Presenter: Quinn Sheppard (University of San Diego)

Description:

The Tijuana River Watershed encompasses 1750 square miles of territory in both Mexico and the United States, culminating at the National Estuarine Research Reserve. While this area comprises one of the largest undisturbed wetlands in the state, it is one of the most polluted rivers in Southern California, draining raw sewage and nonpoint source pollution. Despite extensive research, microplastic pollution along the beaches has not been explored. The objective of this study is to determine how the abundance and morphology of microplastic pollution in beach sediments vary with distance along the littoral cell from the Tijuana River outfall. Twenty samples were collected at 10 sites that span from the Tijuana River outfall to Mission Beach, San Diego. They are characterized as outfall sites, low-visitation beaches near the outfall, and high-visitation beaches further from the outfall. Solutions of 100ml sediment and 400ml hyper-saline solution were mixed and settled for 16 hours before being processed using a vacuum filtration system in a laminar flow hood. The microplastics (MP) were counted and classified using light microscopy. Laboratory practices to reduce laboratory contamination were employed and analytical blanks were run for every 3 samples. MPs ranged from 1 to 199/100ml sediment, of which approximately 91% were fibers. The greatest MP abundance occurred at the river outfall sites, but recovery rates were highly variable, and the analytical blanks ranged from 3-63/100ml sediment. The results of this study suggest that microplastic distribution in sandy beach sediments

is patchy but higher near the Tijuana River Outfall, and that future studies should report analytical blanks and employ methods to reduce contamination. Understanding the relationship between watersheds and microplastic distributions may inspire policy change on water quality protections in watersheds.

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MICROPLASTIC POLLUTION IN THE TIJUANA ESTUARY BEACHES OF SOUTHERN CALIFORNIA

Category

Education and Policy Session > ED - Education & Outreach > ED12 Undergraduate Research in Marine and Aquatic Sciences

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Student or Profesional? I am a Student