Characterizing the forces shaping the bacterial communities on ocean pier surfaces

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Video Byte

Keywords: Microbiome, outdoor surfaces, piers, metagenomic sequencing, metagenome-assembled genomes, functional traits, secondary biosynthetic capacity, bacteria, microbes, community structure, metagenomics, pier, ocean pier, aquatic, terrestrial, built environment, functional analysis, biosynthetic capacity, xenobiotics

Posted Date: March 1st, 2022

DOI: <https://doi.org/10.21203/rs.3.rs-1405880/v1>

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Abstract

Bacteria and other microorganisms cover nearly every surface on earth, including the surfaces we build and maintain. Ocean piers are unique sites at the intersection of terrestrial, aquatic, and human-built environments. Saltwater spray, inclement weather, and pollutants make piers a harsh environment for bacteria. Together, these factors suggest that piers house a unique microbiome. Researchers recently conducted a study to characterize the microbiomes found on pier surfaces. On nine piers along the coast of Hong Kong, the researchers found diverse microbiomes that were rich in novel bacterial species. Surface material (metal versus concrete) was the strongest factor influencing the bacterial community structure. Although the overall abundance was low, corrosion-associated bacteria were more prevalent on metal surfaces, and high-touch surfaces like handrails and poles had more human skin-associated microbes than other surfaces. The specific bacterial species present drove the differences in metabolic functions and biosynthetic capacity between surfaces. These results contribute to our understanding of microbiomes in environments that fall at the transition between ecosystems, and they could be used to develop better maintenance practices for such outdoor surfaces.