

# Common Aquatic Macroinvertebrates in Helena, MT



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# Introduction

In Montana, bear and elk get a lot of the attention, but aquatic macroinvertebrates deserve some attention as well! Why you ask? A number of reasons! They are an important part of the aquatic food web. As the different macroinvertebrates scrape, collect, or shred their food, they help break down the debris found in waterways. Macroinvertebrates are also an important food source for local fish. In addition to being an important part of the food web, aquatic macroinvertebrates can indicate the health of the water as some are sensitive to pollution. When you find certain macroinvertebrates, you know the water is healthy!

This booklet does not include all the aquatic macroinvertebrates in Helena's waterways. The ones listed here were the most commonly found during the months of September and October.

# Suggested Materials

If you are headed out to explore aquatic macroinvertebrates, we recommend bringing the following items:

- Nets - kicknets or butterfly nets
- Observing containers - ice cube trays or any container that can hold water
- ID chart
- Microscope, loup, or magnifying glass
- *A curious mindset!*



# Locations



## Spring Meadow Lake

Aquatic macroinvertebrates collected and observed:

- crayfish, scud, damselfly nymphs, leeches, snails, backswimmers, water boatmen

## Wetlands off Frontage Road

Aquatic macroinvertebrates collected and observed:

- dragonfly nymphs, damselfly nymphs, scuds, snails, leeches, mayfly nymphs, water boatmen, backswimmers





## Tenmile Creek

Aquatic macroinvertebrates collected and observed:

- stonefly nymphs, caddisfly larvae, backswimmers, water striders, mayfly nymphs

## Upper Prickly Pear Creek

Aquatic macroinvertebrates collected and observed:

- stonefly nymphs, caddisfly larva, backswimmers, water boatman, water striders, snails, horsefly larva, crane fly larva, leeches, dragonfly nymphs



# Methods



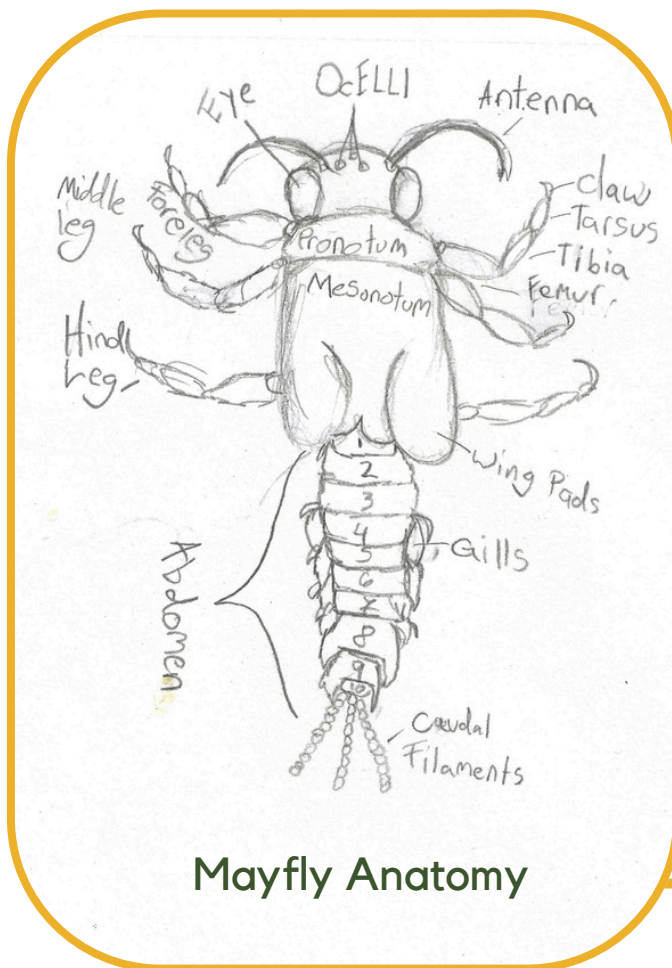
Between September 20th and October 11, 2024, students gathered macroinvertebrates from local creeks and water bodies using kicknets and nets. They carefully placed them in collection containers to observe and identify before placing them back into the water.

They used the data they collected, along with information from resource guides and books, to create illustrations, maps, and reports on the most common macroinvertebrates collected during the time period.





