

FOSSILS AND DIATOM PHYLOGENY: CAN AMBIGUOUS PHYLOGENETIC RELATIONSHIPS BE RESOLVED WITH ONE KIND OF DATA?

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Two years ago we offered some comments on fossil evidence in relation to diatom classification and phylogeny (David Williams & J. Patrick Kociolek, 2010. Towards a comprehensive diatom classification and phylogeny (Bacillariophyta), *Plant Ecology and Evolution* 143 (3): 265–270, 2010, doi:10.5091/plecevo.2010.401). In this poster we extend that dialogue to some specific points, particularly those relating to the ancient basal “centric” diatoms as revealed by recently published molecular analyses. Our aim is to document lineages that have known fossil representatives and offer commentary on the relation between sampling, extinction and accuracy in determining relationship from limited amounts of evidence (molecules, in particular). Examples will be drawn from Lithodesmiales, Ardissoniales and other selected ‘araphid’ groups. We will discuss whether we can “sequence our way” to resolving ambiguous relationships of some of these groups, and what role fossil evidence may (uniquely) provide in resolving these relationships.