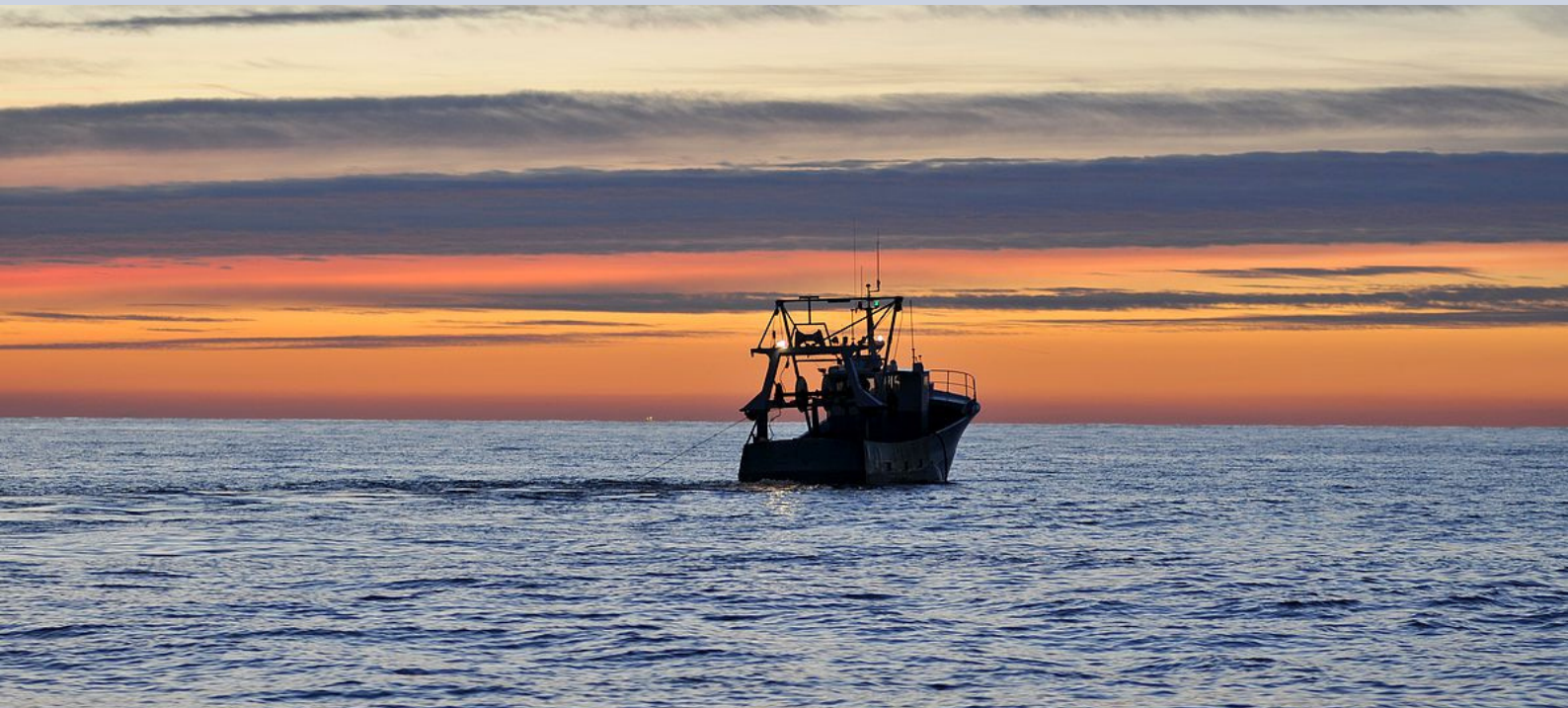
APPLICATION OF THE ECOSYSTEM-BASED APPROACH TO FISHERIES MANAGEMENT IN THE NORTH WESTERN WATERS

A REVIEW OF ICES WKIRISH PROCESSES, OUTCOMES AND POSSIBLE NEXT STEPS



Report from the webinar held by the North Western Waters Advisory Council on 29 April 2021

In memory of Hugo Boyle

AGENDA

Thursday 29 April, 14:00 – 16:00 CET

1. **Welcome** (Emiel Brouckaert, Chair of the NWWAC)

2. **Speakers' introduction**

3. **Overview on WKIrish process and outcomes** (Jacob Bentley, UNEP-WCMC)

4. **Inclusion of the ecosystem approach in the ICES assessment** (Ghislain Chouinard, ICES)

5. **Panel discussion with:**

- Mark Dickey-Collas, ICES ACOM Chair
- Ghislain Chouinard, ICES ACOM Vice-Chair
- Colm Lordan, ICES ACOM Vice-Chair
- Dave Reid, Team Leader of the Ecosystem Based Fisheries Management Team at the Marine Institute
- Jacob Bentley, Senior Postdoctoral Fellow at UNEP-WCMC
- Mathieu Lundy, Fisheries Scientists at the Agri-food and Biosciences Institute
- John Lynch, Chairman of the Irish South and East Fish Producer Organisation
- Johnny Woodlock, Fisheries expert at the Irish Seal Sanctuary

6. **Discussion on NWWAC next steps**

7. **Closing remarks** (Emiel Brouckaert, Chair of the NWWAC)

INTRODUCTION

On 29 April 2021, the North Western Waters Advisory Council (NWWAC) held a webinar on the application of the ecosystem-based approach to fisheries management in the North Western Waters. The webinar was a welcome opportunity to learn about the process and outcomes of ICES WKIrish, which brought multiple stakeholder groups together, including the NWWAC, to enhance fisheries advice and co-develop an operational route for an ecosystem approach to fisheries management.