# What is a macroinvertebrate?

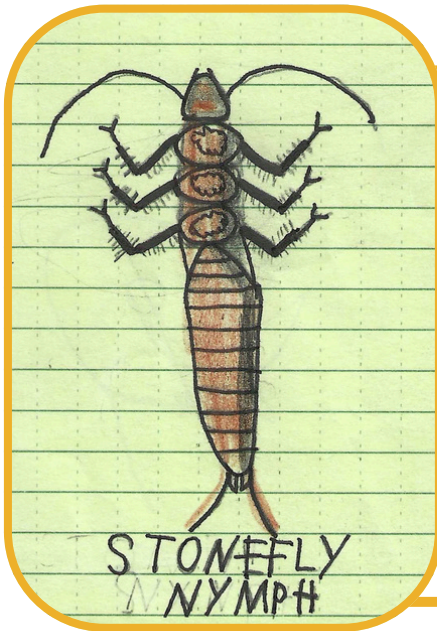


Mayfly Anatomy

An aquatic macroinvertebrate is an animal without a backbone that lives in or on the water. They can be seen with the naked eye (without a microscope).

# Stonefly

*Field School Nickname: Monster of the Deep*



Distinguishing Features: 2 tails; 6 legs;

Fun Facts:

- The adult fly lays its eggs in the water by dipping their bottoms in the water.
- Nymphs can grow to 3 inches long!
- Nymphs can live in the water for up to 3 years before becoming an adult.

## Acrostic Poem:

**S**hredders  
**T**orrent waters  
**O**xxygen dependent  
**N**ymp  
**E**cologically important  
**F**uzzy gills  
**L**ong antenna  
**Y**outhful most of its life

# Stonefly

Pollution Tolerance: Low; Needs healthy waters!

Habitat: Thrive in the rocks and gravel substrate of cooler, clean, faster-flowing waterways.

Diet: Many considered shredders, eating on decaying organic matter. Some species are also carnivores, eating smaller macroinvertebrates.

EGG 2-3 WEEKS	NYMPH 2-3 YEARS	ADULT 2-3 WEEKS
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## Adults

There are a variety of Stonefly adults in Montana. The Giant Stonefly (pictured to the right) is one species.



# Dragonfly Nymph

*Field School Nickname: Snap Jaw*



**Distinguishing Features:** large eyes; robust body

**Fun Facts:**

- The dragonfly nymph's lower jaw can extend to catch its prey!
- Nymphs remain in the water for up to 5 years before they emerge as a dragonfly.

**Pollution Tolerance:** Moderate

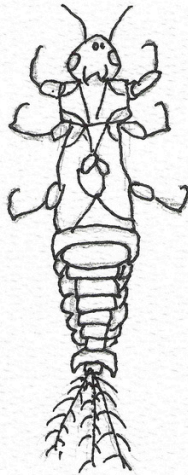
**Habitat:** Ponds, lakes, streams, often near the edges of these waterways or hiding in vegetation, including logs and tree roots.

**Diet:** Primarily a carnivorous predator, eating small aquatic organisms.



# Damselfly Nymph

Field School Nickname: Plate Dancer



Distinguishing Features: 3 tails; 6 legs; large eyes

Fun Fact:

- Similar to the dragonfly, the damselfly nymph shoots out its lower jaw to catch its prey.

Pollution Tolerance: Moderate

Habitat: Similar to dragonfly nymphs, they prefer freshwater ponds, lakes, and slow-moving streams, often near the edges of these waterways or hiding in the substrate of submerged vegetation, rocks, and sediment.

Diet: Primarily a carnivorous predator, eating small aquatic organisms.

Do not bite or sting.  
Agile - flies in any direction  
Mosquitoe lover, yum  
Shoots out jaw to catch prey  
Evolves from nymph.  
Lakes and ponds  
fly up 30 miles per hour  
Life span: up to many years  
Yellowish brown nymph!

# Scud

*Field School Nickname: Fish Food*



**Distinguishing Features:** looks like a mini shrimp

**Fun Facts:**

- Scuds, also called sideswimmers, are crustaceans.
- The scud is an amphipod, meaning they have two foot-types!
- A pair of scuds can have up to as many as 20,000 young each year!

