

Minutes from the BALTFISH symposium on interactions between seals, fish and fisheries in the Baltic Sea

Gothenburg, 19-20 March 2019



Photos by: Håkan Carlstrand (top) and Sven-Gunnar Lunneryd (bottom)

Minutes from the BALFISH symposium on interactions between seals, fish and fisheries in the Baltic Sea

Gothenburg, 19-20 March 2019

List of contents

Minutes from the BALTFISH symposium on interactions between seals, fish and fisheries in the Baltic Sea	1
Gothenburg, 19-20 March 2019.....	1
Background	2
Introduction.....	2
Seal and fish trends.....	3
Status and trends of key Baltic Sea fish stocks.....	3
Status and trends of Baltic Sea seal populations.....	3
Grey seals returning to Germany	3
Helcom recommendation on the conservation of seals in the Baltic.....	4
Seal impacts on fish	4
Studying impacts of seal predation on fish.....	4
Grey seal predation in the central Baltic.....	4
Seal-fish parasites.....	5
Seal impacts on fisheries and communities	5
Discussions on the seal-fishery conflict within BSAC.....	5
Seal fisheries conflict in Lithuania	6
Impacts of seals on fishing communities in Sweden	6
Documenting seal damages and associated costs	7
Impacts of seals on the economics of Swedish small-scale fisheries.....	7
Fisher perceptions of seal impacts	8
Seal impacts on coastal fisheries in Latvia	8
Compensation schemes.....	8
Group discussions on seal impacts.....	9
Group discussions on mitigation and management options.....	9
Seal-safe gears	11
Seal-safe gear development in Sweden.....	11
Seal-safe gear development in Denmark	12
Seal-safe gear development in Finland.....	12

Seal-safe gear development in Estonia	13
Group discussions on seal safe gears	13
Suggestions for next steps.....	14
Concluding remarks.....	15

Background

The BALTFISH symposium on interactions between seals, fish and fisheries in the Baltic Sea was hosted by the Swedish Agency of Marine and Water Management (SwAM) on behalf on the Swedish BALTFISH presidency at the Elite Park Avenue Hotel, Gothenburg, Sweden 19-20 March 2019. The symposium gathered researchers, representatives from the fishing industry, Low Impact Fishers of Europe (LIFE), the Baltic Sea Advisory Council (BSAC), representatives from HELCOM and BALTFISH member state representatives with the aim of sharing current knowledge and gaining a common understanding of different aspects related to interactions between seals, fish and fisheries in the Baltic Sea. The symposium was moderated by Ms Gry Sagebakken from SwAM.

Introduction

Mr Ingemar Berglund, Director of fisheries management at SwAM welcomed the participants on behalf of the Swedish BALTFISH presidency. Mr Berglund noted that the recovery of the seal populations of the Baltic Sea is a success story, but has also put increasing strain on coastal fisheries through increased predation on target fish species, damage to catch and fishing gears as well as a growing parasite problem.

Close cooperation is required on all levels between stakeholders, scientists and authorities sharing responsibility for finding workable solutions to enable co-existence between seals and viable, sustainable fisheries in the Baltic Sea. The regionalisation process of the Common Fisheries Policy provides forums for such collaboration through the BALTFISH and BSAC, and HELCOM is an important forum for cooperation on overarching environmental issues.

Furthermore, Mr Berglund highlighted the importance of seal-safe gear development in addressing the seal-fisheries challenge, and the central role of fishers in taking an active part in the development and implementation of seal-safe gear. He noted that proceedings from the symposium will be communicated to the Baltfish High-Level Group (HLG) for their consideration.

Seal and fish trends

Status and trends of key Baltic Sea fish stocks

Mr Joakim Hjelm from SLU Aqua in Sweden gave an overview of the status and historical trends of key fish stocks in the Baltic Sea (herring, sprat, cod, flounder, salmon and vendace).

Mr Hjelm noted that several factors in combination have likely contributed to the deteriorated condition of the eastern cod stock with higher rates of parasite infection and smaller individuals as a result. For the first time in several years, ICES is expected to deliver an analytical assessment of the eastern cod stock during the first half of 2019.

