
MICROPLASTICS FOUND IN THE EASTERN OYSTER (*Crassostrea virginica*) AND THE SURROUNDING ENVIRONMENT

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Abstract

Microplastics (MP, < 5 mm) can be incorporated into marine snow (heteroaggregations) and sink to the benthos quickly where they interact with benthic organisms. The eastern oyster (*Crassostrea virginica*) is a commercially important species that has been shown to ingest MP; however, oysters are discriminant suspension feeders that do not consume all particles to which they are exposed. This study focused on identifying the polymer compositions, shapes, and sizes of MP found in different environmental compartments on a recreational oyster bed. Oyster, water, marine snow, and sediment samples were collected and the quantity and types of MP in each were determined. Many precautions were taken to minimize and monitor MP contamination in the field and laboratory because quality control and assurance measures are essential for gathering reliable data. Microplastics were isolated from samples via chemical digestion, and any suspected MP were identified using micro-Fourier transform infrared spectroscopy (μ FTIR). A total of 86 microplastics were identified out of 885 suspected MP across environmental media. The highest MP count in an individual oyster was 9 MP, suggesting that there are very low concentrations of MP in oysters and the surrounding environment. There were no significant connections found between oysters and the surrounding environmental compartments suggesting that bivalves would be a poor bioindicator species for MP pollution. These data will aid in determining the types of MP (polymer composition, shape, size) to which oysters are exposed, and identify those they ingested. Such comparisons are important to determine if MP in the environment are problematic for the eastern oyster and if so, what MP types should be addressed in future environmental policies.

Keywords: bivalve, mollusc, suspension feeding, bioindicator

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