



Population dynamics of a freshwater calanoid copepod: Complex responses to changes in trophic status and climate variability

Seebens, Hanno, Dietmar Straile, Rainer Hoegg, Hans-Bernd Stich, Ulrich Einsle

Limnol. Oceanogr., 52(6), 2007, 2364-2372 | DOI: 10.4319/lo.2007.52.6.2364

ABSTRACT: The long-term dynamics of the calanoid copepod *Eudiaptomus gracilis* were analyzed in Lake Constance, a deep lake that has been influenced strongly by changes in trophic status and climate variability during the last few decades. Although copepod abundances remained rather stable throughout the study period (1970-1995), the seasonal pattern changed strongly, including a seasonal shift in the timing of peak abundance from spring to late summer with increasing oligotrophication. This shift in seasonality resulted from seasonally opposing long-term trends in abundances (a reduction in abundances in spring and an increase in summer) possibly due to seasonally opposing long-term trends in naupliar mortality (an increase in late winter mortality and a decrease in early summer mortality). The changes in seasonality were most pronounced within the early copepodid stages, whereas the long duration of the adult stage seemed to buffer the adult dynamics against seasonal environmental variability. The effects of climate variability on population dynamics were more subtle and consisted of faster development in spring in years with faster vernal warming. Furthermore, the accelerated development in spring resulted in earlier occurrence of the population minimum in summer and subsequently in an earlier abundance increase in late summer/autumn. Hence, abundances in summer/autumn were still related to spring climate variability, which shows that spring environmental variability can be transferred further into the season by the cohort dynamics of continuously reproducing populations.

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.

