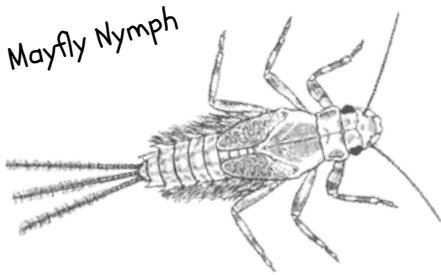


Why Biological Monitoring?

- Helps CRWA determine water quality in Charles River streams
- Is easy to do with basic equipment and training
- Benthic macroinvertebrate (BMI) bugs are good indicators of water quality



What is a Benthic Macroinvertebrate (BMI)?

- Bug living on the stream bottom - "benthic"
- Can see it with your eye - "macro"
- Does not have a backbone - "invertebrate"

How Does it Work?

- Volunteers use EPA Bioassessment protocols to sample in a stream
- Stream Biotic Index classifies how tolerant BMIs are of water pollution
- Calculate water quality score based on types and numbers of BMIs



Volunteer Monitoring Steps

1. Habitat Assessment



2. BMI Sampling



3. BMI Identification

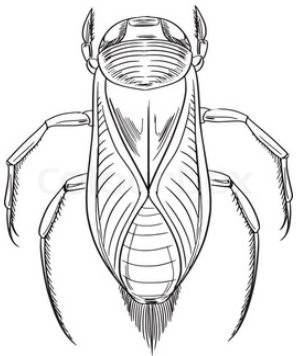




**Always sample
with a partner**



**Do not sample if there is
thunder or lightning**



Water
Boatman

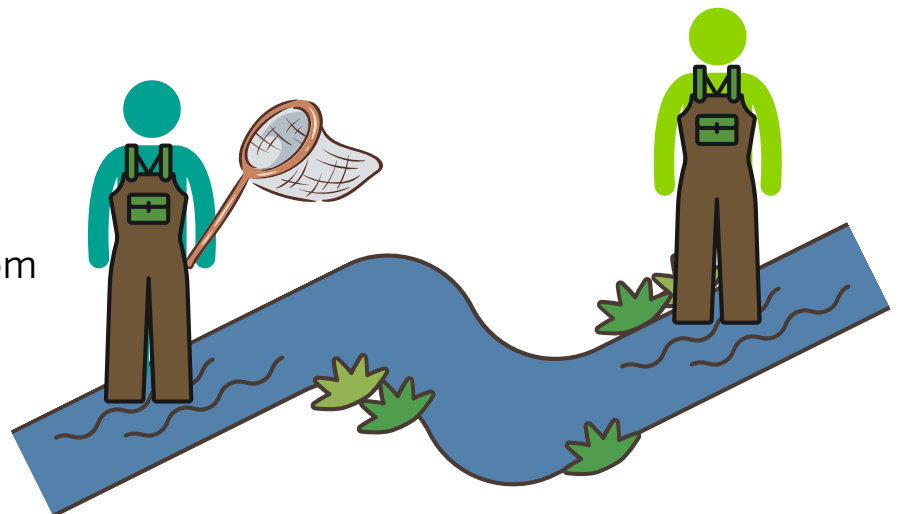


Be careful of site hazards

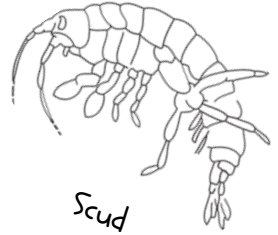
- Uneven ground
- Poison ivy

While wading:

