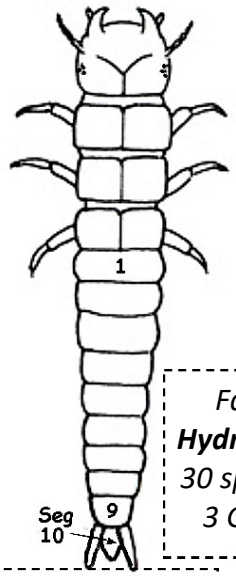
Continues at D on page 8

Abdomen with 9 segments: body usually hard



Go to next page E

Abdomen with 10 segments & cerci at rear



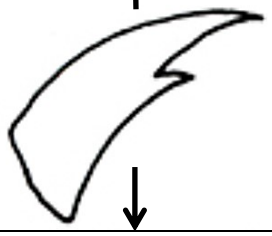
Family:
Hydraenidae
30 species in 3 Genera

Go to next page F

Legs 4 segments, abdomen 9 segments, antennae short

E
from page 3

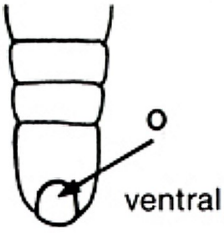
No operculum on last abdominal segment. Mandibles with prominent



*Family: **Helophoridae***
1 Genus:
***Helophorus** 20 species*

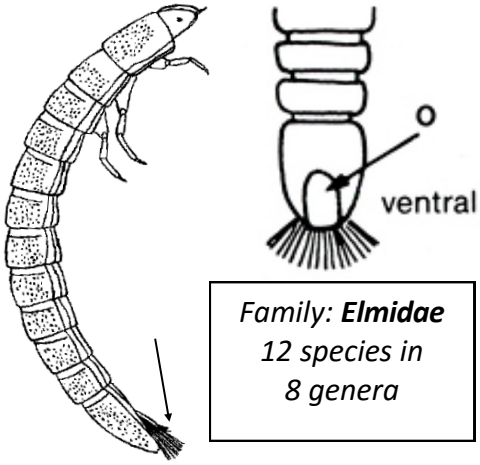
Ventral side of last abdominal segment with operculum (0 - arrowed in the diagram below) Mandibles without prominent teeth.

Body circular in cross section and generally smooth no gills in operculum. (Look underneath)



*Family: **Dryopidae:***
Genus:
***Pomatinus** 1 species*
*& **Dryops** 8 species*

Body semi-circular in cross section and covered in small warty bumps, gills in operculum resembling hairy tufts (Look underneath - arrowed)



*Family: **Elmidae***
12 species in
8 genera

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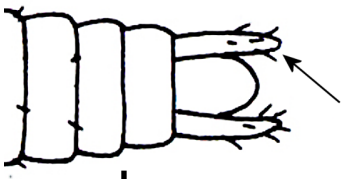
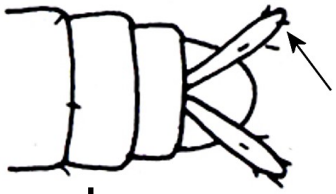
*Family **Hydraenidae***

F
from page 3

Cerci (tails) parallel

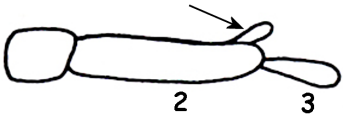


Cerci (tails) divergent



3rd antennal segment swollen on the inner face, 2nd segment has two appendages

3rd antennal segment symmetrical, 2nd has one appendage



*Genus: **Octhebius***
15 species

*Genus: **Limnebius***
5 species

*Genus: **Hydraena***
10 species

Legs with five segments, no gills, two claws of about the same size.

