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Report of the Joint ICES and Pelagic RAC Workshop on Pelagic Fisheries within the Marine Ecosystem: Tradeoffs and potential benefits of the Ecosystem Approach (WKPELECO)

29–30 September 2010

West Indisch Huis, Amsterdam, The Netherlands



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International Council for
the Exploration of the Sea

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Executive summary

The “Joint ICES and Pelagic RAC Workshop on Pelagic Fisheries within the Marine Ecosystem: Tradeoffs and potential benefits of the Ecosystem Approach” (WKPELECO) chaired by Aukje Coers, the Netherlands, Mark Dickey-Collas, the Netherlands, Christian Olesen, Denmark, and Sean O’Donoghue, Ireland, was set up jointly by ICES and the Pelagic Regional Advisory Council (PRAC). This was in response to the PRAC requesting ICES SCICOM to facilitate an exchange of views between scientists and stakeholders on the potential implications of an ecosystem approach to fisheries management. 53 participants took part in the workshop from 29–30 September 2010. Three separate parallel sessions were held focusing on: the effects of environmental variability on pelagic fish stocks, the different ecosystem services of pelagic fish, and the effects of other users of the sea and competition for space on pelagic fisheries.

WKPELECO enabled scientists, managers, fishers and representatives from NGOs to discuss the role of the ecosystem approach to fisheries management. It was noted that sustainable exploitation and management in a variable environment will require approaches to fishing that appreciate that the productivity of stocks, and the carrying capacity of the ecosystem will vary. It is difficult to reconcile stability and flexibility of catch in a fluctuating environment. Management plans perform relatively well as a management tool, as long as they are regularly reviewed and adapted. When considering the pelagic environment, we do not currently understand what good environmental status (GES) is. However the workshop acknowledged that a diverse ecosystem probably provided the greatest resilience when considering ecosystem health.

Pelagic fish interact with other components of the ecosystem, including demersal fish, zooplankton and top predators (sea mammals, elasmobranchs and seabirds). There is a paucity of knowledge of these interactions, and the inherent complexity in the system makes quantifying the impact of fisheries very difficult. However a hierarchy of simple management objects (with associated trade-offs) should be explored which account for these interactions and potentially ensure GES for the pelagic system. The reputation of fisheries under the Pelagic RAC as the “cleanest” fisheries in terms of bycatch and discarding is probably justified. It appears that the RAC is not complacent on the subject and knows that the impact of the fisheries must be regularly assessed and there is always a need for further improvements to fishing techniques.

The workshop commented that the seas were becoming more crowded both in activities and in policies. There is no need for more policy but for an integration of the policies. Fisheries should be considered an important user of marine space. The impact of new developments such as building wind farms or designating protected areas is unknown. The midwater nature of pelagic fisheries results in almost no disturbance of the seabed. Spatial managers and conservationist need to be aware that not all fisheries have similar impacts. Spatial management needs to account for the competing needs of stakeholders and the process needs to be transparent. The fishing industry needs to make sure that it is heard.

The members of the Pelagic RAC that were present at WKPELECO suggested that the RAC now begin the process of formally constructing a position paper on Pelagic Fisheries and the Ecosystem Approach, using parts of this workshop as a basis.

1 Introduction

The Joint ICES and Pelagic RAC Workshop on Pelagic Fisheries within the Marine Ecosystem: Tradeoffs and potential benefits of the Ecosystem Approach (WKPELECO), was set up jointly by ICES and the Pelagic Regional Advisory Council (PRAC, Annex 1). This was in response to a request by the PRAC to ICES to facilitate an exchange of views between scientists and stakeholders on the potential implications for pelagic fisheries when an ecosystem approach is adopted in fisheries management. The request came from initial discussions were held during PRAC meetings in the first half of 2010.

53 participants took part in the workshop in September 2010 (Annex 3). Presentations were given during a plenary session on the first day, after which the participants broke up in three separate parallel sessions which respectively focused on: (1) the effects of environmental variability on pelagic fish stocks, (2) different ecosystem services of pelagic fish and (3) the effects of other users of the sea and competition for space on pelagic fisheries (see Figure 1.1). Each session was requested to address the following questions: (a) what should be the management objectives for pelagic fisheries in relation to implementing an ecosystem approach – in the short, medium and long term, (b) how should those objectives be reached, (c) which relevant topics and scientific studies that have come to table during the workshop that others should know about and (d) how can be ensured that the available knowledge base is optimally utilized to support this process.

On the final day of the workshop, a plenary discussion was held to synthesize the findings of the breakout groups and look forward to the future.