**Pollution Tolerance:** Moderate

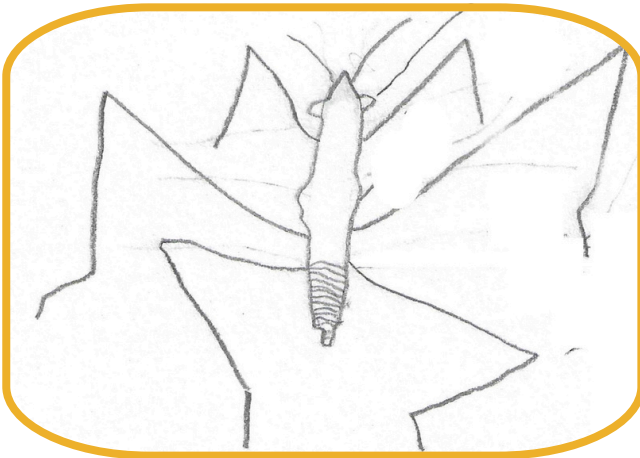
**Habitat:** Thrive in the shallow and slow-moving parts of streams, ponds, and lakes.

**Diet:** decaying organic matter (detritivore)



# Water Strider

*Field School Nickname: None -  
Water Strider fits perfectly!*



**Distinguishing Features:** 4 of its 6 legs are longer, allowing it to distribute its weight over the water surface and "skate" across.

## Fun Facts:

- It eats other bugs that have fallen into the water.
- Have little "grabbers" to get more traction on the water's surface.
- They can swim up to 100 body lengths a second, which is about 400 MPH as a 6 foot human!

**Pollution Tolerance:** High

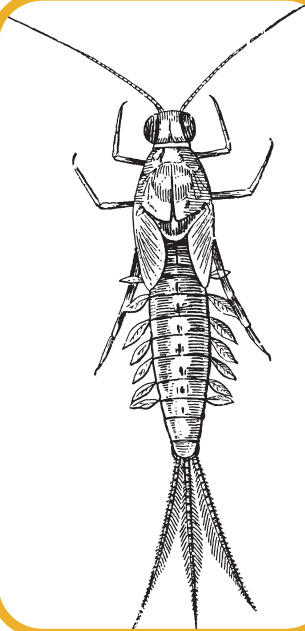
**Habitat:** Prefers calmer water, such as ponds, ditches, marshes, or slow-moving parts of streams.

**Diet:** Carnivore - eats other bugs that have fallen into the water.



# Mayfly

*Field School Nickname: Mayflower Flutterer*



Distinguishing Features: 3 tails; gills present on lower part of body.

Fun Facts:

- While in the water as a nymph, they molt 12-45 times before they hatch into a flying adult.
- Once an adult mayfly is out of the water, they only live a day or two.

Pollution Tolerance: Low; Needs healthy waters with a high oxygen content.

Habitat: Different species prefer various habitats, from lakes and ponds to streams and rivers.

Diet: Herbivore or scavenger feeding on decomposing organic matter.

# Mayfly

## Acrostic Poem:

**M**ass emergence

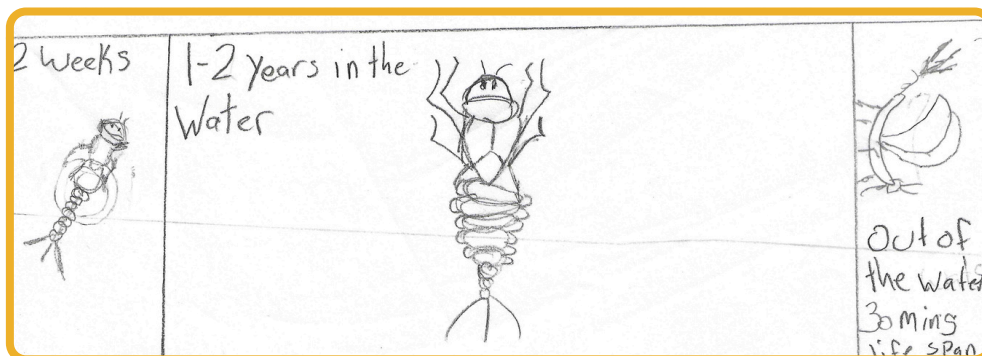
**A**dult for less than 48 hours

**Y**outhful for most of its life

**F**luttering gills on abdomen

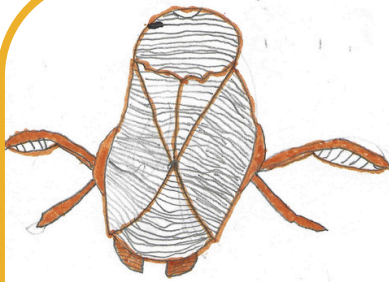
**L**ong needle-like tail

**Y**ou can use to fish!



# Water Boatman

*Field School Nickname: Bubble Boatman*



**Distinguishing Features:** Similar to a backswimmer, but swims the right way up. Their back lacks are shaped like a boatman's oars which propel it.

