

WORKSHOP ON THE ECOSYSTEM BASED MANAGEMENT OF THE BALTIC SEA (WKBALTIC)

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i Executive summary

The main objective was to identify important management issues and needs, to be carried out with stakeholders. This could include inter alia: mixed-fisheries interactions, ecosystem drivers of fisheries productivity and inter- and intra-specific interactions. Also to consider and potentially adapt existing mixed fisheries methodology for application in the Baltic, and prioritise recommendations for a new mixed fisheries model for pelagic species. And finally to develop a roadmap for the delivery of future research needs for EBM and mixed fisheries management of Baltic Sea fisheries.

The main message is that there are a wide range of important issues in the Baltic including from the industry; Stock sizes, misreporting, accuracy of discarding data, and relevance of closures. Issues identified by other stakeholders included; need for foodweb modelling, differences in patterns locally and globally, and uncertainty about discards.

The information on issues was catalogued, and possible scientific interventions identified, including; fisher self-sampling, Ecological Risk Analysis (ERA), and Mind Mapping of issues and linkages.

Based on the above, a road map was developed. The core idea was to set up a Baltic Task Force, to assemble data and initiatives in the Baltic, probably supported centrally, (e.g. by the European Commission) and involving the BAC, and other representative bodies. The TF would then carry out and analyse the ERA, and systematically map the stakeholders concerns in a conceptual (mind mapping) approach. The EU funded PANDORA project will also look at the issues raised and determine what analyses and new information can be provided by the project. On that basis, the Workshop should meet again in 2021, with the important stipulation, that it would need full participation by fishing (and other) industry representatives.

The principle conclusion, and agreed by all, was the need for a single, small, dedicated and funded group to act as the central motivators of this work. A similar group was initiated for WKIrish, albeit unfunded, and not dedicated to this work.

ii Expert group information

Expert group name	Workshop on the Ecosystem Based Management of the Baltic Sea (WKBALTIC)
Expert group cycle	Annual
Year cycle started	2019
Reporting year in cycle	1/1
Chairs	David Reid, Ireland
	Rüdiger Voss, Germany
Meeting venue and dates	25–26 February 2020, ICES HQ, Copenhagen, Denmark (26 participants)

iii Term of reference

Term of reference	Addressed in this report
a. With stakeholders, identify issues necessary for management needs regarding mixed-fisheries interactions, ecosystem drivers of fisheries productivity and inter- and intra-specific interactions;	Yes
b. Consider and potentially adapt existing mixed fisheries methodology for application in the Baltic, and prioritise recommendations for a new mixed fisheries model for pelagic species;	Yes
c. Develop a roadmap for the delivery of future research needs for EBM and mixed fisheries management of Baltic Sea fisheries.	Yes

1 Introduction

The Workshop on the Ecosystem Based Management of the Baltic Sea (WKBALTIC) met in ICES HQ, Copenhagen, on 25–26 February 2020. WKBALTIC was chaired by Rüdiger Voss, Germany, and David Reid, Ireland.

The workshop included participants from Denmark, Estonia, Germany, Latvia, Lithuania, Poland, and Sweden. It also included a wide range of management and NGO stakeholders. For a variety of reasons, mainly multiple commitments, there were no fishing industry stakeholders at the whole meeting, although it was possible to have two Danish industry representatives in for a short period each to present their views.

The main approach to the workshop was to give the stakeholders free scope to raise issues important to them, and then discuss in plenary, and make recommendations. Several issues were raised, discussed and included in the roadmap, others were considered less important, and for the moment, not included in recommended further work.

2 Catalogue of key issues

The workshop included good representation from managers, eNGOs, and scientists, but was lacking in fishing industry representatives. It should be noted that we were able to have short discussions with Claus Sparrevohn (Danish Pelagic Producers' Organisation, Denmark) and Michael Wall Anderson (Danish Fishermen's Association, Denmark).

If the work is to continue, it would need inputs from other science fields as well, e.g. marine mammals and seabirds.

It was recognized that one of the issues remained that the Baltic includes nine countries, eight of which are in the EU, and that watershed issues extend to several more.

The following represents an agreed summary of the discussions and conclusions from the workshop.

2.1 Seals

Role of seals as direct (depredation) and indirect (resource competition) competitors with fisheries, especially for key commercial species; cod, herring, sprat (salmon)? To include evaluation of the importance of parasites for which seals are a vector.

2.2 Industry concerns

Pelagic industry

Mixed fishery of herring and sprat is the biggest issue. Fishers see a big mismatch between what they see and the Working Group's ideas of the two stock sizes. This probably leads to misreporting of sprat as herring and vice versa, depending on the relative balance of stock assessment and quota with perceived availability on the grounds. Fishers are more able to catch sprat and then report as herring.

- Raises question of how trustworthy the historical landing data are. Could re-estimate catches back in time with fishers? Could look at the sensitivity of the assessment models to different scales of misreporting estimated with fishers. May be possible to also use EFCA "last catch" data to help scale the issue for sensitivity analysis.
- Joint science industry analysis of scale of, and sensitivity of assessment to, misreporting?
- Not catching herring and sprat in the same haul but on the same trips. Sprat in the deeper areas.
- Effectiveness of spatial closures for sprat?

