

# FAUNTLEROY CREEK BENTHIC STUDY

OUR LADY OF GUADALUPE SCHOOL, OCT. 22, 2018 Sarah Nadalin, teacher

## OBJECTIVES

---

Sixth-grade science students from Our Lady of Guadalupe School sampled sites in upper and lower Fauntleroy Creek for benthic macroinvertebrates (BMIs) and their findings suggested the degree of water pollution, as defined by the EPA-approved Biotic Index of Water Quality. They gained experience in

- employing teamwork to execute an established scientific protocol
- making site observations
- documenting their work
- posing and answering questions based on their findings
- presenting a summary to watershed, school, and city representatives
- evaluating the experience with an eye toward improvements.

## METHODOLOGY

---

With their teacher, chaperones, and watershed volunteers, the students followed scientific protocol to collect BMIs using a Surber sampler. Collection teams took two samples in the upper creek (at the church/YMCA) and two in the lower creek (several yards upstream of the fish ladder). The upper site is directly downstream of where all creek tributaries come together to form the main stem.

One sample at each location was the official one, taken in a riffle using the Surber and stirring the gravel in the frame for one minute. The unofficial sample was for comparison, consisting of a grab sample of decaying leaves and wood taken from the creek channel; these unofficial samples are referenced here.

The sorting team separated sample elements into shallow trays, then the identification team used a dichotomous key to identify and record the macroinvertebrates they saw, using hand-held magnifying glasses. The site-description team documented features of each site and weather conditions. The documentation team took photos of the sites and of the teams at work.

Students presented a slideshow of their research. Invited guests were Chapin Pier, an ecologist with Seattle Public Utilities; Peggy Cummings, forest steward for the Fauntleroy Creek watershed; creek advocates Judy Pickens and Phil Sweetland, and one parent.

## FINDINGS

---

### SITE CONDITIONS

	Upper Creek	Lower Creek
Air temperature	15.0° C	15.0° C
Water temperature	12.0° C	11.0° C
Water depth	18.0 cm	5.0 cm
Weather conditions	Foggy; no rain	Foggy; no rain

Students found stonefly larvae in both unofficial samples, four in the upper creek and one in the lower creek. Following are results from official samples.

## MACROINVERTEBRATES - OFFICIAL SAMPLES

	2013		2014		2015		2016		2018	
	Upper Creek	Lower Creek	Upper Creek	Lower Creek	Upper Creek	Lower Creek	Upper Creek	Lower Creek	Upper Creek	Lower Creek
Stonefly larvae	1	1	1	2		2			1	
Mayfly larvae				1	1	5				1
Caddis fly larvae				1	1	19				
Aquatic worms		1	2	2	1	5	1	7	1	2
Black fly larvae			1							
Midge fly larvae										
Water penny			2							
Beetle larvae			1							
Riffle beetle			1							
Snail						4				1
Too small to ID or unable to ID		3			2				1	3
<b>Total</b>	<b>1</b>	<b>5</b>	<b>8</b>	<b>6</b>	<b>3</b>	<b>35</b>	<b>1</b>	<b>7</b>	<b>3</b>	<b>7</b>

## STUDY CONCLUSIONS

---

- Changing the sampling location may have had something to do with reduced abundance and diversity of BMIs in the upper creek.
- Because aquatic worms can live in healthy or polluted water, students could not reach a conclusion about creek health based on BMIs.
- A heavy rain event prior to sampling could have washed toxins into the creek; BMIs may not have had a chance to recover.
- The unofficial samples proved that stonefly larva (a clean-water BMI) were present in both upper and lower sampling sites, suggesting that the creek is relatively clean.
- Increasing the number of sampling sites might give a more complete picture of abundance and/or diversity of organisms.

## QUESTIONS FOR FURTHER STUDY

---

- Should future samplings use the exact riffle locations?
- Should we be even more precise about the time of the year that we sample?
- Should we limit the number of people near the creek during collection?
- Could we be more organized about when each team does its job?
- Could we research more about organisms while waiting for the collection team?

## SUGGESTIONS FOR NEXT YEAR

---

- Take two official samples per site as slightly different locations to maximize the amount of data collected.
- Change the upper sampling site to the big bridge as that is where released fry need to find food.
- Emphasize staying out of the creek while sampling.
- Take MANY notes.
- Emphasize staying on task.
- Make sure each team coordinates with the teacher and classmates.
- When sampling, hold the Surber firmly in place.