

Healthy Rivers

What are healthy rivers, and why are they important?

A healthy river supports many different species of fish and wild life. It can provide safe drinking water for a community and is safe for recreation and harvesting food.



How to determine if a river is healthy

- Use a data logger to determine:
 - pH
 - Temperature
 - Salinity
- Collect macroinvertebrates
 - A healthy river should support many different kinds of insects
 - Determine if the macroinvertebrates are sensitive to pollution

What are macroinvertebrates?

- Macroinvertebrates are animals that do not have a spine
- Macroinvertebrates are large enough to see without a microscope
 - Bugs
 - Jellies
 - Snails
 - Others?



<http://www.dailydesktop.eu/data/media/863/Jelly%20Fish%2003%20-%20Medusa.jpg>



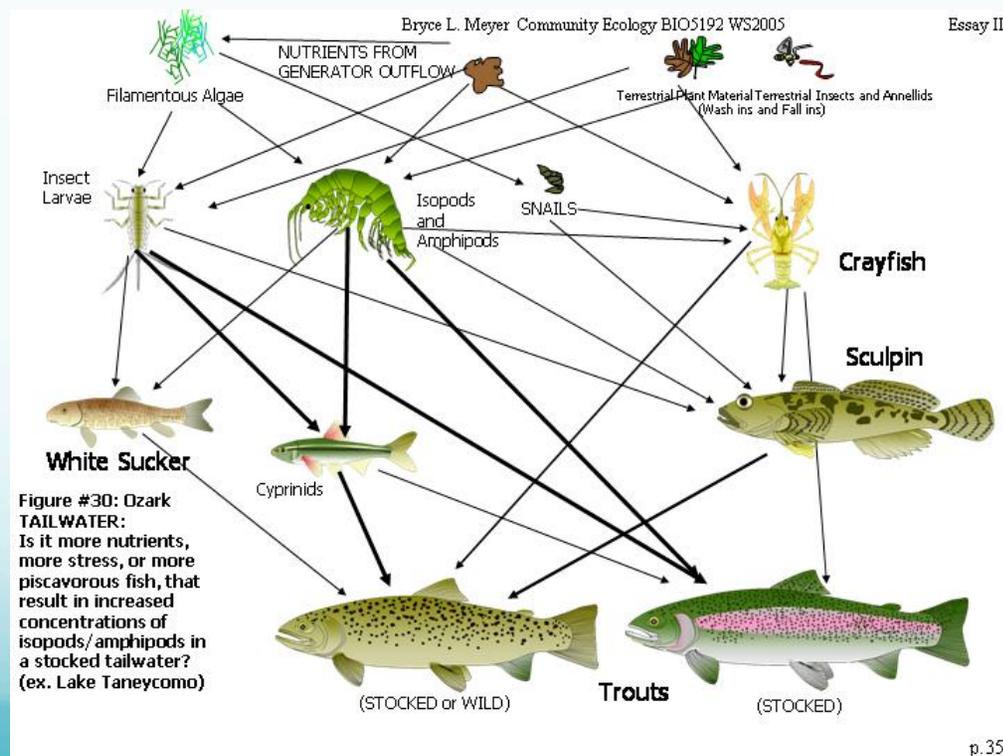
<http://www.the-edison-lightbulb.com/wp-content/uploads/2011/03/snails.jpg>



<http://ecologyadventure2water.edublogs.org/files/2011/04/macroinvertebrates-1qaji9r.jpg>

Why are macroinvertebrates important?

- In aquatic systems, macroinvertebrates serve as a food source for fish and other, larger animals
- For this bioassessment, we are primarily concerned with insects, as this is what the fish will eat



What kind of macroinvertebrates can we find here?

MACROINVERTEBRATES

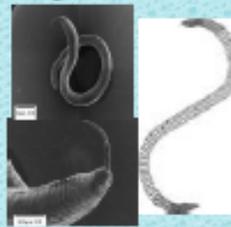
Sensitive to pollution

Stonefly



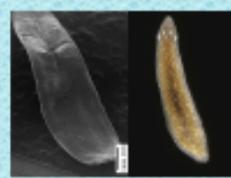
Tolerant to Pollution

Segmented Worms



Moderately Sensitive/Tolerant to Pollution

Flatworms



Caddisfly



Insect larvae: Káanuu



Mayfly



Beetles



Cháan tángaa



Gándlaay River



Ga'nd



Water-strider



How to collect macroinvertebrates: What you'll need

For the river:



D-loop net

Boots



A bucket

A data logger



For the identification:



A turkey baster

An Ice cube tray



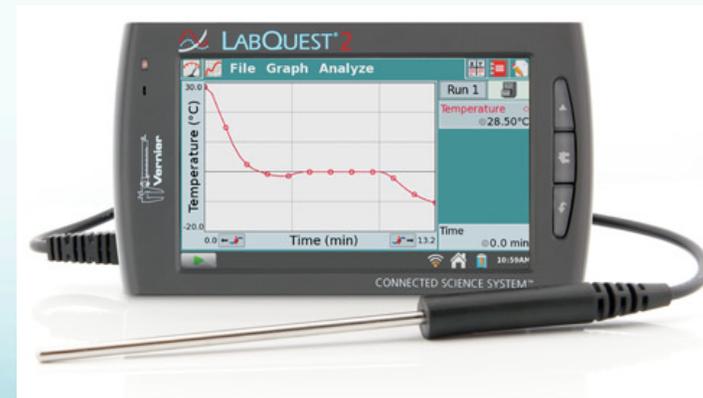
A magnifying glass

An identification key
(specific for your area)



Data collection

- Make sure to name and note each site the students are collecting from
- Use the data logger to collect information from each site in the river that students will collect macroinvertebrates from
 - Temperature
 - Salinity
 - pH
 - Flow rate



How to collect macroinvertebrates: What you do

- One person will hold the net
- The other will kick rocks and debris from the bottom of the river
- Look to see if macros have been collected in the net
- Dump the contents of the net into a bucket with a little water



For the identification

- Place individual insects in each of the compartments of the ice cube tray using the turkey baster
- Use the identification key to determine which insects you have collected
- Record your results



Results

Macro-invertebrate	How many?	Sensitivity to pollution	Location collected	Temp	Salinity	pH	Flow rate

How healthy is the river?

- How many different types of insects were collected?
- Were any of the insects sensitive to pollution?
- How were macroinvertebrates influenced by pH, and flow rate?
 - Temperature?
 - Salinity?