This report both documents the workshop and addresses the terms of reference. The deliberations of each breakout group will be discussed and then the general findings brought together in the final chapters of this report.

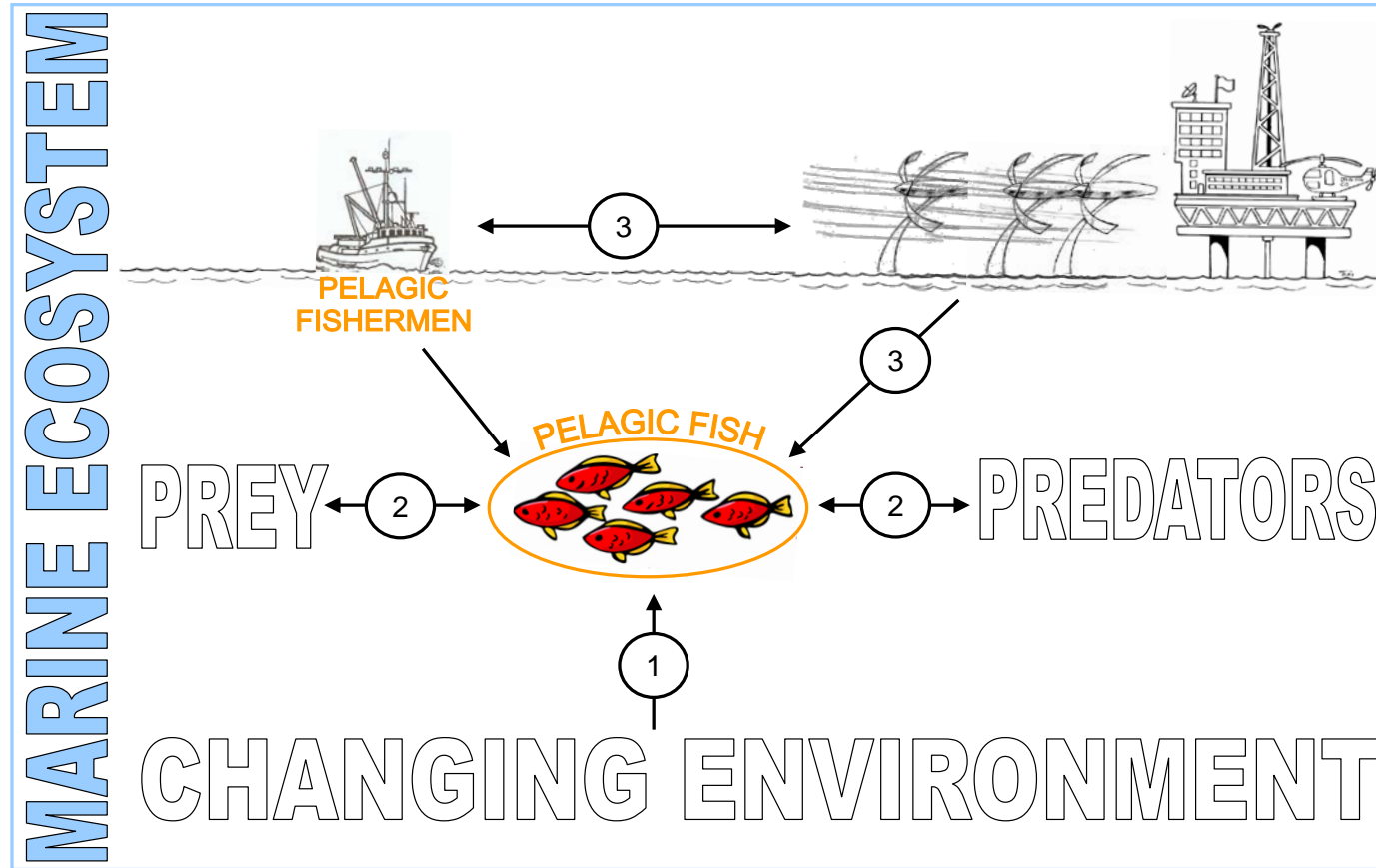


Figure 1.1. Simplified schematic overview of topics of the three workshops. The numbers refer to the parallel sessions.

2 Environmental Variability – sustainable exploitation and management in a variable environment

This session investigated how the environment affects pelagic fish stocks. How changes in ecosystem carrying capacity and oceanography affect productivity and distribution of fish and through that the exploitation, management and advice. For instance, can management assume stability in the system and can industry reconcile environmental variability with requirements for market stability? Are concerns about climate change relevant to the management of pelagic fish stocks (in the short / medium / long term)? Is understanding environmental variability more important to EBM management than to single fish stock management?

