

## ABSTRACT

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Title: The Presence Of Microplastics Within The Gills And Digestive Tract Of Atlantic Menhaden (*Brevoortia tyrannus*)  
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The volume of plastic pollution in our oceans is growing proportionally with our dependency on plastic products. Plastics can fragment and degrade forming microplastics that pose a serious threat to marine environments. Microplastics are plastic particles smaller than 5.0 mm in size and are ubiquitous in coastal and open ocean waters. Due to their size, they pass through municipal wastewater treatment systems and can be ingested by filter feeding marine organisms. In this study, Atlantic menhaden (*Brevoortia tyrannus*) gills and alimentary canals were examined for the presence of microplastics. Fifteen menhaden from regional Connecticut and Rhode Island bait shops were digested in nitric acid and microplastics were isolated from the digest solutions using a density separation and filtration process. Microfibers were the predominant form of microplastic identified in menhaden. In total, 49 discrete microfibers and one microplastic fragment were found in the 15 menhaden examined (3.26 microplastics per fish). Overall, more microplastics were identified in the intestinal tissues of the menhaden compared to the gill tissue. The majority (60%) of the fibers identified were clear. Red (17%) and blue (15%) fibers were also abundant, while there were significantly fewer black (8%) fibers. IR-ATR analysis of a fiber isolated from menhaden tissues was positively identified as polyester. The presence of microplastics within Atlantic menhaden raises concern about the potential for chemicals from the microplastics to be incorporated in fish oil supplements from reduction plants. Strategies to minimize the abundance and toxicity of microfibers in the environment include the combination of better laundering techniques, the use of natural or recycled fibers, and using bio-sourced additives within synthetic fibers.