As mentioned in the NWWAC advice on Fishing Opportunities for 2021, the NWWAC recognises that there are many pressures on the marine environment, including climate change, pollution and unsustainable fishing, which pose a synergistic threat to marine ecosystems and their ability to deliver ecosystem services such as commercial fisheries and climate mitigation. Ensuring sustainable fisheries, including the setting of TACs in line with best available scientific advice, and taking into account ecosystem dynamics is essential to maintain and restore healthy and productive ecosystems which are resilient to other stressors such as climate change and are able to continue to deliver essential ecosystem services.

Due to their direct involvement since the inception of WKIrish in 2014, NWWAC members held a vested interest in following up on the WKIrish process after the last workshop held in November 2019. Lessons learned from this webinar will aid the AC in the production of advice to the European Commission on the importance of considering ecosystems dynamics to inform more holistic management decisions, especially in relation to TAC-setting.

The main part of the event was a panel discussion including experts and stakeholders who had all been directly involved in the WKIrish framework. The panel reviewed lessons learned and best practices from the WKIrish process and explored future possibilities for the use of the ecosystem models developed to progress ecosystem-based fisheries management (EBFM) in the Irish Sea, especially through the integration of the approach into the ICES assessment. Moreover, discussions examined limitations and opportunities in relation to extending the application of these models and the overall approach to other areas in the NWW.

THE PANELISTS

DAVE REID

Dave is Team Leader of the Ecosystem Based Fisheries Management Team at the Marine Institute. He holds a BSc Marine Biology from Liverpool and a PhD from Bangor. Before his role as principal investigator at the Marine Institute, he has been working on surveys, gear and fisheries ecosystems at MarLab from 1989 to 2009.

MATHIEU LUNDY

Mathieu is a fishery scientist working at the Agri-Food and Bioscience Institute. He is the current chair of the ICES Working Group for the Celtic Sea Ecoregion. Mathieu was involved in the WKIrish workshop series from the initial scoping, the assessment benchmarks and was the Chair of the final two workshops which attempted to bring together the ideas moving toward integrating the ecosystems into fishery catch advice.

JACOB BENTLEY

Jacob is a Senior Postdoctoral Fellow at the UN Environment Programme World Conservation Monitoring Centre. He has previously worked between the Scottish Association for Marine Science and Marine Institute on an ecosystem model of the Irish Sea.

THE PANELISTS

GHISLAIN CHOUINARD

Ghislain is a Vice Chair of the ICES Advisory Committee, dealing with a part of the fisheries advice including the Western Waters. Previously, he was at Fisheries and Oceans Canada involved in Atlantic Canada fish stock assessments, scientific advice and the direction of research programmes.

MARK DICKEY-COLLAS

Mark is the Chair of the ICES Advisory Committee and has over 25 years' experience providing fisheries and marine science advice having worked as a national fisheries scientist in Northern Ireland and the Netherlands. Mark liaises with regional and international organisations across the north Atlantic and Arctic on issues such as fisheries science, ecosystem assessment, data provision, Good Environmental Status, vulnerable species and habitats, and impacts of fishing. His scientific expertise is in ichthyoplankton, population dynamics, ecosystem modelling, ecosystem approach and the policy/science interface.

COLM LORDAN

After completing a PhD on the fisheries biology of squid species off the west coast of Ireland, Colm joined the Marine Institute in 1998 and currently leads a team of scientists working on demersal fish and Nephrops surveys, stock assessment and scientific advice. In 2018, he was appointed as one of the Vice Chairs of the ICES Advisory Committee.

THE PANELISTS

JOHN LYNCH

A Howth-based fisherman, John has been fishing in the Irish Sea for over 30 years and owns the trawler Eblana, carrying out a family business which involves his brother, son, and nephew. As the Chair of the Irish South & East Fish Producer Organisation, he has always been interested in fisheries innovation and development, collaborating on several occasions with BIM, Ireland's Seafood Development Agency, especially on survivability trials. Finally, John is also a member of the NWWAC and directly participated in the WKIrish workshops.

JOHNNY WOODLOCK

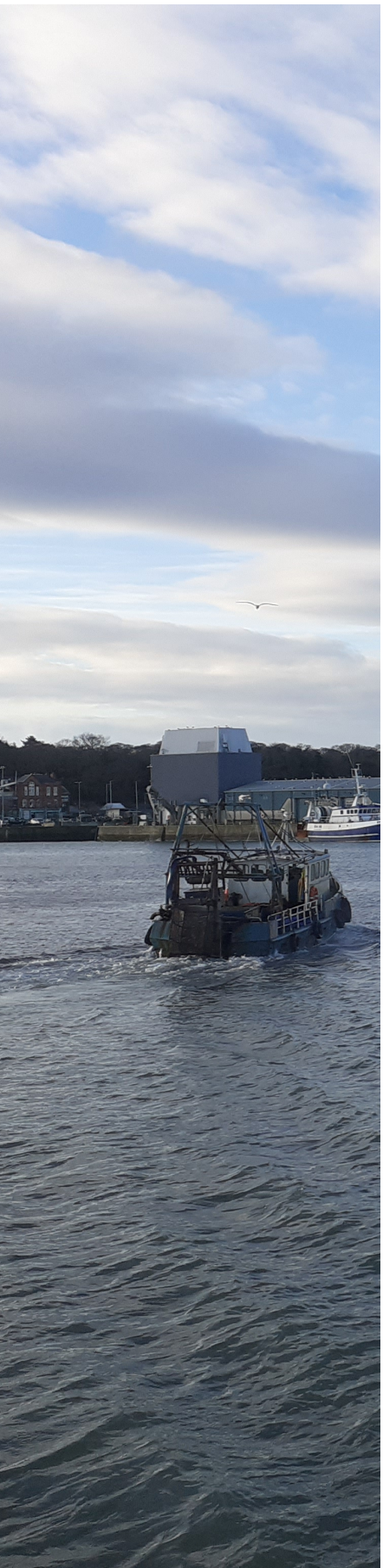
Over sixty years living in a small coastal fishing town, Johnny holds a Master's degree in environmental science and is a member of the Regional Inshore Fisheries Forum. He is a founder member of the Irish Seal Sanctuary and the Irish Whale and Dolphin Group. He regularly contributes to various hunting and angling magazines and is a member of the NWWAC. He was highly involved in the WKIrish workshops.