Status and trends of Baltic Sea seal populations

Mr Markus Ahola from the Swedish Museum of Natural History presented information on the ecology, status and trends in the seal populations of the Baltic Sea, including grey, harbour and ringed seal.

Population trends show a significant decrease in all populations during the 1900s, mainly due to hunting and environmental contaminants such as PCBs contributing to low reproductive success. A slow recovery started in the 1980s with most populations increasing significantly in the last 20 years. Populations of grey seal in different locations in the Baltic Sea have increased with between 0, 9% and 20% between 2003 and 2017, with the greatest increase in southern Baltic and along the Swedish coast. So far there are few observations of breeding, i.e. newborn pups, in the south of the Baltic sea. The total Baltic population of grey seal has increased by from around 15 000 to over 30 000 during the same period. There are indications that the population may soon be reaching carrying capacity, currently estimated at around 50 000 individuals. The carrying capacity of seals can vary, e.g. depending on food availability. A flattening of the population trend indicates that the population is reaching carrying capacity. Other signs include a thinner blubber layer and fewer pregnant females.

Harbour seals, present only in the south-western Baltic, have increased during the period and are showing signs of reaching carrying capacity in both Kattegat and Skagerrak. Ringed seals in the Bothnian Bay have increased by 4.7% annually while populations remain more or less constant in the Archipelago Sea, Gulf of Finland and Estonia. Climate change poses a challenge to ringed seal, as they are dependent on keeping their pups on the ice. Less ice also makes monitoring more difficult.

Grey seals returning to Germany

Mr Michael Dähne from the German Oceanographic Museum in Germany presented studies on the return of the grey seals to German waters and what implications this may have for management. The grey seal disappeared from German waters in the 1980s due to the crash in the Baltic population but has since recovered and recently returned to German waters. Grey seals have been sighted in German waters throughout the year

but they mainly come to feed, with more sightings coinciding with the presence of herring. The birth of a grey seal in the German Baltic was first documented in 2018.

Mr Daniel Steputtis from the Thünen Institute in Germany gave a brief overview of development of seal-safe gears in Germany, highlighting how gear developed for the northern Baltic Sea needs adaptation to German circumstances in order to be functional.

Helcom recommendation on the conservation of seals in the Baltic

Ms Jannica Haldin from the HELCOM secretariat introduced the HELCOM recommendation 27-28/21 on conservation of grey, harbour and ringed seal in the Baltic Sea. The recommendation was adopted in 2006 by contracting parties to HELCOM (i.e. all countries surrounding the Baltic Sea). It recognizes e.g. regional differences in the seal populations, general management principles and the need for national management plans.

The recommendation defines reference levels that are linked to different management options. A regional expert group, HELCOM SEAL, has been tasked with quantifying reference levels, harmonising national management plans and drafting HELCOM guidelines for exemptions to the general principles.

In a subsequent discussion at the symposium it was recognised that there is a need to ensure that there is coherence between the habitats directive and the marine strategy framework directive on how the target levels for the seal population are set.

Seal impacts on fish

Studying impacts of seal predation on fish

Mr Karl Lundström from SLU Aqua in Sweden presented current research methods for studying the impact of seal predation on fish stocks. Understanding the impact of seals on fish stocks requires information not only on the seal population, fish stocks and fisheries, but also on seal diet and food web interactions.

Fishing mortality and seal predation are likely to impact fish stocks in different ways as they select species and size of prey. There are currently no holistic models of the impact seal predation on fish stocks in an ecosystem context. Seal predation can however be integrated into single species stock analysis for fish. Mr Lundström highlighted the importance of considering local conditions and food web dynamics when assessing impacts of seal predation on fish stocks and their recovery.

Grey seal predation in the central Baltic

Ms Lotte Kindt-Larsen from DTU Aqua in Denmark presented research on grey seal predation in the central Baltic Sea and Danish waters.

Diet analysis shows that seals are opportunists and eat what is available. According to a study 2014-2016, cod seems to be the dominant prey for large parts of the year but is replaced by other species at times when it is not available. It was noted that the study period coincided with strong year classes for cod, which could be a contributing reason for cod dominating the diet. The presentation highlighted difficulties in matching the spatial scale for data on population size and that of diet composition when estimating total seal predation for a stock in a certain area.