**Fun Facts:**

- They swim up to the surface to grab an air bubble so they can breathe while swimming under water!
- They can fly!

**Pollution Tolerance:** High

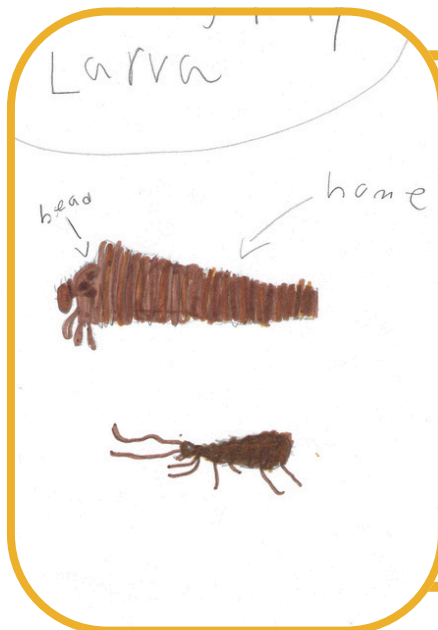
**Habitat:** Prefer ponds, lakes, and slow-moving streams where there is vegetation to hide and eat.

**Diet:** Varied - algae, decomposing organic matter, and smaller macroinvertebrates



# Caddisfly Larva

*Field School Nickname: Cone-Home Caddisfly*



**Distinguishing Features:** Found primarily in its self-made home of rocks or tiny twigs.

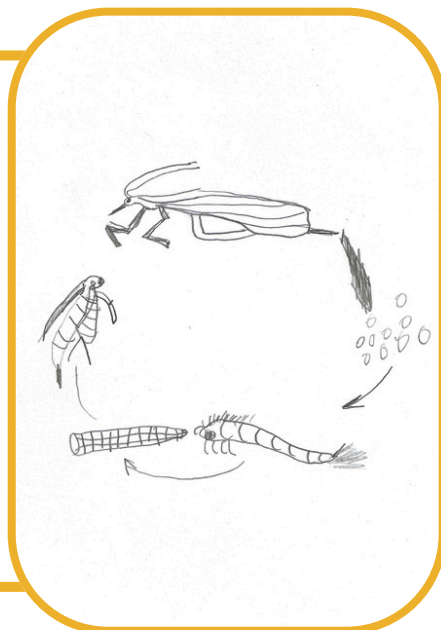
**Fun Facts:**

- It creates its home using its spit as a "tape" to stick rocks/twig together.

**Pollution Tolerance:** Low; needs healthy waters.

**Habitat:** Locally, they prefer streams, clinging to the bottoms of rocks.

**Diet:** Most are herbivores, scraping material from rocks, logs, and the surface.



# Backswimmer

*Field School Nickname: White Belly Backswimmer*



**Distinguishing Features:** It kicks around in the water on its back. If flipped over, you will see its white belly.

**Fun Facts:**

- Females are generally larger than males.
- Inject toxic saliva into their prey.

**Pollution Tolerance:** High

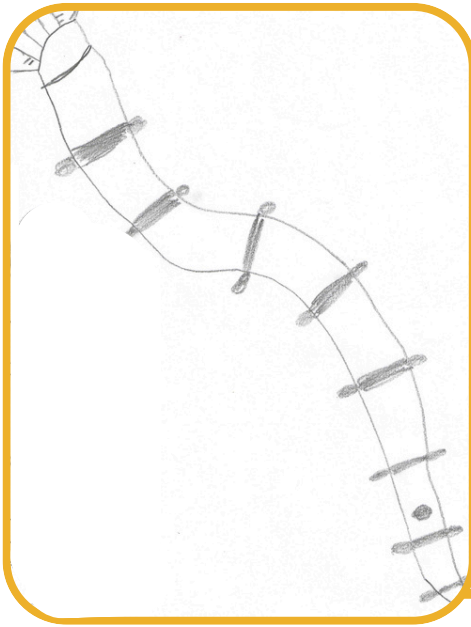
**Habitat:** Calm waters, such as ponds, lakes, or slower moving parts of streams.