MODERATING THE EVENT:

DEBBI PEDRESCHI

Debbi is a post-doctoral researcher at the Marine Institute where she works on Integrated Ecosystem Assessment as part of the Mission Atlantic project. She is also the current Chair of the Integrated Ecosystem Assessment Steering Group at ICES and has participated in the WKIrish workshops.

AN OVERVIEW ON WKIRISH PROCESS AND OUTCOMES (JACOB BENTLEY, UNEP-WCMC)



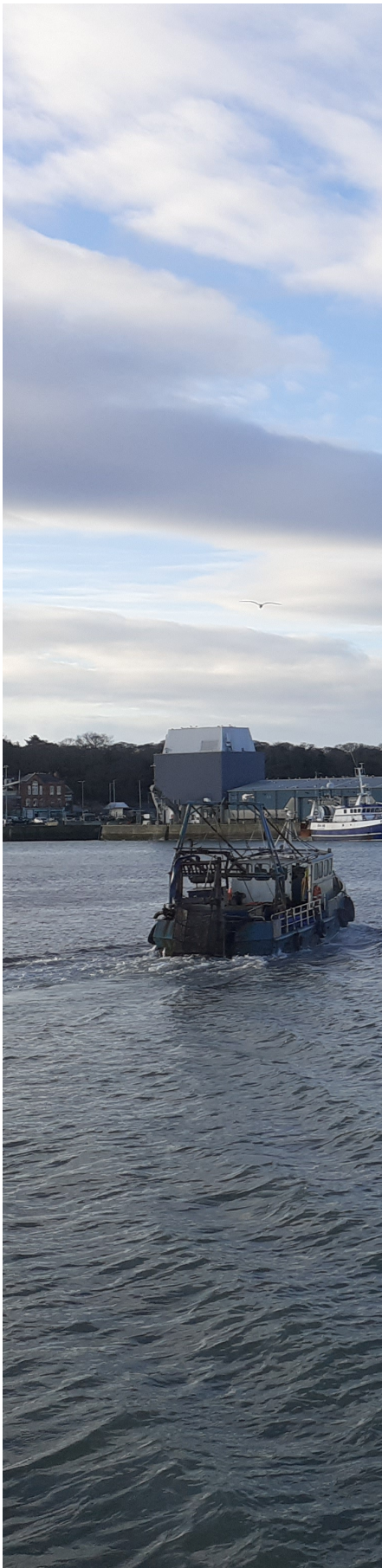
In the past, the Irish Sea has been characterised by a whitefish dominated fishery, targeting cod, place, whiting and herring. Over time, this fishery has shifted more towards shellfish, primarily Nephrops, as commercial opportunities for these species increased, but also as whitefish stocks declined.
In point of fact, a cod recovery plan was put in place in 2000 to help the recovery of whitefish stocks. Despite effort reduction, area closures and decommissioning reductions in fishing effort, there were no clear signs of improvement. Therefore, in 2014 the industry requested an ICES benchmark for the Irish Sea (WKIrish) to understand why the stocks were not recovering as expected, taking into account possible ecosystem factors preventing the success of the recovery plan.

The WKIrish benchmark involved a group of scientists, NGOs and representatives from the fishing industry. The idea behind WKIrish was to collect data on the Irish Sea and build a new suite of ecosystem models to find out why the commercial stocks in the area were not recovering as expected. It started in 2015 with an information sharing and scoping workshop, where stakeholders came together to formulate the questions they wanted WKIrish to address and to come up with ideas for modelling tools and next workshop stages to address those questions. In 2016 a big data gathering and evaluation workshop was held, followed by a single species stock assessment benchmark in 2017. From there, the work focused on the development of ecosystem models, integrating fishers and other stakeholders' knowledge through a co-development process.

The Irish Sea Ecopath ecosystem model that was developed is quite a complex, including everything from bottom trophic levels all the way up to top predators. The model focussed specifically on the commercial stocks in the Irish Sea with the aim to determine the explanatory factors and ecosystem drivers underpinning these stocks' recovery failure.

