

EFFECTS OF DIFFERENT NITROGEN SOURCES ON COASTAL MICROPLANKTON COMMUNITIES

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Abstract: Anthropogenic alteration of the nitrogen (N) cycle has importantly increased the inputs of organic and inorganic reactive N (Nr) into the coastal ocean. N controls the productivity of marine ecosystems over ecological time scales and therefore, significant responses of microbial communities to the incoming supply of Nr might be expected. The short-term effects of inorganic and organic nutrients, limited in phosphorus (P) and including different sources of N (nitrate, ammonium), on microplankton community structure and metabolism were studied in microcosm experiments conducted in a eutrophic coastal embayment in NW Spain under contrasting hydrographic conditions. Results obtained showed that micro- and nanophytoplankton positively responded to nutrient additions, and did not show a preference between distinct inorganic N forms. By contrast, picophytoplankton and heterotrophic bacteria clearly preferred ammonium to nitrate. These results are important in the context of increasing riverine and atmospheric inputs (with high N/P ratios and relatively different ammonium and nitrate concentrations) into marine coastal embayments.

Key words: anthropogenic inputs, nitrogen, ocean, phytoplankton, bacterioplankton.