**Aquatic Macroinvertebrates**

<http://www.epa.gov/bioiweb1/html/benthosclean.html> (good photos/ PNW)

<http://www.troutnut.com/> (good info on different macroinvertebrates)

**Trophic Groups**

**Shredders:**

- chew and shred live and dead plants

-caddis, stone, true flies

**Collectors:**

 -gather fine suspended materials

 -black fly larvae, some mayfly, some caddis “cast nets”

**Scrapers:**

 -scrape algae and diatoms off rocks

 -mayfly, caddis, true flies

**Piercers:**

 -pierce live plants and extract nutrients

 -some caddis

**Predators:**

 -eat other macroinvertebrates

 -stoneflies, caddis, dragonflies

**Aquatic Macroinvertebrate Life Histories (range 2wks – 2yrs)**

 Generally: Egg – Larvae – Fly – Egg

 Larvae: worm like

 Pupae: non-feeding stage before metamorph

 Nymph: stage between larval and adult, resembles adult but no wings generally

 -never enters pupae stage

**Complete Metamorphosis**

 -egg – larva—pupae—adult—egg

 Ex: true flies, beetles, caddis

**Incomplete Metamorphosis**

 -egg – nymph – adult – egg

 Ex: stone, mayfly, dragon, true bugs (water strider)

**Stonefly**

 -2 tails

 -12-25 molts

 -crawl to shore and emerge

**Caddis**

 -emerge directly from water or crawl to edge and emerge

 -

**Mayfly**

 -3 tails

-emerge as winged sub-adults (duns), molt into adults (spinner)

**Egg Deposition**

 -drop on surface

 -air drop

 -fly swims/crawls to bottom