Research Article

Assessing the status of shallow lakes using an additive model of biomass size spectra

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KEYWORDS

size spectra • ecological quality • shallow lake • additive model

ABSTRACT

1. Planktonic biomass size spectra were used to summarize the ecological quality of six shallow lakes sampled in spring, early summer and late summer.
2. A simple additive model fitted to the data was used to assess the applicability of the size spectrum theory to shallow lake ecosystems.
3. The additive model replicated the hierarchical pattern of biomass predicted by the predator-prey theory of aquatic production, and was a more appropriate model for predicting biomass size spectra than the frequently used linear regression.
4. Lakes with varying ecological quality were a significant source of variation in the additive model, and further research into using size spectra to monitor ecological quality in shallow lakes is warranted. Specifically, the production of size spectra from a wider range of sites is needed to provide greater statistical validation.
5. The use of size spectra can provide an attractive and cost-effective way for classifying lake ecosystems because it circumvents the need for difficult taxonomic description.