Exploring Macroinvertebrates at McLean Game Refuge in Granby, CT

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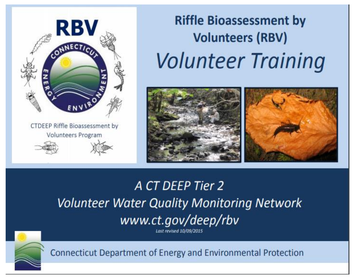
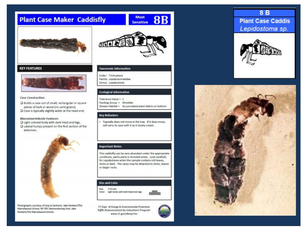
Step one: RBV Training

Fig.1.





During this presentation led by Alisa Phillips-Griggs, volunteers learned all about macro-invertebrates, from learning the proper way to capture and preserve them, to learning all their fascinating scientific names.

Step Two: Search for Macroinvertebrates

During October - November of 2019 at Bissell Brook and West Branch Salmon Brook, the ongoing search for macroinvertebrates was successful. In order to trap macroinvertebrates, you have to move along the brook in a kicking/shuffling motion, to get macroinvertebrates into the net that the other person is holding. Then macroinvertebrates get placed in the sampling tray for sorting and identification. The main goal is to find out how many macroinvertebrates of each type you collected, so you can determine if they are in the most wanted or least wanted category.

If your sample has macroinvertebrates of the most wanted category, the water quality in their habitat is great, and vice versa. Then these macroinvertebrates are placed in an alcohol specimen jar, and are sent to the RBV (riffle bioassessment by volunteers) DEEP (Department of Energy and Environmental Protection), to identify and confirm the quality of the stream.

A. 


B.

Figure 2. RBV Sampling at West Branch Salmon Brook, Granby, CT
A. Upstream view of West Branch Brook B. Sorting and identifying macroinvertebrates C. Crayfish


C.

Why Use Macroinvertebrates to Study Water Quality?

You may be wondering, what in the world are macroinvertebrates? This is a fancy name for "river bugs," that are spineless and are large enough to be seen by the naked eye. They come in different sizes and can be found on the backs of leaves in the water or stuck on rocks, and can be captured when scrubbed off. These insects have a certain water quality tolerance and can only survive in ideal conditions. Most species of macroinvertebrates, such as Mayflies or Riffle Beetles (Fig. 4.) are found in good quality water, and a few such as the aquatic worm or Black Fly Larva are found in polluted water.

Why is all this important? This can ultimately tell us the quality of a waterbody and is a simple and easy method to use that doesn't require extensive experience.

Riffle Bioassessment by Volunteers (RBV) Program

This is a statewide volunteer water quality monitoring program, coordinated by the CT DEEP, which stands for Department of Energy and Environmental Protection. The newly trained volunteers are to detect water quality by finding and identifying macroinvertebrates, to see whether they thrive in their environment.

Figure 3.
Total macroinvertebrates collected at Bissell Brook;
Sorting & identifying macroinvertebrates at Bissell Brook, McLean Game Refuge

