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Belize Research Project

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Introduction

For my experiment I wanted to compare the body size, shape and structure of the macro-invertebrates of fast moving, turbulent water to the ones in slower moving, less turbulent water. I hypothesized that the more turbulent water would have a slightly different set of species than the less turbulent water seeing as how different the velocities would be. The most notable difference in all of these organisms would be how big they are and how they are shaped. In more turbulent water I predict the macroinvertebrates would be smaller with a lower center of gravity as not get swept away by the current. I also predict that macroinvertebrates who live mainly in less turbulent water could be much bigger with bulkier body frames with no worry of getting swept away.

Macroinvertebrates that I expect to find in less turbulent water are things like freshwater shrimp, crayfish and other large crustaceans along with different kinds of insect larvae, fresh water snails and other aquatic insects. But in the more turbulent water I expect to find no large crustaceans and only insect larvae, possibly only certain kinds of insect larvae who need high amounts of dissolved oxygen along with fresh water snails who could easily grasp a rock in a swift current.

Materials

Kick Net

Specimen Jars

Measuring Tape

Tennis Balls

Pencil

Notebook

Method

 I, along with a group of other students as my assistants, collected specimens with a kick net first in the Sibun River which due to the heavy amount of daily rainfall was quite turbulent. This at first was my turbulent water because it was even hard for me to stand or walk around with the current. First, two students would firmly plant the kick net along the base of the river. Then two more students would go twenty feet or so ahead of the kick net up stream and start walking towards the kick net kicking up rocks and stirring the soil as they approach. This tactic is to disturb and loosen any macroinvertebrates so they flow downstream and into the nets. When the approaching students reach the net, it is scooped up above the water and taken back to shore where any and all specimens are collected in specimen jars and taken back to the resort where they were identified and counted for my project and marked as coming from the Sibun River. Now in order to calculate the river velocity at this river I stretched a measuring tape out to 20 ft. then I had the person standing up stream drop a tennis ball in the water up stream then I would time the tennis ball’s travel to the other end of the measuring tape. I do this multiple times as to get an average time. I then divide my average time by the distance traveled to get my river velocity in feet per second. I did this same thing in a slower in a small creek that was on the Sleeping Giant Mountain Resort grounds that flowed down from the mountains into the Sibun. I believed this creek to have less turbulence because it was much smaller in size. So I made many of the same collections in this creek and also identified, counted and marked them as being from the creek. I then compared the numbers of different species and of what species I collected in each source of water and came to a conclusion.

Results

 In the Sibun River I calculated the velocity to be .78 meters a second which converts to 2.58 feet a second. The specimens collected were 2 Flathead Mayflies (Family Heptageniidae), 4 Water Pennies (Family Psephenidae), 1 Hellgrammite (Family Corydalidae), 3 Dipteran Larva, 18 Mayflie Larva, 12 Freshwater Snails and 1 Stonefly Larva. We did approximately six tries with the kick net well collecting in this location. In the local creek on the Sleeping Giant Resort grounds its velocity came out to .44 meters a second which converts to 1.45 feet a second. In this creek I collected 4 Hellgrammites, 1 Freshwater Crab, 1 Freshwater Shrimp, 71 Freshwater Snails, 1 Darner Dragonflie larva (Family Aeshnidae), 2 Damselflie larva and 3 Dragonflie larva. We did approximately four collections in this creek.

Conclusion

 I concluded that in the more turbulent water of the Sibun River there would be more insect larvae and less larger macroinvertebrates and after my collections I found this to be true at least from what I have collected. In the Sibun I collected much higher numbers of smaller macroinvertebrates in the form of insect larva with the exception of 12 snails that were caught. But in the creek my hypothesis was also correct that I would find larger crustaceans and I did. A crab and shrimp were collected along with a whopping 71 snails and only 10 insect larvae which was a lot less concentration then the Sibun River. All the insect larva collected had smaller more flat body plans whereas the snails had bulky shells that would have caused much drag in a current and the shrimp also had a bulkier body plan that I wouldn’t predict would be very streamline in fast moving water.