

## Dichotomous Key to Common Aquatic Invertebrates

**1.**

1-1 Having segments (jointed) legs. (**Go to 2**)



1-2 Does not have segmented legs. (**Go to 15**)

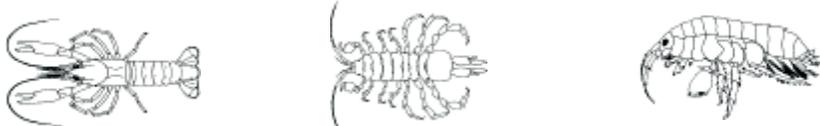


**2.**

2-1 Having only six segmented legs. (**Go to 3**)



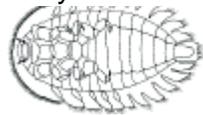
2-2 Having more than six segmented legs. (**Go to 12**)



**3.**

3-1 Body elongated (longer than it is wide); legs not concealed beneath the body. (**Go to 4**)

3-2 Body disk or oval shaped and very flat.



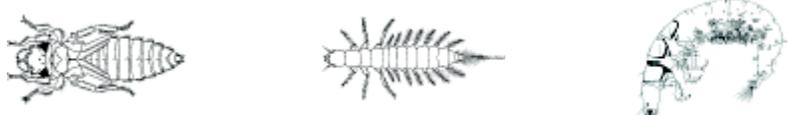
Order Coleoptera; family **Psephenidae** (Water penny)

**4.**

4-1 Two or three distinct tail filaments that may appear hair-like webbed or paddle shaped. (**Go to 5**)



4-2 No tail filaments; tail consisting of a single long filament; tail having hooks that may or may not have filaments. (**Go to 7**)



See acknowledgements on page eight

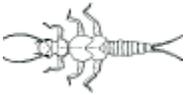
5.

5-1 Two or three hair-like tail filaments (may appear webbed); plate-like, filamentous or feathery gills attached to the sides of the abdomen.



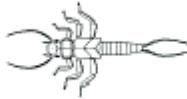
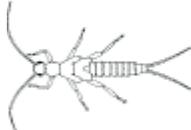
Order **Ephemeroptera** (Mayflies)

5-2 Two or three hair-like or paddle shaped tails; no gills attached to the abdomen. (Go to 6)



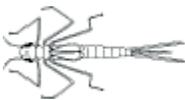
6.

6-1 Two hair-like tail filaments; no gills attached to the abdomen.



Order **Plecoptera** (Stoneflies)

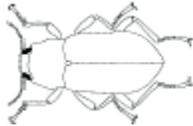
6-2 Three broad paddle-shaped tails, which are actually gills; no gills attached to the abdomen.



Order Odonata; sub-order **Zygoptera** (Damselflies)

7.

7-1 Abdomen is hardened; body is plated or skin is hardened. (Go to 8)

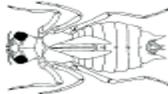
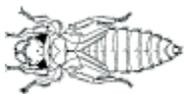


7-2 Abdomen is soft, not hardened or plated. (Go to 9)



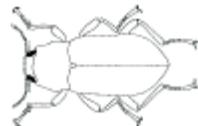
8.

8-1 Wide abdomen; large eyes; scoop-like lower lip (labium) that covers most of the mouthparts; may have pointed structures on the end of the abdomen.



Order Odonata; sub-order **Anisoptera** (Dragonflies)

8-2 Entire body is hardened; tail may have tiny hooks or filaments.



Order Coleoptera; family **Elmidae** (Riffle beetle)

**9.**

9-1 Pairs of fleshy or thin filaments extending from the abdomen. (**Go to 10**)



9-2 No pairs of abdominal filaments. (**Go to 11**)



**10.**

10-1 Fleshy or thin filaments attached to the abdomen, may have tufts of gills beneath; short forked-tail; large chewing mouthparts on the head.



