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ABSTRACTS

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Implications of macrophyte abundance on algal growth management: the case of three natural swimming pools with distinct macrophyte abundance

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ABSTRACT

Natural swimming pools are small constructed lakes for recreational purposes. They are composed by a swimming area merging with an area planted with emergent and submerged macrophytes, which function as biological filters. Fish are absent, however a wide diversity of phytoplankton, zooplankton and macroinvertebrate species colonize these pools. Therefore, pools can be regarded as the ideal systems to extrapolate the implications of macrophyte abundance management on algal growth control. The present study was taken in three pools (A, B and C) located in Minho Region (Northern Portugal) In early summer the macrophyte area had a 30% of cover in Pool A, in B 40% and in C 60%. Phytoplankton, zooplankton and filamentous algae abundance as well as conductivity, pH, dissolved oxygen, hardness, nitrates, nitrites, ammonia, phosphates were recorded in February, April and June. The lowest densities of phytoplankton were observed in pool C. Besides, filamentous algae were abundant in the pool A, whereas in B and C they were recorded only in summer. In Pool A, zooplankton assemblage was always dominated specialists on small particle feeding, which food preference are detritus and bacteria. Conversely, in the Pool C herbivorous zooplankton was predominant. The low algal densities observed in the Pool C are explained by the presence of a well established macrophyte assemblage. These plants contribute to the reduction of algal densities by (1) creating of areas of shade; (2) removing nutrients from water column and (3) provide refuges for herbivorous zooplankton. Therefore, the present study stresses the pertinence of take in account the key role of aquatic macrophytes when management practices for algal growth control are developed.

Key words: algal growth management, macrophytes, natural swimming pools