

***Enterococcus* growth on eelgrass (*Zostera marina*); implications for water quality**

Donna M. Ferguson¹, Stephen B. Weisberg², Charles Hagedorn³, Kristine De Leon⁴, Vida Mofidi⁵, Julia Wolfe⁵, May Zimmerman⁴, and Jennifer A. Jay⁶

¹*Environmental Health Science Department, University of California, Los Angeles, Los Angeles, CA*

²*Southern California Coastal Water Research Project, Costa Mesa, CA*

³*Department of Crop and Soil Environmental Sciences, Virginia Tech, Blacksburg, VA*

⁴*Department of Biology, California State University at Long Beach, Long Beach, CA*

⁵*Orange County Public Health Laboratory, Santa Ana, CA*

⁶*Department of Civil and Environmental Engineering, University of California, Los Angeles, Los Angeles, CA*

ABSTRACT

Enterococci are fecal indicator bacteria used to monitor fecal pollution of recreational waters. When *enterococci* levels exceed health standards, fecal pollution is assumed as the cause. *Enterococci* growing on plants limit their usefulness as fecal indicator bacteria. Here we examined enterococcal growth on eelgrass in Mission Bay, CA where *enterococci* levels have exceeded water quality thresholds. A total of 69 eelgrass samples were collected from six sites, shaken to remove *enterococci* attached to plant surfaces and the eluant filtered onto culture media. Isolates were then identified to species using biochemical methods, and DNA typing by pulsed-field gel electrophoresis was done to assess clonality of strains. *Enterococci* concentrations among eelgrass ranged from 8 to 14 000 CFU g⁻¹ dry weight. The most predominant enterococcal species found were *Enterococcus casseliflavus* and *E. hirae* followed by *E. faecalis*. Cluster analysis indicated a high level of clonality among isolates across all species, with clonal isolates consistently associated with individual eelgrass samples. Finding high densities of *E. casseliflavus*, *E. hirae* and *E. faecalis* on eelgrass that included clonal strains indicates the capability of enterococcal growth on eelgrass. Amplification of *enterococci* on eelgrass presents challenges for regulatory agencies that interpret elevated levels of these bacteria as an indication of fecal pollution.

Due to distribution restrictions, the full-text version of this article is available by request only.

Please contact pubrequest@sccwrp.org to request a copy.