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PHOSPHORUS AVAILABILITY AND ZOOPLANKTON STRUCTURE AND METABOLISM IN TROPICAL RESERVOIRS FROM BRAZIL.

In the last decades, a large number of reservoirs of all sizes has been constructed in Brazil. Most of them were built for electricity production as well as for water supply. An increasing number of dams have transformed the landscape of vast areas of Brazil. Regions such as the upper Paraná basin are drained by rivers like the Rio Grande or Tietê now transformed into “chains of reservoirs” of different sizes and forms. These systems are suffering from an array of environmental problems varying from exotic species introductions to anthropogenic eutrophication. This study summarizes the major results of some intensive monitoring programs aimed to trace and evaluate the impacts of eutrophication not only on the biodiversity of planktonic organisms but also on the magnitude of internal processes affecting this community. Four different reservoirs of different size and trophic grade were considered: Furnas, Ibirité, Pampulha and Volta Grande. The structure and dynamic of zooplankton at different scales of time, space and trophic status were examined. The study shows that increasing eutrophication is causing modifications in the dominance and size patterns of zooplankton as well as loss of species. Multivariate analyses consistently show that zooplankton biomass is often more associated with the availability of different forms of phosphorus in the water column than any other abiotic and biotic variable. Experimental data indicate that these organisms play a crucial role in the internal cycling of this limiting element. The study also brings evidence that most of these reservoirs are P-limited, acting as efficient P-sink and N-generating systems. Finally, the significance of these findings for the recovery and management of such systems will be briefly discussed.