Seal-fish parasites

Ms Jane Behrens from DTU Aqua in Denmark presented information on the seal-associated cod liver worm (*Contracaecum osculatum*), its' life cycle, status in Eastern Baltic cod and other transport hosts, as well as potential effects on cod health status.

While liver worm is only one of many stressors contributing to the recent deterioration in the condition of Baltic cod, it is clear that it does have an effect. As the liver is important for producing proteins, this can contribute to stunted growth and lower reproductive capacity. Presence of liver worm also increases water content in the muscle tissue, affecting the quality and the value of the fish. The liver also functions as an energy reserve, meaning that fish with smaller or diseased livers may have lower resilience.

Infection rates in cod are estimated to have increased from around 20% to more than 90% since the 1980s when grey seal abundance was low. Grey seals are the main host of the liver worm although other seals may also function as hosts. Little is however known about causalities, and whether cod in poor condition are more susceptible to infection.

Ms Magdalena Podolska from the National Marine Fisheries Research Institute in Poland presented research undertaken between 2011-2017 in the southern Baltic Sea on cod liver parasites transmitted by seals and cetaceans, and their impact on condition and mortality of the host (cod).

Infection levels in cod has increased markedly since 2011 with *Anisakis simplex* and *Contracaecum osculatum* as the dominating species found in cod liver. Environmental conditions, disease and food availability may make the cod more susceptible to liver worm. In addition to reducing the condition of the cod, high rates of parasite prevalence can also pose a hazard to human health if raw cod is ingested. There is currently a lack of research on parasite effects on predator species other than cod, e.g. salmon.

Seal impacts on fisheries and communities

Discussions on the seal-fishery conflict within BSAC

Mr Nils Höglund from Coalition Clean Baltic presented on behalf of the BSAC the BSAC view on seals and fisheries.

Within BSAC, there are many diverse views on how to deal with seal-fishery interactions. BSACs working group on ecosystem based management (WG

EBM) initiated discussions in 2017 to reviewing current knowledge and discussing ways of addressing the impacts on fisheries caused by grey seal population recovery and expansion in the Baltic Sea. The BSAC WG EBM has not reached consensus on one way forward, but has concluded that non-lethal mitigation methods need to be prioritised, such as development of seal-safe gear and compensation for seal damages. Suspending efforts to strengthen grey seal populations in areas where they are already abundant could also be an option. BSAC has also condemned illegal killing of seals and raised issues concerning the ban on trade of seal products. The group has highlighted that an ecosystem approach is required to address the problem between seals and fisheries. It is currently very hard for small-scale fisheries in large parts of the Baltic Sea to coexist with the seals. As the situation is urgent, the next steps must be to analyse and agree on what can be done using existing tools, rather than waiting for further research. Mr Höglund also raised that there is a need for further investment in fisher-scientist research collaborations to evolve seal-safe fishing methods that are effective and can be put into use. Solutions may look different in different parts of the Baltic region and while the conflict may be new to countries like Germany and Denmark, they can take advantage of experiences in countries such as Finland and Sweden where this has been a longstanding issue. He further emphasised the importance of analysing and evaluating effectiveness when designing, choosing and implementing management measures.

Seal fisheries conflict in Lithuania

Mr Linas Lozys from the Nature Research Centre in Lithuania presented research on seal and fisheries interactions in Lithuania. The coastal fishery in Lithuania is conducted with gill and fyke nets targeting cod, smelt, herring, round goby and flounder. Grey seals are found in Lithuanian waters and listed nationally and as such requiring special protection measures. Since 2005, there is increasing conflict between fisheries and seals, due to seal damage of gear and predation on catches as well as seal bycatch in nets. In order to alleviate the conflict, compensation for seal damages to a total of 0.4 million Euros has been paid out over last three years, which can be compared to the total income for the coastal fishery at 0,5 million euros per year. A shift from gill nets to reinforced dyneema fyke nets has been tested as another possible solution.