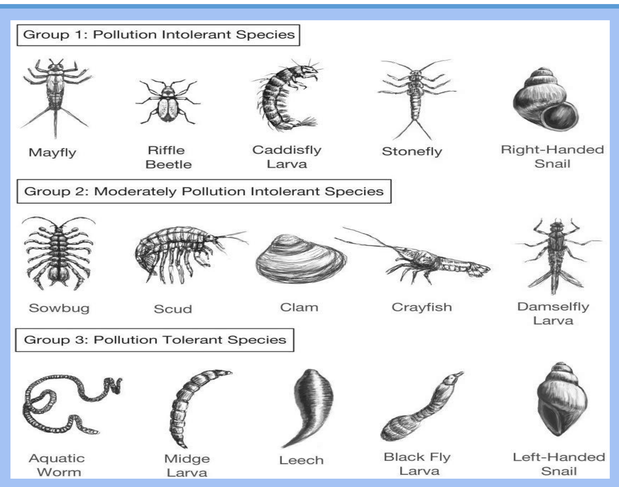
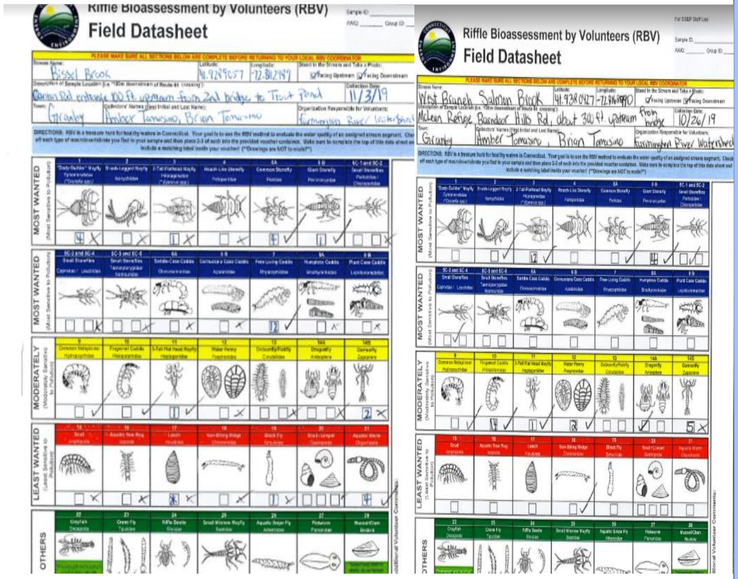


Figure 4. Macroinvertebrate species

RESULTS



A. Bissel Brook **B. West Branch Salmon Brook**

Fig. 5. Results show that in both streams, Bissell Brook and West Branch, the water quality is very good, because of the abundance of the most wanted category of macroinvertebrates.

Takeaways from Fieldwork and Results

This was a pretty successful project, as I not only learned how to test for water quality using living organisms, but also a little more about the macroinvertebrates themselves, and was able to walk away with some useful knowledge that will help me in the future when I want to do some more testing.

REFERENCES

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- **Article ¨Macroinvertebrates (2020)** https://environment.arlingtonva.us/streams/macroinvertebrates/
- **CT DEEP photo (2020)** https://www.google.com/search?q=connecticut%2Benergy%2Benvironment&rlz=1CAJIKU_enUS864US864&sxsrf=ACYBGNSszFaR5mssk5-lWUnWLJgcBA6hhQ%3A1581908832538&source=lnms&tbm=isch&sa=X&ved=2ahUKEwjN6Z7QzdfnAhUumnIEHUKCBTUQ_AUoAnoECBMQBA&safe=active&ssui=on#imgrc=-jn-1GPglyjxJM
- **DEEP: Riffle Bioassessment by Volunteers (RBV) (2020) website** https://www.ct.gov/deep/cwp/view.asp?a=2719&q=325606&deepNav_GID=1654
- **Farmington River Watershed Logo photo** https://www.google.com/search?q=farmington+watershed+association+logo&rlz=1CAJIKU_enUS864US864&sxsrf=ACYBGNSJ3Xe6VpCI5uVbPzyvdfmKiXnGTg%3A1581914656657&source=lnms&tbm=isch&sa=X&ved=2ahUKEwjv7rKp49fnAhW7mHIEHf64A4AQ_AUoAXoECAwQAw&biw=1366&bih=609&safe=active&ssui=on#imgrc=dPF0-AQYnSKYMM
- **Macroinvertebrate comparison chart photo (2020)** https://www.google.com/search?q=macroinvertebrates&rlz=1CAJIKU_enUS864US864&sxsrf=ACYBGNS5ciDGGpT8kY8N0m-PraquIn3IGQ%3A1581917183657&source=lnms&tbm=isch&sa=X&ved=2ahUKEwjz0K7e7NfnAhVBTd8KHb64CgYQ_AUoAXoECBQQAw&biw=1366&bih=609&safe=active&ssui=on#imgrc=jkGqmVASxFKxmM

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