Project information

Keywords

Cladocerans, Penilia avirostris, rotifers, copepods, Acartia sp., ocean acidification, physiology, behaviour, energetics, growth, development, epigenetics, adaptation

Project title

Prosjekt OA-2, Task 3: Capacity for adaptation in arctic invertebrates to multiple OA drivers (pCO2, salinity and temperature).

Year

2018

Project leader

Howard Browman

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

60.086N, 5.262E

Participants

Howard Browman (IMR), Haakon Hop (NPI), David Fields (Bigelow Labs, USA), Steve Shema (Grotti, Iceland), Neel Aluru (Woods Hole Oceanographic Institute, USA).

Flagship

Ocean Acidification

Funding Source

Fram Centre + Institute of Marine Research

Summary of Results

2018 activity. Three species of Cladoceran – none of which have been successfully cultured anywhere in the world (*Podon spp*., *Evadne spp*. and *Penilia avirostris*) – were targeted as possible model species. After several months of trials, we succeeded in culturing *Penilia avirostris* through several generations. Therefore, the multigeneration study to be conducted in 2019 will use *Penilia avirostris*.

We conducted a pilot experiment with Cladocerans (*Evadne sp*.), rotifers (*Brachionus sp*.), and copepods (*Acartia sp*.) in short-term (3-4 days) experiments to assess whether an epigenetic response can be observed. The experiments were conducted at 12 and 16 C and at 500 and 1000 pCO2. In addition, the metabolic rates of *Penilia avirostris* were measured across a temperature range of 8-16 C.

Master and PhD-students involved in the project

None.

For the Management

The project management went according to plan.

Published Results/Planned Publications

Publications (2018 and onward)

Thompson, C., J.A. Runge, D.M. Fields, C. Thompson, S. Shema, R.M. Bjelland, C.M.F. Durif, A.B. Skiftesvik, M. Arts, A. Mount, V. Chan & H.I. Browman. Vital rates of the salmon louse, *Lepeotheirus salmonis*, are unaffected by high CO_2 but are affected by temperature. Marine Biology (submitted).

Runge, J.A., D.M. Fields, C. Thompson, C.M.F. Durif, S. Shema, R.M. Bjelland, A.B. Skiftesvik and H.I. Browman. Interaction between temperature and pH on growth and respiration of the planktonic copepod, *Calanus finmarchicus*. In preparation.

Fields, D.M., C. Thompson, C.M.F. Durif, S. Shema, A.B. Skiftesvik and H.I. Browman. The temperature response of respiratory and metabolic rate in the marine Cladoceran, *Penilia avirostris*. In preparation.

Communicated Results

This is a new project, so there were no results to communicate this year.

Interdisciplinary Cooperation

David Fields - Bigelow Laboratory for Ocean Sciences, USA
Neel Aluru – Woods Hole Oceanographic Institute, USA
Grotti (Steven Shema) - Iceland

Budget in accordance to results

As planned.

Could results from the project be subject for any commercial utilization

No

If Yes

No.

Conclusions

Since this is the first year of the project, no conclusions are available yet.