Dytiscidae Jaws

C
from page 3

Noteridae Jaws

Jaws sickle shaped usually protruding in front of head

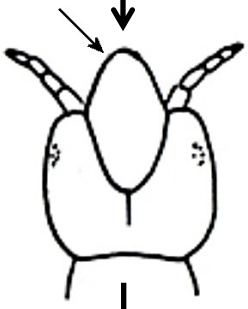
Jaws not sickle shaped & not protruding in front of head

***Dytiscidae** larvae 28 Genera (14 are keyed out here)*

Head with a frontal lobe

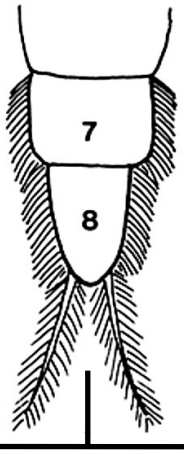
Head has no frontal lobe

*Genus: **Noteridae** 2 species*

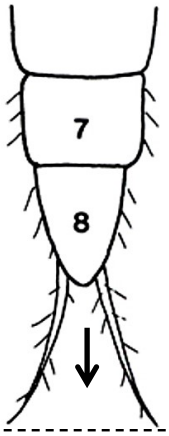


Continues at G top of page 6

Lateral fringes of dense hair on abdominal segments 7 & 8



No lateral fringes of dense hair

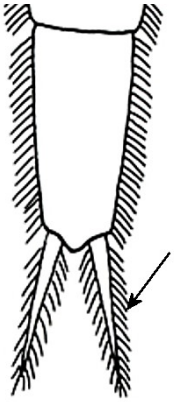


Continues at H top of page 6

Stipes of maxilla 4x as long as wide

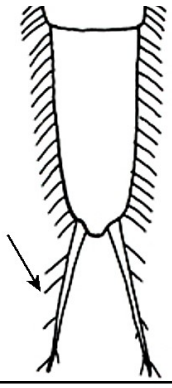
Stipes no more than 3x as long as wide

Cerci with lateral fringes of dense hair



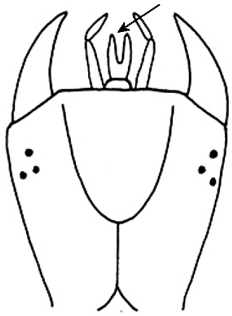
*Genus: **Dytiscus** 6 species*

Cerci without lateral fringes of dense hair



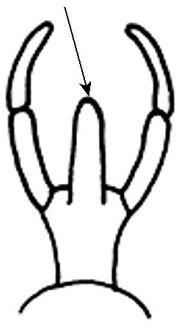
*Genus: **Hydaticus** 2 species*

Ligula (at centre of labium) forked



*Genus: **Acilius** 2 species Larvae distinctive check picture on page 6*

Ligula simple



*Genus: **Graphoderus** 2 species*

*Check (from P 5) The two species of **Acilius** have very distinctive larvae, look especially at the shape of the head and the very long first segment of the thorax, the prothorax.*

Dytiscidae larvae: head with a frontal lobe

G from page 5

EITHER

Larvae has a very long, thin frontal lobe and jaws curve up underneath to meet it. Distinctive colour pattern also.

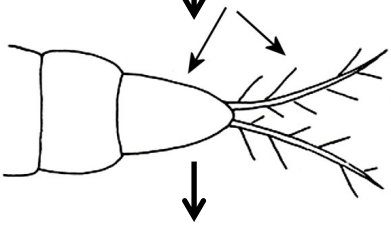
Hyphydrus ovatus

OR

Frontal lobe is shorter and wider, colour pattern different to photos

Cerci with less than 7 setae

Cerci (tails) with more than 7 setae



Cerci much shorter than length of last abdominal segment.

Genus: **Laccornis**
1 species
L. oblongus

Cerci as long or longer than length of last abdominal segment.

2 Genera:
Hygrotus & Hydroporus
9 & 29 species

Cerci (tails) short. Head (including frontal lobe) is longer than wide.

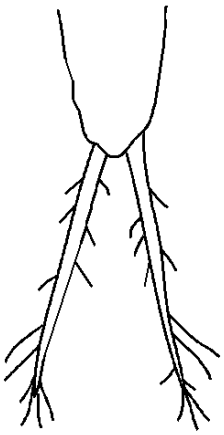
Genus:
Nebrioporus (Potamonectes)
7 species

Cerci (tails) long. Head (including frontal lobe) about as long as wide.

