

## Research objectives

1. To investigate the bacterial community composition (BCC) and abundance in the River Wensum catchment.
2. To determine the effects of spatial and temporal variation and environmental factors on the BCC and abundance

## Key messages

- Date and location explain the variation and abundance of bacterial community composition (BCC)
- Temperature, total phosphorus and pH were among the physical and chemical parameters that showed a positive correlation with BCC, while total carbon showed a negative correlation

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## Description of research/methods

Samples were collected monthly from 28 sites in the Wensum from June 2011 – June 2012. 20 ml of each sample was filtered and stained with DAPI to obtain bacterial numbers by epifluorescence microscopy. 300 ml of each sample were filtered to determine bacterial fragment sizes after DNA extraction and PCR amplification.

ARISA profiles and multi dimensional scaling (MDS) of DNA fragments demonstrated that the bacterial community composition (BCC) shifted between the winter season (January–March 2012) and the spring season (April–May 2012) (Figure 1). MDS also revealed that the BCC in the Blackwater sub-catchment at Sites A, B and E was completely different from Sites C, D, F, G and H, although spatially within the same headwater area. Epifluorescence microscopy demonstrated that bacterial numbers were different between both months (Figure 2) and sites. Statistical analysis using Pearson correlation demonstrated that temperature, total phosphorus and pH were among the physical and chemical parameters that showed a positive correlation with BCC, while total carbon showed a negative correlation.

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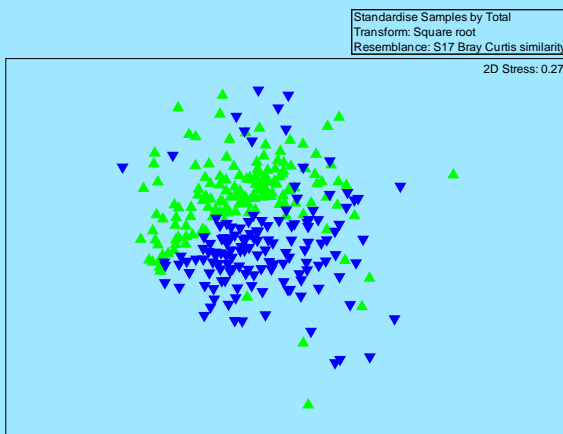


Fig. 1 Results of ARISA profiling and multi dimensional scaling (MDS) to show bacterial composition in 2011 and 2012

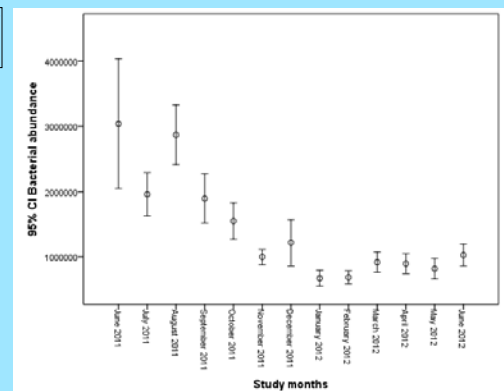


Fig. 2 Results of epifluorescence microscopy giving monthly bacterial abundance from June 2011 – June 2012