Proceedings

EcoFishMan Stakeholder Meeting

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Meeting on Technological Innovations in Fisheries

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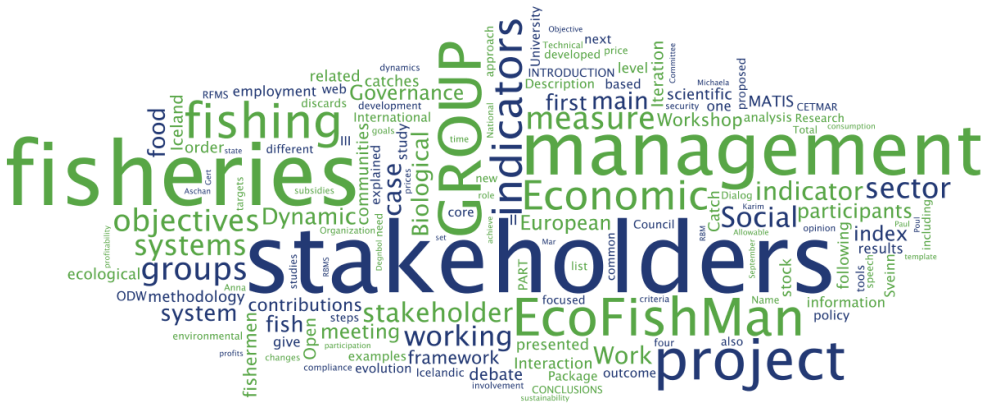

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Participants

A full list of participants is given in Annex 1.

EcoFishMan Stakeholders meeting

Introductory Presentation

Marta Ballesteros, CETMAR, Spain

Abstract:

The EcoFishMan project relies on stakeholder involvement as a critical factor for its success. Therefore, project design and implementation includes a commitment with stakeholders' participation to address the puzzle of improving fisheries managements systems' design in Europe.

The introduction underlines the difficulties related to "change processes" covering from the simplest activity of human behaviour to more complex challenges. In this context becomes a key aspect the innovative thinking approach of Ecofishman, which invites all stakeholders to share four moving forward steps: 1) from the traditional discourse based on "who is to blame" by the situation of the fisheries worldwide to a more constructive "how to implement solutions"; 2) from the limited "what are my goals" to "what are the best goals", applying cooperative instead of competing strategies; 3) from "what is going wrong" to "what we could improve", taking advantage from the descriptive analysis to action; 4) from "planning" to "learning by doing", using pilot projects in iterated processes.

Within this framework several tools are available for actual interaction, searching for a common outcome: the outputs from the Ecofishman project are really an input for applicable and acceptable improvements in fisheries governance.

Matís Ltd., Introduction

Oddur Már Gunnarsson, MATÌS, Iceland

Abstract:

MATIS is a public commercial food research company founded in Iceland in 2007, following the merger of three public food research institutes. The role of MATIS is to engage in food research, innovation and safety to increase the value of food through research, development, dissemination of knowledge and consultancy. MATIS multidimensional fields include fisheries research, fisheries management, traceability, markets, processing technology, environmental research, quality and safety of aquatic and marine catches, chemical and physical properties of food and feed, genetics, aquaculture, biotechnology, microbiological & chemical and consulting. MATIS has put special emphasis in building up top facilities at its laboratories performing cutting edge research in close collaboration with various Universities, Institutes and Industry in Iceland and throughout the world. MATIS has coordinated and participated in numerous EU funded projects including BADMINTON, TraceFish, FQLM, QIMIT, CODLIGHT TECH, EuroFIR, QALIBRA, SeafoodPlus, CHILL-ON, Fish and Chips, Marine Genomics Europe and SalseaMerge. http://www.matis.is

EcoFishMan Background and Aim

Anna Kristin Danielsdóttir (Project Co-ordinator), MATIS, Iceland

Abstract:

The overall *EcoFishMan* aim is to develop a new fisheries management system, a Responsive Fisheries Management System - RFMS based on results-based management (RBM) principles that will contribute to the reform of the Common Fisheries Policy (CFP). The project is based partly on previous research works of the *FisHmark* project and the Ph.D. project by Sveinn Margeirsson, the present CEO of Matís Ltd., where a wholistic adaptive approach in industry was developed and a processing forcast model/tool was designed to predict where, when and how much fish to catch. Today, the tool is used for decision making in the cod industry in Iceland. The EcoFishMan project accounts for stakeholder requirements, ecological, economical and social factors and utilises modern technology for surveillance and assessment of stocks. The new system will be based on responsiveness, flexibility, stakeholders´ responsibility and communication. Fishermen will provide scientists and authorities with more data than before, using already available instruments such as electronic logbooks. This will allow for rapid response to changes in the environment and increased communication between stakeholders. The burden of proof that the fisheries are ecologically sustainable will be shifted towards the fishermen. With more data exchange, a more focused management of the value chain of fish will be possible and thereby the economical and social outcome of the fisheries improved. EcoFishMan is a multidisciplinary project, involving scientists and stakeholders in activities relating to biology, stock assessment, technology, economy, sociology and legal aspects of fisheries management. It involves a consortium of 14 European Partners and its duration is three years: March 2011 – February 2014. The project amount is €3.8 million. External advisory experts and stakeholders play an important role in EcoFishMan giving advice during the developmental process of the project and then assisting in the implementation of the new RFMS.

The project Strategic objectives are:

- **SO1**: Identify and evaluate existing Results-Based fisheries Management (RBM) systems
- **SO2**: Identify and evaluate a set of indicators for the outcome targets
- **SO3**: Specify and design the Responsive Fisheries Management System (RFMS) with the stakeholders

- **SO4**: Verify viability of the Responsive Fisheries Management System (RFMS) through simulated case studies
- **SO5**:Evaluate the Responsive Fisheries Management System (RFMS) and the associated costs and benefits
- **SO6**:Consult stakeholders and produce a roadmap for the use of the new Responsive Fisheries Management System (RFMS)

The expected outcome of the project is a new fisheries management system that involves improved cooperation and mutual understanding between policy makers and stakeholders:

- Developed in collaboration with the important stakeholders in fisheries
- Takes into account ecological, economic and social factors
- Based on the stakeholders own requirements
- