

Abstract

The purpose of studying stream invertebrates on algae and non-algae covered rocks is to determine which they prefer. From this information the base of the food web and stream energy can be analyzed. The experiment was conducted by placing 10 algae and 10 non-algae covered rocks in an alternating pattern in a stream. After a few days, the invertebrates on each rock were counted. Our results revealed that stream invertebrates prefer the algae covered rocks.

- Our study site was a section of Rock Creek off of Highway 212 224 before it meets the Clackamas River. We conducted our experiment in the morning in fall.
- We set up 20 rocks on both sides of Rock Creek. 10 were algae covered and 10 were non-algae covered. We placed the rocks in two rows with algae and non-algae rocks alternating. We cleaned and removed all the invertebrates beforehand in order to have accurate data, and counted the amount on each rock at the end of our experiment. We determined the rock size by measuring the circumference of one rock, then turned that same rock 90 degrees, and measured the circumference again. Then we divided the results by 3.5^2 . That gives us the rock size (which we measured in inches).
- We are using 10 samples of each rock type. The control is the rock with no algae and the treatment is the rock with algae, with the rocks as independent variables, and (number of) invertebrates the dependent.
- Though the data, we determined the minimum, maximum, median, lower quartile, and upper quartile for each type of rock. We used this to construct box plots. We also found the amount of invertebrates on algae and non-algae rocks.
- Our results showed that the total number of invertebrates found on the algae covered rocks was 215, and the total number of invertebrates found on the non algae-covered rocks was 76. In finding this, we were able to conclude that the rocks covered in algae provide better a better spot for colonization than rocks that don't have algae. There was a total of 139 more invertebrates found on the treatment rocks than on the control rocks.

Introduction:

- The purpose of our research is to determine what type of rock invertebrates prefer: algae or non-algae covered. From this information we can analyze the base of the food chain.
- We figured that the invertebrates would tend to be on the algae covered side of the rock because the algae acts as a food source for the invertebrates. Our hypothesis is that we think that because of the algae being a main food source, the invertebrates will tend to be on the algae covered, meaning that the algae covered rocks will in fact have more invertebrates on them.
- The ecological and environmental significance of this research is to learn about the base of the stream food chain: algae and invertebrates and how they react. Since algae is the base of the food web, other organisms wouldn't survive without it.
- Our research objective is to determine if invertebrates prefer algae or non-algae rocks. We hypothesize that invertebrates will prefer the algae covered rocks as those are a source of food for them.

