

University of Southern Mississippi
Reginald Woods
Faculty Mentor: Dr. R.D. Ellender
Science and Technology

Microbial Source Tracking in Mississippi's Coastal Sediments

Enterococcus is found in virtually all feces of wild/domestic animals and consequently provides little information as to the source or origin of fecal contamination. Its presence in coastal water may be associated with multiple animal sources, and it is probable that its long-term survival in sediments may adversely affect the number of Enterococci found in coastal water. This bacterial source tracking study was conducted to classify and identify the *Enterococcus* in environmental sediment samples. Enterococci were enumerated by membrane filtration and processed for further analysis. The BOX-PCR fingerprinting method was utilized to differentiate selected isolates from four distinct sampling sites off the coast of Mississippi. Isolates were collected from the beaches of Pratt Avenue, Cowan Road, Veterans Affairs, and Rhodenberg Avenue. Following isolate identification, fingerprints of each isolate were counted and compared using BioNumerics software (Applied Maths). After group separation and jackknife analysis, results implied various similarities between 136 total isolates. In retrospect, results implied that spatial distance in geographical location decreases Rate Correct Classification (RCC) in isolate identification. Further analysis calculated Average Rate Correct Classification (ARCC) to be 48.50. Taken together, these results indicate that BOX-PCR may be a useful and efficient tool in determining sources of fecal pollution.