



Karla Lea Čerkuć,
Mentor: Mihaela Marceljak Ilić ,
XV. gimnazija, Zagreb, Croatia

The impact of Mediterranean mussels (*Mytilus galloprovincialis*, LMK.) on the amount of microplastic in the sea

INTRODUCTION

The research aim is to determine whether Mediterranean mussels reduce the amount of microplastics from the sea and can they serve as biopurifiers of microplastics in the areas of mariculture.

RESULTS

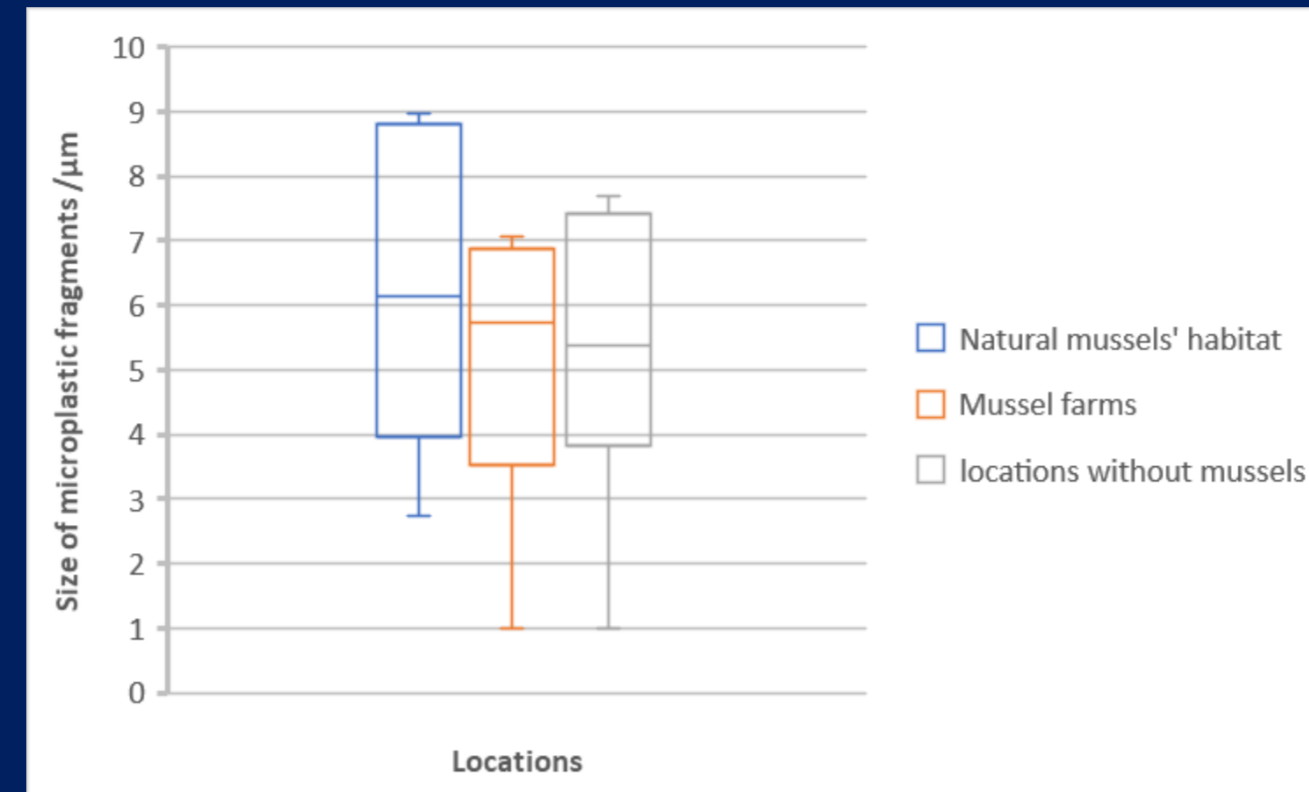


Figure 3 Average size of microplastic fragments



Figure 4 Average size of microplastic fibers

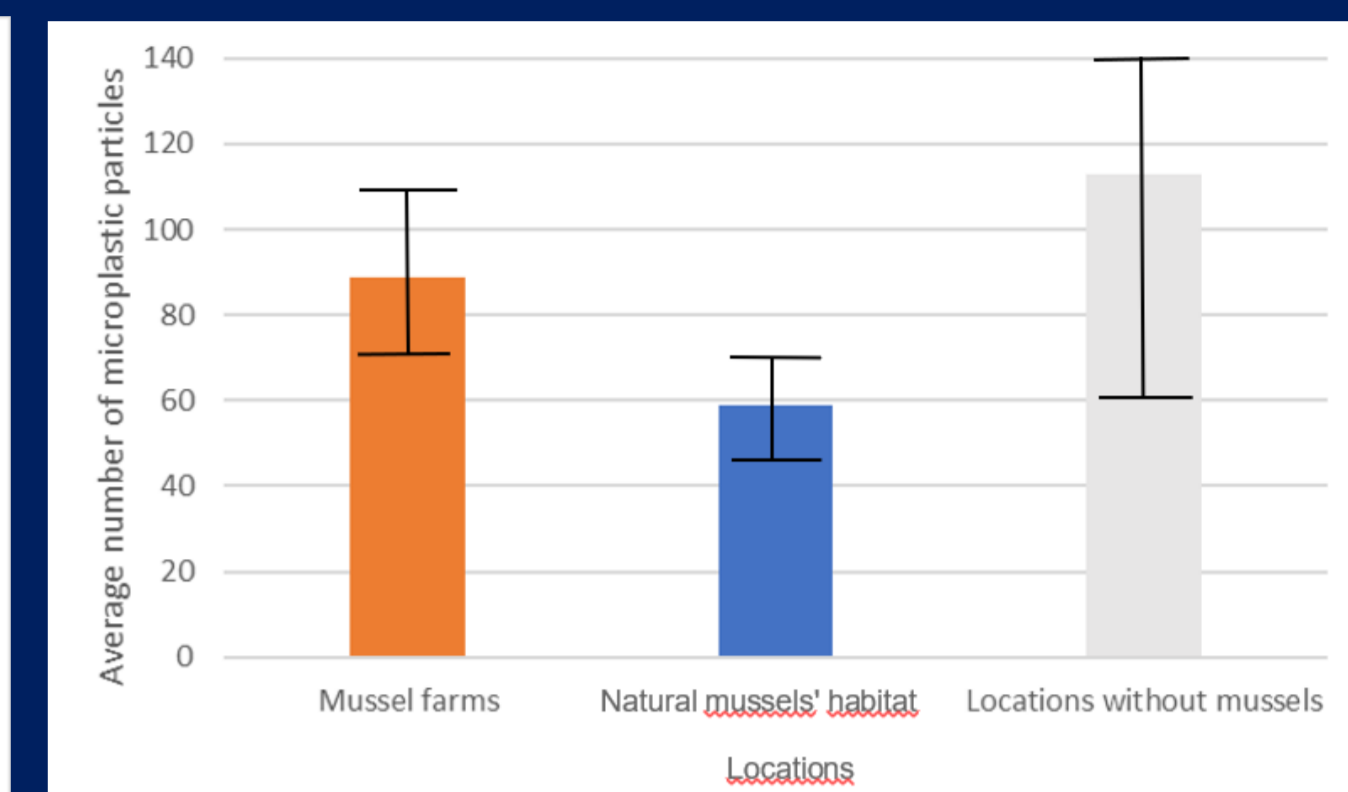


Figure 5 Average number of microplastic particles

RESEARCH QUESTION AND HYPOTHESIS

- Does the presence of mussels impact the amount of microplastics found in the sea?
- Which sampling site will have the biggest variety in microplastic shapes, colors, and sizes?
- What are the most common types of microplastic found in the sampling sites?

The hypothesis is that there will be a smaller amount of microplastics in sea samples from areas densely inhabited by mussels than in sea samples where there are no mussels.

DISCUSION

The hypothesis that there will be fewer microplastics in areas with a high concentration of mussels than in areas where there are no mussels was confirmed. Schmidt et al. (2018) conducted research on the amount of microplastics in the Mediterranean Sea, and depending on the location, their average varies from 34 to 212 pieces per m². These results coincide with the obtained results of this research. Given that most research on microplastics investigates their chemical structure or bioaccumulation in marine organisms, it is difficult to compare the results with previous research.

METHODS

Samples were taken in mussel farms, natural mussels' habitats and habitats without mussels. At each location, three 500 mL bottles were filled at a depth of 0.5 m. The GLOBE hydrology protocols for water pH and water temperature were used as a control factor to make pH levels and water temperature would not affect the results. A total of 27 seawater samples were collected. The samples were filtered using a vacuum pump and a funnel for vacuum filtration. Dry filtrate membranes were analyzed using a school microscope model DN-107T at magnification 400x.



Figure 1 Mussel farm



Figure 2 Microplastic fiber

CONCLUSIONS

- human pollution of the sea is very visible and concerning,
- Lesser amount of microplastics found near the habitats of mussels,
- undetermined source of dark blue plastic,
- the main form of microplastic in a fragment shape,
- the largest fragments of microplastic are found in the natural habitats of mussels,
- Mussel farms have the greatest deviations when it comes to the average size of microplastic fibers.

BIBLIOGRAPHY

Schmidt N., Thibault D., Galgani F., Paluselli A., Sempere R. 2018. Occurrence of microplastics in surface waters of the Gulf of Lion (NW Mediterranean Sea). ScienceDirect. <https://www.sciencedirect.com/science/article/abs/pii/S0079661117300484> , Accessed 8.3.2023.