



FELLOWSHIP SUMMARY REPORT

Recipient of fellowship:	Sven Sebastian Uhlmann, Vrije Universiteit Brussels (VUB), Biology department, Pleinlaan 2, 1050 Brussels, Belgium
Subject title:	Predicting and improving catch welfare in wild-capture fisheries
Theme number:	Theme 1 Managing Natural Capital for the Future
Host institution:	DTU Aqua, Willemoesvej 2, 9850 Hirtshals
Host supervisor:	Barry O'Neill
Dates of fellowship:	April 19, 2022 – June 14, 2022

I, Sven Sebastian Uhlmann, consent that this report shall be posted on the Co-operative Research Programme's website.





Relevance of the fellowship

The high survival exemption rule of the European Landing Obligation policy generated a demand for assessments of discard survival and welfare of unwanted fish. The goal of this project is to facilitate the prediction of survival potential in the absence of available resources to empirically study it and to facilitate a reduction of gear impacts on captured fish by evaluating the utility of a dummy, sensor-equipped fish to measure prevailing forces inside a codend.

1. Objectives of the fellowship

This project aimed to

- i) predict survival potential of discarded fish based on a Bayesian Belief network, and
- ii) evaluate the utility of sensor-equipped silicone fish to measure prevailing forces (acceleration, flow velocity, rotation, pressure, shear) inside a modified vs conventional codend.

2. Were the objectives of the fellowship achieved?

The objectives of the fellowship were partially achieved. Some of the research is still ongoing, and for technical reasons the collection of force measurements inside codends were limited.

If not, for what reasons? (The data or research is still ongoing or being analysed; technical reasons (e.g. equipment not working, adverse weather conditions, unexpected results, etc.; other reasons?)

3. What were the major achievements of the fellowship? (up to three)

As part of this fellowship, two harmonized datasets of bottom-trawled-and-discarded plaice observations from Denmark and Belgium were combined and analysed to optimise predictions of discard survival. A method paper is currently being written about it.

To measure the forces inside a codend at scale (inside the flume tank in Hirtshals) an experiment was done to manipulate amplitude and frequency of a pulsating codend.

A sensor fish was used to measure the forces inside the codend during a flume tank trial in Hirtshals.

4. Will there be any follow-up work?

A paper manuscript to optimise discard survival predictions is being prepared for publication (in Fisheries Research). A full-scale research proposal may be drafted to take the flume-tank trial into a real-life setting and test a novel, modified codend under both calm and rough sea conditions on-board a research vessel. The Bayesian belief network analysis still has to be done. Video material that was recorded during the flume tank trial still has to be viewed and edited for a short youtube video that can be used as part of relevant dissemination, presentation or for student training and teaching.

5. How might the results of your research project be important for helping develop regional, national or international agro-food, fisheries or forestry policies and, or practices, or be beneficial for society?

Fish welfare issues need to be addressed by commercial fisheries to meet the demand for sustainably produced seafood. This research examined possibilities to improve predictions of discard survival and also suggested a modification to discard-intensive, bottom-trawl capture processes to mediate impacts and reduce injury to trapped organisms inside a codend.

6. How was this research relevant to:

This research suggested a statistical procedure on how to optimize discard survival predictions for bottom-trawled flatfish and tested a sensor fish inside a flume tank. It provided a useful platform for a longer-term collaboration with the host organization. The combined and harmonized discard survival observations from Denmark and Belgium provided a case study to test a statistical procedure to improve discard survival predictions and with a potential publication of the results it will provide guidance to policy makers on how to interpret discard survival evidence that is put forward annually to the European Commission.





7. Satisfaction

The fellowship fully met my expectations, and I am very excited to continue collaborative research with DTU Aqua to design and test more sustainable fishing gear. I am planning to visit Hirtshals again at the end of August 2022 to continue the work that we started during my fellowship at DTU Aqua. The OECD Co-operative Research Programme fellowship allowed me to strengthen collaborative ties with DTU Aqua in Hirtshals and I am confident that it will lead to further work and exchange (e.g. in the shape of student projects or a consortium partnership for third-party research funding). It was difficult to completely focus on the fellowship within the specified period due to teaching and consultancy commitments. The sensor fish that was loaned for the period of the scholarship was a delicate piece of equipment, difficult to assemble and maintain and it ceased to operate properly after the first deployment. More force measurements inside a commercial net during a trial at sea were not possible.

8. Advertising the Co-operative Research Programme

I learned about the OECD fellowship via its website. I found the OECD Fellowship programme extremely well organized and appreciate the dissemination and publication of fellowship results.

