



The effects of *Yucca shidigera* extract on the reduction of ammonia concentration in Lake Koumoundourou

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Increasing concentrations of nutrients in Lakes is a common problem worldwide, nowadays and has significant impacts on their trophic status and thus on the ecosystem's health. Koumoundourou Lake is a shallow, semi-saline Lake, located in the industrial zone of Attica, Greece. The particular water body receives significant pressures from the nearby industries, from uncontrolled disposal of urban waste and from large number of birds that find a shelter there during the winter time (due to the extinction of most of the rest of Attica wetlands). This study investigates the efficiency of a particular restoration measure for the reduction of ammonia by using a plant extract. Particularly, *Yucca shidigera* has been proved effective in reducing ammonia in aquaculture and therefore, this study aims to investigate if the effects of *Yucca* extract could be similar in Lake Koumoundourou and determine the appropriate amount of *Yucca* extract, necessary to restore the water quality at the desirable levels. Six treatments (two replications per treatment) for 180 hours were conducted, in which three different levels of Ammonium chloride (varying between 0 and 6mg/l) and five different concentrations of *Yucca* (varying between 0 and 2 mg/l) were added in the lake water (in experimental tanks). As far as the effects of *Yucca* extract on water quality are concerned, it is initially considered that it stimulates the reduction of dissolved oxygen (DO) since its concentration dropped faster in the treatments with added *Yucca* than the treatments with no *Yucca* at all, despite the amount of the added Ammonia. Concentration of ammonia-nitrogen kept dropping until hour 48 from the beginning of the experiment, indicating that the efficacy of *Yucca* extract removing ammonia last for about 48 hours, irrespectively of the amount of yucca extract added. Additionally, the relationship between the added *Yucca* extract and the removed ammonia concentration is proportional. Thus, it is concluded that the application of *Yucca* extract can be a promising way to treat lakes with high ammonia levels due to human induced or natural (birds' faeces) pollution.