

Protistan Biodiversity in the Plankton: New Insights from New Approaches

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Abstract: Protists are unicellular, eukaryotic organisms that exhibit phototrophic (microalgae), heterotrophic (protozoa) or mixotrophic nutrition. These species play essential roles in planktonic food webs as primary producers and consumers. Protistan species have traditionally been identified based on morphological and ultrastructural features, and the techniques used to identify these species have often been varied or taxon-specific. While morphological features have proven useful for taxonomists and evolutionists, they have not proven helpful to ecologists studying complex natural communities of protists where biodiversity may be high and phylogenetic breadth may be great. For this reason, ecological studies have rapidly incorporated new approaches from molecular biology and immunology for assessing protistan species diversity, species identification and quantification of taxa of ecological interest. Surprisingly, analyses of protistan biodiversity by sequencing DNA taken from environmental samples have indicated a significant protistan assemblage that has gone undetected until recently by traditional, microscopical analyses. In this presentation, information supporting this finding will be presented and studies being undertaken to describe and isolate these species will be discussed.