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**Environmental Microbiology/Microbial Ecology /Microbial Communities - Part III**

**THE EFFECT OF ENVIRONMENTAL AND SEDIMENT CHARACTERISTICS ON THE SPATIAL**

**AND TEMPORAL DISTRIBUTION OF E. COLI IN INTERTIDAL SEDIMENTS**

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**Background**

Current bathing water quality monitoring, in accordance with microbial water quality regulations,

ignores the presence of faecal indicator organisms (FIOs) in river or estuarine sediments. Sediments

act as an environmental reservoir of FIOs, therefore when sediments are resuspended, FIOs are

redistributed into the water column and can contribute significantly to adverse microbial water quality.

Understanding FIO distribution and abundance in sediments therefore provides an improved

understanding of microbial pollution and increase the accuracy of bathing water quality advisories.

**Objectives**

The aim of this work was to identify and model key driving factors that influence the spatial and

temporal variation in the abundance of *E. coli* in intertidal estuarine sediments.

**Methods**

Intertidal sediments were collected from two estuaries in NE Scotland through seasonal transect

sampling, and a spatially and temporally intensive regime. Enumeration of *E. coli* from surface

sediments was performed in conjunction with a comprehensive suite of physical, biogeochemical and biological sediment analyses. Data were explored using Spearman’s rank correlation coefficients, best subsets models and multiple stepwise linear regression models.

**Conclusions**

*E. coli* abundance was largely dependent on biogeochemical variables, with interstitial pore water

salinity consistently influential. Multiple linear regression models of the different datasets explained up to 87.4 % of *E. coli* variation suggesting that, with further research, the predictive modelling of FIO abundance in sediments could be included in the designation of bathing water quality advisory notices.