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Occurrence and toxicity of Microcystis in Ford Lake, Michigan, USA

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Abstract Text:

Occurrence and toxicity of Microcystis spp. were measured by ELISA in Ford Lake, southeast Michigan, USA over three consecutive summers. Assays were conducted weekly from July to October. Water column stability, nutrient concentrations, and N:P ratios were examined as potential predictors of phycocyanin and microcystin. The lake was typically dominated by Aphanizomenon in mid-summer, but Microcystis rose to dominance in September after a brief period of improved water clarity. Microcystis presence was associated with N:P ratios higher than those of Aphanizomenon and toxin levels seemed to be associated with population senescence. In 2006, we performed a whole lake experiment that induced a bloom in August by the diatom Aulacoseira, rather than the usual bluegreens. Cyanobacteria abundance and toxicity were both reduced compared with control years.

Impact Statement:

Whole lake experiment by selective discharge of hypolimnetic water prevented anoxia, reduced internal nutrient loading, and destratified the lake sufficiently to induce a mid-summer diatom bloom.