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MariFish

Coordination of European Marine Fisheries Research Programmes

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D8.13. MariFish Workshop on the use of Indicators in Fisheries Management

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Revision 1

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PU	Public	YES
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	



MariFish Workshop on the use of Indicators in Fisheries Management Copenhagen, 31st August - 1st September 2010

1. Introduction

MariFish organised a two-day workshop in Denmark (August/September 2010), to bring together the scientists who are undertaking three MariFish funded research projects, and the fisheries managers who could potentially use the indicators. The overall aim was to learn about the preliminary results emerging from the work and to ensure the potential relevance of the research for fisheries management. It provided an opportunity for researchers to present progress in the early stages of their projects, and to receive feedback from a range of fisheries managers and policy-makers.

The aims of the workshop were to:

- Link and develop the research projects financed through the MariFish Joint Call for Proposals: avoid duplication; identify potential for further collaboration; understand, discuss and develop the projects' content; and develop relationships between the project participants.
- Support the policy relevance of the projects: bring the researchers and fisheries managers from different countries together; provide the researchers with an early reality check in terms of what the fisheries managers would like from the research; and enhance awareness of the central role of communication in ensuring the relevance of the research and effective engagement with policy discussions.

The meeting had input from: a range of the researchers involved, who described their research; fisheries managers, who shared their hopes, constraints and needs for information from fisheries indicators; and also from several participants with expertise on the question of the relationship between research and policy - how to ensure that research is relevant.

1.1 Background

In December 2008 MariFish launched a call for proposals on fisheries management indicators. Eight partners – Denmark, France, Greece, Iceland, Netherlands, Norway, Spain and UK (Defra) – committed a total of euros 5.8m to the call.

The research theme selected for the call was the development of the concept of operational fisheries management indicators that can assist managers in developing long term fisheries management plans; and exploring ways these indicators can be applied to selected fisheries through their inclusion in fishery management plans (See attachment 1 for details of the call).

Three projects were selected for funding from the call:

1. BADMINTON: Bycatch and discards: management indicators, trends and location

This project is led by the Hellenic Centre for Marine Research (HCMR) and involves research teams from France (IFREMER), the Netherlands (IMARES), Spain (IEO), UK (Cefas), Denmark (IFM and DTU-AQUA) and Iceland (MATIS).

BADMINTON will firstly quantify and analyse spatial and temporal distribution of EU discards. Operational indicators will then be developed for both discard state – amounts and characteristics – and pressure – selectivity of fishing. Important factors that determine discard amounts, including ecological, economic and social, will be investigated. A simulation tool will help compare alternative management strategies aimed at reducing discards in mixed species fisheries. The project will conclude with suggested mitigation measures. The total budget allocated is €1.0m.

2. REPROdUCE: Understanding recruitment processes using coupled biophysical models of the pelagic ecosystem

This project is led by the Spanish Institute of Oceanography (IEO) and involves research teams from Greece (HCMR), France (IFREMER), and AZTI also from Spain. Portugal (IPIMAR) is also involved in the project with research donated “in kind” as person/months.

REPRODUCE will develop life cycle models for sardines and anchovy in the Bay of Biscay and for anchovy in the Aegean Sea. The models will be used to understand the main mechanisms and drivers of the recruitment process and help predict the abundance of new individuals entering the stock. A series of assessment questions relevant to the management of each of the target stocks will be evaluated and indices for recruitment strengths will be produced to assist short, medium and long term management plans. The total budget allocated is €0.9m.

3. DEFINEIT: Developing fisheries management indicators and targets

This project is led by the Danish Technical University (DTU-AQUA) and involves research teams from the UK (Cefas, IC, USTAN), Netherlands (IMARES), Norway (IMR), Greece (HCMR), Iceland (MRI), and INE also from Denmark.

The project has five main strands: firstly to construct multi-species models that consider predator/prey relationships and interactions with fisheries and develop appropriate indicators; secondly identify the main causes of variation in recruitment patterns and develop stock-recruitment models which will be used to provide management advice; thirdly assess the effect of technical interactions on target and non-target species, in the context of bycatch and discards; and fourthly develop resource indicators that combine social, economic and biological elements. A fifth strand will synthesise the results to ensure that the management advice is consistent with the ecosystem approach. Total budget allocated is €2m.