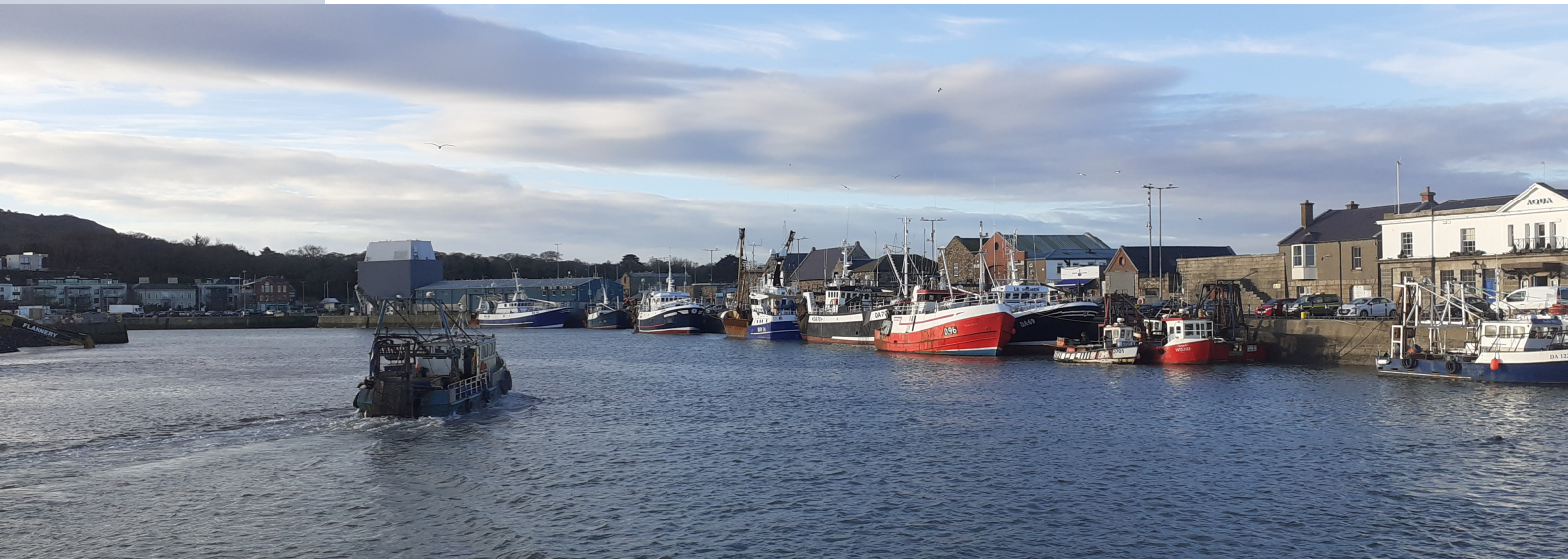
A fundamental part of the data used to build this model came from fishers' knowledge, gathered during workshops. Fishers shared their knowledge on diets of commercial species and results were very promising, as fishers identified 80 predator-prey interactions, of which 63% matched stomach record data. The impacts of this type of knowledge from fishers in the model were seen more at the interspecific level than at the ecosystem level (because this ecosystem includes upwards of 500 predator-prey interactions). Still, the changes in the model brought by this type of information are very important, especially when using these tools to address policy questions related to discards and the impacts and functioning of the landing obligation.
Fishers' knowledge was also used to fill gaps regarding fishing effort records for some fleets. The combination of fishers' knowledge and scientific data improved the model's ability to simulate observed stock trends.

To get to the key question of why stocks were not recovering, several environmental drivers, such as temperature and food availability, were added to the model, which was thus able to recreate historic trends. In fact, results indicated that it looked like environmental drivers had been suppressing the recovery rate of commercial stocks in the Irish Sea. The model was submitted to the ICES Working Group on Multispecies Assessment Methods and received the ICES key-run approval for its use as an advice tool.



During this step of the process, it was also proposed to add ecosystem information to the ICES fisheries catch advice by using ecosystem indicators to provide ecosystem-based fishing mortality reference points (Feco) within ICES Fmsy ranges. This provides the opportunity to operate in and adapt to changes in the ecosystem. Recommendations for target F within the pretty-good-yield ranges are made based on the condition of the ecosystem indicator within its historical range. Feco scales fishing mortality down when the ecosystem conditions for the stock are poor and up when conditions are good.

One of the main weaknesses of this approach is that it can be difficult to select environmental indicators, separating trend from noise (i.e. unexplained variability within a data sample) and identifying mechanistic links. Also, Feco is a relatively small step in comparison to advances such as multi-species MSY, and still relies on single-species assessments being in place. It is also characterised by high data requirements. On the other hand, this approach allows ecosystem understanding to be incorporated within the existing precautionary framework, as it does not conflict with the MSY principle and the ICES precautionary approach. The simulations suggest that Feco could act as a biomass buffer during periods of poor productivity. The approach also allows for an operational use of these ecosystem models in the strategic advice framework, achieving a relatively important step towards EBFM.



INCLUSION OF THE ECOSYSTEM APPROACH IN THE ICES ASSESSMENT (GHISLAIN CHOUINARD, ICES)

An ecosystem approach to fisheries management (EAFM) is a way of managing fisheries that balances the different objectives in society, which can be ecological and economic. This is done by applying an integrated approach across geographical areas that reflect the natural ecosystems. An EAFM would include conservation and exploitation ecological objectives, social-economic objectives and, finally, some governance and institutional objectives. ICES currently only addresses the ecological objectives in terms of fishing opportunities advice, while WKIrish explored the socio-economic objectives as well. It is important to recognise that WKIrish has made significant progress on stakeholder engagement and in building common understanding of the issues, suggesting a practical application of the approach within ICES.

ICES has been working to make EBFM operational and, to this end, the influence of a dynamic ecosystem on fisheries (the work of WKIrish) and the impact of fisheries on the ecosystem need to be considered. Moreover, fisheries need to be examined in relation to other maritime activities and pressures. For this reason, an EBFM “aware” framework and implementation plan is being developed by ICES for its advice.

The ICES fisheries advice is largely based on single species assessments, and various aspects linked to ecosystem productivity are taken into account, such as changes in growth, recruitment, natural mortality and multi-species interactions. However, a full integration of the entire ecosystem interactions and impacts on the stocks is lacking in the assessment.

Since WKIrish proposed an approach for incorporating overall ecosystem productivity and drivers in the fisheries advice framework, a “Productivity subgroup” of the ICES Advisory Committee (ACOM)” was tasked to review the WKIrish findings and provide for a potential way forward. The review highlighted a number of pros and cons as listed below:

PROS
The approach is valuable for tracking ecosystem fluctuations and departures from baseline.
Good way to communicate ecosystem changes to stakeholders.
Would help facilitate the incorporation of ecosystem considerations in benchmarks.