Industry representatives suggested that issues with Western Baltic Spring Spawning (WBSS) herring has been exacerbated by changes in calculation of the reference points and leading to a change in the perspective on the stock status, while biomass remained similar.

- Rügen herring: roughly 50% of the catches in 22 are from other stock components, not specifically Rügen herring, and these cannot be separated in the catch. It was suggested that managing the WBSS herring fishery mainly on the basis of information coming from the Rügen was a mistake, as they are not showing any increase while other components may be.

Wider industry

It was observed that plaice and herring were increasing in the western Baltic, and that the sprat sole stocks were stable, all suggesting a reasonably healthy situation.

- They question the sense of closing all fisheries on sustainable stocks just to try and preserve one stock that is failing anyway (eastern Baltic cod), and noted that natural mortality is very high, much higher than fishing mortality.
- The small-scale fishers are suffering – if the stock recovers there will be no-one local left, it will be the large vessels that come in. Need a sensible approach to this, which is not too costly.
- Given climate change, it was questioned how valid it was to be using historical data in assessment.

2.3 Discarding uncertainty

Consider whether fishers could also help us scale the discarding issues. Is discarding underestimated by 10, 20, 50 100, 1000% ????? Is this reasonable to do. How would we use the data in providing advice – is it acceptable to use “opinion” to help scale the possible inaccuracies of assessment outputs? Involve social scientists to help/advise on how to make this work?

Could also look for areas of highest discarding. This was done in the Celtic Sea, with some success, using an online app. But fishers thought it was a bit weak because it was based on five years average sparse observer data. If updated regularly with fishers’ data could be much more useful. For example, by using adaptive management approaches such as real-time closures etc.

2.4 Foodweb interactions

There are a range of ecosystem/foodweb models as well as extensive empirical data and process knowledge available for the Baltic Sea. We need to look at issues like:

- Cod feeding on sprat;
- Why there are low condition sprat AND cod?
- Why plaice and flounder are successful benthic predators but cod may not be;
- Current cod stocks may be growing slowly due to limited benthic prey, and are barely able to grow large enough to switch to piscivorous guild?
- Would a closure of eastern Baltic cod fishery be expected to lead to recovery?

The choice of the tools should follow the problem, with possible applications ranging from process-studies to broad based Ecosystem/foodweb models (e.g. Bauer *et al.*, 2019)

2.5 Local vs. Global?

- There is evidence that many of the interesting interactions are happening at much smaller scale than the whole Baltic Sea, perhaps particularly in coastal areas. Arguments that the Baltic even now includes areas that represent conditions from some time ago: rock reefs, hi condition cod, areas between 10 and 50 m deep, that are not anoxic, and may allow better growth conditions than deeper or immediate coastal waters. Catalogue these “micro-ecosystems” as a route to exploring the basis of any differences for our key fish species.
- Sticklebacks: vessel landings in Denmark this week with a 100 tonne bycatch of sticklebacks from the open sea in SD 27. These are being caught for fishmeal, due to high oil content. There is evidence that the populations of sticklebacks (*Gasterosteus aculeatus*) are increasing. This may affect other local species, as the species are prone to feeding on eggs of other species. They may also compete for habitat with round goby. They have not been

included in foodweb models historically. This increase in sticklebacks may also have occurred historically, and this should be investigated. If it is novel, it will be a challenge for a model like Ecopath to handle. Consideration should be given to including them, and in gathering data to do so. It was noted that there was ongoing work in Sweden (and elsewhere ??) on this.

2.6 Management issues

Area 24 – disputed borderland?

There would seem to be many issues associated with the overlap from east to west Baltic cod in Area 24. Could this be managed better? Probably yes, but can we at present suggest a better approach – based on models, surveys, catches?

Quota stability

Is this a possible approach to avoid rapid changes and provide consistency? Would it be desirable for fishers or assessment/management? Possibly yes. A stable quota would probably lower than a medium-term mean to minimize risk. Stable quotas have been used for Baltic Salmon despite record years? Is this an approach to pursue, possibly through MSE?

Experimental management

Given some of the ecosystem and management issues, it might be feasible to take an experimental approach to management – if it works, retain and adapt, if it doesn't try something else? It can be argued that we have an experiment NOW, with closure of fishing for Eastern Baltic Cod – are there aspects we could study while this persists e.g. resuspension as a result of trawling, or species succession issues?

More selective gears?

Is this a workable if partial solution to some of the issues e.g. area 24? Really need the involvement of fishers to evaluate, as well as gear technical experts.

This might be a good approach for experimental management. Quick trials of innovative gears by fishers without excessive red tape (Feekings *et al.*, 2019)?

