Effect of temperature on herring egg development and hatching success

Special course project | March to May 2021

If you are interested in doing this project or have questions, please contact:
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(Tommy speaks both Danish and English, so feel free to contact him in either language)

Project overview

DTU Aqua is looking for one or two students interested in doing a special course project on development and hatching success of herring eggs raised at different temperatures. The project is part of a larger grant from the Danish Fisheries Agency aimed at understanding why the stock of Western Baltic spring-spawning herring is in decline.

The student(s) will work with Postdoc Tommy Norin and perform experiments in the fish laboratory at DTU Aqua, which involve strip spawning and fertilising eggs from wild-caught herring, maintaining and raising eggs at different temperatures, monitoring egg hatching success, recording egg developmental rates under microscope, and measuring oxygen uptake rate of the eggs using state-of-the-art microplate respirometry. The number of ECTS credits will be agreed on based on how much time the student(s) can allocate to the project. The student(s) is expected to deliver a brief written report at the end of the course.

Background

The Western Baltic stock of spring-spawning herring is in decline. To understand the potential eco-physiological drivers of recruitment failure in the stock, this project will measure the so-called ‘cost of development’ of herring eggs from different populations from Denmark and possibly Germany.

The cost of development represents the amount of energy (estimated as oxygen demand) required to develop as an egg, from fertilisation to hatching. The cost of development is very sensitive to deviations in temperature away from optimal and is thus considered a good indicator of the sensitivity of ectothermic (“cold-blooded”) animals to climate warming, which may be contributing to the decline of this herring stock.