

“Water Bugs”: the very basics

What are they?

Spineless animals large enough to be seen with the naked eye that live in virtually all freshwater habitats. They include larval and adult aquatic insects (“bugs”), worms, snails, crawdads, etc. (“Larvae” are immature insects, like butterfly caterpillars - they are “teenage bugs”.) They are frequently used to assess water quality in creeks and rivers.

Why sample/monitor them?

- They are our neighbors.
- They are an important part of the food chain in and around water.
- Some are very sensitive to pollution and can tell us about the health of a stream.

How do they get oxygen?

- Breathing tube (mosquito larvae)
- Take air bubble underwater with them (diving beetle)
- Gills (mayflies and stoneflies)
- Lungs (pouch snail)

How/what do they eat?

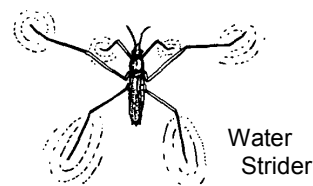
- Shredders = eat larger plant material in the stream, mostly from streamside vegetation
- Scrapers = eat algae attached to stones, sticks, and other debris, usually in the current. Their flattened, streamlined body lets them withstand the current while they feed.
- Collectors = eat decomposing matter that includes animal waste as well as tiny pieces of dead animals and plants that lived upstream. They are often worm-like.
- Predators = have specially adapted bodies to capture and eat live prey.

Where do they live?

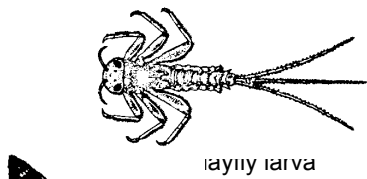
- Headwater (the very beginning of a stream/river)= mostly shredders and collectors (lots of vegetative cover → lots of leaves → shredders)
- Midreach (the middle of a stream/river) = mostly collectors and scrapers (more light → more algae → scrapers)
- Larger rivers = mostly collectors

What water pollutants are they sensitive to?

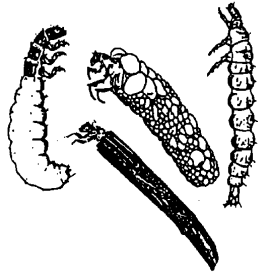
- Too much dirt
- Too much fertilizer
- Not enough oxygen
- High water temperatures
- Toxics such as pesticides



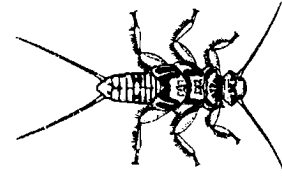
“Pollution-Sensitive”



Mayfly larva



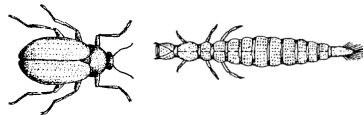
Caddisfly larva, some with “houses”



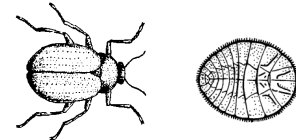
Stonefly larva



Gilled Snail

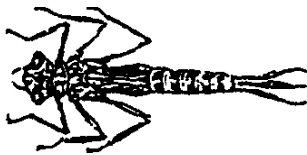


Riffle Beetle adult & larva

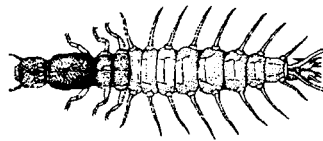


Water Penny adult & larva

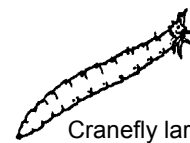
“Somewhat-Pollution-Tolerant”



Dragonfly nymph



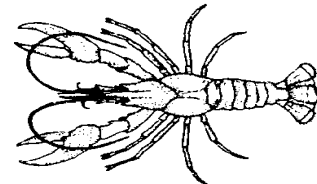
Clam



Cranefly larva



Net-spinning Caddisfly larva

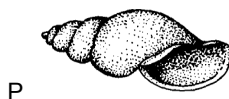


Crayfish (Decapod)

“Pollution-Tolerant”



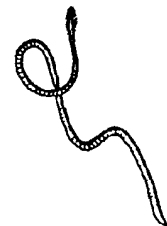
Black Fly Larva



Snail



Leech



Midge larva



Other snails



*These are general categories. Some kinds of sensitive aquatic bugs will tolerate pollution. The drawings are not to scale!