

Introduction:

This project is about the macroinvertebrates in Little Campbell Creek and the Sediment basins. The surrounding area of our creek section is both suburban and industrial. The water run-off from these areas populated by humans goes to sediment basins, which lead into the creek.

Part of our creek section is above the sediment basins; part below, so we can see if the sediment basins are influencing the water quality of the creek. Recent studies and observations have shown that the sediment basins have not been filtering the sediment out of the run-off. During large storms, events an



excess of sediment over-flows the basins. The concern is that many gilled organisms (macroinvertebrate and fish) will suffer gill damage, which may affect their ability to filter oxygen. Concerned citizens from Polaris K-12 School and members of the Anchorage Waterways Council have been monitoring water quality of the creek the creek for approximately 5 years, checking to see which macro invertebrates can live there. Because this data collection has been on going, it can validate my research as I compare my findings to previous data.

The macroinvertebrate population affects the whole creek eco-system. How do sediment basins effect the macroinvertebrate population in our local creeks? So far, from my research, I've learned that large amounts of sediment and pollution lower the populations of ephemeroptera, plecoptera, and tricoptera (EPT). EPT indicate high water quality, because they are intolerant of pollution. If the least tolerant macroinvertebrates aren't there, then that means the water

quality is lower. The lower water quality below the sediment basins is a threat to the least tolerant macroinvertebrates. The juvenile fish raised in the creeks use the macroinvertebrates as a source of nutrition. If the macroinvertebrates and young fish are scarce, the larger animals depending on the fish and macroinvertebrates then will also have population problems. Additionally, when the fish spawn upstream, macroinvertebrates eat many of the carcasses. If the macroinvertebrate population didn't eat as many dead fish as usual, it may attract scavengers and other carnivores to the area which could cause problems for the human population in the area. In a few years, the whole creek ecosystem could be drastically changed.

Materials:

Field

- Hip or chest waders.
- Sampling D-net with filtered cup.
- Shoulder length waterproof gloves.
- Buckets, one for sample, one for extra creek water.
- Clipboard, paper, and pencils.

At the lab

- Sorting tray(s).
- Ice cube tray(s).
- Sorting Equipment (tweezers, spoons, dropper).
- Identification keys.
- Magnifying glass, stereoscopes, digital camera.

Procedures:

- 1) Go to the creek you are sampling from with the field equipment.
- 2) Collect weather and temperature data.

- 3) Survey a 25-meter reach of the stream, and record physical characteristics using the Streamteam protocol.
- 4) Enter the creek downstream of where you will be sampling, to prevent the macroinvertebrates from upstream being washed away or disturbed.
- 5) Select 5 areas to sample that best represent areas (e.g. riffle cobble, undercut bank, large woody debris, etc.)
- 6) Jab your net into the streambed just below your sampling site.
- 7) Using your gloves, wash (rub free of any possible macroinvertebrates) any grass, woody debris, or sizable stones in a 1 ft. by 1 ft. area in front of the net.
- 8) Empty sample into bucket
- 9) Repeat steps 5-7 for your remaining sites, and then return to the lab.
- 10) Upon return at the lab, put away your field equipment (excluding the bucket) and take out your lab equipment.
- 11) Fill the ice cube trays with creek water and fill the sorting trays with your sample.
- 12) Sort the sample into the ice cube trays, putting similar organisms into the same compartment.
- 13) Count the number of each type of organism and record your data into your data collection chart.

Data:

Date	Jabs	Site	#of E P T	#of other
10/1/08	5	NFLCCem North Fork Little Campbell Creek east of meadow	101	58
10/17/08	3	Lower Sediment basin	7	34

Analysis:

My data shows that the majority of macroinvertebrate in the creek are EPT,

in the sediment basins, EPT are the minority. Previous data has also shown that in and below the sediment basins, there are fewer EPT than above the sediment basins. The procedures are quite thorough, though they take awhile. The only variables I came upon are: how many jabs are made in a sample, and the weather. The sediment basins and the creek froze before I got enough data.

Conclusion:

I have concluded that the sediment basins negatively affect the creek. My data shows that in the creek, the majority of macroinvertebrate are E P T, indicating good water quality. On the other hand, in the sediment basins, EPT are the minority, indicating poor water quality and the water from the sediment basins flow into the creek.

Recommendations:

I recommend to others interested in a similar project complete it during the spring, summer or fall, so the water you are sampling from does not freeze over, and to make sure that you have enough time to collect all the jabs and count the macroinvertebrates in a timely matter. City officials should consider looking at how sediment basins affect the creek and make sure our storm water systems are working properly and not negatively affecting the creek.

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