1.2 Rationale for the Workshop

Policy and public debate about fisheries in recent years has been controversial. There is now a high degree of public awareness about the risks and consequences of over-fishing, and the need to manage technology and economic activity wisely in often sensitive ecosystems. It is generally agreed that fisheries management should ensure that exploitation of resources provides economic, environmental and social conditions that are sustainable, and it is in this context that fisheries indicators are being developed and used.

At least in theory, indicators provide a way of sharing complex information about the status of fisheries resources, including the “direction of travel” - whether fish communities are being used sustainably, are in danger of depletion, or are regenerating.

However, despite the immediate appeal of fisheries indicators, experience suggests that it is often not so easy to create a common understanding of what indicators are, what they can be used for, and what relevance they have in a political environment.

2. Report on the Workshop

2.1 Setting the context

The meeting was fortunate to have influential policy participants from the Danish Ministry, for Food, Agriculture and Fisheries, the European Commission and elsewhere, who generously shared their experiences and perspectives in a frank and open series of discussions.

Early speakers immediately introduced some of the complications around fisheries indicators. For example, Eskild Kirkegaard asked what is maximum sustainable yield - species yield, multispecies yield, boat yield, country yield? Does this relate to catch, landings, or economic or social yield? So even such an apparently appealing indicator turns out to have many potential dimensions and interpretations, complicating and politicising the task of providing any apparently ‘objective’ information and advice as a result.

Similarly, maximum sustainable yield is defined as the long-term average catch that can be achieved under prevailing conditions. Yet as we know, in a complex system such as the sea, dimensions such as population size can vary widely even under ‘natural’ conditions, making it complex and difficult to provide definitive advice as to MSY.

From the perspective of the European Commission - a potentially vital ‘customer’ for this research given its subsidies for reducing the size of fishing fleets, member states have to report to the Commission once a year on their efforts to achieve a sustainable balance between fishing capacity and fishing opportunities, and we have not yet succeeded in providing this comprehensive picture.

Again, the complex challenges around fisheries indicators in this case mean that on the basis of the reports the Commission has received, it was unable to provide a reasoned and justified answer to the question: is there an excess of fishing capacity in the EU fishing fleet? This is driving interest in developing a stable set of indicators, including biological indicators (such as fishing mortality ratio; ratio between catch and stock biomass; catch per unit of effort); technical indicators (such as capacity utilisation); and economic indicators (such as the ratio between current revenue and break-even revenue; return on investment).

2.2 Break-out discussions of the projects

Each project team outlined their research objectives, methods and progress to date. Whilst allowing for adequate description of key aspects of the research, this part of the meeting was kept deliberately as brief as possible, in order that the main focus could be on discussions about how to ensure the relevance of the research.

Following the project presentations, discussions during the break-out sessions were structured into two stages: feedback to the researchers on the basis of reactions to their presentations, and secondly discussions around three questions that had been posed by John Holmes at the end of his talk on research communication:

- What do you need to do at each step to maximise the eventual value to the “customers”?
- What successful examples of research-policy communication could the projects learn from and build on?
- Are there any underlying issues e.g. mutual understanding, skills etc that need to be resolved?

2.2.1 Summary - discussions of the BADMINTON project Two of the project’s participants were at the meeting, Vassiliki Vassilopoulou (VV) from HCMR in Greece, who is the project’s coordinator, and Sveinn Margeirsson (SM) from Matis in Iceland. Other participants in this break-out meeting were John Lock, John Holmes, Johann Sigurjonsson, Sally Clink, Eskild Kirkegaard and Sigurdur Björnsson and Kristjan Freyr as facilitator and rapporteur respectively.

A few slides were prepared for a short overview at the meeting, but here are the main comments.

Reliability of data

The evaluators of this project had expressed some concerns over the reliability/availability of good quality discard data. VV explained how data is gathered from selected fleets, not the whole of Europe. Both project’s participants emphasised the importance of reliable data and explained how they are facing this challenge. A feedback from the group was to stress the importance of this and the need to minimise it, even while acknowledging that the problem is inherent.

