

Differential feeding behavior of three coexisting krill species in the St. Lawrence estuary, Canada: a fatty acid and stable isotope approach

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Krill as forage species play a key role in energy transfer to higher trophic levels in marine ecosystems. In the St. Lawrence estuary, three krill species (*Meganyctiphanes norvegica*, *Thysanoessa raschii*, *Thysanoessa inermis*) coexist and dominate the macrozooplankton biomass. Although, these species are ecologically important, the dynamics of their trophic interactions with the lower trophic food web are still poorly understood. Our goal was to evaluate if diets, feeding behavior and trophic position differ among the 3 krill species throughout the seasons. We monitored variability of these parameters throughout one-year, 2014 to 2015 (including winter icecover), using stable isotopes and fatty acids composition in the lipids neutral fraction. Both proxies revealed that diets and feeding behavior of these species were significantly different. *M. norvegica* always showed a diet mostly based on copepods while *Thysanoessa* spp. fed a higher proportion of phytoplankton. Moreover, lipid content at least of *M. norvegica* seemed closely related to copepod availabilities suggesting that this species is more “carnivorous” whereas *Thysanoessa* spp. seemed to be omnivorous with a preference for phytoplankton. Therefore, *M. norvegica* showed a relatively stable and higher trophic position than *Thysanoessa* spp. throughout the year. However, the trophic position of *T. inermis* was surprisingly high in the St. Lawrence estuary compared compared to Arctic regions. All species showed a seasonal shift to a higher trophic position during summer. The resulting trophic niche partitioning may support stable coexistence of these krill species in the St.

Lawrence estuary.

Keywords: feeding behavior; fatty acids trophic marker; stable isotope; coexistence;
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