Impacts of seals on fishing communities in Sweden

Ms Maria Johansson from Lund University in Sweden presented a study on people's concerns about seals in three fishing villages in southern Sweden. The study applied methods and experiences from previous research on analysed individual and collective response of community members, with a focus on the psychological and socio-cultural factors that affecting this.

The study concluded that in general, seals are perceived as a major threat to small-scale fisheries, and thereby to local heritage and values connected to the fishing village identity. Perceptions on how well the village could cope

with the impact of seals on fisheries varied between the villages and between individuals depending on the relation to the fisheries.

Attitudes towards 14 different coping strategies (e.g. investment in seal-safe gears, economic compensation, seal tourism, seal hunting, transition to trawling, consumer labelling, etc.) varied, however locals and fishers shared an overwhelming certainty that continuing “business as usual” will mean the end of small-scale fisheries. Visible action and presence is needed in order to counter a loss of confidence in authorities.

Documenting seal damages and associated costs

Ms Sara Königson and Mr Sven-Gunnar Lunneryd from SLU Aqua gave a presentation on the impacts increasing seal populations has resulted in conflicts with fisheries.

Seal damages on catch recorded in coastal fisher logbooks show an increase from the beginning of the 21st century of around 50% to 80% on herring, whitefish and vendace, and from nearly 0 to between 50% and 80% of caught flounder, cod, turbot and perch in the southern Baltic Sea. A report from 2014 by SwAM on the effects of seal damages on the fisheries¹ estimates the costs of these damages at around 3 500 000 Euros per year. In addition, there are likely hidden costs in the form of fish removed from nets by seals but not recorded, with studies showing 1:4-1:7 ratios of recorded damaged fish compared fish in nets removed by seals. When accounting for hidden damages, estimates for 2017 show that the weight of cod damaged in or removed from nets likely exceeds that of cod landed in the coastal fishery. It was also noted that damage to gears can constitute a significant cost, something that has been highlighted in studies from both Denmark and Sweden. Increased seal predation can also constitute a cost to fishers in the form of a decrease in available fishing allowances or other restrictions to the fisheries.

Impacts of seals on the economics of Swedish small-scale fisheries

Mr Staffan Waldo from SLU Agrifood in Sweden presented a recently published report estimating the cost of seals and their impact on the economics of Swedish small-scale fisheries.

Seals affect revenues by reducing landings and lowering the quality and hence the price of catch. They also cause increased costs in the form of damaged gear and increased effort required in terms of working time and fuel costs. Holma et al (2014) studied seal damage in Finnish salmon fisheries and found that seal proof gear alleviate the problem only to some part. In the recent study by SLU Agrifood, costs were quantified using data from the EU data collection framework for 2013-2014 combined with a questionnaire. The study showed that almost all costs of seal impacts on

¹ Sälpopulationernas tillväxt och utbredning samt effekterna av sälskador i fisket, SwAM report 2014 (in Swedish)
<https://www.havochvatten.se/download/18.1043270314a7ac5d2bdbd6e9/1424956870914/regeringsuppdrag-salpopulationernas-tillvaxt.pdf>

fisheries are within the small-scale passive gear fisheries, and that less active fishers incurred comparatively higher costs. When focussing on active small-scale fisheries the study showed regional differences with significantly higher costs in the Baltic Sea and less in the Kattegat and Skagerrak, possibly caused by differences in gear use among other factors. Salmon and cod fisheries experienced the highest costs with effects also on mixed, vendace and eel fisheries.

Fisher perceptions of seal impacts

Mr Esko Taanila from FLAG ESKO, an EMFF funded fisheries association for southern Finland, presented preliminary results from the Baltic Sea Seal and Cormorant Transnational Cooperation project. The project is a collaboration between 14 FLAGs in Sweden, Finland, Germany, Estonia aiming to map seal damages experiences by fishers and identify solutions to address the problem.

Interviews conducted with 219 fishers in the participating countries, showed that seal was seen as serious problem in all sites and cormorants mainly in northern Baltic Sea and Germany. Increased operation and workload, changes in fish stocks and behaviour, reduction in catches and damages to catches and gear, were all seen as serious impacts from seals on the fisheries.

