

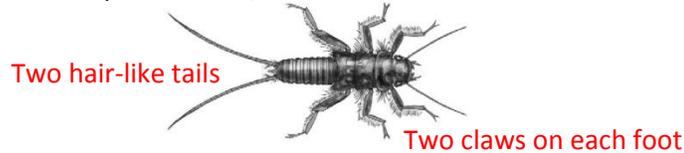
# SC Adopt-a-Stream Macroinvertebrate Sensitivity Guide

## Pollution Sensitive Organisms

require **high levels of dissolved oxygen** and are found in **good water quality**

### STONEFLY NYMPH

- Measure  $\frac{1}{2}$ - $1\frac{1}{2}$  **inch** in length (not including tails)
- 2 sets of wing pads
- Branched gills between legs on underside of body
- Yellow to brown in color
- Superficially like certain flattened Mayfly Nymphs
- **Two tails, prominent antennae, and two claws at the end of each leg** (vs. Mayfly Nymph)
- Prefer cold, swift-moving streams (streamlined, flattened bodies allow movement within rocky streambed in rapid currents)



### MAYFLY NYMPH

Similar to a stonefly but with **noticeable gills on abdomen** and **three tails** instead of two

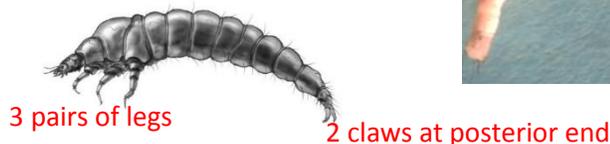
- Mature larvae measure **up to  $\frac{3}{4}$  inch** in length (excluding tails)
- Two rows of long hairs present on inside of front legs used for filtering food particles from the water
- Slender antennae
- May be minnow-like with a vertically oriented head and usually three tails (as pictured) or may be more flattened with a horizontally oriented head and two tails



### CADDISFLY NYMPH

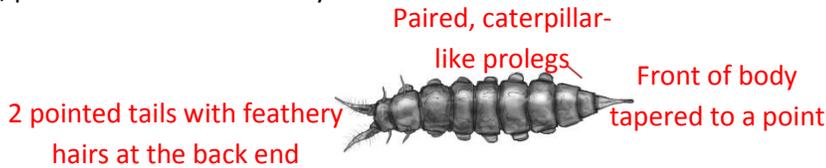
**Builds distinctive cases** made of sticks, rocks, sand, plant material and/or other debris

- **Up to 1 inch** in length
- Antennae reduced and inconspicuous
- Curls up slightly (not as tightly as the common net-spinning caddisfly)



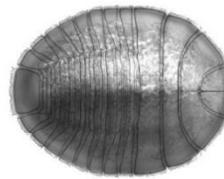
## AQUATIC SNIPE FLY LARVA

- Measure  $\frac{1}{4}$ -1 inch in length
- Mostly cylindrical, with the **front tapered to a cone-shaped point**
- Body is pale brown to green color
- Larva have several mostly paired caterpillar-like prolegs
- Two stout, pointed tails with feathery hairs at back end



## WATER PENNY

- Measure  $\frac{1}{4}$  inch in length
- **Flat disk-like body**, enables them to resist current
- Head and legs concealed from above
- 6 legs and branched gills on underside
- Usually found on smooth rocks, grazing on attached algae
- Prefers cold running water (cold, fast-moving streams)



## RIFFLE BEETLE

- Measure approximately  $\frac{1}{16}$  to  $\frac{1}{4}$  inch in length
- Small body, usually oval
- Long legs
- Slender antennae
- Walk slowly underwater; do not swim on surface



## GILLED SNAIL

\*When monitoring, **do not count empty shells!**

- Shell **usually opens on right**
- Shell opening covered by thin plate (operculum)



## Somewhat pollution tolerant organisms

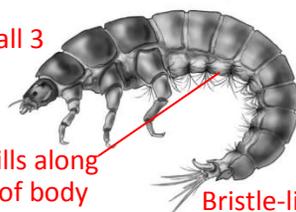
require **moderate levels of dissolved oxygen** and are found in **good or fair quality water**

## COMMON NET-SPINNING CADDISFLY LARVA

Body is:

- Caterpillar-like with **three pairs of legs**
- **Strongly curved**

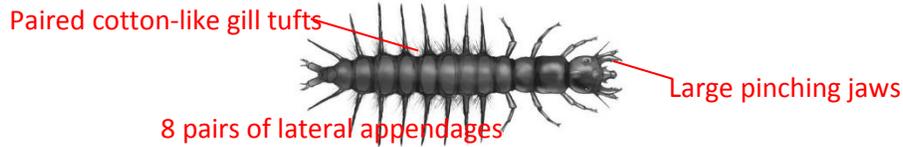
Dorsal plates (sclerites) on all 3 thoracic segments



