



Complex interactions between the zebra mussel, *Dreissena polymorpha*, and the harmful phytoplankter, *Microcystis aeruginosa*

Sarnelle, Orlando, Alan E. Wilson, Stephen K. Hamilton, Lesley B. Knoll, David F. Raikow

Limnol. Oceanogr., 50(3), 2005, 896-904 | DOI: 10.4319/lo.2005.50.3.0896

ABSTRACT: We report a reversal in the sign of the herbivore-phytoplankton interaction between the zebra mussel (*Dreissena polymorpha*) and *Microcystis aeruginosa*, a harmful planktonic cyanobacterium. A pair of large-scale manipulations of mussel density in the same lake in consecutive years showed that when phosphorus concentrations were very low (mean total phosphorus [TP] ~ 3 $\mu\text{g L}^{-1}$), the effect of *Dreissena* on the biomass of *M. aeruginosa* was monotonically negative across the full range of sustainable mussel densities. When the enclosures were fertilized with phosphorus (mean TP ~ 9 $\mu\text{g L}^{-1}$), there was a monotonically positive effect of *Dreissena* on *M. aeruginosa* across the same mussel gradient. These contrasting results indicate that *D. polymorpha* feeds on *M. aeruginosa*, as shown in previous laboratory feeding experiments, but that the positive effects of *D. polymorpha* on *M. aeruginosa* can be larger than the negative effects of consumption. A sign reversal in the interaction between these two species is congruent with highly variable patterns in the response of *M. aeruginosa* to *D. polymorpha* invasion across lake and river systems in North America.

Article Links

[Download Full-text PDF](#)

[Return to Table of Contents](#)

Please Note

Articles in L&O appear in PDF format. Open access articles may be freely downloaded by anyone. Other articles are available for download to subscribers only, or may be purchased for \$10 per article. All L&O articles are moved into Open Access after three years.

