ORAL PRESENTATION

QUALITY ASSURANCE ASSESMENT OF REPLICATE DIATOM
COUNTS: LESSONS FROM REVIEW OF 800 COMPARISONS

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Comparing replicate counts of diatom slides made by two or more diatomists is a standard procedure for helping improve quality and consistency of identifications and quantifying taxonomic uncertainty. Two metrics widely used in making comparisons are Percent Similarity (PS) and Jaccard's index. Interpreting values of these metrics is challenging. Key questions are: What values represent acceptable agreement between analysts? How do these values vary with structure of assemblages (e.g., taxa richness) and initial efforts to resolve discrepancies (e.g., resolving synonym issues). These are important both in terms of evaluating consistency in counts generally, and because project sponsors regularly require that minimum criteria be met (e.g., PS of 60 – 90). To better understand what values might make reasonable criteria, we evaluated results of over 800 replicate counts of stream samples that are in the North American Diatom Ecological (NADED) database at the Academy of Natural Sciences. Comparisons were made by categories: counts done by the same analyst; counts by analysts using the same or different taxonomic systems, and counts before and after synonym issues were resolved. It was difficult to assign count pairs to categories where differences between analysts were due to use of different synonyms, lumping vs splitting, and differences in characteristics used to distinguish species and varieties (e.g., lengths, striae counts). PS's above 90% were generally restricted to counts by the same analyst and samples with low taxa richness. PS's below 60% were common and due to differences in taxonomic systems and efforts at resolution of synonyms; high taxa richness was frequently a contributing factor.