



## **How does winter conditions change shallow benthic food webs in high Arctic – stable isotopes approach.**

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Stable isotopes ( $\delta^{15}\text{N}$ ,  $\delta^{13}\text{C}$ ) have been used to investigate trophic interactions in the shallow sublittoral in the high Arctic fjord, Kongsfjorden ( $79^\circ\text{N}$ , Spitsbergen). Most of the research done in the Arctic is based on data collected during the summer. Relatively little is known about Arctic ecosystems during the winter time. Samples were collected both during the summer (July) and winter (March) seasons, which resulted in unique data set and allowed for rare comparison of food web structure changes through the year. Stations were located in the glacial part of the fjord and in its central part further out from glacier, at the depth range of 15 m. Samples included macrobenthos (over 50 species), zooplankton (9 species) and meiofauna (2 groups), with special focus on amphipods (20 species), as well as samples of macroalgae, sediment and POM.

The main aim of this study was to examine shallow benthic food web structure in a high Arctic fjord and to assess if, and how, it changes with respect to winter and summer seasons. Three up to four trophic levels were identified in winter and summer. Despite high seasonality in Arctic fjords, we did not find much difference in benthic food web structure between winter and summer. With only minor changes in species composition and no significant changes in biomass and abundance benthic communities in shallow waters show high degree of plasticity and one may expect strong resilience of the benthic food webs to the potential climate change.