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Evaluation of microbial source tracking methods using mixed fecal sources in aqueous test samples

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ABSTRACT

Microbiological source tracking methods are potentially powerful tools that are increasingly being used to identify sources of fecal contamination in surface waters, but these methods have been subjected to limited comparative testing. In this study, 22 researchers employing twelve different methods were provided sets of identically prepared blind water samples. Each sample contained one to three of five possible fecal sources (human, dog, cattle, seagull, or sewage). Researchers were also provided portions of the fecal material used to inoculate the blind water samples for their use as library material. No MST method tested predicted the source material in the blind samples perfectly. Host-specific PCR performed best at differentiating between human and non-human sources, but primers are not yet available for differentiating among the nonhuman sources. Virus and F+ coliphage methods reliably identified sewage, but were not able to identify fecal contamination from individual humans. Library-based isolate methods were able to identify the dominant source in most samples, but had difficulty with false positives, identifying the presence of fecal sources that were not in the samples. Among the library-based methods, genotypic methods generally performed better than phenotypic methods.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2003_04AnnualReport/ar27-griffith_328-337.pdf