

RIBOTYPING AND ANALYSIS OF SURFACE WATER MICROBE
COMMUNITIES IN THE ELKHORN SLOUGH ESTUARY BY TERMINAL
RESTRICTION FRAGMENT LENGTH POLYMORPHISMS

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by

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ABSTRACT

RIBOTYPING AND ANALYSIS OF SURFACE WATER MICROBE COMMUNITIES IN THE ELKHORN SLOUGH ESTUARY BY TERMINAL RESTRICTION FRAGMENT LENGTH POLYMORPHISMS

by
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Master of Science in Marine Science
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Surface water prokaryotic and eukaryotic microplankton community compositions were characterized by the Terminal Restriction Fragment Length Polymorphism (TRFLP) assay across the Elkhorn Slough National Estuarine Research Reserve (ESNRR), a National Estuarine Research Reserve Site (NERRS) site in Moss Landing, CA, USA. Thirty-four established sites were sampled to compile a snapshot of major Operational Taxonomic Units (OTU's) composing the microplankton communities across varying environs of the Elkhorn Slough and tributary waterways. Community nonparametric multivariate statistical analyses were carried out to assess uniqueness of microbial communities as a whole, contribution of specific OTU's to average community distinctness, relationship between samples specific to Elkhorn Slough main channel (ES) sites versus NERRS (ESFS) sites, and correlation of eukaryote / prokaryote occurrences. An exploratory analysis of physicochemical relationships to community structures was also carried out. Raw data and statistical analyses reveal 75 unique prokaryote and 84 unique eukaryote OTU's encompassing readily differentiable communities with minimal correlation of occurrence of eukaryotic and prokaryotic OTU's across the sample set. Eukaryote communities clustered tightly into three distinct dissimilarity groups including the ES main channel, ESFS monthly sampling sites excluding the Old Salinas River site, and the Old Salinas River site, and provide support for clear discrimination amongst the estuary's two major environmental regimes. Prokaryote communities revealed a more disperse dissimilarity profile across sample sites and provide more granular discrimination amongst site-specific environmental regimes in the estuary.