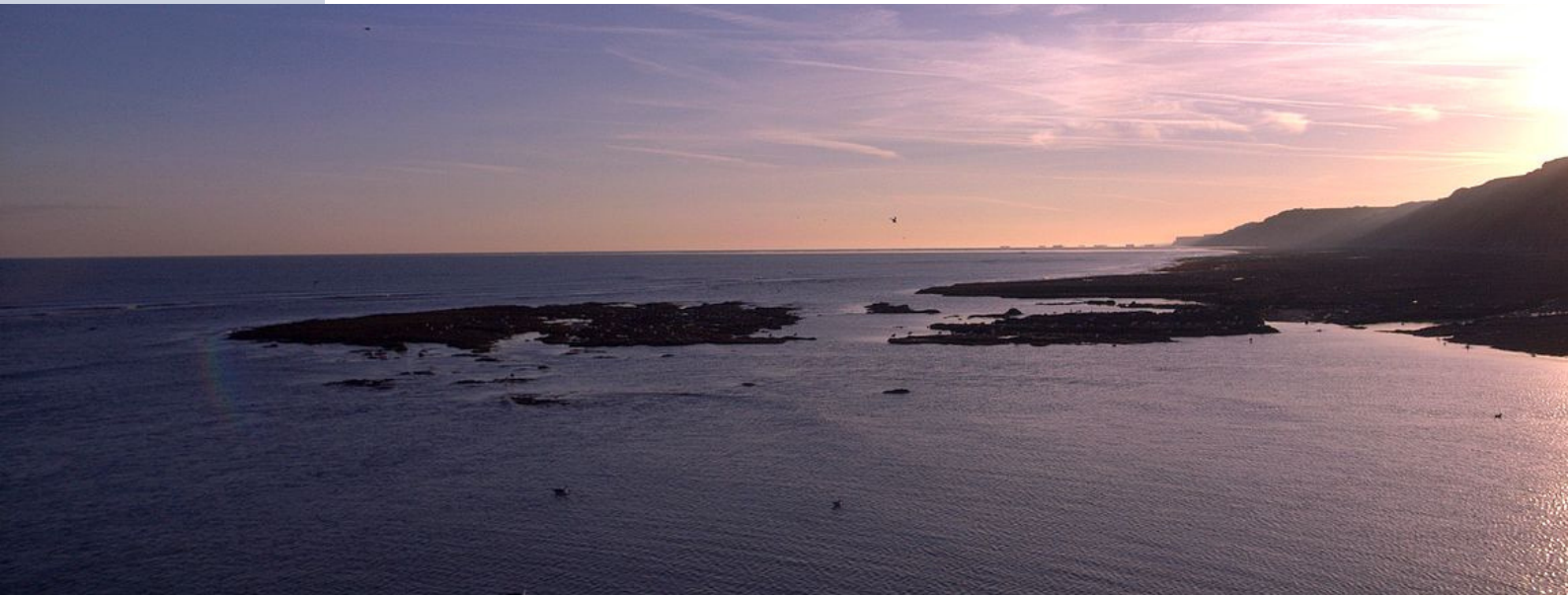
CONS
Questioned how the approach differentiates between tracking noise and a clear ecosystem signal.
Further developments for the selection of indicators needed.
Currently assumes linear relationships, which may not hold true, and needs to improve understanding of the mechanisms involved.

Thus, the ACOM is hesitant in including the WKIrish approach into the generic framework for advice because of some concerns in relation to the advice quality assurance.

Further discussions to explore these issues were carried out, also involving WKIrish experts, which highlighted recent developments that examined benefits and trade-offs of the approach (Bentley, Jacob W., et al. "Refining fisheries advice with stock-specific ecosystem information." Frontiers in Marine Science 8 (2021): 346).

While it appears that the noise to signal issue can be evaluated, it is also important to accept that a full understanding of all the mechanisms involved will be hard to attain. Another point was raised in relation to other initiatives, either within ICES (looking at developing integrated advice for the Baltic Sea) or elsewhere, which are pointing to a similar direction as put forward though WKIrish. Finally, by using Feco, the advice remains precautionary even in case of misspecification, since the advice would be constrained within the Fmsy ranges considered precautionary.

To conclude, the approach from WKIrish has potential to deal with ecosystem changes on a finer timescale than major regime shifts. Most of the ACOM concerns can or have been addressed and while the mechanistic understanding is not complete, the approach is precautionary and guards against departures in assumptions. ACOM is currently further exploring the integration of the approach into the advice and will have to re-engage with experts on quality assurance requirements. Where considered appropriate, Feco could be provided as a catch scenario. ICES is also going to inform the requesters of the advice of the WKIrish approach and suggest this could be a useful scenario to provide when available. To this end, ICES would appreciate the NWWAC raising these issues with key requesters of advice.



PANEL DISCUSSION

Which are the quality assurance requirements needed in order to incorporate the approach into the ICES advice?

Ghislain: ACOM has been looking at how the approach could be incorporated widely into all the ICES advice and wants to ensure that there is a clear process in place to do that throughout the variety of advice. WKIrish provides a good example, but there may be other aspects to consider.

Since the 1970s, bottom trawling has increased in the Irish Sea and this has inevitably impacted the habitats. There might not be a linear relationship in this, but it is possible that this has limited species' ability to recover. Do you think that ecosystems are potentially functioning in a different way and that the degraded state of the ecosystems is playing a role in that?

Jacob: The ecosystem model shows that there are large function changes in the way that the Irish Sea ecosystem has worked over time. For example, the decline in cod and the rise of haddock seem to be quite linked through predator-prey interactions. Climate is definitely a big driver, but stocks have also been affected by larger ecosystem impacts, such as food availability, not just by temperature and fishing pressure, and ecosystems degradation probably plays a large role in this. This is definitely something we would like to examine from a spatial angle.

David: One of the reasons we chose to prepare an ecosystem model was that the model could then be used to answer questions not only in relation to the targeted commercial stocks but also to the broader changes in the ecosystem. For example, this model could be used to analyse how the ecosystem can respond to climate change challenges. The model was designed to answer specific questions but is also capable of addressing other topics.

