Project information

Keywords

Zooplankton, pelagic-benthic coupling, vertical flux, coastal ecosystems, Microsetella norvegica

Project title

Marine snow, pelagic-benthic coupling and the impact of the harpacticoid copepod Microsetella norvegica, and other agents in a high-latitude fjord (MICROSNOW)

Year

2017

Project leader

Camilla Svensen

Geographical localization of the research project in decimal degrees (max 5 per project, ex. 70,662°N and 23,707°E)

Balsfjord, 69,22 N and 19,06 E

Participants

Camilla Svensen (UiT), Fredrika Norrbin (UiT), Peter Thor (NPI), Jofrid Skardhamar (IMR), Morten Iversen (MARUM/AWI, D), Marja Koski (DTU-Aqua, DK), Ingrid Wiedman (UiT)

Flagship

Fjord and Coast

Funding Source

Fjord and Coast Flagship

Summary of Results

We found that *M. norvegica* dominated the copepod community in Balsfjord and was associated with marine snow in the surface layer. The measured vertical flux of organic matter decreased with depth, likely due to copepod remineralization processes. By using infra-red video observations, we describe for the first time how *M. norvegica* searches for marine snow. Additional grazing experiments confirmed feeding on marine snow particles. Egg-hatching rates for *M. norvegica* was investigated for 5, 8, 11 and 14 C, and a temperature dependent hatching rate was found.

Master and PhD-students involved in the project

Master students: Peter Glad (UiT) and Theo Berujon (UiT)

PhD student: Coralie Barth-Jensen (UiT)

For the Management

Microsetella norvegica is a small and understudied crustacean species with a high potential impact for coastal pelagic food webs. We found that Balsfjord is a hot-spot for *M. norvegica*, that it specializes on feeding on sinking particles (marine snow), and that it appears sensitive to changes in temperature. We suggest that *M. norvegica* is a new key-species in Balsfjord, and that it may impact the efficiency of biological pump. Its reaction to increased temperatures still needs to be resolved in order to assess the impact of climate change on this species.

Published Results/Planned Publications

Svensen C., Antonsen M., Reigstad M. Copepods under the radar; Population dynamics of *Microsetella norvegica* indicate key role in coastal ecosystems (submitted)

Kubiszyn A, Svensen C. First record of a rare species *Polyasterias problematica* (Prasinophyceae) Balsfjord, northern Norway (submitted)

Svensen C., et al. Can *Microsetella norvegica* regulate the biological pump in a coastal ecosystem?

Barth-Jensen C., et al. Egg-hatching and production rates of *Microsetella norvegica* at low temperatures

Communicated Results

C. Svensen was an invited lecturer at the “Røst Air Ocean Seminar” for artists, scientists and the management in June 2017

C.Svensen et al. Is the tiny copepod Microsetella norvegica a gatekeeper for vertical carbon flux? Ocean Science Meeting, Portland, USA 12-16 February 2018. Oral presentation

C. barth-Jensen et al. Temperature-dependent egg-hatching and production of the egg-carrying copepods *Microsetella norvegica* and *Oithona similis* in a high latitude fjord. Ocean Science Meeting, Portland, USA 12-16 February 2018. Oral presentation

Interdisciplinary Cooperation

We combine physical oceanography, ecology and biogeochemistry.

Budget in accordance to results

Funding from the Fram Centre Fjord and Coast Flagship was the only funding for this project, and therefore crucial for the project work and the results obtained. In-kind contributions on the project was high, and allocations from the Fram Centre were mainly used for sample collection, analyses and smaller equipment.

Could results from the project be subject for any commercial utilization

No

Conclusions

Conclusions from the project will be provided after the second/final year of funding