## DOBSONFLY (HELLGRAMMITE) & FISHFLY LARVA

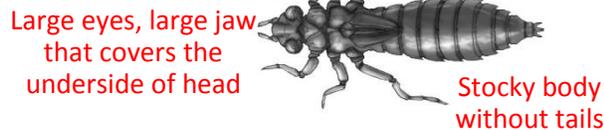
- Measure **3/4 to 4 inches** in length
- Body is elongate and somewhat flattened
- Short inconspicuous antennae
- Abdomen terminates in two small prolegs, each bearing two claws
- Feeds on other aquatic insects
- Typically found on the underside of large rocks in cool, slow-moving streams

**Handle dobsonflies carefully- larger individuals may deliver painful pinch!**



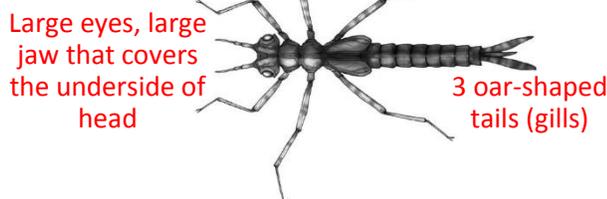
## DRAGONFLY LARVA

- Measures between **1/2 - 2 inches** in length
- **Two pairs of wing pads**
- Large round or oval abdomen
- Abdomen terminates in three small pointed structures
- Often found among vegetation and leaf packs, or burrowed in sediment



## DAMSELFLY LARVA

- Measures between **1/2 - 1 inch** in length
- Abdomen usually much more narrow and slender than that of dragonflies



## CRANEFLY LARVA

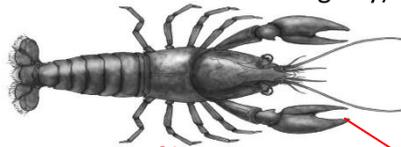
- Measure **1/3-2 inches** in length
- Plump caterpillar-like segmented body
- Milky green to brown color
- Fingerlike projection (gills) at back end of body

Head is usually pulled back into the front of the body



## CRAYFISH

- Measure up to **6 inches** in length
- Resembles a small lobster
- Usually only active at night (hide in burrows or under rocks during day)
- Omnivorous (eats plants and animals)



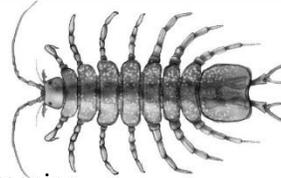
5 pairs of legs

Large pinchers



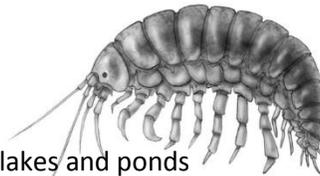
## AQUATIC SOWBUG

- Measures **5-20 mm** in length
- Clear whitish to pink color
- Dorsoventrally flattened (top to bottom)
- Seven pairs of legs- first two pairs modified for grasping
- Found in shallow freshwater on rocks or detritus



## SCUD

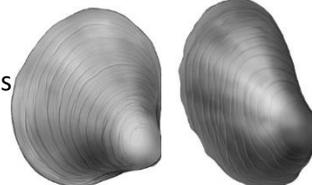
- Measure **5-20mm** in length
- Clear whitish to pink coloration
- Laterally flattened (side to side)
- Most species feed on detritus
- Found in shallow freshwater springs, streams, lakes and ponds
- Important food source for fish



## CLAMS AND MUSSELS

\*When monitoring, **do not count empty shells!**

- Fleishy body enclosed between two clamped shells
- When alive, shells held tight shut



Clam

Mussel

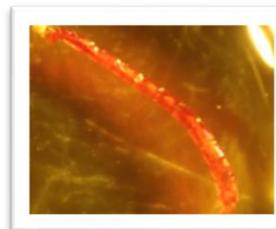


## Pollution Tolerant Organisms

require **low levels of dissolved oxygen** and are found in **any quality water**

## MIDGEFLY LARVA

- Measure up to **1/2 inch** in length
- Small, cylindrical, slightly curved body
- Variously colored, occasionally deep red
- Two small prolegs just posterior to head
- Frequently found in bottom sediments of lakes, streams and ponds where they feed on deposited organic material



Distinct head with two small prolegs at front of body

## BLACKFLY LARVA

- Measure up to **1/2 inch** in length
- Abdomen terminates in an attached disk
- Prefer cold running water
- usually found attached by the end of their abdomens to rocks, woody debris or vegetation in currents of rivers and streams



Body is larger at the rear end, like a bowling pin



Head contains fan-like mouth brushes

## LEECH

- Measures **1.0mm to 5.0cm** in length
- Typically dorsoventrally flattened
- Common in warm protected waters of lakes, ponds, streams and marshes
- Usually avoid light by hiding under rocks or among aquatic vegetation or detritus
- Cannot attach to silty substrates
- Some are parasitic

34 segments



Suckers on each end



## AQUATIC WORM

- Measure **1-30mm** in length (sometimes over 100mm)
- Clear whitish to pink coloration
- Body consists of 7-500 segments, which have bristles or hairs
- ~200 species in North America
- Found in silty substrates and among debris or detritus in ponds, lakes, streams and rivers
- Dense populations of Tubificids can be found in organically polluted rivers



## LUNGED SNAILS

\*When monitoring, **do not count empty shells!**

- Shell usually **opens to the left** when pointed end is up
- Breathes air
- No operculum

