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Abstracts

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Morpho-Functional Groups and Phytoplankton Development in Two Deep Lakes (Lake Garda, Italy and Lake Stechlin, Germany)

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Phylogenetic classifications of plants often do not reflect their ecological functions. In fact, the functioning mechanisms of biological communities may be better understood if species are arranged into groups having similar characteristics. The objective of this work is to evaluate – with the use of multivariate methods – the ability of the classifications based on the morphological and functional characteristics (size and form, mobility, potential mixotrophy, nutrient requirements, presence of gelatinous envelopes) of cyanobacteria and eukaryotic algae to explain the seasonal dynamic of the phytoplankton community. The analyses takes into consideration the data collected in two deep lakes. One of them is located at the southern border of the Alps (Lake Garda, $z_{\max}=350$ m; biennium 2002-2003) and the other in north-east Germany (Lake Stechlin, $z_{\max}=67$ m; 1995, 1998 and 2001). In both lakes, the temporal evolution of the phytoplankton communities within individual years followed a regular annual cycle, with the exception of Lake Stechlin in 1998, due to an irregular phytoplankton pattern caused by a sudden mass appearance of *Planktothrix rubescens* in the spring and summer months, followed by a swift collapse of the whole community in autumn. Overall, the temporal developments of the phytoplankton communities obtained on the basis of patterns of the morpho-functional groups appeared highly comparable with those obtained, in the single years, on the basis of the original phytoplankton matrices. Finally, the

comparison of the morpho-functional groups of the lakes Garda and Stechlin evidenced important differences in the abundance and seasonality of the dominant phytoplankton types. The results obtained in this work underline that the use of classifications based on the adaptive strategies of the single species may represent a useful tool to investigate the community evolution and to compare phytoplankton assemblages of different lakes, overcoming problems related to the existence of possible differences of taxonomic accuracy and determinations.