



Molecular gut content analysis of *Calanus* sp. copepods suggests decoupling of prey selection and abundance 

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Predators such as copepods shape the community within an ecosystem by regulating prey abundance and distribution. Investigating predator grazing activity within an ecosystem is therefore of great importance to understand its structure and function. To test the influence of phytoplankton growth phase on mesozooplankton feeding, we conducted a seawater mesocosm experiment and incubated *Calanus* sp. copepods inside mesocosms that were nutrient-manipulated to promote *Phaeocystis pouchetii* (Haptophyta) or *Skeletonema marinoi* (Diatomea) blooms. We further developed prey specific TaqMan qPCR assays to quantify relative grazing by *Calanus* on these dominant phytoplankton taxa. In addition, we conducted a metabarcoding analysis of microbial eukaryote diversity in seawater and *Calanus* guts, to investigate *Calanus* prey selection across the mesocosm manipulations. Our TaqMan qPCR results indicated that grazing on both *P. pouchetii* and *S. marinoi* was low regardless of phytoplankton growth phase, suggesting a decoupling from relative prey abundances. This low relative grazing by *Calanus* on *P. pouchetii* and *S. marinoi* was confirmed in a more complete assessment of the gut content using the metabarcoding approach, which identified ciliates and large diatoms as the preferred prey. Our data suggest an inverse relationship between *S. marinoi* abundance and copepod grazing, possibly due to a change in *S. marinoi* bioavailability with growth phase. Elucidation of copepod grazing selection is clearly a complex issue, however the use of molecular techniques to measure relative grazing rates can shed light on the feeding choices in mixed prey communities.