John: Trawling in the Irish Sea has not increased, it has actually decreased drastically since 2000, probably for the very reasons that stocks have declined and efforts for recovery have not been successful. This is the main reason why we got involved in the WKIrish, as we were very interested in exploring the possibility of other factors having an effect on stocks' recovery that could be controlled or contained in the same way as the fishing effort.

Johnny: Trawling and dredging mobilise sediment into the water column and this could have an effect on temperature changes, mobilising nutrients into the ecosystem. I think that this is an aspect that plays an important part in the ecosystem functioning and should be further examined through the ecosystem approach, which is very helpful in considering all these interactions.

Mark: There are limitations to the complexity you can build in to answer management challenges. For many of these challenges that are coming up now in terms of EBFM, space is the key factor. We have models which are dealing with complex trophic dynamics, but they rarely build in behavioural dynamics, which is another issue which in fact impacts the dynamics of the ecosystem. At ICES we are trying to start broadening out not just ecosystem modelling in terms of space, but also the single species stock assessments. A second issue is that there is a whole suite of management tools that are coming in to deal with some of the issues that people here have already raised. A classic example would be the Marine Strategy Framework Directive, which is trying to integrate some of these challenges. ICES has been working with DG Environment to look at trade-offs between trawling impact, catch and volume, and impact on the seabed. One model is unlikely to be a panacea, but I hope that, with the suite of approaches, we can start to address some of these challenges.

Mathieu: One of the most productive sessions we had in the process of the workshop series was when we engaged with the stakeholders, asking what questions they would really like to have answered. We reviewed the different classes of models (there were three other models that we were working on at the time) and we went through identifying potential solutions to these questions. We also considered the solutions' time scale, if it was a short-term win or if it needed significant development. Overall, the biggest strength of WKIrish was to have all the different stakeholders engaged and expressing those questions and concerns.

> *Mathieu, you mentioned three other models, what happened with those? Is there work still ongoing?*

Mathieu: Indeed, that work is still ongoing. Commitment from national institutes is needed for resources and staff. Jacob was developing the Ecopath model, we were developing a model which uses growth parameters and temperature drivers, and a LeMans model was being developed through Cefas. All these models have slightly different traits and different applications. Work is still ongoing, not under the nametag of WKIrish anymore, but I think national institutes are seeing that their stakeholders are interested in what they could help answering and we are committing to continue the science.

> *One of the strengths of the approach was how the scoping was carried out, being very collaborative and inclusive from early on. I would like to ask the stakeholders who participated in WKIrish about their experience of engaging in the process.*

John: I found it enormously interesting. When stakeholders' information was gathered, sometimes the information would not provide the results we were expecting and that was because we had not considered other factors that would affect different issues.

For example, the impacts on the seafloor from trawls, ships anchoring, pots, or the issue of dredge waste, etc. It actually gave a truer picture of what was going on that we had never looked at before. It was definitely a worthwhile exercise and it is very good and interesting to see the results coming out of the process.

Jhonny: It was a fascinating experience for me, particularly the last workshop we had where we got a great demonstration from the North East menhaden fishery and the herring fishery in North America. The amount and diversity of stakeholders they included and consulted was fascinating, as they also involved the tourism sector (for example, groups related to birdwatching and whale watching). I think this is a lesson we could also implement here. It is definitely important to involve the fishers on the ground and get the information from them.

Patrick Murphy (ISWFPO, from the audience): The WKIrish process was brilliant, in particular it was very interesting to learn more about the importance of food webs in the ecosystem and how species interact with each other. With the challenges ahead, such as climate change and the spatial shift of fish populations, this is the data stream that has to be considered for good management in the future. I am delighted to hear that the outcomes of this process will be hopefully used, ensuring a better understanding of the marine environment and a better way to design policy responses.

Alan McCulla (ANIFPO, from the audience): I really appreciated WKIrish experts engaging with fishers, coming to visit the ports and meeting face to face with us. I think that was very useful and interesting. It is an important lesson learned that the scientists need to make the time and resources to engage with fishers on the ground. This kind of partnerships are very welcomed by the industry, as there is nobody more interested in fish stocks sustainability that the fishers.

Mark: Following the FAO and the Convention on Biological Diversity guidelines on ecosystem-based management, it is not only on conservation and exploitation but also on social and economic and on governmental and institutional standards and objectives. At ICES, we are pushing as hard as we can to move towards the objective of EBFM, but we are not getting a request pulling us in that direction, asking us to provide ecosystem-based advice in terms of productivity or in terms of Feco.

Therefore, should we start thinking about the other dimensions of ecosystem-based management, basically, the social economic objectives and the governance and institutional objectives, and how do we get the advisory system and the management systems to start asking the scientists to progress and move quicker on the topic? The moment we get those kinds of directions, we will see a faster momentum building.

Cristina Ribeiro (DG MARE, from the audience): First of all, thank you very much for the invitation to this webinar, both the two presentations and the ongoing discussions are very interesting. From the European Commission's perspective, it is great to see that there are different ways to implement the EAFM, exploring various approaches and processes. I had one question about multi-species implications of Feco, whether these are being considered or not by the WKIrish outcomes, as this is a very complex discussion bringing elements that are not so easily tackled by the managers. Hopefully, we will engage in additional discussions on the topic in the future.

Dave: Feco certainly has the ability to provide advice on multi-species issues, but not all the species are represented in the modelised species. It comes back to the question the model is built on. There are multispecies modelling approaches implemented in the past which could be used again, but understanding the ecosystem involves many other complex implications related, for example, to changes in the zooplankton or changes in the thermal environment. Everything interacts and relates, which makes it very complex. Thus, it is very important to find the right balance between a model's simplicity and ecosystems' complexity, in order to obtain clear results from a model.