Seal impacts on coastal fisheries in Latvia

Mr Maris Plikshs from the Institute of Food Safety, Animal Health and Environment (BIOR) in Latvia gave a presentation on the influence of seals on the coastal fishery in Latvia.

Grey seals and ringed seal come to feed in Latvian waters but there are no haul-outs. The Latvian coastal fishery is a mixed fishery using mainly traditional gears including pound net, trap net, fyke net, gillnet and seine nets. A questionnaire with fishers in 2016 and 2017 showed that mainly gillnets, trap nets and eelpout fyke nets were damaged by seals. There was no damage to herring pound nets, round goby traps or turbot gillnets. The costs of gear damage were estimated to 17.2% and 8.9% of gross value of landings in 2017 and 2018 respectively, while for herring and round goby fisheries it was as high as 77%. Although gear development is seen as the only possible solution to coexistence available at this time, it is also recognised that current gear solutions and seal scaring methods are not fully effective, and further development is required. Current push-up salmon traps are not suitable for Latvian waters, while other gear modifications such as double netting or rigid gear could be an option but requires considerable investment. Trials with a new seal-scaring device developed Riga Technical University have been successful so far but requires more long term testing.

Compensation schemes

Ms Susanne Viker from the SwAM in Sweden presented an overview of compensation schemes for seal damages to fisheries in different Baltic

countries. Among the Baltic Sea countries Estonia, Finland, Lithuania, Poland and Sweden have compensation schemes. Many of the schemes are partly funded through the European Maritime and Fisheries Fund (EMFF). In some schemes, fishers are rewarded with extra compensation if they choose seal-safe gears. Compensation has been given in Sweden since 1986, increasing from a total SEK 100 000 at the time to SEK 15 million in 2018. Funding can be received both as compensation but also for preventative measures such as investment in seals safe gear and research. Funding is also directed towards the longstanding “Seals and Fisheries Program” coordinated by SLU Aqua that focusses on developing seal-safe fishing gear and conducting research on the conflict between seals and coastal fisheries.

Group discussions on seal impacts

Group discussions stressed that, when it comes to impacts of seals on fisheries, the effects of the parasite situation needs to be especially emphasised and addressed as the reduction in quality and price level of cod is contributing to putting the Baltic cod fisheries in jeopardy.

Impacts of seals on the prospect of recovery of weak fish stocks and on migrating stocks needs to be further discussed. In Poland, seals have had a major effect on the migration and recovery of salmon and endemic trout in the Vistula River, thwarting the ambitions of a restocking program funded jointly by authorities and fishers.

A further reduction of local fisheries could increase dependency of Baltic Sea countries on imported fish, with implications on food security and ability to reduce carbon emissions. It could also have implications for data collection required for estimating the status of coastal fish stocks.

Group discussions raised that it is important that fishers and local communities are not left to feel alone in dealing with the problem. Local presence and engagement by authorities could be instrumental in maintaining social trust in affected communities. If coastal fisheries are reduced further or disappear, there can be knock-on effects on the identity of local communities and businesses.

It was highlighted that legal aspects of the conflict between seals and fisheries need to be put on the table and highlighted, i.e. what legal commitments already exist and what they mean in the context of enabling coexistence of seals and fisheries.

When describing the costs of seals it is also important to consider the existence values of seals to the wider society in the same context, e.g. in terms of seal tourism.

Group discussions on mitigation and management options

There was wide recognition in the symposium discussions that the worst management option would be to continue business as usual. In general, participants expressed the need for an ecosystem approach in the management of seals and fisheries, with concerted action from responsible

authorities geared towards both ecological, as well as social and economic sustainability. There was a wish for decision makers to highlight trade-offs between different policies objectives in a coordinated manner when deciding on management options and mitigation measures. In this context, more clarity was also requested regarding the mandates and responsibilities of different bodies and how they coordinate on the issue.

As a possible way forward, it was suggested that general principles or guidelines regarding the management of seal-fisheries interactions could be developed and agreed on a Baltic wide level to guide and frame the development of locally adapted management strategies. Regional platforms for knowledge sharing need to be identified, developed and supported, including forums for exchange and repositories for compiling knowledge (e.g. a toolbox or similar). These platforms will be crucial for ensuring cost-effective development of management measures and use of research funds. It is also important to integrate and learn from international experiences and management experiences from similar situations within other environments (e.g. game management).

