Vermont Bug Strong

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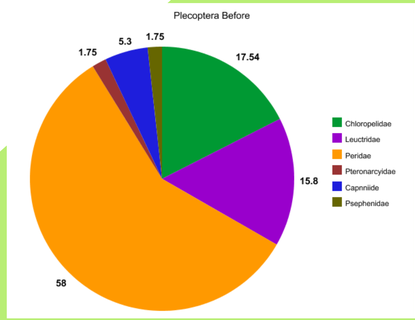
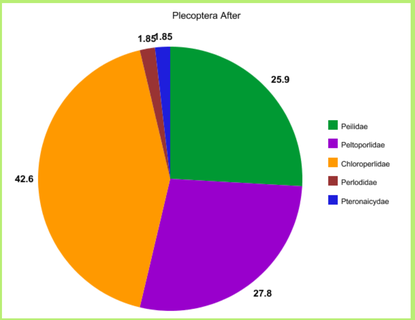
Objective:

Ever since the beginning of our streams project adventure, bugs have been our favorite part of the project. We are amazed by the incredible amount of information one can learn by what bugs are in our streams, such as water quality, pollution, and many more things. This year we decided to focus our studies on the bugs who have been prominent year in and year out. More specifically, we are looking at the bugs who have the ability to adapt, and those who do not. We wanted to see if the adaptation skills of certain bugs affect whether they are able to bounce back after large storm events like tropical storm Irene.

Procedure:

As always, we started our project with the site assessment and of course bug sampling. Once we took our bugs back to the lab, we identified them and started looking closer at what we had in general. We separated bugs into order groups and looked at our pre- Irene data. We also researched these bugs extensively in order to make and accurate prediction about adaptation. Finally, we made graphs from before and after Irene in order to compare them. After collecting our data, we then made conclusions based on what we found.

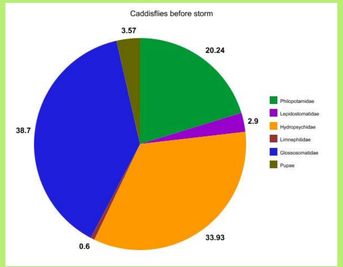


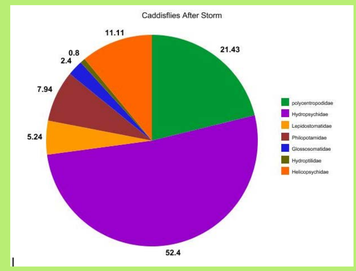


Observations:

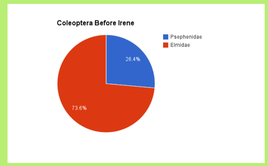
Caddisflies: There are nearly 200 types, and each have their own specific case building material, if they make cases at all. Caddisflies use these cases as camouflage against predators. Cases help them breath. They move their bodies up and down inside the case, and that releases oxygen that they need. When a storm event like Irene happens, Caddisflies are largely affected by the new stream pollution. The supplies for their cases get destroyed, and they have a hard time regrouping.

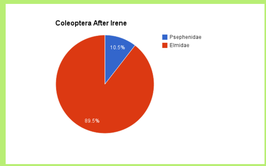
Mayflies and Stoneflies: Both are very temperamental when it comes to stream pollution. Both are water quality indicators, meaning that after Irene, they would have also had problems surviving in the affected streams. Both of these species are fragile insects and they can't live in poor conditions. Since we have a lot of both of these bugs, we can say our streams are typically clean and sufficient.





Beetles: The last prominent bug we find each year is perhaps the most tolerable. We found that such bugs have an easier time adapting to hard conditions, mainly due to their thick outer shell. They are also able to survive on land or in water, which improves their chances in storm events. Coleoptera are the most diverse insect found in streams.

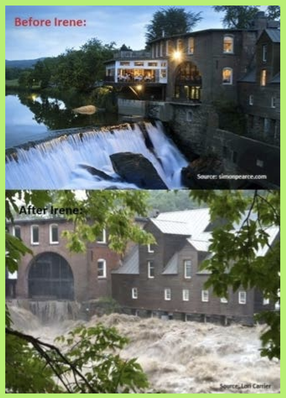




Results and Conclusions:

We found that due to the timing of our projects sampling it is hard to tell by our samples whether or not these bugs were affected. The pre- Irene bug samples showed flourishing numbers. Based on the extensive research we have done, we believe if we could have sampled directly after the storm we would have found our bug numbers drastically dropped. This is because most of our bugs depend on good quality water and materials that would most likely have been lost in our streams. By the time we were sampling bugs again (safely), the bugs would have had time to repopulate. What we did find however, is that when the bugs did come back there were more variety, and also higher numbers in all but the Coleoptera. We believe this is due to the adaptations these bugs had to make in order to survive the next Irene. Bugs may be small, but they are complex and extremely Important to our streams. In the future, we would wait for a large storm event and sample directly after it. By doing this, we would not have to solely depend on our research as much because our bugs would yield more useable data. We would also look at more streams and compare the data of streams that were directly affected by Irene instead of working with the database we have.

Rachel Emerson gathering macroinvertebrates.



WORK CITED:

Saint Michaels College. "Macroinvertebrates of Vermont Rivers." *Macroinvertebrates of Vermont Rivers*. Vermont EPSCoR and The National Science Foundation, 2008. Web. 28 Mar. 2012. <http://academics.smcvt.edu/Vermont_rivers/>.

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