

DIATOMS AS BIODIVERSITY INDICATORS IN LAKES OF THE CIRCUM-MEDITERRANEAN

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Diatoms (single-celled siliceous algae) occur in virtually all water bodies, are abundant, diverse and sensitive to a wide range of water chemistry variables. In lake sediment studies of past environmental change, their power as highly sensitive monitors of temporal trends in environmental variables such as salinity (related to lake-level and climate change) or nutrient status is widely acknowledged. Over the past decade diatom research has advanced considerably, with the development of transfer functions based on large modern regional data-sets of water chemistry and diatom assemblage composition data, from which to quantify past changes in water chemistry variables.

The Mediterranean regions of the Balkans, Turkey and Spain contain a wide variety of wetlands, including fresh (hydrologically open) and saline (hydrologically closed) lakes. Many of these wetlands are threatened increasingly by the effects of human-induced eutrophication and accelerated water abstraction, such that issues surrounding conservation and biodiversity are of particular concern. Whilst existing diatom-based research has been aimed primarily at reconstructing past environmental change, the recent expansion of diatom study in these regions has produced for the first time large regional data-sets of modern ecological data and an increasingly large body of long (last c. 10-20,000 yr.) and short (last c. 150 yr.) term palaeolimnological data, from which to assess temporal trends in biodiversity, both on a site-specific and regional basis.

This paper explores the potential of diatoms as indicators of biodiversity in the circum-Mediterranean, based on modern ecological and palaeoecological studies of lakes of the Balkans, Turkey and Spain, and by comparison with previously published species inventories for particular lakes. The influence of taxonomic nomenclature, habitat variation and sampling site on apparent biodiversity is discussed, and temporal trends are assessed using simple biodiversity indices. It is suggested that one of the most valuable outcomes of using the long-term palaeolimnological record to assess biodiversity, by reference to large modern ecological data-sets, is that one may identify clearly the past existence of characteristic diatom assemblages (and by inference, lacustrine environments) which now have no modern analogue in the regional flora.

Key words: diatoms, Mediterranean, palaeolimnology, biodiversity, transfer functions