Management is currently based on the assumption of stability or at least slowly changing long-term trends. Unaccounted for environmentally induced variability will compromise fisheries management. Dealing with maintaining fleet capacity in a situation of a variable fish productivity is a perennial problem in fisheries management. Management through landings, rather than catch also leads to problems, especially when highly variable recruitments can affect discarding behaviour. There are current high profile examples of how environmental variability can affect sustainable fishing through fish migrations perturbing area allocation of quota or fishing rights.

Predicting the variability is not just difficult but it is also dangerous, if managers take decisions based on poor science. However management must be aware that they operate in a variable environment.

Can management objects cope with the natural fluctuation in stock abundance? Is it better to “make hay while the sun shines” or is it better to try to keep the sun shining. Are large biomasses of pelagic fish as detrimental as small biomasses in terms of impact on the ecosystem? It is unclear what the impact of really large stocks is especially on lower trophic levels or in terms of the viability of the stocks themselves. Many pelagic stocks are known to demonstrate density effects on growth. It is unclear, as yet, as to whether pelagic stocks can overgraze the zooplankton, or their fish prey (in the case of mackerel etc). Disease may also play a role in regulating large populations, which is currently not accounted for in management.

It is difficult to reconcile stability and flexibility in a fluctuating environment that impacts on pelagic fish productivity. Carrying capacity will change in future thus the productivity of fisheries will be expected to change. The old tools such as LTMPs can be still be used to manage fisheries but may need to bring in new concepts such as adaptive plans, environmental linked reference points (such as more frequent revisions, alternate state values for reference targets or limits). Environmental variability is as important to EBM as to single fish stock management.

We do not currently understand what good environmental status (GES) is when considering pelagic fish. Most studies to date on GES have been based on demersal fish. However the workshop acknowledged that a diverse ecosystem probably provided the greatest resilience when considering ecosystem health. A proposed EU FP7 project MYFISH will address this issue.

The workshop did not consider the role of climate change on pelagic fish and fisheries.

3 Sharing fish – the ecological and economic trade-offs of exploiting pelagic fish

This workshop considered the ‘Ownership of fish stocks’ in the broadest meaning of the words. Despite pelagic fish being important storages of biomass they also interact with other organisms as predators and prey. How should managers prioritize the trade-offs between exploitation by fishers and these and other ecosystem services of pelagic fish? Should overarching management objectives need to be defined for managing fisheries towards a pelagic or demersal dominated system? What is the price of maintaining large sea mammal and seabird populations? Should managers attempt to control invasive species? Is the reputation of pelagic fisheries as the “cleanest” fisheries in terms of bycatch and discarding justified?

The workshop considered this theme in relation to four main issues, stability for fish and fishers, interactions and trade-offs between demersal and pelagic stocks, the impact of pelagic fish on lower trophic levels and the interaction between pelagic fish and top predators.

The issue of stability has also been addressed above in section 2. But if certain threshold biomasses are required for the ecosystem services of pelagic fish under EBM, and stability of the catch is also a management objective, which objective takes primacy? Also how can you maintain stability in the catch when not only the stock productivity fluctuates, but also the other ecosystem component that are linked to the pelagic fish also vary in abundance. These second order interactions will only add increased complexity to management.

Many studies suggest an interaction between pelagic and other components of the ecosystem. The workshop highlighted the links with demersal fish, zooplankton and top predators. These interactions are likely to be bi-directional. There is a paucity of knowledge and an inherent complexity in the system, which makes quantifying the impact of fisheries very difficult. Management requires simple approaches, which as yet have not been developed. It would also be naive to assume that the entire ecosystem could be proactively managed to certain preferred states. Trying to bring about a recovery in cod or other demersal stocks by manipulating pelagic fisheries may be a precarious challenge.

The issue of interaction with demersal fish and top predators would require consideration from a number of RACs and will require trade-offs in determining management objectives. There are already examples of management objectives for top predators impacting on fisheries, e.g. sandeel fisheries closed for perceived impact on birds and cockle fisheries closed also for birds. The workshop agreed that there need to be clear and feasible objectives for top predator populations including birds, seals and cetaceans. These objectives must be draw up with all stakeholders and all likely to be impacted by the measures. The impact of top predators on pelagic fish also needs to be addressed. A good example is the current research highlighting the impact of whales of Norwegian spring-spawning herring.

The reputation of fisheries under the Pelagic RAC as the “cleanest” fisheries in terms of bycatch and discarding is probably justified, but this does not mean that the RAC is complacent on the subject. It knows that the impact of the fisheries must be regularly assessed and further improvements to fishing techniques made.

