



Popular science summary of the PhD thesis

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| PhD student | <u>Mette Munkholm Svantemann</u> |
| Title of the PhD thesis | <u>Development of decision support tools for commercial fisheries and for fisheries monitoring using in-trawl cameras and automatic image processing</u> |
| PhD school/Department | <u>DTU Aqua, Section of Fisheries Technology</u> |

Science summary

Advancements in vessels, gear, and navigation systems have greatly enhanced the efficiency and scale of our fisheries, particularly true for our trawling practices. Trawling targeting demersal species often occurs in mixed-species environments, resulting in non-target bycatch of unwanted species and sizes that are frequently discarded at sea or landed with little or no economic value. Such scenarios inevitably challenge the ecological and economic sustainability of the fisheries. High levels of bycatch in these fisheries have led to management regulations aimed at improving fishing practices, including technical measures such as bycatch reduction devices designed to enhance gear selectivity. Most bycatch reduction devices designs use large or square mesh panels. We test whether incorporating a simple dark tunnel concept in front of an escape opening can trigger station-holding behaviour in roundfish aiming at extending the time fish spend near the escape opportunity, thereby potentially enhancing the effectiveness of the escape panels.

We discuss the need for more technology in our fishing practices and introduce a bycatch detection and tracking tool that uses machine learning to analyse images from an in-trawl camera in near real-time. The tool alerts fishers to the presence of bycatch in the catch and transforms the fishing process from a blind to a more informed process for the vessel operator.

Length frequency distributions are often important input variables in quota calculations in stock assessments. We, therefore, build on our detection and tracking tool to automatically extract individual body length estimations. We test our developed methodology in a hydroacoustic survey that collects length distribution data for quota calculations and present the initial step towards a more automatic way of collecting body length data.