

Invertebrate Sample Processing at the U.S. Geological Survey's National Water Quality Laboratory

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Biographical Sketch of Author

Steve Moulton is employed as the Biological Operations Manager for the U.S. Geological Survey's National Water-Quality Assessment (NAWQA) Program. In his position, the author is responsible for coordinating various operational activities related to the biological component of the NAWQA Program such as sampling protocols, training, and taxonomic laboratory support.

Abstract

Invertebrate communities are frequently studied in water-quality monitoring programs because of their important roles in the structure and function of aquatic ecosystems. Taxonomic data derived from samples of these communities must be generated using approved sample processing protocols to ensure long-term data comparability for interpretive studies at the local, regional, and national scales. Broadly defined, sample processing includes activities related to subsampling, sorting and identifying organisms, evaluating analytical method performance, and ensuring accurate and consistent taxonomy. The U.S. Geological Survey (USGS) has established an analytical capability at the National Water Quality Laboratory (NWQL) in Denver, Colorado that specializes in processing invertebrate samples collected by USGS national (e.g., National Water-Quality Assessment Program) and District-based water-quality studies. The NWQL has processed several thousand samples collected from streams throughout the United States that has resulted in a unique centralization of invertebrate taxonomic expertise. Standard and custom analytical services are available at the NWQL for processing quantitative and qualitative sample types. Taxonomic identifications are quality assured for accuracy and national consistency following a novel, taxon-based approach that randomly examines taxonomic data produced weekly across taxonomists and projects. Additional quality assurance is achieved through correspondence with recognized taxonomic specialists and by accessing an up to date taxonomic library and invertebrate reference collection. Methods and procedures used by the NWQL are described in Moulton et al. (2000. Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory—Processing, taxonomy, and quality control of benthic macroinvertebrate samples. U.S. Geological Survey Open-File Report 00-212, 49 p.).