

Project information

Keywords

Calanus spp., ocean acidification, physiology, behaviour, energetics, growth, development, lipid content

Project title

Prosjekt OA-3: Physiological effects of OA in Arctic copepods

Year

2014

Project leader

Howard Browman

Participants

Howard Browman, Haakon Hop, Peter Thor, Allison Bailey, David Fields, Jeffrey Runge, V. Thiyagarajan

Flagship

Ocean Acidification

Funding Source

Fram Centre + Institute of Marine Research + Research Council of Norway

Summary of Results

We conducted an experiment to assess the effect of pCO₂ on *Calanus finmarchicus* and *glacialis*. The levels selected were framed by predicted increases over the next 100 years. There was no effect of pCO₂.

For the Management

The project management went according to plan.

Published Results/Planned Publications

Publications from 2014 experiments

Runge, J.A., D.M. Fields, C. Thompson, S. Shema, R.M. Bjelland, C.M.F. Durif, A.B. Skiftesvik & H.I. BROWMAN. 2016. Vital rates of an ecologically critical planktonic species in North Atlantic ecosystems, *Calanus finmarchicus*, are unaffected by high CO₂. *ICES Journal of Marine Science*. (in press).

BROWMAN, H.I. 2016. Applying organized skepticism to ocean acidification research. *ICES Journal of Marine Science*. (in press).

Bailey, A., J.A. Runge, D.M. Fields, P. Thor, C. Thompson, A.B. Skiftesvik, R.M. Bjelland, C.M.F. Durif & H.I. BROWMAN. *Calanus glacialis* larvae are tolerant to lowered pH. *ICES Journal of Marine Science* (submitted).

Bailey, A. Pierre de Wit, Peter Thor, Howard I. BROWMAN, David Fields, Jeffrey Runge, Alex Vermont, Reidun Bjelland, Cameron Thompson, Steven Shema, Caroline Durif, Haakon Hop. Gene expression responses to increased pCO₂ during the larval development of the Arctic copepod *Calanus glacialis* (in preparation).

Dineshram, R., V. Thiyagarajan, D.M. Fields, J.A. Runge, C. Thompson, S. Shema, R.M. Bjelland, C.M.F. Durif, A.B. Skiftesvik & H.I. BROWMAN. The proteome of *Calanus finmarchicus* is unaffected by elevated pCO₂. (in preparation).

Communicated Results

Communicated results of 2014 experiments

11/2015- BROWMAN, H.I. Applying organized skepticism to ocean acidification research, or some marine organisms will do just fine in a high CO₂ world.

Bailey, A., P. Thor, H.I. BROWMAN, D. Fields, J. Runge, A. Vermont, R.M. Bjelland, C. Thompson, S. Shema, C. Durif & H. Hop. Arctic copepod *Calanus glacialis* larvae are tolerant to lowered pH. ***Received best poster award***

Fram Science Days, Tromsø, Norway

10/2015- Bellerby, R., J. Mathis, W. Chen, K. Azetsu-Scott, L. Miller, S. Dupont, H. BROWMAN. Arctic Ocean acidification: present understanding, management requirements and future research strategies

PICES Annual Meeting, Qindao, China

09/2015- BROWMAN, H.I. Applying organized skepticism to ocean acidification research, or some marine organisms will do just fine in a high CO₂ world.

ICES Annual Science Conference, Copenhagen

02/2015- Bailey, Allison, P. Thor, H.I. BROWMAN, D. Fields, J. Runge, A. Vermont, R. Bjelland, C. Thompson, S. Shema, C. Durif. The effects of projected ocean acidification on the early development of the key Arctic copepod, *Calanus glacialis*.

ASLO Aquatic Sciences Conference, Granada, Spain

12/2014- Bailey, Allison, P. Thor, H. I. BROWMAN, D. Fields, J. Runge, A. Vermont, R. Bjelland, C. Thompson, S. Shema, C. Durif. The effects of projected ocean acidification on the early development of the key Arctic copepod, *Calanus glacialis*.

Arctic Change 2014, Ottawa, Ontario, Canada

Interdisciplinary Cooperation

David Fields - Bigelow Laboratory for Ocean Sciences

Jeffrey Runge - Gulf of Maine Research Institute

V. Thiyagarajan – University of Hong Kong

Budget in accordance to results

As planned.

Could results from the project be subject for any commercial utilization

No

Conclusions

Calanus spp. populations are unlikely to be strongly affected by ocean acidification.