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A quantitative analysis of annual phytoplankton cycle of the Magdalena lagoon complex (Mexico)

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An annual cycle of the micro- and nanophytoplankton cell densities of whole water samples in combination with the species composition, distribution and diversity of the microphytoplankton fraction in the Magdalena lagoon system, Mexico, has been studied on a bi-monthly basis. Two major patterns were detected: from November to May, high microphytoplankton densities ($0.5-1.5 \cdot 10^6$ cells l^{-1}) prevail throughout a large part of the investigated area; from late spring to late autumn cell densities are much lower ($5-250 \cdot 10^3$ cells l^{-1}). During each period a number of microplankton assemblages occur, each with its characteristic diversity and stability. The distribution and density of the microphytoplankton is clearly related to the presence of nutrient-rich water pockets and the prevailing winds for part of the year, as documented in earlier hydrological studies. The nanophytoplankton played a minor role during most of the year; this fraction dominated quantitatively in only a few cases. Based on these data, the Magdalena lagoon complex can be considered a very productive area. This is most probably due to the high productivity of the phytoplankton. The quantitative existence of an important species, feeding the food web of this coastal lagoon system.

Palabras clave: Phytoplankton, Magdalena lagoon

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