Order Megaloptera; family **Corydalidae** (Fishfly/Hellgrammite)

10-2 Fleshy or thin filaments attached to the abdomen; single filament-like tail extends from the end of the abdomen; large chewing mouthparts on the head.



Order Megaloptera; family **Sialidae** (Alderfly)

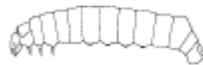
**11.**

11-1 Two forked hooks at the end of the abdomen, which may be very small; feathered or branched tail-like structures usually cover the hooks. The invertebrate may be inside a case built from streambed materials such as small pebbles, sand grain, leaves etc.



Order **Trichoptera** (Caddisflies)

11-2 Soft abdomen; has pairs of caterpillar-like legs that may not be fully developed; abdomen may be smooth or may be covered by filaments or hairs.



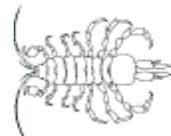
Order **Lepidoptera** (Aquatic moth)

**12.**

12-1 Body is dorsally flattened (wider than it is high); has a thin plated fan-like tail. (**Go to 13**)



12-2 Body is dorsally flattened (wider than it is high); seven pairs of walking legs, the first is claw-like and may be slightly enlarged. Looks like the terrestrial pill-bug (roly-poly).



Order **Isopoda** (Aquatic sowbug)

13.

13-1 Body is long; has five pairs of walking legs, the first pair are usually enlarged forming claws; has a large fan-like tail. (Go to 14)



13-2 Body is flattened from side-to-side (higher than it is wide); seven-pairs of walking legs, first two are claw-like the remaining legs are simple. Has a habit of swimming sideways.



Order **Amphipoda** (Scud/sideswimmer)

14.

14-1 Body mostly dorsally flattened; five-pairs of legs, first three-pairs with hinged claws and the first pair of claws are greatly enlarged; abdomen terminates in a flipper-like structure.



Order **Decapoda** (Crayfish)

14-2 Body is flattened from side-to-side (higher than it is wide); five pairs of walking legs, the first are not enlarged forming a claw.



Order Decapoda; family **Palaemonidae** (Freshwater shrimp)

15.

15-1 Having a distinct head. (Go to 16)



15-2 Does not have a distinct head. (Go to 20)



16.

16-1 Having a distinct head and one or more tiny pro-legs, which are leg-like appendages but are not segmented. (Go to 17)



16-2 Having a distinct head or the head region is obvious; no legs or pro-legs attached to the thorax. (Go to 19)



**17.**

17-1 Body is very small (less than ½ inch); body appears inchworm like and may be widened towards the end of the abdomen. (Go to 18)



17-2 Very distinct body with dramatic indentations; suckers on each segment on the underside of the body.



Order Diptera; family **Blephariceridae** (Net-wing midge)

**18.**

18-1 Hardened clearly visible head; long worm-like body; two pairs of prolegs with terminal hooks. Some kinds may be red in color.



Order Diptera; family **Chironomidae** (Non-biting midge)

18-2 Head hardened and rounded bearing a pair of labral fans (mouth brushes); prolegs on lower thorax; lower third of the abdomen is swollen (vase-like) and terminates in a ring of hooks.



Order Diptera; family **Simuliidae** (Black fly)

**19.**

19-1 Body is flattened dorsally with a leathery feel; head is reduced but visible; thorax is broader than the head; spiracles at the end of the abdomen for breathing.



Order Diptera; family **Stratiomyidae** (Soldier fly)

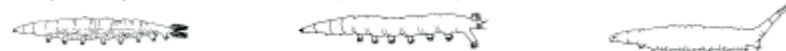
19-2 Soft-elongated body flattened from top to bottom; no individual segments; sides of the body constricted towards the front forming a head that is often somewhat triangular shaped; two eyespots situated on top of the head gives the animal a cross-eyed appearance.



