The shrimp fisheries in the Skagerrak area of Sweden, Norway and Denmark analyzed using a systems perspective (39191)

In recent years the Shrimp stock in the Skagerrak has been drastically reduced. The three countries, who fish on the stock, differ substantially in terms of fleet structure, national quota management, fishing patterns and market. The market situation combined with the quota being fished has led to incentives for discarding of smaller shrimps (high-grading), mainly in the Swedish fishery. Discard of shrimp has been banned in Europe for a few years, and in 2016 more general EU discard ban will be implemented. Therefore the development of more size selective gear is being pushed in several countries.

The developments in the stock, the differences in the three countries’ resource utilization and the coming management changes makes it very interesting to map and compare environmental and socio-economic aspects of the three countries’ shrimp fishing in the Skagerrak. Life Cycle Assessment (LCA) is an ISO-standardized methodology that maps resource consumption and environmental impact of products from a systems perspective. There are now a number of case studies where you look at the role of management in the impact of the product. In these cases the product is mostly followed only during fishing until landing (not during processing, packaging and distribution after landing). A Canadian study compared Canadian and American fishing on the same stock of lobster using LCA and demonstrated significant differences in environmental impacts that mainly depended on the countries' management.

The aim of this study was to quantify a set of indicators that together give a broad picture of the sustainability of the three fisheries to provide an objective basis for a discussion on needed measures. The different indicators concerned environmental, economic or social aspects of sustainability and were quantified per tonne of shrimp landed by each country in 2012. The Danish fishery was most efficient in terms of environmental and economic indicators, while the Swedish fishery provided most employment per tonne of shrimp landed. Fuel use in all fisheries was high, also when compared with other shrimp fisheries. Interesting patterns emerged, with smaller vessels being more fuel efficient than larger ones in Sweden and Norway, with the opposite trend in Denmark. The study also demonstrated major data gaps and differences between the countries in how data are collected and made available. Various improvement options in the areas data collection and publication, allocation of quotas and enforcement of regulations resulted and are described in more detail in a scientific paper in ICES Journal of Marine Science in 2016.

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