

# Critter Corners ~ Macro Focus!



**Adapted from CBF's curriculum, "Critter Corners" and can be used as an introduction to biotic water quality testing using benthic macro invertebrates.**

## Activity:

Post the pages around the classroom or field trip site. Ask the participants to read all each of the human characteristics and then stand by the description that they, themselves, can most identify with.

Hand out the corresponding Macroinvertebrate sheet to each group and have them read the facts of the critter they have chosen. Finally bring the participants together into a group and have them introduce themselves and state why they have identified with that particular macro invertebrate.

## Setting the Theme:

Conduct a brief introduction discussion on why these critters are important and how they act as indicators for water quality. Carry on your theme by conducting a water quality macro survey and a water quality chemistry testing activity. Points on biotic and abiotic testing can be a focus for the day – involving the notion that abiotic tests can give a quick one time set of data, while a biotic test can provide a longer term picture given that these critters live in the same area over an extended time and represent varying levels of sensitivity to water quality.

## Goal:

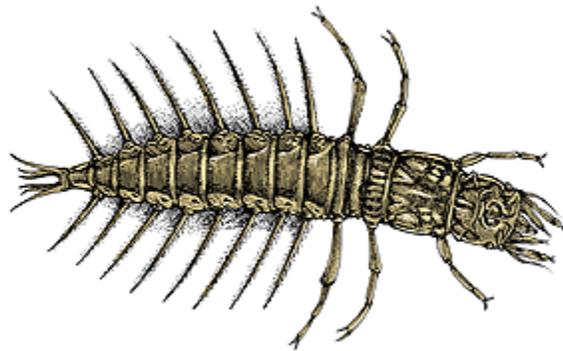
This activity introduces the concepts of biotic indicators/ a contrast to chemistry testing, while allowing the participants to gain a more personal view and heightened interest into these fascinating critters! This introduction provides opportunity for a more participant/student directed activity since the participants are reviewing and discussing the attributes of the critters themselves and presenting their thoughts to the group.

- Sets theme
- Supports knowledge and sensitivity
- Provides information and opportunity to connect with state standards
- Sets stage for upcoming activities and relevant connections to water quality/ human impact

# Hellgrammite

Strong and outwardly aggressive but sensitive down deep  
Not a picky eater

- These insects are large and are well known to fly fisherman. Being so large and lively makes them very good bait for fresh water fish!
- They are predators and sometimes even cannibalistic. They eat other macro invertebrates such as caddis flies and black flies.
- Large pinching jaws, but cotton-like gill tufts along underside of abdomen.
- These macro invertebrates belong to TAXA ONE (Very sensitive to pollution!) If you find them, they are indicators of GOOD WATER QUALITY!



# Black Fly Larvae

Always prepared and ready with a back up plan

Doesn't mind a messy home: "Some germs are good for you" and "A little dirt won't hurt."

- Found in cool headwaters of streams.
- Adults are vicious biters! They lay eggs in the stream during midsummer, when the stream is warmest. The eggs remain dormant until the water cools.
- The larvae like cool flowing water because it contains higher levels of oxygen and carries food particles to them.
- The larvae feed by catching particles in filtering fans that grow out of their heads.
- The larvae spin a small pad of silk that affixes to a rock ~ if larvae are knocked off of a rock, it can use the silk as a lifeline and reel itself back in!
- Black Flies are in TAXA THREE (they can tolerate a high level of pollution).



BLACK FLY  
(*Simulium vittatum*, pupa)

# Crayfish

Typically reserved but can be feisty and combative if provoked  
Prefers night to day.

- Has two large claws and eight legs. It resembles a small lobster.
- Most often found hiding under rocks or logs in freshwater streams and lakes.
- They are most active at night, when they feed on snails, algae, insect larvae, worms, and tadpoles.
- Like other crustaceans, crayfish molt their outer carapace (hard body covering) to grow larger.
- Crayfish are in TAXA TWO (they are somewhat pollution tolerant)



# Mayflies

Is “in the know” and up to date on current events

Not a multi-tasker, one job at a time

- Mayflies were around when dinosaurs live on earth!
- There are more than 700 different species and they live in fresh water.
- Look on the abdomen! Mayflies wave their gills in the current. They do this to increase the amount of dissolved oxygen passing over their gills.
- Larvae live for one year in the water but only two hours to three days as an adult!
- The only function the adult mayfly has is to mate. They do not even have mouthparts to eat!
- Mayfly larvae eat decaying plants.
- The nymphs know when other nearby mayflies are changing into adults and they change too. They all end up metamorphosing at the same time!
- Mayflies are in group TAXA ONE (very sensitive to pollution).