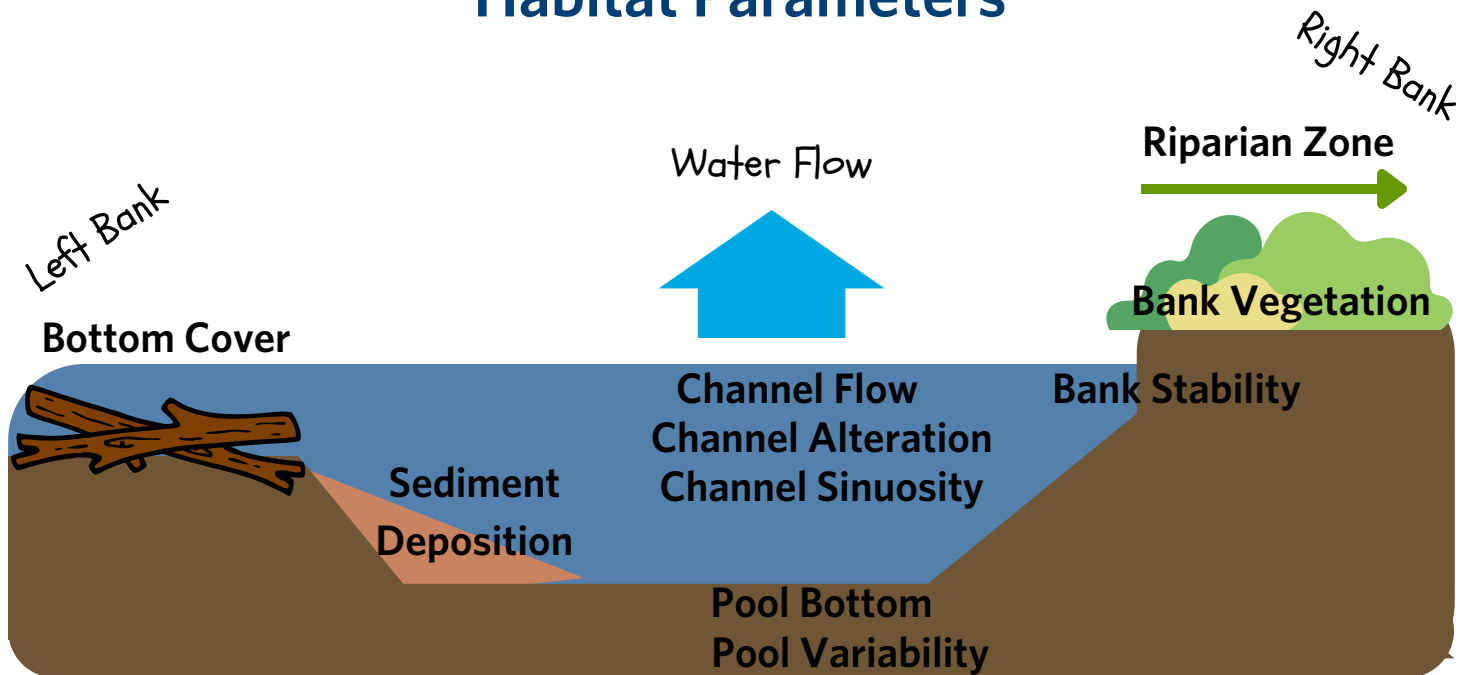
- Be careful of slippery banks
- Use a stick or net to check bottom before stepping
- Move slowly and carefully
- Never wade above your knees
- Stay on hard bottom surface



1. Assess the site using the top of the A1 Form. Choose a reference point and a 50-100 m long river reach.
2. Walk your reach downstream to upstream to assess the habitat parameters.
3. Use the A2 Form and A2 Reference Guide to score each habitat parameter with your team.