4 Crowded Seas – spatial claims to the sea and multifunctional use

This workshop addressed interactions among different users of the seas and how policy should develop. How will the Marine Strategy Framework Directive affect fisheries? How will the further implementation of the Integrated Maritime Policy affect fisheries? What will be the impact of new developments such as building wind farms or designating protected areas? What will be the pelagic sector's strategy: fight, fright or flight? Will we wait to see what happens, or do we act proactively? How do land-based activities and utilization of the coastal zone affect pelagic fisheries?

The workshop commented that the seas were becoming more crowded both in activities and in policies. Fishing is being impacted by the CFP, MSFD, IMP, Natura 2000, the Bird, Habitat and Water Directives. There is no need for more policy but for integration of policies.

We do not know the impact of new developments such as building wind farms or designating protected areas. There may be potential for benefits such as protected nursing areas, or refuges for adult fish however the empirical evidence to support these ideas is lacking, and there is no evidence of the an increase in fisheries productivity as a result of closed areas in northern Europe. There is a perception that all protected or restricted areas are lost for fisheries because of other non-fishery objectives.

The midwater nature of pelagic fisheries, resulting in almost no disturbance of the seabed, means that they should be considered different from demersal fisheries. Spatial managers and conservationist need to be aware that not all fisheries have similar impacts.

Spatial management needs to account for the competing needs of stakeholders and the process needs to be transparent. The fishing industry needs to make sure that it is heard. There must be an efficient use of marine space, and it is important to incorporate previous experience into decision-making and not reinvent the wheel. The workshop did not address the influence of land-based activities, although it is well known that aggregate extraction for land-based construction does impact spawning grounds of herring. The impact of wind farms on herring spawning, or any other pelagic fish behaviour is currently unknown. The pelagic RAC also provides one very clear example of a construction impact on a pelagic fish, with the 1930s closer of the Zuider Sea by the Afsluitdijk completely destroying a fish stock and a viable fishery on spring-spawning herring.

The workshop felt that it was difficult to quantify the impact of increased competition for space on pelagic fisheries. This area needs increased research both in terms of the effect of spatial management and the increase in governance policies.

5 A framework to develop and achieve management objectives

The workshop agreed that the deliberations had been useful in terms of focusing people's minds on pelagic fisheries and the ecosystem approach. The need to determine clear management objectives for the operation of pelagic fisheries in a resilient ecosystem was stressed by many at the workshop. The members of the Pelagic RAC that were present suggested that the RAC now begin the process of formally constructing a position paper on Pelagic Fisheries and the Ecosystem Approach. This would be similar in structure to the paper produced by the RAC in December 2009 "Position paper on the Reform of the CFP and its governance system, including the future RAC". It would be based on the discussions from the workshop and probably be published by the end of 2011.

The framework should include the following objectives:

- The maintenance of fishing activities.
- Pelagic resources should be maintained at sufficient abundance to play a continued central role in the system and provide services to society.
- To maintain resilience, diversity must not be allowed to decline.
- A balance between and among uses/users of marine areas with an integration of policies.
- Ensuring that the pelagic fisheries get a fair say in debate.
- People are part of the ecosystem.

The approach/process should be

- Participatory and iterative
- Open and transparent
- Cost-effective
- Acknowledge a variable natural environment and varying stock distributions.
- RAC stakeholders must draw up objectives collectively with other stakeholders, thus exploring overlap and common objectives.

6 Report on how to ensure the optimal use of information to support and inform this process

There is a shortage of studies and tested indicators for EBM in pelagic fisheries. As mentioned above most studies of the impact of fisheries on the ecosystem have been made on demersal fisheries. We still do not understand what GES means for pelagic fish, or the pelagic environment. The need for more understanding must not delay the process of developing an EBM of pelagic fisheries, however decisions by management but be robust and based on the most recent evidence and proper scrutiny.

Open access to data and transparency of methods are central to ensuring that all stakeholders are truly participating in the debate. Simple reference points and objectives are likely to be more successful than the further development of complex environment models. While predicting the future is likely to be unsuccessful, scenario testing will provide insight. ICES, national laboratories and the pelagic RAC should continue working together to build on the existing understanding.

There are ongoing projects (MEFEPO etc.) which hope to address further both the data requirements and approaches to developing an ecosystem approach to pelagic fisheries.