Genus:
Oreodytes
4 species

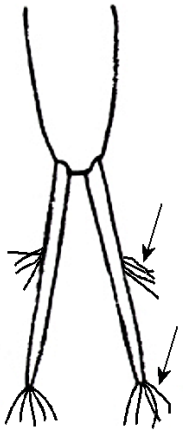
Dytiscidae larvae, no frontal lobe, no dense lateral fringes

H from page 5



Numerous hairs spread along cerci

Cerci (tails) have two groups of hairs



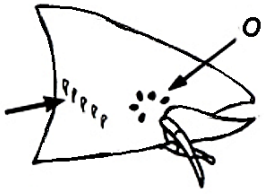
4th antennal segment more than 2/3 length of 3rd

4th antennal segment less than half length of 3rd

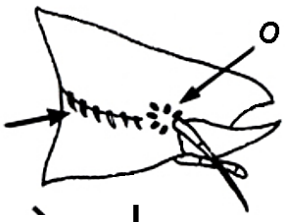
No keel to head, spines on a line running well below ocelli (O)

Slight lateral keel to head, line of spines would intersect or pass just below Ocelli

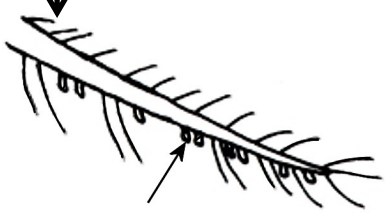
Genus: **Laccophilus** 3 species



Foreleg femur has spines confined to basal half



Foreleg femur has spines extending to distal half

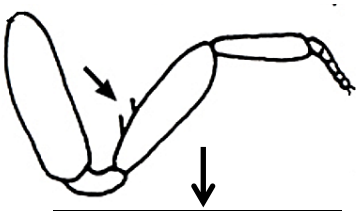


Cerci have numerous short, spine like setae on the outer edge

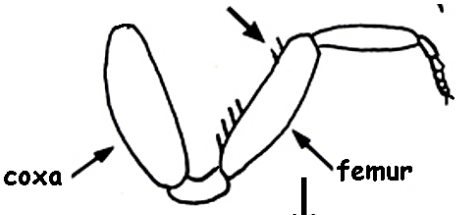
Genus: **Rhantus** 7 species

Only 2 or 3, spine like setae on outer edge of cerci

Genus: **Colymbetes** 1 species **Colymbetes fusca**



Genus: **Agabus** 21 species

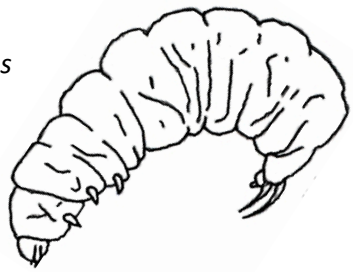


Genus: **Ilybius** 10 species

Well developed head, large, toothed mandibles (arrowed)

D
from page 3

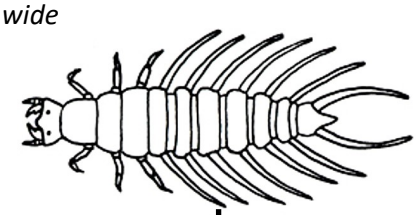
Small head, mandibles inconspicuous



Hydrophilidae
Continues below

Family:
Chrysomelidae
26 species
8 genera

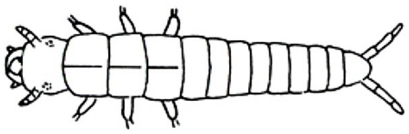
First 7 segments of abdomen have gills longer than the segments are wide



Genus: ***Berosus***
5 species

No gills or gills that are smaller than the segments are wide

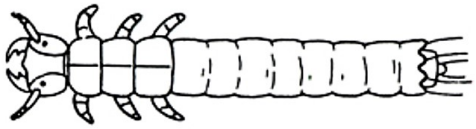
8 complete abdominal segments, 9th & 10th are reduced & joined