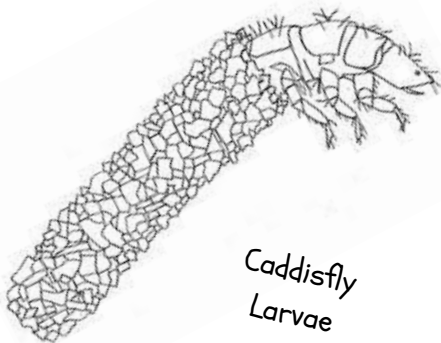


Habitat Parameters

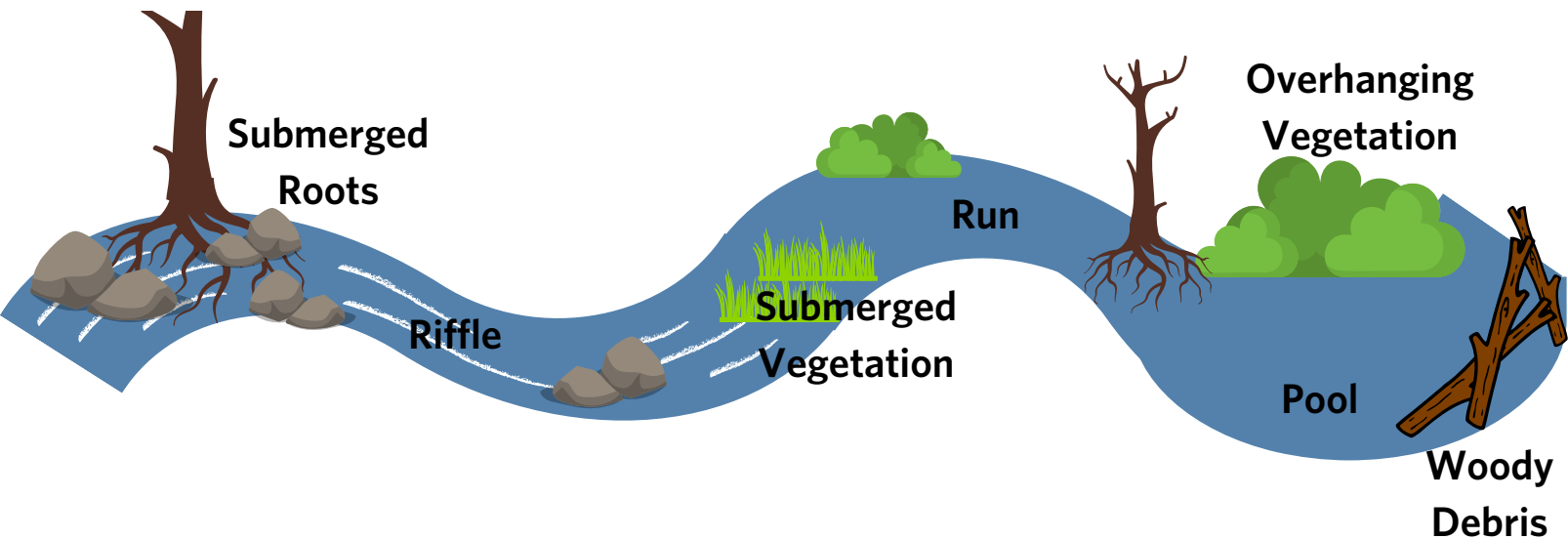


Tips!

- Each team member should choose which habitat category each parameter fits into (A2 Reference Guide), then the team should discuss and agree on the final score.
- Think about the variety of streams you've seen around the watershed; in urban, suburban, and rural landscapes.
- Think about the habitat parameters as if you were a river bottom bug!



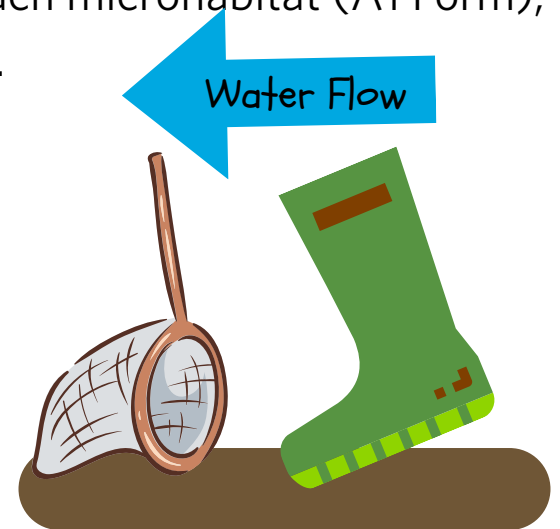
1. Identify the types and percentages of microhabitats in your reach.



2. Calculate the number of jabs to make in each microhabitat (A1 Form), and sample one microhabitat of each type.

How to do a jab:

- Rest net on stream bottom, facing into flow
- Disturb the bed upstream of net with your foot
- Lift net without digging into bed
- In overhanging vegetation, hold net below vegetation and sweep with your hand



3. Empty and rinse the net onto a white tray on the stream bank.
Pick the bugs out of the sample and store them in rubbing alcohol.



Tips!

- Bugs like to hide on leaves and sticks - wash them off carefully!
- Keep the water in the tray still to watch for movement.
- Try not to smooch the bugs with your forceps, so they are easier to identify.