

Effects of mesohabitat sampling strategy on the assessment of stream quality with benthic invertebrate assemblages

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With 6 figures and 2 tables in the text

Abstract: Benthic macroinvertebrate communities are used widely to assess change in biological quality of streams, with taxa generally pooled across a variable number of different mesohabitats sampled at each station. Computer simulations showed the potential variation in the record of a station community according to the combination of mesohabitats sampled. For each station, all the faunal lists obtained by combining six, eight or ten sampled mesohabitats were compared on the basis of their structure (biocentotic indices) and composition (Jaccard's similarity index).

Relative abundances of taxa varied depending on the combination of mesohabitats sampled. Total abundance and the dominance index in a station community were the most variable parameters, whereas taxonomic richness depended to a lesser extent on mesohabitats sampled. Differences in community composition were readily explained by taxa which were only present in one, two, or three mesohabitats. These taxa accounted for a minimum of 46 % taxonomic richness in each station and were mainly present with low abundances. Because most mesohabitats contained these kinds of taxa, invertebrate assemblages contrasted in composition although they displayed similar taxonomic richness.

Variability in the faunal assessment of a station assemblage owing to the mesohabitats sampled can have a strong impact on the biological assessment of this station. Recommendations are suggested to alleviate this problem.

Introduction

Variation in invertebrate assemblages induced by sampling has long been recognized as a problem for the characterization of aquatic ecosystems (KERANS

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