9 complete abdominal segments, 10th is reduced

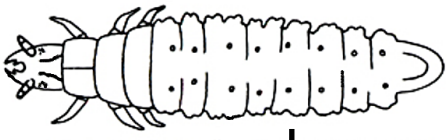
Genus:
Helophorus
(part of)
20 species

Abdomen relatively hard, of similar width to thorax & head

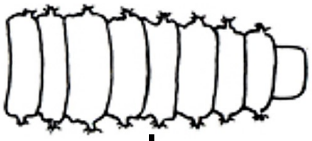


Genus: ***Hydrochus***
7 species

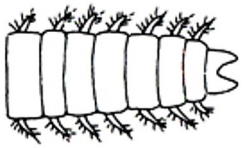
Abdomen soft, fleshy & wider than thorax & head



No gills or only rudimentary gills

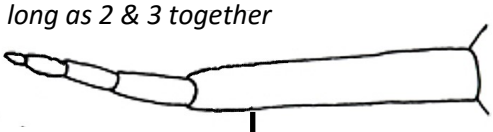


Prominent gills bearing hairs



Genus:
Hydrochara
1 species
H. caraboides

Antennal segment 1 at least twice as long as 2 & 3 together



Genus: ***Hydrophilus***
1 species
H. piceus

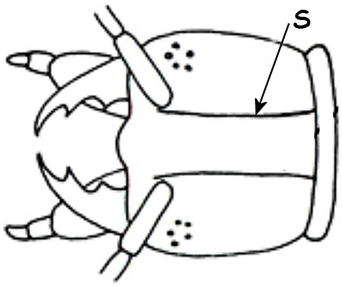
Antennal segment 1 slightly longer than 2 & 3 together

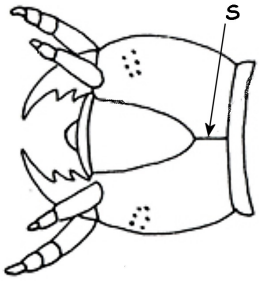
continue at
I
on page 9

I
from page 8

Sutures on head parallel & separate

Sutures on head not parallel, may join as below or may not





Genus: ***Laccobius***
9 species

Legs visible from above

Legs reduced, not visible from above

No prolegs, mandibles symmetrical

Abdomen with prolegs, mandibles dissimilar

2 Genera ***Anacaena*** *&* ***Paracymus***
Continued at J
on page 10

Labroclypeus has 4 or 5 clearly defined teeth

Labroclypeus has more than 6 teeth, those on right (viewed dorsally) not being clearly defined

Genus:
Hydrobius
1 species
H. fuscipes

Genus:
Cymbiodyta
1 species
C. marginellus

Genus:
Enochrus
11 species

NOTE: The Labroclypeus is the dorsal surface of the head above and between the mouthparts

Anacaena & Paracymus larvae

J
from page 9

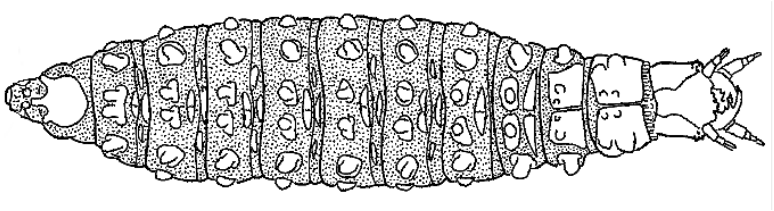
Genus:
Anacaena
4 species

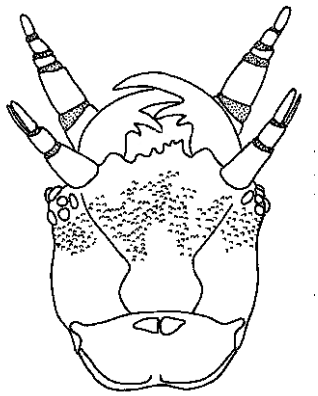
Mandible has 3 prominent & one very small 4th tooth (arrowed)

Mandible has 3 prominent teeth and no small 4th tooth present

Genus:
Paracymus
2 species

General appearance of the very small larvae





Heads are similar except for the number of teeth on the mandibles

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