

Project information

Project title

Effects of climate on cod life history and ecology along a temperate-arctic gradient

Year

2016

Project leader

Hector Andrade

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

79,006°N and 11,678°E

Participants

Michael Carroll (Akvaplan-niva AS), Jane Godiksen (Institute of Marine Research); Bryan Black (University of Texas) William Ambrose (Bates College) Jørgen Berge (UNIS) Audrey Geffen (University of Bergen)

Flagship

Fjord and Coast

Funding Source

FRAM

Summary of Results

The project has finished. Results obtained in 2016 included:

Analyses:

Finished microelement measurements in cod otoliths at ages 0, 1 and 3.

Growth increment analyses have been measured in 177 fishes from 5 locations: Konsfjord Porsanger 82, Konsfjord 8, Isfjord 9, Skrei 61, Svalbard 17

Statistical analyses with these results are been developed

Proposal submissions to continue work:

One proposal submitted to Svalbard Environmental fund to expand our work. Unfortunately, no funds were granted.

Our work has been accounted for in a proposal entitled "Long-term otolith and bivalve growth chronologies in relation to cod stock dynamics and climate in the Northeast Atlantic" lead by Steve Campana. Such proposal has been submitted to The Icelandic Research Fund

Outreach:

Participation in the Workshop "Growth-increment Chronologies in Marine Fish: climate-ecosystem interactions in the North Atlantic (WKGIC2)" at the Mediterranean Institute for Advanced Studies headquarters in Esporles, Spain, on 18-22 April 2016. Outcomes of this meeting include that our work has been accounted for in the Icelandic proposal described above. Another outcome is that a new approach to analyze growth-climate relationships in short-lived species is been developed with our results.

Partial result presentation at the ICES science meeting 2016 in the Theme Session H "Looking backwards to move ahead: how the wider application of new technologies to interpret scale, otolith, statolith and other biomineralised age-registering structures could improve management of natural resources". A manuscript is been developed (see below)

Master and PhD-students involved in the project

None

For the Management

We are analyzing results on the biogeochemical composition of otoliths to determine if cod from Svalbard is migrating or becoming resident. The cod chronologies we have generated will allow managers to better understand the effects of climate upon the growth and productivity of cod stocks across a temperate-boreal-arctic latitudinal gradient.

Published Results/Planned Publications

2 manuscripts are being developed. The first will be submitted before the 15th of the December to the MEPS, the journal which will publish the ICES Science 2016 meeting proceedings (Lead by Andrade). The second will be developed in 2017, as a part of a bigger project evaluating methodologies to study growth-climate relationships in short-term living species (Lead by Bryan Black).

Communicated Results

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Budget in accordance to results

Yes. The funds allowed us to perform the pilot study as planned.

Could results from the project be subject for any commercial utilization

No

Conclusions

Work has clearly demonstrated that the chronology approach is possible with short-term lived species but several samples are needed to develop growth patterns across the study region.