



## Effects of mineral nutrients on the growth of bacterio- and phytoplankton in two southern reservoirs

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**ABSTRACT:** Nutrient limitation of bacterio- and phytoplankton was studied simultaneously in two warm-water lakes in the southern United States—Joe Pool Lake (JPL) and Eagle Mountain Lake (EML). Lakes were sampled approximately biweekly between March 1998 and December 1999 from a single station. Nutrient limitation was assessed through dilution bioassays in which nitrogen (N, 50  $\mu\text{M}$  above ambient), phosphorus (P, 10  $\mu\text{M}$  above ambient), carbon (C, bacterioplankton only, 83  $\mu\text{M}$  above ambient), and trace nutrients (Tm, phytoplankton only) were supplied. In both lakes, growth of bacterio- and phytoplankton was stimulated by nutrient additions. Multiple nutrient limitation was common. P alone and in combination with N and C or Tm most frequently limited growth of both bacterio and phytoplankton in JPL. N alone and in combination with P and C or Tm most frequently limited growth of both bacterio- and phytoplankton in EML. Comparison of in situ growth rates to growth rates under potentially nutrient saturating conditions revealed that both bacterio- and phytoplankton in both lakes were growing well below maximum potential during warm months but near maximum potential during cooler months. This result was due to a combined effect of low temperature in winter and restricted nutrient availability in summer. Phytoplankton was generally more strongly limited by nutrient availability than was bacterioplankton, but there were occasions when the intensity of limitation shifted between communities.

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