Recreational Fishing

Recreational fishing is probably at a significant scale, and be important in the context of stock conservation. It is banned in some countries. Monitoring of this type of fishing is somewhat patchy across the Baltic countries. In some it is based on questionnaires to fishers. In most places it is carried out from small, registered, vessels, so sampling and recording could be possible

Monitoring and control of recreational fishing is probably beyond the scope of this group, except for recommendations. What is needed is an evaluation of the impact of this type of fishing. This would need a consistent international monitoring strategy? This may be happening already, but should be documented.

3 Research approaches

3.1 Fisher self-sampling

Would it be useful to ask fishers to start self-sampling of cod (as is reported as underway for herring and sprat), particularly length/weight condition. This is a simple task, maybe just bag and freeze specimens for later analysis. Is this helpful, is it possible?? Difficult to do when the eastern Baltic cod fishery is closed, maybe a sentinel fishery approach?

FDF could also be a possible tool to help substantiate fisher derived data?

3.2 Ecological Risk Assessment.

Given the wide range of issues emerging from the workshop, there would be value in carrying out some form of Ecological Risk Assessment. This could be based around ODEMM or similar (Pedreschi *et al.*, 2019). Could use the ODEMM approach with more focused set of sectors, pressures and components. Could also include indirect, second order effects for selected combinations that could be identified a priori. It is possible to do a restricted range of possibilities within a fairly short - half to one-day workshop.

3.3 Mental modelling/mind mapping

Good for identifying priorities especially for stakeholders, and so what to include or not. One example presented was done by ICES Secretariat, another by the Marine Institute, Ireland as part of WKIrish6. This could also be used as part of a stepwise approach to RA (Holsmann *et al.*, 2019), starting with this qualitative approach, then a semi-quantitative RA on the main outcomes, and finally a fully quantitative modelling approach on the key threats/risks?

4 A Road Map for Ecosystem Based Management of the Baltic Sea

4.1 A Baltic Task Force?

The Baltic Sea Advisory Council (BSAC) has an ecosystem based Working Group that could be a good forum to take forward the approaches highlighted e.g. Ecological Risk Assessment and more stakeholder participation especially fishers. Such a risk assessment would be specifically to prioritize research and management action

It should be recognized that there will be language issues, and a need for translation facilities. Also clarity of objectives – what do we actually want from them? It should be recognized that there will be national differences in perspectives, and that the fishing industry is not monolithic and there will be similar differences in perspective within the industry.

This may also be usefully complemented with local small group (c.4) with stakeholders, but it is recognized that this would be labour intensive.

It was proposed to seek supporting funding from the EC.

This should ideally include WGIAB and other related ICES (and HELCOM??) working groups.

It was proposed that this TASK FORCE could be set up and should include 2-3 individuals funded and tasked to expedite the process within an 18-month to 2-year window. With agreement, this could involve BSAC.

4.2 PANDORA – EU H2020 project

This project is about including biological information into stock assessment (and management). It will be able to work with some of the commercial fish related issues over the next two years. PANDORA aims to go beyond the standard single stock assessment advice approach, and provide more nuanced advice to managers, e.g. including key elements from the Ecosystem Overviews. The PANDORA team can report back to WKBALTIC in a year time.

4.3 WKBALTIC future?

It was suggested that the WK should meet again, in approximately one year. In the interim, the members should develop the framework to perform the risk analysis, in collaboration with BSAC, WGIAB and wider. The chair and his team are willing to help in the ERA development.

The WK should also probably develop a collective view of what EBFM is and specifically what it would involve in the Baltic. E.g. for some people it could be just looking at sprat and herring interactions? It was noted that when advice is focused on a headline single stock level, and as a number (e.g. catch options), while any EBFM advice was on page 3 or in the Ecosystem Overviews, it is unlikely that we will make much progress on EBFM.

As a specific example of what ICES can do, through its network and staff was illustrated by a quick examination of potential issues with gravel extraction and possible impacts on herring spawning grounds. Quick checks with ICES scientists suggested not, but could explore further?

Members of the WK thought initially that the Baltic Ecosystem Overview (EO) was a good place to start looking for areas to investigate. The WK reviewed the EO with ICES Secretariat, but in general, the information, while useful, was not seen as specific enough to target the work needed.

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Annex 2: Resolution

6WKBALTIC – Workshop on the Ecosystem Based Management of the Baltic Sea

This resolution was approved in 2018 but the workshop was postponed.

2018/2/FRSG36 The **Workshop on the Ecosystem Based Management of the Baltic Sea** (WKBALTIC), chaired by Rudi Voss*, Germany and David Reid*, Ireland will be established and will meet in ICES HQ, Copenhagen, on 25–26 February 2020 to:

- a) With stakeholders, identify issues necessary for management needs regarding mixed-fisheries interactions, ecosystem drivers of fisheries productivity and inter- and intra-specific interactions;
- b) Consider and potentially adapt existing mixed fisheries methodology for application in the Baltic, and prioritise recommendations for a new mixed fisheries model for pelagic species;
- c) Develop a roadmap for the delivery of future research needs for EBM and mixed fisheries management of Baltic Sea fisheries.

WKBALTIC will report by 19 March 2020 for the attention of FRSG.