FAUNTLEROY CREEK BENTHIC STUDY

LOUISA BOREN STEM K-8, October 24, 2023 Elizabeth Mahrt and Zachary Elway, teachers
Tom Trulin, photographer

OBJECTIVES

Fourth-grade students from Louise Boren STEM K-8 sampled sites in upper and lower Fauntleroy Creek for benthic macroinvertebrates (BMIs) and reported their findings. A group of 30 students gained experience in

- employing teamwork to execute an established scientific protocol
- making site observations
- recording data
- posing and answering questions based on their findings
- evaluating the experience with an eye toward improvements

NOTE for 2023

The Louisa Boren STEM school has two 4th grade classes of around 25 students each. The teachers wanted to find a way that all 50 students could participate in the fieldtrip. Having 50 kids engaged at once in the benthic study is untenable, so this year, we introduced a pilot study documenting and measuring lichen growth in the area. This monitoring study is intended to happen in the same general area and at the same time as the benthic study, with half the students participating in the benthic study and half in the lichen study.

METHODOLOGY

With their teachers, chaperones, and watershed volunteer Shannon Ninburg, the students followed scientific protocol to collect BMIs using a Surber sampler. The class took four samples in Fauntleroy Creek. The first two were near the church/YMCA in the upper creek, directly downstream of where all creek tributaries come together to form the main stem. They took the third and fourth sample in the spawning reach, several yards upstream of the fish ladder in the lower creek. All samples were taken in a riffle.

At each site, a collection team positioned the Surber sampler and stirred the gravel for one minute. An environmental team noted temperature/ water level/ environmental data. A sorting team separated sample elements into shallow trays and used a dichotomous key to identify the macroinvertebrates they saw with the naked eye and hand-held magnifying glasses. Volunteer Tom Trulin took photos of the action.

Prior to the on-site benthic activity, Shannon visited the class in school and gave a short presentation about benthic macroinvertebrates. Just after we collected the 4th and final benthic sample for the on-site activity, we ran out of time and were not able to observe findings for this sample. We were also not able to walk the students through a short verbal report of their overall findings compared to previous years due to time constraints. .

FINDINGS

SITE CONDITIONS

	Upper Creek	Lower Creek
Air temperature	11.0^{o} C	11.0 ^{o} C
Water temperature	10.0 ^{o} C	11.0 ^{o} C
Water depth	4.0 cm	9.0 cm
Weather conditions	Cloudy	Cloudy

	2019		2020		2021		2022		2023	
	Upper	**Lower**	**Upper**	**Lower**	**Upper**	**Upper**	**Upper**	**Lower**	**Upper**	**Lower**
Stonefly larvae	2	2		4	1	1	3	1	1	1
Mayfly larvae			1		1	1		4	1	3
Caddis fly larvae										2
Aquatic worms	2			2	1	1		2	1	1
Black fly larvae				1	1	1	1		1	
Midge fly larvae								2		
Water penny			1							
Beetle larvae										
Riffle beetle										
Snail					1	1			1	
Scud										1
No ID				1						
Total	**4**	**2**	**2**	**8**	**5**	**5**	**4**	**9**	**5**	**8**

CONCLUSIONS

- A variety of BMIs were in samples collected at both sites, many of which require good-quality water.
- BMIs were more abundant in the lower creek than in the upper creek. Sorting the lower sample was a little more difficult as it contained more rocks and leaves than the upper sample.
- Most stoneflies were found in the upper creek, and most mayflies were found in the lower creek.
- For the first time in this study, students found a tiny gilled snail in the upper creek, about a ¼ cm in size.

RECOMMENDATIONS FOR NEXT YEAR

- Almost 30 kids participated in the study this year, which was too large a group to do the activity effectively if all are trying to do so at the same time. The teacher recognized this and took half the group on a forest walk while the other half did the sampling. When kids returned from the walk, they took a second sample in order to have the experience following a protocol.
- We repeated this format at the lower creek, which seemed to work well except that we ran out of time.
- Next year, go over the roles, protocol, and expectations for the activity during the class presentation (instead of only using the class time to learn about macroinvertebrates). Before students head to the collection areas of the creek, give them clear guidelines about what their individual jobs are, and make sure each student gets a job at least once over the course of the 4 sample collections.