The group then discussed the handling of the question of discards, comparing the situation in Iceland, where it is illegal, with Europe. There is now a plan to make discarding illegal in Europe or to introduce the “catch-quota” system (CQM), where all caught fish is landed (this helps with research and monitoring). This is an obvious change for the better in the pipeline.

Indicators

The question “what are indicators” was discussed. It was apparent from discussions early during the workshop that a clear terminology is needed so everyone is speaking the “same language”. To summarise, in the view from the break-out group, indicators that are to be useful need to have two characteristics;

- a) one part that describes the current status of pre-defined factors, and
- b) a reference point that defines the preferred status of the same factors (i.e. a goal towards which you wish to move through good management).

Indicators are a tool that helps managers to understand the current situation and by comparing the indicator versus the reference point they tell you in which direction you are moving: right or wrong. It is important that indicators are clear and easy to understand, but when it comes to biological and integrated indicators they can be complex; there are challenges ahead.

Nevertheless, the message to the coordinator is to develop clear and easy-to-understand indicators and avoid complex biological ones. It is probably not within the scope of this project to set the reference indicator, which is most likely “a moving target” based on political issues as well as scientific ones.

Knowledge management

The “value chain”, the “customers” and “dissemination” are probably the key words when it comes to the overall challenge of knowledge management. A frequently asked question during the workshop - “who are the customers?” - was also asked within the group.

The discussion on KM was relatively short due to time constraints, but it was stressed that a long-term view must be taken and that “customers” in this case are the managers¹, the industry, NGOs and the general public. Also using the RACs would be helpful as their members are in direct contact with other key stakeholders.

VV and SM explained how they will interact with the stakeholders, such as by asking each partner in the project to get feedback from at least two different stakeholders. More formal stakeholder meetings are planned in month 32 for further consultation.

In General

The coordination of the project seems to be in good hands and current status and the interaction of WP1-3 was explained. The partners are fully aware of the inherent risk in discard data and have taken proper actions to minimise the effect of “bad” data. The interaction with fisheries managers is planned, but direct, or more, interaction with RACs may be helpful.

2.2.2 Summary – discussions on the REPROdUCE project

The project leader, Miguel Bernard, recalled the main components of the project; small pelagics in the Bay of Biscay and the Aegean Sea. The tools used are an integrated modelling frame. The models include climate indicators, different trophic levels and humans as a fishing fleet. There is feedback between the models. The project looks at bottom-up, top-down and side effects.

The rapporteur for this group was Karin Linderholm and the facilitator was Fredrik Arrhenius. The group found the project highly interesting, at first having some difficulty to see the relevance to the question of indicators, but were helped by further explanation that the intended outcome is a reproductive indicator and that the complex modelling was needed in order to get a better understanding of the system of small pelagics.

Managers had not yet been involved in the project, neither in its design nor so far during the first year of the research. It was however agreed that it would add value to have discussions with managers, stakeholders and other relevant parties, and to invite one or more project advisors, who could follow the project’s progress and have a continuous dialogue throughout.

The scientist representing the project asked for advice and support, from the group and further on from the MariFish secretariat, on how to communicate the results and to what fora, throughout the project. The complexity of the project and the end-to-end modelling will make presentation of the results complicated. It will also be difficult to evaluate the results as the modelling consists of several separate models which require knowledge from several different fields (a normal challenge in inter-disciplinary research).

The project’s representative was also keen to get more input from managers on what priorities to make and what questions to ask, especially when entering into a complex ecosystem modelling where trade-offs between different parameters have to be made.

¹ As a part of defining the terminology “managers“ need to be clearly defined.

Concerning who would be the customer of the research results the scientists argued that it may be unclear but that the managers would need to know it would be valuable to learn more about the causes behind long-term cyclic fluctuations of small pelagics. The main customer group for the reproductive indicator for small pelagics - one of the main outcomes - is clearly managers and policy makers, as well as stakeholders who depend on the resource.

2.2.3 Summary - discussions of the DEFINEIT project

The project researchers present were John Mumford, Finlay Scott and Anna Rindorf, while the rapporteur for this group was Alison Simmance and the facilitator was Andy Payne.