**Diet:** Mainly carnivorous, eating insects, young fish, nymphs, and sometimes algae.



# Cranefly Larva

*Field School Nickname: Crane's Crown*



**Distinguishing Features:** Appears grub-like with a crown on one end.

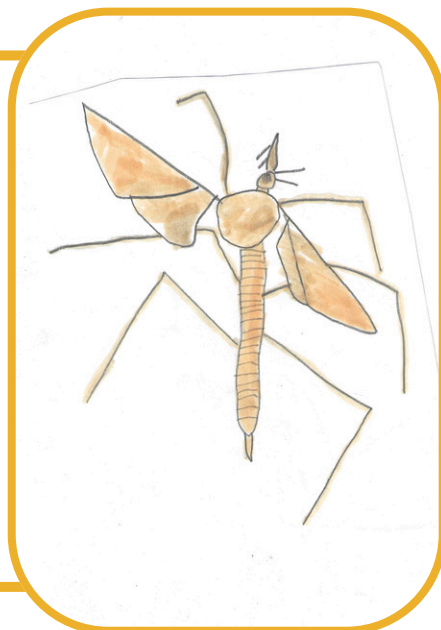
**Fun Facts:**

- Sometimes known as "leatherjackets"
- Important food source for trout

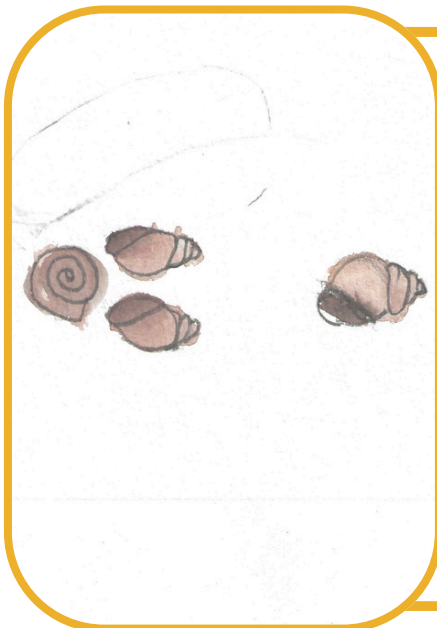
**Pollution Tolerance:** Moderate

**Habitat:** Streams, lakes, and ponds

**Diet:** Detritivores - eating mainly decaying organic matter



# Snail



## Two kinds of snails?!

Distinguishing Features: A shell that opens up either to the left or to the right.

If it opens to the Left:

- It is a lunged snail

If it opens to the Right:

- It is a gilled snail

Pollution Tolerance: High (for lunged snail) and Moderate (for gilled snails)

Habitat: Depending on species, rocky substrates or muddy areas.

Diet: Mainly algae and decaying plant matter.



# Leech

*Field School Nickname: Death by Chocolate*



**Distinguishing Features:** Looks like a mini-eel

**Fun Facts:**

- Leeches can consume up to 5 times their body weight in blood.
- They can feel vibrations in their skin.
- They have 32 "brains" (one in each body segment)!

**Pollution Tolerance:** High

**Habitat:** Shallow edges of ponds or lakes and slow moving parts of streams; often under rocks.

**Diet:** Hematophagous - feeding on blood of aquatic organisms; some feed on insect larvae



# Riddles

## Riddle #1

I swim on my back  
with an air-filled sack.  
My belly is white.  
I give TINY bugs quite the  
fright!

## Riddle #2

I extend my lower jaw  
on bugs to gnaw.  
I am in the nymph stage  
for ages and ages.

## Riddle #3

As a nymph I have 3 tails.  
Oxygen I need, or I am quite  
frail.  
On land I live less than a  
day,  
then I quickly waste away.  
On my abdomen you will find  
gills.  
As an adult, fly-fishermen  
use hair and feathers to  
make me with frills.

## Riddle #4

My home can be square.  
I have no hair.  
My spit is like tape.  
To get algae for food, I must  
scrape.  
I need fast-moving, clean  
H<sub>2</sub>O.  
You may find me low  
under a rock,  
You might stop and gawk.

Answers: #1 Backswimmer; #2 Dragonfly nymph; #3 Mayfly; #4 Caddisfly larva

# Online Extras

- [Caddisfly Larva Making its Home:](#)
- [Dragonfly Catching its Prey](#)
- [Backswimmer Drags Prey into the Upside Down](#)
- [Stonefly Molt Timelapse](#)
- [Leeches and Medicine](#)
- [How Water Striders Stay on Top of the Water & Eat](#)

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