Many of the participants highlighted that a combination of compensation, gear development and hunting as a way forward to mitigate impacts of seals on fisheries and coastal communities. If seal hunting is to be expanded, options for making use of the seals need to be developed.

While compensation is important, supporting small-scale fishers to market local catch at a higher price or implementing seal-safe labelling could also be useful. Funding could be allocated, e.g. through FLAGs, to support the fisheries and to develop local seal- or fisheries related tourism.

Spatially explicit management of seals should be explored further as a possible approach. Once hotspots solutions seal-fisheries conflict have been identified, locally adapted solutions could be developed and tried. One option could be to designate seal free zones that implemented with the help of stationary seal scarers and/or hunting. Seal free zones could also be put in place to improve the effectiveness of fishing area closures, e.g. during spawning periods.

An improved evaluation and a shared understanding of the effectiveness of different mitigation measures, such as culling and hunting, is required as a basis for agreeing on management strategies. When evaluating socio-economic impacts there is a need to look, not only at the consequences for fishers, but also for the wider community and different stakeholders, e.g. seal culling could be a basis for a hunting tourism, while at the same time it may deter seal-safari tourism. Wider ecosystem effects need to be explored, e.g. impacts on different species by seal scarers due to sound pollution.

The effects of management options need to be considered in the context of other factors affecting the status and ecology of Baltic fish stocks and seals, as well as the economy of small-scale fisheries. If the general health of the Baltic Sea and certain fish stocks was improved, certain seal-safe gear may be more cost-effective.

Collaboration between fishers, researchers, authorities and other stakeholders will be central to developing sustainable solutions to co-existence between seals and small-scale fisheries. This does not happen automatically but requires support, education and capacity building on how to collaborate successfully. Competent moderators and supporting experts are required in order to be able to steer an emotionally charged situation towards constructive, fact-based and solution-oriented collaboration.

Seal-safe gears

Seal-safe gear development in Sweden

Ms Sara Königson and Mr Sven-Gunnar Lunneryd from SLU Aqua gave an overview of the development seal-safe fishing gears in Sweden.

Acoustic seal scarers have been developed with varying success. Unfortunately, trials with acoustic harassment devices (AHDs) in Sweden have not been successful as seals have been habituated to and even attracted by the sound, and the devices have been expensive, sensitive to rough conditions, high-maintenance and dependent on high-energy supply. Since 1994, the SLU Aqua coordinated “Seals and fisheries program”² in collaboration with fishers and with researchers in other countries, have developed several types of rigid, strengthened and double-netted gears designed to keep the seal away from the catch. Among these, around 600 more or less seal-safe push-up (pontoon) traps mainly targeting salmon are currently in use in Finland and Sweden. The traps are relatively expensive at around 8-16 000 euros but purchases are subsidised. Without it, coastal fisheries for salmon in the northern Baltic Sea would likely no longer have existed. Pontoon traps adapted for herring have given good catches during spring but have problems with size selectivity. Trials targeting pike and perch resulted in mediocre catches. Although they do work, the pontoon are not the best option for fishing cod, as they need to be mounted on the bottom and are not good at dealing with currents or waves. Trials with bottom-standing fish houses have been more effective, but there is generally less preference for this type of static gear as it prevents fishers from following the fish. Coastal bottom seines produce good results for vendace, flounder and cod, but may impact the bottom (although not as pronounced as trawling) and requires good knowledge of bottom structures and expert handling. Many versions of rigid cod pots have been developed and tested, with some being used commercially in areas where seal damages prevent gill net fisheries.