Colm: A big dimension to this is also the mixed fisheries technical interaction and the bycatches of whiting and cod in the Nephrops fishery for example. It is very important to consider these aspects, also in relation to other areas such as the Celtic Sea or the North Sea, where we have got stocks for which big reductions in fishing mortality are advised, impacting the fishing mortality of other species that are caught in the same fishery. I think this important part probably still needs to be developed in the Irish Sea since, at the moment, we do not have an operational mixed fisheries advice for the Irish Sea.

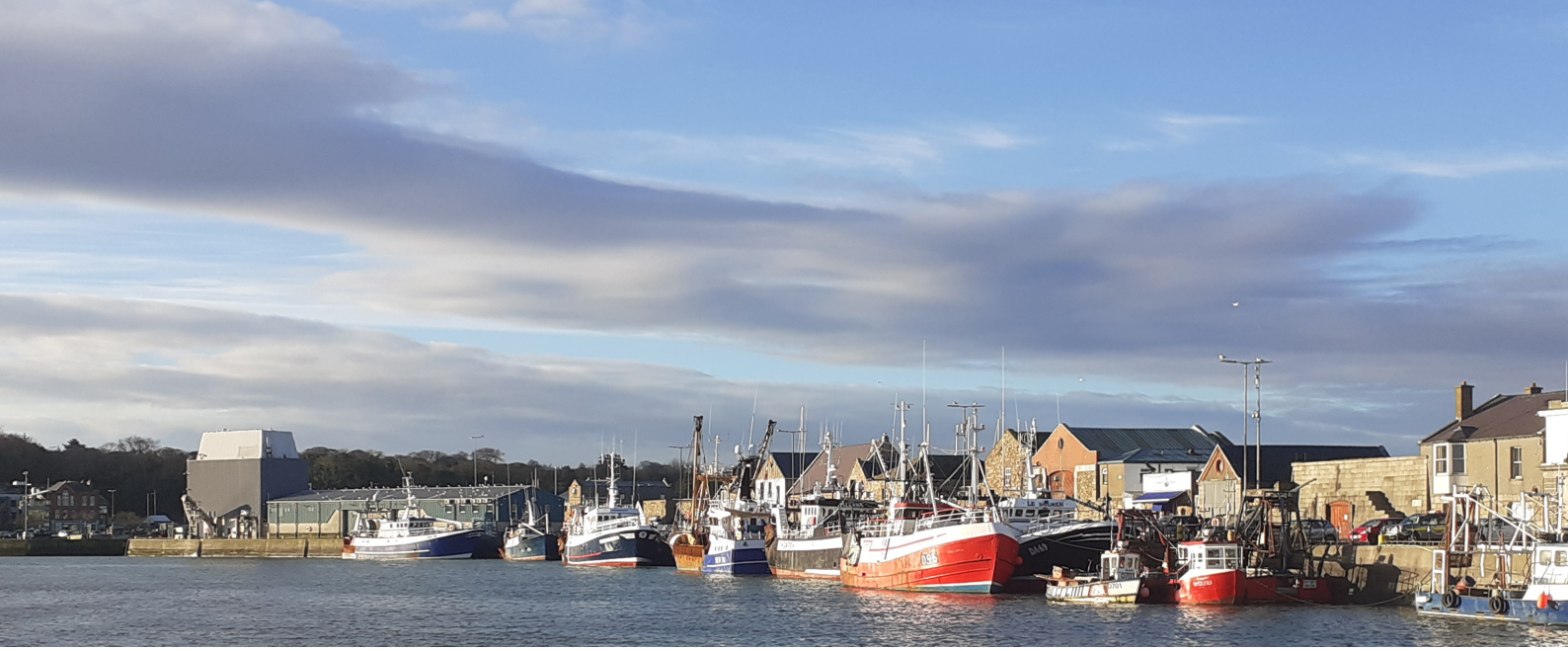
Mathieu: Indeed, one of the considerations on the Feco indicator was how to fit it into the current approaches to mixed fisheries as well. Work is still ongoing on this particular topic.

At WKIrish you have used a food web model which is very complete and gives us a lot of insights into different parts of the system, but there is maybe an issue with that data or that information not being available in other regions. Are you considering other modelling techniques to identify what these ecosystem indicators might be, and would that be an acceptable approach, or do you think everybody needs a food web model for this?

Jacob: I think the existing model that we developed helps because a lot of the indicators we pulled out in the end were from the ecosystem model and identified as being important by the model. For example, we are using the model to identify the importance of temperature change, the importance of zooplankton, etc. What you really need for implementing Feco is a good understanding of which indicators are important to a stock and a mechanistic understanding. In my opinion, a complex ecosystem model is not necessary, however, it helps because that is how we have been deriving indicators. Like you said, it is a long process, it took us three year to get that model to the stage where we were ready to pull out indicators.

Dave: A good ecosystem model helps a lot, because we can integrate a lot of different things and it can also apply to a much wider range of questions. At the same time, the Feco approach is minimalistic in some ways, because it moves within that Fmsy range. You can be a lot more dramatic than that, but we chose this approach because it fits in with the way fisheries are currently managed.

Colm: I was wondering about the potential of the ecosystem model improving the single stock assessments and feeding back into the single stock assessments. We are currently not doing that in the Irish Sea, but we do have the possibility to start doing it. We could also use that ecosystem understanding to feed reference points estimation. There are probably a few additional things that we should be working on now that we have all this new information and knowledge.