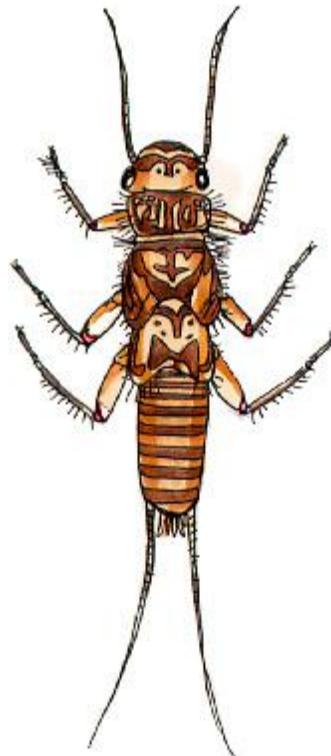
FLATHEADED MAYFLY  
(*Stenacron interpunctatum*, larva)

# Stoneflies

Prefers winter over summer.

Better at climbing and running than swimming.

- Stoneflies are active all winter long, feeding and moving in icy cold streams.
- They require a high level of dissolved oxygen.
- Stoneflies breathe from their armpits. When oxygen levels go low, they do push ups, which increases the flow of water (and therefore oxygen) over their body.
- Not strong swimmers.
- They eat other small animals and also the bacteria and fungi that live on dead plants.
- They are in group TAXA ONE (very sensitive to pollution).



COMMON STONEFLY  
(*Acroneuria evoluta*, larva)

# Dragonflies

Capable of seeing issues from different angles, perceptive, and rarely misses details.

An old soul

- These insects were around when dinosaurs were walking the earth! Some ancient dragonflies had wingspans of up to 3 feet.
- Dragonflies have a 360 –degree view of the world.
- The mouthparts of the nymph are shaped like the creature from the movie “Alien”. The lower jaw extends out and has a separate mouth that is hinged and designed for snatching prey in just a few hundredths of a second.
- Some species of dragonflies live as nymphs for up to 6 years.
- Nymphs are jet propelled! They have a chamber at the end of their abdomen and force water out which propels them forward.
- Dragonflies are in TAXA TWO (somewhat pollution tolerant)



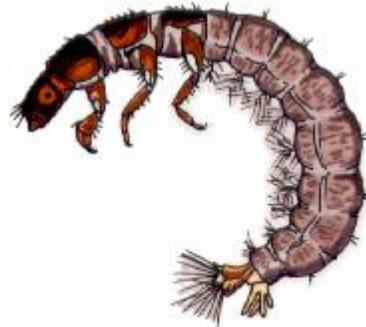
CLUBTAIL  
(*Gomphus vastus*, larva)

# Caddisflies

Enjoys working with hands and being creative

Needs quiet time alone, away from activity to rebuild their energy (introvert)

- Caddis flies make their own homes – some out of sand, or stones, or sticks. They glue the cases together with sticky silk that they spin through their mouths.
- Some species spin extended webs. To ward off predators, they rub their forelegs against their head to create threatening vibrations with the web!
- The larvae molts 5 times. As adults they live for about 2 months.
- Caddis flies are in the group TAXA ONE (very sensitive to pollution).

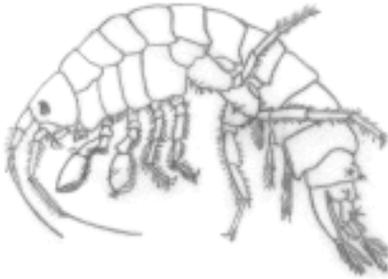


CADDISFLY  
(*Symphitopsyche slossanae*, larva)

# Scuds

Very social and outgoing  
Dependable and helpful

- Scuds, also known as amphipods, live in fresh water and salty water.
- Scuds eat dead and decaying matter.
- They swim sideways and resemble small shrimp
- Sometimes you may collect a scud that has a larger scud riding piggyback on it. These scuds are actually mating and may swim like this for up to a week.
- An important part of the food web and frequently predated upon by fish
- They are in group TAXA TWO (somewhat sensitive to pollution).



# Pouch and Pond Snail

Rarely in a hurry

Only the bare necessities please

- This type of snail does not have gills, but instead has a sac-like lung with which they can breath air
- They eat algae, other aquatic plants, and sometimes dead animals.  
They are eaten by fish, birds, and some turtle
- Shell opens to the left
- Their presence usually indicates that there are too many nutrients in their body of water.
- The Pouch and Pond Snails are in TAXA THREE (pollution tolerant) so they can live in any quality of water.