² Seals and fisheries program website (in Swedish) <http://www.salarochfiske.se/>
Summary of the Seals and fishery program (in English)

<https://www.slu.se/en/departments/aquatic-resources1/research/sustainable-fishery/seal-safe-and-low-impact-fishing-methods/>

List of publications from the Seals and fishery program

<http://www.salarochfiske.se/lasmera.4.3eea013f128a65019c28000441.html>

Gear development takes a long time, as it requires many trials to increase and maintain catch efficiency to make it comparable to and as versatile as gill nets. Catch rates vary with environmental factors such as depth, season, and currents, and depending on how pots are placed in relation to each other. The design of the pot can be varied to target specific species and sizes of fish. Cod pots can have a soak time of 3-4 days during which the catch is remains in good condition, meaning that pots do not need handling as often as gill nets. A recent trial gave an average catch of 10 kilos of cod per pot.

Research continues with a focus on different gear modifications and bait types, as well as a comparative lifecycle analyses for gill net and pot fisheries. A scheme to involve fishers and promote the use of seal-safe gears is also underway, where fishers can borrow pots and come with suggestions for redesign. Gear development can only succeed as a management option if there are active and involved fishers who want to invest, innovators and manufacturers, agencies that facilitate regulation and economic support. Ecosystem based management of fish and seal populations is crucial, as the gear is only useful if there is fish available to catch.

Seal-safe gear development in Denmark

MS Lotte Kindt-Larsen from DTU Aqua informed the symposium on the development, evaluation and use of seal-safe fishing gear in Denmark.

She emphasised the need for collaboration and exchange between initiatives and researchers working with gear development to be able to pool resources and experiences, something that has been highlighting in the close collaboration between Denmark and Sweden. Cod is easily scared compared to many tither fish species so entrance design is important. Trials on a round pot have resulted in a 400% increase in catch rate compared to initial models, but the gear is still not economically sustainable with current catch rates and cod prices. Trials on stronger materials in fyke nets with dyneema has reduced seal damage to gear by 86%. Trials around Bornholm with mini seine that can be used by a small vessel and operated by one person, showed good catches when it was working but requires good knowledge of the bottom in order to avoid getting stuck and losing the catch. Collaboration with researchers in Ireland focus on trialling a new seal acoustic deterrent that focuses on startle effect by varying the sound.

Seal-safe gear development in Finland

Mr Esko Taanila from the Finnish FLAG ESKO presented the latest technique and methods of seal-safe gear tested in Finland on behalf of Mr Esa Lehtonen from LUKE who was not able to participate. A wind and sun powered stationary Otaq seal scarer has been trialled in combination with push-up traps in the Gulf of Finland in 2018. The frequency of pings has been randomised to make it more difficult for the seal to avoid the sound by surfacing. Preliminary results from the trial have been positive with less seal damages to gear and catches.

There have also been trials setting out stationary seal scarers to make “seal free zones”, e.g. blocking access in narrow sounds. Preliminary estimates show that the equipment works well at a distance of least 45 meters from the device but probably further. Installation of one device is currently around 17 000 euros, which makes it an expensive investment if it is to be used widely. It is unlikely that the equipment would be suitable in rough weather; however, this has not yet been tested. Questions were raised as to the effects of seal scarers on other species, meanwhile it was noted that seal scarers are often used at fish farms.

Seal-safe gear development in Estonia

Mr Markus Vetemaa from the Estonian Marine Institute at the University of Tartu presented results from studies on seal by-catch in the Baltic and trials with acoustic harassment devices in Estonian coastal waters.

A study 2005-2009 showed that 90-98% of bycaught seal in Estonia waters were grey seal. Before fishers were educated in species identification, smaller grey seal were often falsely reported as ringed seals. A Baltic wide project published in 2014 estimated bycatch in trap and gill nets to between 1 240 and 2 860 seals annually, or between 2 180 and 2 380 when accounting for underreporting. Trap nets constitute around 88% of the bycatch, with some fishers having installed zippers in the trap nets to facilitate the removal of bycaught seals. Seal mortality through bycatch is most likely higher than from hunting. Bycaught seals are often younger and with a thin blubber layer in comparison to hunted individuals, which may imply that bycatch has little impact on population growth. A study from 2009 estimated the losses in revenue in small-scale fisheries due to seal damage at 0.9 million euros in comparison to total fishing revenue at 3.6 million euro. Estonia has undertaken trials with an adapted version of a Lofitech acoustic harassment device previously used trials in Norfjärden, Sweden where it had been deployed to protect a bay from seals. The frequency and impulse interval was changed in order to lower the energy consumption. The AHD has at least a 100 m range and when used it gave significantly increased catches of herring and garpike. Several Estonian fishers have purchased the AHD with the help of 80% funding from EMFF. However, the AHDs and accompanying solar energy panels are still rather sensitive, making the lifespan short in the exposed coastal waters of Estonia. Ruggedized versions may need to be developed. Group discussions on seal-safe gears.