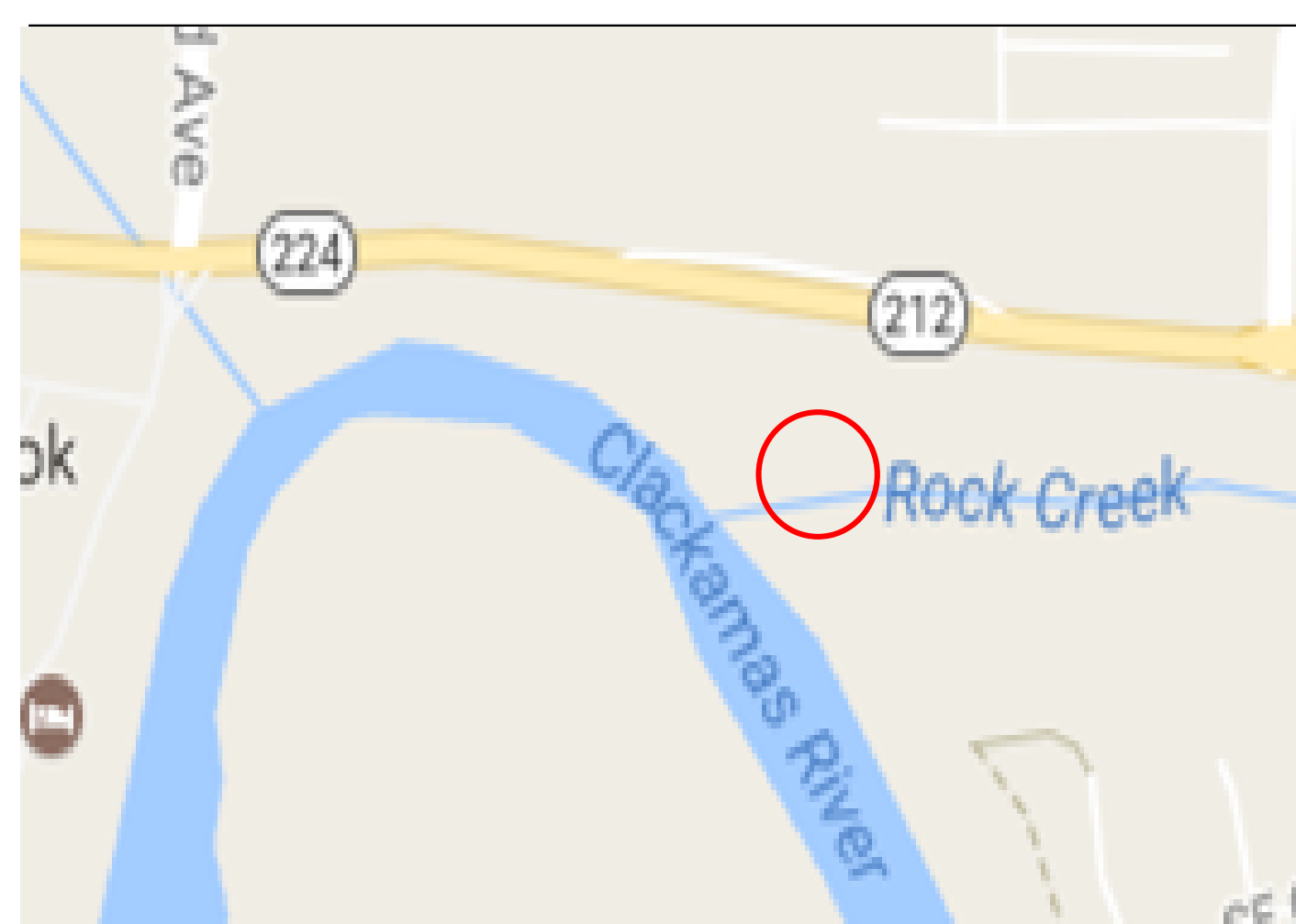


Figure 1: We conducted our experiment on the shore of Rock Creek off of Highway 212 224.



Figure 3: Area of sampling.



Figure 4: Cleaning and labeling rocks.

Methods

Results

Figure 5: Results of the data collected in a table format.

	Avg. Rock Size	Avg. Invertebrates Per Rock (Density)
Algae	320.19in ²	35.8 Insects / in ²
Non-Algae	416.91in ²	8.4 Insects / in ²

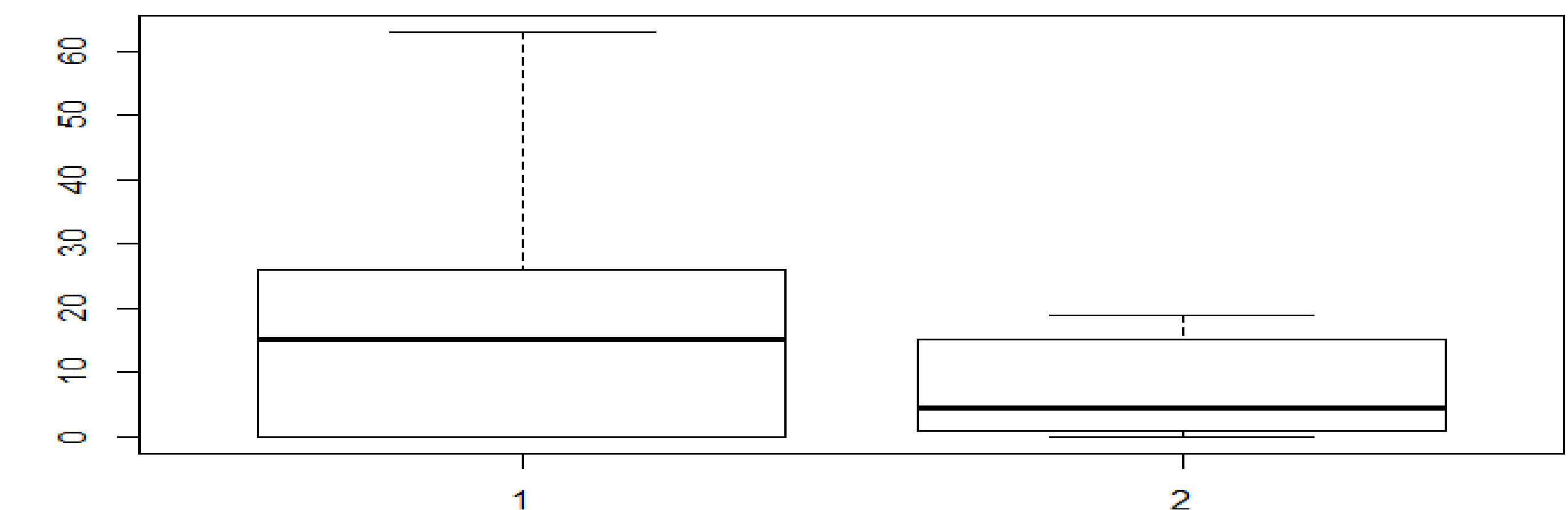


Figure 6: Box and Whisker Plot of the data that we collected at the sampling site.

