



Growth limitation in young *Euphausia superba* under field conditions

Ross, Robin M., Langdon B. Quetin, Karen S. Baker, Maria Vernet, Raymond C. Smith

Limnol. Oceanogr., 45(1), 2000, 31-43 | DOI: 10.4319/lo.2000.45.1.0031

ABSTRACT: Growth rates of late furcilia and juvenile Antarctic krill (*Euphausia superba* Dana) in the spring and summer were related to food quantity and quality. The 4 yr covered by this study (1991-1992, 1993-1994, 1994-1995, and 1995-1996) were part of the seasonal time series of the Palmer Long-Term Ecological Research program. Chlorophyll a concentrations represented food quantity, and accessory photosynthetic pigments represented phytoplankton community composition or food quality. Instantaneous growth rates reflected the in situ nutritional history of the previous intermolt period. The response of krill to the food environment was seen on temporal scales of days to weeks. Percent growth per intermolt period (percentage growth IWP^{-1}) varied significantly both within and between years, ranging from ~2 to 10% IWP^{-1} . Percent growth IWP^{-1} increased with increasing chlorophyll a (Chl a), reaching a maximum of 9.3% IWP^{-1} above a critical concentration of about 3.5 mg m^{-3} . Maximum growth was reached in only 2 yr, 1991-1992 and 1995-1996. In a multiple regression analysis, total Chl a and prymnesiophyte-Chl a explained over 71% of the temporal variance in growth. In general, highest growth was found toward the end of diatom blooms and lowest during periods of low phytoplankton biomass or blooms dominated by cryptophytes and prymnesiophytes. The results of this study support the hypothesis that maximum growth rates are only possible during diatom blooms and that production in Antarctic krill is limited by both food quantity and quality.

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.