

SPATIAL VARIABILITY OF THE DIATOM COMMUNITY OF LAKE WIVENHOE, AN AUSTRALIAN FRESHWATER RESERVOIR

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Australia, in particular South East Queensland, relies on reservoirs to store freshwater to supply both drinking water and water for irrigation purposes. In addition, Australia has low annual rainfall and a high loss of surface water due to evaporation. There is a need to develop robust indicators of reservoir health to better inform management of these systems, especially in times of drought. Reservoirs have unique hydrology and can be separated into three zones, lacustrine, transition and riverine. Seventy six species of diatoms were identified over 18 sites throughout the reservoir, with only 11 species showing abundances over 1% at more than three sites. This study shows that the composition of the diatom community from 18 sites within Lake Wivenhoe is strongly correlated with the three zones of a reservoir. Historical water quality data was also found to strongly correlate with the three zones of the reservoir. The variability of the diatom community between sites can be attributed to a combination of the hydrological regime and water quality of each site. Diatom community and water quality zonation in the reservoir matched remarkably well. The main water quality parameters that separate each site (secchi, ammonia, true colour, pH, conductivity and No_x) could be expected to drive the differences in the diatom community. From this work, it can be determined that the diatom community does change spatially and by collecting a sediment diatom sample from each zone of the reservoir, the diatom community will be adequately captured. This information can be used for future work in developing a diatom index for South East Queensland reservoirs, leading to efficiency in the sampling methodology.