



Conference Abstract

# High-throughput DNA barcoding of oligochaetes for abundance-based indices to assess the biological quality of sediments in streams and lakes

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## Abstract

Aquatic oligochaete communities are valuable indicators of the biological quality of sediments in streams and lakes, but identification of specimens to the species level based on morphological features requires solid expertise in taxonomy and is possible only for a fraction of specimens present in a sample. The identification of aquatic oligochaetes using DNA barcodes would facilitate their use in biomonitoring and allow a wider use of this taxonomic group for ecological diagnoses. Previous approaches based on DNA metabarcoding of samples composed of total sediments or pools of specimens have been proposed for assessing the biological quality of ecosystems, but such methods do not provide precise information on species abundance, which limits the value of resulting ecological diagnoses. Here, we tested how a DNA barcoding approach based on high-throughput sequencing of sorted and genetically tagged specimens performed to assess oligochaete species diversity and abundance and the biological quality of sediments in streams and lakes. We applied both molecular and morphological approaches at 13 sites

in Swiss streams and at 7 sites in Lake Geneva. We genetically identified 33 or 66 specimens per site. For both approaches, we used the same index calculations. We found that the ecological diagnoses derived from the genetic approach matched well with those of the morphological approach and that the genetic identification of only 33 specimens per site provided enough ecological information for correctly estimating the biological quality of sediments in streams and lakes.

## **Keywords**

Biological quality, Sediments, Molecular index, High-throughput sequencing, Oligochaetes, Streams, Lakes

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