7 Conclusions

WKPELECO enabled scientists, managers, fishers and representatives from NGOs to discuss the role of the ecosystem approach to fisheries management. Sustainable exploitation and management in a variable environment will require approaches to fishing that appreciate that the productivity of stocks, and the carrying capacity of the ecosystem will vary. It is difficult to reconcile stability and flexibility of catch in a fluctuating environment that impacts on pelagic fish productivity. Management plans perform well in this case, as long as they are regularly reviewed and adapted. We do not currently understand what good environmental status (GES) is when considering pelagic fish. However the workshop acknowledged that a diverse ecosystem probably provided the greatest resilience when considering ecosystem health

There is an interaction between pelagic fish and other components of the eco-system, including demersal fish, zooplankton and top predators (sea mammals, elasmobranchs and seabirds). There is a paucity of knowledge of these interactions, and an inherent complexity in the system, which makes quantifying the impact of fisheries very difficult. However a hierarchy of simple management objects (with associated trade-offs) should be explored which account for these interactions and potentially ensure GES for the pelagic system. The reputation of fisheries under the Pelagic RAC as the “cleanest” fisheries in terms of bycatch and discarding is probably justified, but the RAC is not complacent on the subject and it knows that the impact of the fisheries must be regularly assessed and further improvements to fishing techniques made.

The workshop commented that the seas were becoming more crowded both in activities and in policies. There is no need for more policy but for an integration of the policies. Fisheries should be considered an important user of marine space. The impact of new developments such as building wind farms or designating protected areas is unknown. The midwater nature of pelagic fisheries results in almost no disturbance of the seabed. Spatial managers and conservationists need to be aware that not all fisheries have similar impacts. Spatial management needs to account for the competing needs of stakeholders and the process needs to be transparent. The fishing industry needs to make sure that it is heard.

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Annex1: Terms of Reference for WKPELECO

2009/2/SSGSUE15 **Joint ICES and Pelagic RAC Workshop on Pelagic Fisheries within the Marine Ecosystem: Tradeoffs and potential benefits of the Ecosystem Approach (WKPELECO)**, chaired by Aukje Coers, the Netherlands, Mark Dickey-Collas, the Netherlands, Christian Olesen, Denmark, Sean O'Donoghue, Ireland, will meet in Amsterdam, The Netherlands, 29–30 September 2010 to:

- a) Consider three aspects of the ecosystem approach and pelagic fisheries through workshops:
 - Environmental Variability — sustainable exploitation and management in a variable environment
 - Sharing fish – the ecological and economic trade-offs of exploiting pelagic fish
 - Crowded Seas – spatial claims to the sea and multifunctional use
- b) Suggest a framework to develop and achieve management objectives;
- c) Report on how to ensure the optimal use of information to support and inform this process.

WKPELECO will report by 1 December 2010 (via SSGSUE) for the attention of SCICOM.

Annex 2: Programme of WKPELECO

Day 1 — 29 September 2010

12:00 – 13:00	REGISTRATION, COFFEE AND SANDWICHES		
13:00 – 13:30	Welcome by the President of the Pelagic RAC Mr Iain MacSween		
	Welcome by Mr Maarten Kool (Director of Agriculture and Fisheries – Dutch ministry of Agriculture, Nature and Food quality)		
13:30 – 13:50	Introduction speech by DG Mare representative		
	Presentation by Dave Reid (Marine Institute, Ireland) Introduction to WS1: Environmental variability		
13:50 – 14:10	Presentation by Leif Nøttestad (Marine Research institute, Norway) Introduction to WS2: Sharing fish		
	Presentation by Jesper Raakjær (IFM, Denmark) Introduction to WS3: Crowded seas		
14:30 – 14:45	Coffee		
14:45 – 15:00	Presentation by Aukje Coers Examples of PRAC involvement on ecosystem topics		
15:00 – 18:00	<u>Workshop 1</u>	<u>Workshop 2</u>	<u>Workshop 3</u>
	Environmental variability	Sharing fish	Crowded seas
	Chair: Lotte Worsøe Clausen Expert: Dave Reid Rap.: David Miller	Chair: John Pope Expert: Leif Nøttestad Rap.: Aukje Coers	Chair: Luc van Hoof Expert: Jesper Raakjær Rap.: Martin Pastoors?
19:30 – ?	Diner		

Day 2 — 30 September 2010

09:00 – 09:30	Coffee
09:30 – 09:50	Presentation by Chair/Rapporteur WS 1
09:50 – 10:10	Presentation by Chair/Rapporteur WS 2
10:10 – 10:30	Presentation by Chair/Rapporteur WS 3
10:30 – 11:00	Coffee
11:00 – 11:45	<p>Panel discussion and plenary debate</p> <p>Chaired by Mark Dickey-Collas</p>
11:45 – 12:00	Concluding remarks by John Pope
	Closure of the meeting by the president of the Pelagic RAC Mr Iain MacSween

Annex 3: Participants of WKPELECO 2010

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