**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

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**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