

## SPATIAL PERIPHYTIC DIATOMS BETWEEN TWO SUMMERS IN A LARGE SUBTROPICAL SHALLOW LAKE

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Diatom communities are commonly used as indicators for environmental disturbance. Both diatom growth and the composition of the diatom community reflect the organisms' sensitivity to environmental changes. Their sessile habit and inability to migrate away from adverse conditions make them reliable proxies for their environmental surroundings and limnological conditions. In this study, we provide the responses of diatom community in two summers in Mangueira Lake, which is a large shallow oligo-mesotrophic system under continuous wind influence. The lake is placed in the Taim Hydrological System (THS), southern Brazil, site 7 of the Long Term Ecological Research of the Brazilian network (LTER=PELD –CNPq). Samplings were carried out in 2006 and 2008 in three distant sampling points (North, Center and South). Biofilms were scraped from natural substrata and we provide quantitative analyses. Seventeen physical and chemical variables of water were measured in each sample resulting in Principal Components Analysis (PCA), which explained 93.9% of the variance in the first two axes, showing spatial and temporal variation. The South was characterized by high transparency. The main descriptive variables of the summer of 2006 were turbidity, total inorganic carbon and SRP, and in 2008 were silica, temperature and total organic carbon. Diatoms as in richness and abundance were the most representative group in total periphyton (average 50%). These have specialized structures for attachment to substrata and competition for resources. *Gomphonema gracile*, *Epithemia turgida* and *G. parvulum* had expressive contribution for total periphytic algae biovolume. Diversity was high, except in South/06 (1.96 bits.ind<sup>-1</sup>) with dominance of *Achnantheidium minutissimum* (59% of total density). Difference ( $p < 0.02$ ) between densities and community composition in Center/06 and North/06, revealed spatial distribution. North/06 showed lower biomass, with abundance of *G. parvulum* that tolerates high turbidity and higher concentration of phosphorus. Temporal distribution between 2006 and 2008 pointed to higher density of *Punctastriata lancettula* in the North/08 ( $p < 0.007$ ) and increased of total densities especially *E. turgida*, *A. minutissimum* in the South/08 ( $p < 0.04$ ) that may have occur in response to availability of silica and higher temperatures. We also performed a Two-way Cluster Analysis were the primary clustering separate North/08, South/06 and South/08 were the most similar, and Center can show characteristics of both.