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## ABSTRACTS

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## Water level fluctuations in reservoirs: a challenge for algal control growth and water quality management

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### ABSTRACT

Azibo Reservoir (41°34'32, 25"N; 6° 53'51, 63"W) is located in Douro catchment. Reservoir surroundings are occupied with several villages. Extensive farming and cattle grazing are the most important activities. Furthermore, during the summer the reservoir is used for recreation. Other uses are water supply and irrigation, yet these activities are not significant. Consequently, water level fluctuations are of small magnitude, allowing the existence macrophytes in the reservoir shallow areas. Agueira Reservoir (40°19'53, 83"N; 8° 11'47, 76"W) is used to generate hydroelectrical power and to urban water supply. Consequently, accentuated water level fluctuations occur. The catchment is occupied with intensive forestry, agriculture and livestock production and with several medium sized towns. Reservoirs were sampled for the following water quality parameters: Phosphate, nitrate, chlorophyll *a*, temperature, dissolved oxygen, conductivity and transparency. Phytoplakton assemblages were characterised. Trophic state was assessed by computation of Carlson's Trophic State Index. Phosphate, nitrate and chlorophyll *a* were significantly higher in Agueira, which was classified as eutrophic. Azibo was considered mesotrophic. Cyanophyceae were abundant in Agueira. Conversely, in Azibo phytoplankton assemblage was dominated by Bacillariophyceae and Cryptophyceae. Agueira trophic state can be explained by the internal disturbance induced by the intense water level fluctuations, causing an increment of suspend particulate material in water column. Besides, the exposure of littoral sediments to cycles of drying and wetting also increases nutrient availability and prevents the establishment of macrophytes. These phenomena plus the input of allochthonous nutrients originated from human activities in the catchment area lead to the increase of phytoplankton biomass. Recreational activities probably are the factors with greatest influence on Azibo trophic state. Based upon the obtained data, management measures are suggested to control excessive algal growth and increase ecological integrity of both reservoirs as proposed in Water Framework Directive

**Key words:** reservoirs, water level fluctuations, algal growth management