Class **Turbellaria** (Flatworm)

**20.**

20-1 Body has distinct pro-legs and may have whelps; head is very small and reduced into the body; may not be visible. (Go to 21)



20-2 Body has no pro-legs but may have whelps; head is very small and reduced into the body; may not be visible. (Go to 22)



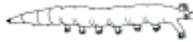
**21.**

21-1 Body long (caterpillar-like); head reduced but may be visible; prolegs on most abdominal segments; abdomen ends in a fringed tail.



Order Diptera; family **Athericidae** (Watersnipe fly)

21-2 Body elongated; head reduced or pulled into the thorax; prolegs present on most abdominal segments; prolegs longer on segment eight; abdomen is blunt on the end or terminates in welts.



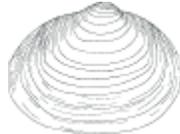
Order Diptera; family **Empididae** (Dance fly)

**22.**

22-1 Body not covered by a hard shell. (**Go to 23**)



22-2 Body covered by one or more hard shells. (**Go to 26**)



**23.**

23-1 Body worm-like and separated by numerous segments; may or may not have suckers at the ends. (**Go to 24**)



23-2 Soft-plump caterpillar-like body; may have whelps along its length; internal structures may be visible. (**Go to 25**)



**24.**

24-1 Body dorsally flattened with 34 segments, which are divided so there appears to be more; suction disks present on one or both ends; eyespots may be present.



Class **Hirudinea** (Leech)

24-2 Body elongated (worm-like); divided into many segments most having bundles of small hairs; no eyespots or suckers present



Class **Oligochaeta** (Aquatic worm)

**25.**

25-1 Rounded head capsule, often reduced and barely visible; ventral welts on some abdominal segments; abdomen terminates into a disc surrounded by lobes or tentacle-like projections of varying shapes.



Order Diptera; family **Tipulidae** (Crane fly)

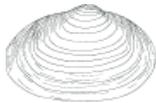
25-2 Body spindle shape both ends tapered; head reduced usually not visible; creeping welts with small hooks present on abdominal segments one through seven; no prolegs.



Order Diptera; family **Tabanidae** (Horse fly)

**26.**

26-1 Body is soft, usually not visible; enclosed in two oblong or rounded shells, hinged together (**Go to 27**)



26-2 Body is soft; enclosed in a single spiraled, coiled or flattened shell. (**Go to 29**)



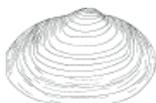
**27.**

27-1 Hinged shell, variable in shape but maybe somewhat oblong; has many indentations and ridges on the tops and sides of the shell.



Class Bivalvia; family **Unionidae** (Mussel)

27-2 Hinged shell, much more rounded in shape than above; the shell has ridges. (**Go to 28**)



**28.**

28-1 Shell very small and rounded, light colored; ridges spaced close together and are usually not raised.



Class Bivalvia; family **Sphaeriidae** (Pea clam)

28-2 Shell much more rounded, brown in color usually lighter than mussels; raised separated ridges along the top and sides of the shell.



Class Bivalvia; family **Corbiculidae** (Asian clam)

**29.**

- 29-1 Has a flat lid-like structure called an operculum that can seal the body of the snail inside the shell; the whorls of the shell bulge out distinctly to the sides (inflated); shells often extended into a spiral shape.



Class Gastropoda; sub-class **Prosobranchia** (Operculate snails)

- 29-2 No operculum; the whorls of the shell do not distinctly bulge out to the sides; often the shells of most kinds are shaped like a low flat cone or coiled flat instead of being extended in a spiral shape. (**Go to 30**)

**30.**

- 30-1 Shell is spiraled or coiled in one plane; no operculum.



Class Gastropoda; sub-class **Pulmonata** (Non-operculate snails)

- 30-2 Shell is a low fiat cone or domed shape; no operculum.



Class Gastropoda; sub-class Pulmonata; family **Ancylidae** (Limpet snail)

Style of this dichotomous key adapted from:

Kellogg, L. 1994 Second Edition. Save Our Streams Monitor's Guide to Aquatic Macroinvertebrates. Izaak Walton League of America

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