The group identified a number of challenges to the effective implementation of the DEFINEIT project, the main ones being:

- Advocacy difficulties with the scientific community
- Lack of indicator uptake
- Communication

Advocacy difficulties with the scientific community

The group agreed that scientific support and consensus is needed to enable the flexibility and uptake of fisheries indicators to policy and the wider community (national and international).

Lack of indicator uptake

The group recognised difficulties in effective uptake of some indicators and pointed to the following causes: indicator not useful; paucity of data resulting in uncertainty in the results; complexity of the indicators creating differences in understanding; and practicality in terms of relevance and effective uptake of advice to fisheries management. In this context, the following statement of importance relating to the success of the project was agreed by the group: *“The **relevance, effectiveness and efficiency** of indicators are crucial to successful uptake by fisheries managers. Crucially, a balance must be met between the relevance and quality of outputs”.*

Communication

The group identified the main customer of DEFINEIT to be fisheries managers, defined as: *the representatives implementing policy quota measures*. Difficulties relating to communication were discussed and included: internal scientific communication issues; the lack of visibility of the DEFINEIT website to the wider community; and the need to develop further tools to improve the impact and visibility of the DEFINEIT results. To improve communication, the group stressed the importance of developing engagement throughout the life of the project, in particular to stimulating effective two-way dialogue between researchers and managers at key milestones.

The group then discussed the project outputs. John Mumford explained that a literature review is being developed to provide a catalogue of where indicators have been used, the level of stakeholder involvement in their development, the reasons for their development, and who and what purposes be served. These outputs will help stimulate consensus and support among the scientific community for the need to further develop - and more importantly to apply - fisheries indicators.

Three forms of indicators were identified: indicators of level - influenced by accuracy and cost; indicators of direction - influenced by the time-frame; and multi-criteria indicators – influenced by the weight assigned to the different parameters and their complexity.

The group also addressed the communication questions asked by John Holmes:

1. What do you need to do at each step to maximise the eventual value to the ‘customers’? It was agreed that this project has to show the relevance, effectiveness and efficiency of indicators in order to be of value to fisheries managers. To help deliver this, communication mechanisms need to be developed to achieve the breadth of dissemination required (national and international). Importantly, DEFINEIT must prove that the process has advocacy (defined as buy-in) with scientists.

2. What successful examples of research-policy communication could your project learn from and build on?

The following successful examples were identified: climate change, through the IPCC platform, highlighted successful collaboration and momentum in strengthening the link between science and policy development and working towards set environmental targets; likewise, food contaminants, governed by the EFSA, presented a good example of where good communication between science and policy has improved public health issues.

3. Are there any underlying issues, e.g. mutual understanding, skills etc. that need to be resolved?

The group found that the skills being deployed within the project were adequately represented in terms of economic, biological and technical expertise. A broad understanding within the six countries managing the project as well as the broader community was also evident.

In conclusion, the aim of DEFINEIT was defined as “to develop tools to estimate fishing levels to maximise the economic yield, taking socio-economic and ecosystem considerations into effect”. The major challenge to effective implementation of the project outputs is communication. Issues raised include the appropriate language of the project’s aim (the exclusion of the term “indicators” was noted) and the lack of visibility of the outputs. Moving forward, the importance of developing better communication mechanisms was identified.

2.3 General Discussion

In the discussions at the end of the meeting, the concept of an ecosystem based approach in relation to fisheries management was highlighted as an area of increasing importance to policy. The participants agreed that there is a shift in policy development towards adopting a more ecosystem wide basis for decision making. In terms of fisheries management, single stock management must be based on multi-species advice and adopt the more multi-disciplinary and inclusive ecosystem based concept. Simon Jennings pointed out that the development of fisheries indicators involves three *inter-active* stages:

1. Objectives (clear objectives set by fisheries managers).
2. Indicator development (measure).
3. Reference point/direction (technical standard, in context of management objective, is set by the scientist).

John Lock highlighted that ecosystems and fisheries are inclusive and it is important to take forward this understanding when developing indicators for use in fisheries management.

John Lock then asked the researchers whether more work is needed to link the 3 projects? Anna Rindorf (researcher from the Defineit project) stated that her team are communicating well with other projects on the same topic. Alister Scott asked how will the projects connect to create influence to the wider scientific community? The researchers pointed out that the three projects adopt different approaches and so it is difficult to coordinate effectively and develop closer interaction. In response, Alister stated that a solution could be to develop a common conceptual framework arising from the projects. Instead of focussing dissemination effort on the specific *information* arising from each project, such a framework could be developed to take forward 1. Common ideas and 2. Joint outputs from the projects². The framework would help build a broader understanding of indicators and help improve the connectivity and influence of the project outputs.