Group discussions on seal safe gears

Group discussions highlighted seal-safe gears as a solution for reducing bycatches and seal damages to maintain coastal fisheries in areas with high seal abundance and improve public perception of the fisheries. However, it was recognised that seal-safe gear do not address impacts of seals on the condition of fish stocks and other issues affecting the economical sustainability of coastal fisheries. Improving direct access to markets by

fishers and marketing underfished species can be ways to enable a viable coastal fishery.

It was highlighted that there is currently not one seal-safe gear with as much versatility as gillnets. Hence, replacement of gillnets may require use of different types of alternative gear over seasons, in different environments and for different target species. Spatial management, where suitable gear use is specified for different areas, may be one way forward. As an example, Finland is currently developing 118 local fisheries management plans for privately owned waters (coastal and inland) that specify target species and gear types. Authorities could promote fishing with seal-safe gears/pots in certain areas, e.g. around wrecks, in order to prevent loss of gears.

Technical improvement of regionally adapted and cost-effective solutions are necessary but take time to develop. Questions were raised around whether certain coastal fisheries may disappear before these are available, and that funding is required urgently to supply fishers with seal-safe gears.

Management authorities need to be more active and invest in facilitating collaboration and knowledge exchange on gear trials and development rather than putting all resources towards compensation. Training and exchange between fishers is necessary, e.g. Polish fishers have recently visited Sweden to learn more about seal-safe gear. Baltic wide cooperation can help to share costs and efforts between countries, e.g. within Baltfish or other regional forums.

Active engagement by fishers in the development and use of seal-safe gears is key. A combination of incentives and regulation is needed to motivate fishers. Compensation schemes could be limited to or directed at fishers that actively participate in the development and use of seal-safe gear. Seal-safe consumer labelling that gives a higher price for products, could be a way forward. Ultimately, the gears need to be made financially attractive to fishers in the long term.

Administrative burden was quoted by some as a reason for not adapting or changing gear. Others said that the administrative burden have not been an impediment up until now. The regionalisation of the common fisheries policy and the current review of the technical regulations will provide better room for approving regionally adapted gear solutions.

Suggestions for next steps

Mr Marcin Rucinski from Low Impact Small-scale Fishers of Europe (LIFE) presented a proposal for the next steps forward on how to address seal-fisheries interactions in the Baltic Sea. Mr Rucinski suggested the elaboration of a joint BALTFISH, HELCOM and BSAC toolbox for suitable measures to mitigate the seals-fisheries conflict. He proposed that BALTFISH could initiate a review of management options available within existing legal frameworks and to submit this for consideration by BSAC and HELCOM.

Concluding remarks

On behalf of the Swedish BALTFISH presidency, Ms Marianne Goffeng-Raakil from the Swedish Ministry of Enterprise and Innovation expressed her gratitude to all participants for helping to fulfil the aims of the symposium. She noted that the symposium has highlighted the need for regional collaboration around locally adapted solutions. Ms Goffeng Raakil emphasised that while managers in BALTFISH can facilitate the approval of new gear types within the framework of the Common Fisheries Policy, proposals for viable solutions need to come from fishers working in collaboration with scientists. Ms Goffeng Raakil informed the participants that proceedings from the symposium would be presented to BALTFISH in Stockholm in June 2019.

Discussions on the topic will also continue in a HELCOM workshop hosted by Denmark in Copenhagen on the 27th of June 2019. The BALTFISH presidency and HELCOM are in contact to coordinate discussions on the topic, as well as on other issues of joint interest.

Ms Gry Sagebakken from SwAM, moderator of the symposium, thanked the participants for their valuable contributions and informed them that the presentations that have been approved for circulation by the speakers will be made available together with notes from the symposium.