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**Abstract:**

The Bolmon lagoon is a brackish and Mediterranean ecosystem from the South of France. In the past decades, it became hypertrophic because of the intensive urbanisation in the draining basin of its single tributary, the Cadière River. This lagoon is influenced by the sea, via the Berre lagoon, but inflows of marine water are not frequent in time and space. High concentrations in phosphorus and nitrogen are typical of the hypertrophic state. Because of shallowness and strong dominant winds, it can be considered as polymictic, which increases the availability of nutrients in the water. In consequence, phytoplankton biomass is very high and cyanoprokaryotes dominate the community all the year round. Diversity is low, assemblage poor and quite homogeneous at the lagoon scale. However, a diversity analysis at different scales highlights the significant role of marine inflows, in increasing locally the diversity. This explains the high total richness (160 taxa) observed during the 19 months studied. A clear pattern of seasonal species replacement emerged from our data: *Planktothrix agardhii*-Chroococcales-*Pseudanabaena*-*P. agardhii*, which is characteristic of this type of ecosystems in the Mediterranean area. Dominance of the freshwater species *P. agardhii* in winter and spring is probably the consequence of both frequent mixing and poor light climate in the water. This species tolerates some low salinity variations, as demonstrated by lab experiments. Although it is frequently reported as a hepatotoxic microcystin producer, no toxicity has been found. In respect with physical, chemical and biological functioning, the Bolmon lagoon is a perfect example of a confined paralic basin, according to Guélorget and Perthuisot's concept (1992).

**Key-words:** Mediterranean lagoon, microalgal blooms, phytoplankton dynamics, taxonomy, cyanobacteria, eutrophication, *Planktothrix agardhii*, toxicity, paralic domain, polymictic shallow lake