Simon Jennings highlighted that the MariFish project provides a strong platform to improve engagement, communication and the uptake of the outputs from the three projects. Alister added that through an effective working partnership, MariFish has provided a vehicle to develop synergy between the projects.

2.4 Closing remarks

Drawing the workshop to a close Niels Gotke provided some closing remarks. He said that all three joint projects (BADMINTON, REPROdUCE and DEFINEIT) presented their first results and showed that they are delivering at a very high level. The presentations gave rise to good discussions and questions about the practical use of the results. Although there was a general agreement about the relevance of effective indicators, there is still a lot more work to be done, if indicators are going to be taken up by fisheries managers and the European Commission. It is quite clear that Indicators have to be relevant, reliable and understandable.

The presentation of the three projects also showed a need to link the projects to maximize the use and utility of the projects. That will require actions from the Marifish coordinator, the partners and the projects. Effective knowledge management and communication will need to become a central element during the life of all three projects to ensure the results are used in fine tuning a new Common Fisheries Policy (CFP) and in the management of fisheries Policy in Europe. Links and cooperation with other new marine research initiatives such as SEAS-ERA and BONUS 169 are also important. To achieve sustainable fisheries management, science and joint research activities will be needed in the future with a close link to the science users.

In conclusion, it was agreed that the MariFish Secretariat can usefully promote the research projects and improve the visibility of the project outputs. In addition, other communication channels, such as the DG MARE stakeholder platform and RAC meetings must be used to improve the impact and uptake of indicators in fisheries management.

² The evidence on “research impact” indicates that research generally has more numerous and higher-level impacts through the ideas and frameworks that are developed as a result than through the specific information it generates (which tends to be fairly specific in its relevance, and therefore limited in its impact)

Annex I: Workshop Agenda.

Agenda for MariFish Workshop 31 August 2010 - 1 September 2010 on the use of Indicators in Fisheries Management

at the Scandic Hotel, Vester Søgade 6, 1601 Copenhagen V, Denmark

31 st August		
12:30	REGISTRATION	30 min
13:00	- LUNCH at Scandic Hotel -	1 hour
14:00	1. The Danish Ministers advisor on fisheries and aquaculture, Mr. Mogens Schou, opens the workshop	10 min
14:10	2. What is the MariFish ERA-net? (John Lock, co-ordinator of the MariFish ERA-net) <i>A short introduction to the idea and activities of the MariFish ERA-net.</i>	15 min
14:25	3. Overview of Workshop (moderator - Alister Scott)	10 min
14:35	4. General introduction on the MariFish Joint Call on the use of indicators (Eskild Kirkegaard, Principal advisor, DTU Aqua) <i>The background for the idea of using indicators as a tool in fisheries management.</i>	15 min
14:50	5. A reality check on the use of indicators for fisheries management (Casto López Benitez) (DG MARE A/2) <i>Working with indicators as a tool in monitoring the development of the fishing capacity of the European fishing fleet – strengths and weaknesses.</i>	20 min
15:10	- COFFEE BREAK -	30 min
15:40	6. Presentation of the funded projects <i>BADMINTON - Dr. Vassiliki Vassilopoulou</i> <i>(20 min – 5 min discussion)</i> <i>REPROdUCE - Dr. Miguel Bernal</i> <i>(20 min – 5 min discussion)</i> <i>Definelt – Dr. Anna Rindorf</i> <i>(20 min – 5 min discussion)</i>	1 hour, 15 min
16:55	7. Communication between science and policymakers/managers <i>Using the work with biological indicators as an example</i> (John Holmes, University of Oxford)	30 min
17:25	8. Closing day 1 (moderator) Alister Scott	10 min
17:35	9. Science Discussion (optional for researchers)	30 min
19:00	- DINNER (Cassiopeia) -	

Annex II: List of participants

Name	role	e-mail	Institution/ organisation	Address	Country	Telephone
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