Microplastic: A Possible Rising Tide of Plastic Affecting an Oyster's Filtration

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Oysters are niche creatures within the marine ecosystem that filter phytoplankton to ensure clarity of water. As global plastic production reaches 4.8 - 12.7 million tonnes annually, their eventual accumulation and decomposition in the rivers and oceans have resulted in large quantities of microplastics similarly infiltrating the aquatic environment. As it is unclear whether the presence of microplastics will alter an oyster's filtration capabilities in a short-term time frame, this experiment spans over two hours and thirty minutes to simulate the immediate effects of microplastics on oysters. The effect of heightened microplastic concentration on an oyster's filtration rate was measured through the amount of light capable of passing through the water through thirty minute intervals, as the faster the oysters filter, the more light is capable of being read by a light probe. By observing the effects of microplastic on oysters in the short term, the future direction of the world's waterways can be similarly predicted. Results revealed that microplastics impact oysters within thirty minutes, causing oysters to filter faster, but as $p=0.15$, the null hypothesis was accepted. Past research similarly showed that oysters filter faster under the presence of microplastics and further determined that oysters sacrifice reproductive capabilities to filter faster immediately, but their experiment occurred over several months in contrast to this experiment's shorter time frame. This research opens up future avenues of research into understanding whether the size combined with duration of microplastics exposure affect other biological functions of an oyster, namely pearl creation size and speed.