

ABSTRACT

A MULTIGENE APPROACH TO THE PHYLOGENY OF THE DASYCLADALES (CHLOROPHYTA, ULVOPHYCEAE)

The inference of an accurate phylogeny for the Dasycladales, an ancient order of tropical benthic marine green algae, is important in order to better understand stratigraphy, character evolution, and classification. Previous genetic analyses suggested that the Family Polyphysaceae is monophyletic, but that the Family Dasycladaceae is a basal paraphyletic assemblage. However, the two data sets disagreed regarding genus- and species-level relationships within the Dasycladales. Given the conflicting results of these previous analyses, the current project examined a third and fourth genes, 26S rDNA and the chloroplast-encoded *atpB*. Aligned sequences were analyzed with parsimony and model-based methods and compared to previously published single-gene phylogenies. Family-level relationships based on new sequences alone and in combination with previous sequences and the use of multiple outgroups failed to resolve a monophyletic Dasycladaceae. However, changes in tree topology associated with each outgroup suggests that outgroup selection be critically considered in future studies of this order.

Matt Ashworth
May 2005