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Planktothrix rubescens' seasonal dynamics and vertical distribution in Lake Pusiano (North Italy)

Elena LEGNANI*, Diego COPETTI, Alessandro OGGIONI[1)], Gianni TARTARI, Maria Teresa PALUMBO and Giuseppe MORABITO[1)]

CNR - Water Research Institute, 20047 Località Occhiate, Brugherio, Italy
[1)]CNR - Institute for the Ecosystem Study, Largo Tonolli 50, 28922 Verbania Pallanza, Italy
*e-mail corresponding author: legnani@irsa.cnr.it

ABSTRACT

The limnological evolution of Lake Pusiano followed, starting 1970s, an increasing eutrophication process, attaining the maximum trophic level at the mid 1980s, when the lake reached an hypertrophic condition (around 200 µg P l^{-1} at winter overturn). Between mid 1980s and the beginning of this century, the phosphorus concentrations continuously decreased, until reaching TP values close to 60 µg P l^{-1}. Despite this improvement in trophic conditions, since 1994 the cyanobacteria contribution increased: noticeable was a very intense bloom of Planktothrix rubescens*, occurred during autumn 2001. The following year, when we carried out this research, this filamentous cyanobacterium strongly dominated the phytoplankton population for the whole seasonal cycle. However, after an intense flood occurred in November the* P. rubescens *population decreased again. This paper aims at describing the seasonal dynamics of the cyanobacterium* P. rubescens *in Lake Pusiano (North Italy) during year 2002, pointing out the environmental factors which favoured its large dominance during the whole seasonal cycle: particular attention will be paid to the role played by the physical factors in promoting the growth of* P. rubescens*, despite the nutrient reduction. Our experimental evidences suggest the involment of mechanisms already observed in other European lakes, such as the establishment of a metalimnetic niche. Moreover, our data point out a high sensitivity of this environment to the changes of the hydrological regime, which probably affect the seasonal phytoplankton dynamics.*

Key words: Planktothrix rubescens*, seasonal dynamics, Lake Pusiano*