

Prevent Marine Pollution Progression and Protect Marine Creatures

1. Motivation behind Research Paper

I have loved sea creatures since I was a child. When I was in elementary school, I even wanted to become an aquarium keeper in the future. These creatures that I love so much are presently suffering and dying at the hands of us humans. One of the causes is marine pollution. In recent years, a lot of trash has been floating in the ocean. Many creatures have lost their lives due to this garbage. When I learned of this situation, my heart ached. I wanted to change this situation and save living creatures, so I began my exploration activities.

2. Introduction

“To reduce the trash in the sea, to protect the sea creatures.” This is the purpose of our project. Many people think that if you want to protect the ocean, you should pick up trash in the ocean. However, even if we pick up trash in the ocean, the beach where we picked up the trash will only be temporarily clean, and the people will continue to throw it away unconsciously. The person who picks up trash continues to pick up the trash. We thought that this infinite loop, which has absolutely no end, is far from a sustainable society. Living in Nara Prefecture, which has no ocean, we had almost no connection to the sea, so we were looking for something we could do to help, then we found a resource. It is a report of a survey conducted by the Kanagawa Coastal Beautification Foundation. Their survey results showed

that 30% of the trash on the beaches was thrown into the sea, and about 70% of the trash came from the rivers. After discovering that marine trash is related to rivers, we decided to focus on rivers because they are familiar to us, the residents of Nara Prefecture. Along with the members of Akishino River Headwaters Loving and Nurturing Association, who have been active for more than 25 years cleaning up trash in the Akishino River, we participated in the river cleanup held on the third Saturday of every month. After the cleanup, we separated all the trash we picked up and researched the trash breakdown.



Figure 1. Sorting trash found in Akishino River

This fallen trash is thought to drift from the river and eventually reach the ocean. We thought that in order to break the "infinite loop", we must change people's attitude toward trash throwing away first. We surmised that if we could change people's mindset, they would unconsciously stop throwing trash into the river, and the amount of trash in the river would gradually decrease.

3. Results and Analysis

Based on the results of a survey conducted by the Kanagawa Coastal Beautification Foundation, we decided to start a new project. The newly developed project was the "eye signboard."



Figure 2. Poster put up to discourage littering

The experiment method is shown below:

1. One plot of five trees was set up end to end, and two plots were set up for a comparison.
2. Eye sign boards were placed in the experimental plot, and a plot without eye sign board was set up as the target of the experiment.
3. The experimental plots were divided into smaller areas and named A1, A2, A3, and A4, respectively. The aim of the experiment was to research whether the increase or decrease in the amount of trash in the area was related to the distance from the eye signboard.

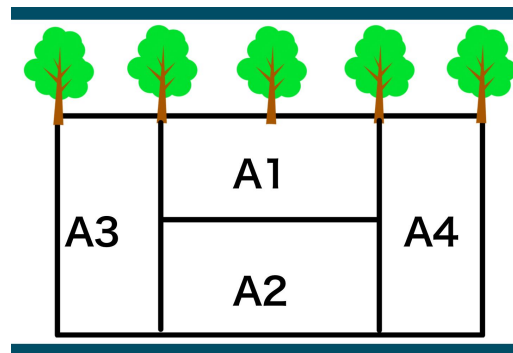


Figure 3. Experimental plot

4. Once every two weeks, the number of trash in each plot and its location were noted.
5. Once a month, trash pickup was conducted. In addition, two weeks after the day of trash pickup, we did not pick up trash, but only measured it.

This experiment continued for about 6 months. We heard from volunteers that local people saw the posters we had created and remarked that the posters were scary, confirming that putting the sign board was in fact attracting the attention of passersby. During the experiment, the members worked together to keep records for about six months, even though at times it was difficult to record the results due to bad weather and the growth of grass along the river. The results of the experiment described above, conducted for about six months, showed that the eye signboard had a positive effect on reducing trash littering. There was a clear difference in the amount of trash between the areas where eye signs were set up or not set up.

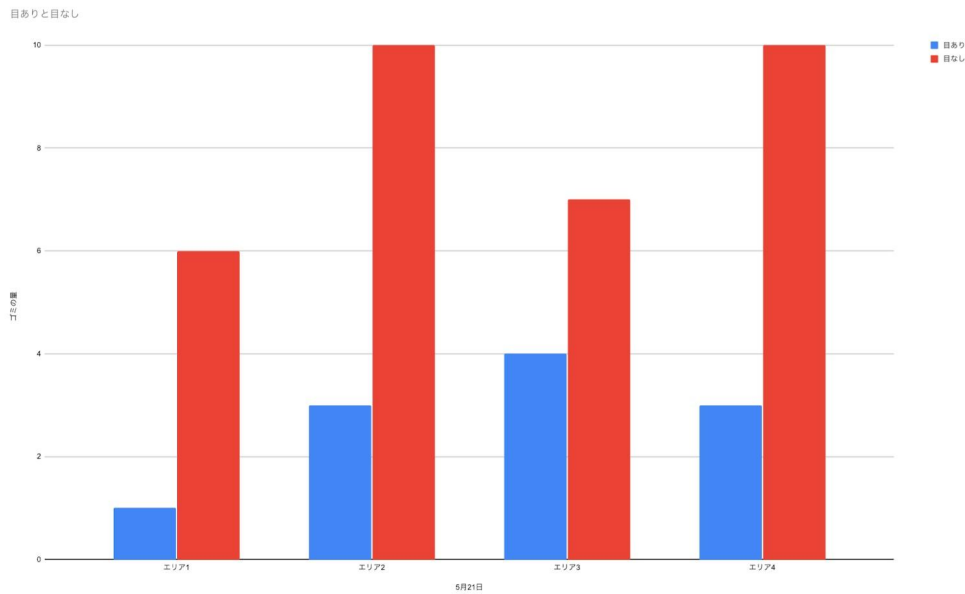


Figure 4. Results of trash pick up. Blue graphs show results with eye signboard, red graphs show results without eye signboard

4. Conclusion and Future Problems

We have conducted river clean-up activities and experiments to achieve this goal. Through these activities, it was found that the amount of trash decreased by 59.52% after the experiment. This shows that there is a possibility people can change their mindset if there is some external factor. However, we have not achieved our goal. The reason why is that we were in a limited area upstream of the Akishino River. In order to achieve our goals of reducing trash in the ocean and protecting sea creatures, it is necessary to conduct such an experiment over a much wider area. Also, it was not obvious that the results of the experiment might change due to traffic and other factors, since the signs were not switched between the tree sections with signs and those without signs. Therefore, the results of the experiment are only for that spot, and it is unclear whether the experiment is effective in all locations. In other words, although good results were obtained in this case, these results may not

be caused by the eye signs, but rather by their location, which may have reduced the amount of trash.

5. Reflection

I have been working in exploration activities in order to prevent marine pollution from progressing. Through these exploration activities, I was able to develop the ability to find issues, seek solutions, and take action. Through experiments and surveys, I was able to demonstrate that the eye signboard developed by the research group was effective. It was a rewarding experience to achieve such positive results. In addition, I was able to interact with the members of Akishino River Headwaters Loving and Nurturing Association, and local residents, expanding my circle of community. Through all the activities, I was able to meet, learn, and gain a lot of strength. I would like to make the most of what I have learned and experienced in my future life.

6. Work Cited

Cooperative Organization . Akishino River Headwaters Loving and Nurturing Association

Kanagawa coast beautification foundation. "About coastal trash." Web. 2020.

<https://www.bikazaidan.or.jp>