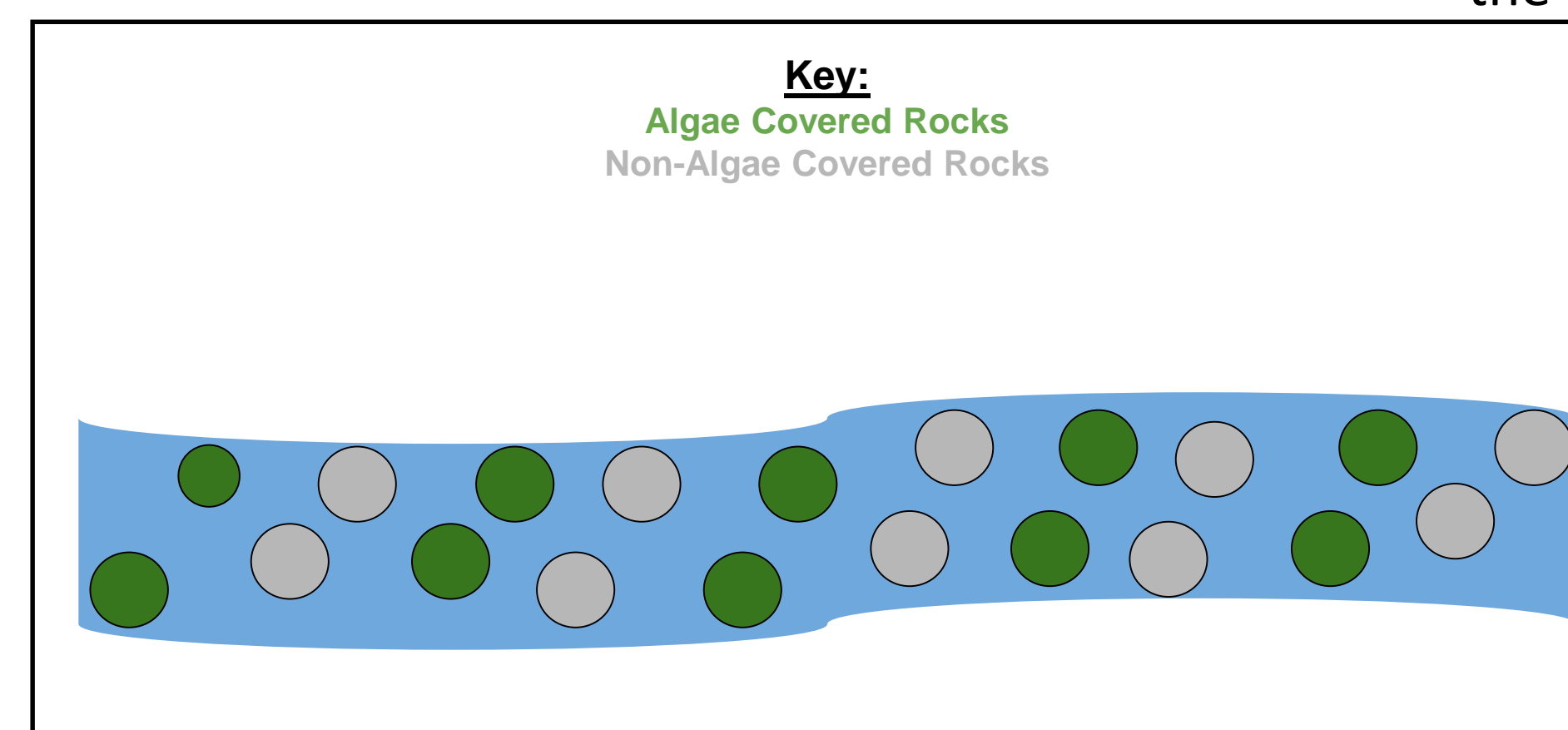


Figure 2: This is the site of where we conducted our experiment.

Results (Description):

- Rocks that are covered in algae hold more nutrients, which provide a greater food source for invertebrates in the stream. So naturally, colonization of invertebrates would be greater on the rocks covered in algae, as opposed to the rocks that are not covered. That is because rocks with no algae on their surface have no other nutrients to provide, which gives invertebrates no reason to colonize on their surfaces.
- In conclusion, there is a greater colonization of invertebrates on the algae covered rocks rather than the rocks without algae.

Discussion

• There is a greater colonization of invertebrates on algae covered rocks. This is due to the algae being a main food source for the invertebrates. This, therefore, causes the attraction of more invertebrates to the algae covered rocks. Possible limitations could be that we couldn't find all 20 of our rocks used in the experiment when we returned to the sampling site to collect the study's results. When collecting the rocks, we found that we were missing 4 algae covered rocks and 1 non-algae covered rock. This made our results less accurate, but we still were able to determine the invertebrates' preference. Our findings match those of similar published research. The paper, Habitat structure, resources and diversity: the separate effects of surface roughness and macroalgae on stream invertebrates by B. J. Downes, P. S. Lake, E. S. G. Schreiber, and A. Glaister has findings that complements ours. They found that "macroalgae increased colonization densities" of invertebrates. Our results are essential to understanding that a healthy stream ecosystem relies on the abundance of algae that invertebrates rely on as a main food source.

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