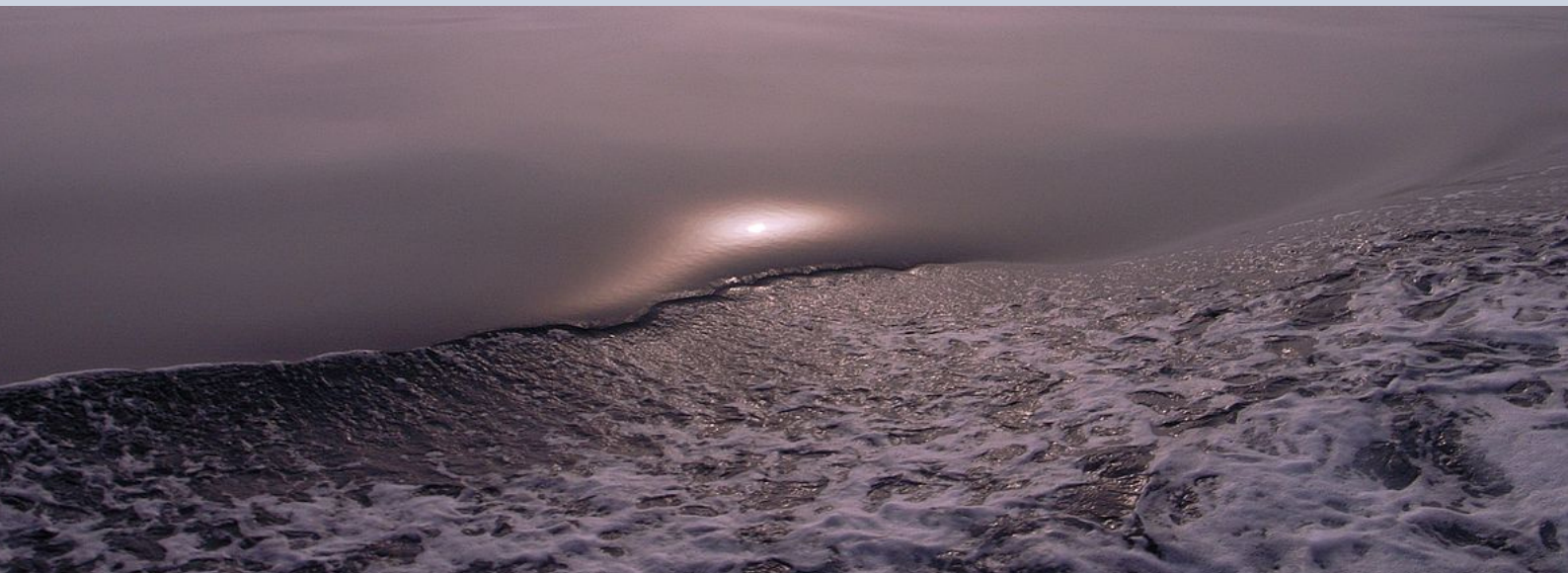
How easy and how risky it is to estimate Feco projecting in the future? And how to accommodate that reduction or increase in an F target? My worry is that it will be difficult for management to adapt quickly to this moving target. I can see a negative side to this management system, as it will be easier to increase the TACs when we are in a good stock size/status, but when we are in a in a bad state, and we are not sure about it, the management will not react as quickly, and we might have a riskier management system.

Jacob: This is something that comes down to the specific indicators that you place on individual stocks so, for example, we use a zooplankton biomass indicator for herring, which in the Irish Sea is linked to the North Atlantic Oscillation, which can be quite noisy and therefore difficult to predict more than the season ahead. In other cases, for example for cod and whiting, we found it strongly linked to the temperature so we can predict that roughly three years into the future. In terms of risk, we are operating within the Fmsy ranges, thus the risk should not be any more than it already exists in the system. It might not be optimal and you would have to revisit and check it annually. But since we are remaining in these ranges, for now it is ideally or hopefully something that should not induce any more risk.

NEXT STEPS AND CONCLUSION

Where do we go from here with WKIrish? What are the main objectives for future work and which are the main challenges?

Dave: First of all, for the Irish Sea we need to reach a conclusion on how to incorporate WKIrish outcomes into the advice. We definitely need clarity on the next steps. I think one of the key problems with our work is that the model is now a bit out of date and needs to be updated, heading for a benchmark. We never really envisaged redoing the Ecopath model every year, but more around a two to five-year timescale, although the advice can be used for annual management. Then, it would be very interesting to see this work being developed in the Celtic Sea as well. We already have quite a lot of models available for the Celtic Sea that we could work up quite quickly to answer questions. Indeed, it would be vital to start again with the questions from the stakeholders involved in that fishery. The critical elephant in the room is funding. Previous WKIrish work was funded by a fellowship award, while the current situation is more difficult, which is a shame as we really want to do this work properly.



We heard that ACOM is going to be looking at specifying the quality assurance requirements and that Feco is not fully approved yet. Do we have an idea from ACOM when that will happen, since decision is pending?

Ghislain: There has been an exchange within the ACOM membership and I think that now for stocks for which there has been adequate review, while the quality assurance of the approach is still an issue, including Feco as a catch scenario in the advice would be a way forward.

How does ICES specifically see the NWWAC advising the introduction of EBFM, given the fact that it is not possible yet to use it even in the Irish Sea area for single stock assessment?

Mark: I know that there are certainly efforts going on in DG MARE.
I took part in a workshop where the Commission was heavily engaged with the RFMOs across the world to try and show how EBFM could be further implemented. I would love to see those kinds of workshops taking place for the European continental shelf fisheries. I would like them to spread their overview and their initiatives to also consider the work in the Northeast Atlantic and to try and bring us all together in that manner. What the AC needs to do, I think, is just reiterate to the Commission regularly that business as usual fisheries management, which is often just crisis management actually, is not being that helpful in terms of creating resilient communities and resilient fisheries to deal with the oncoming onslaught of climate change. I think the only way to really address this is through ecosystem- based fisheries management.

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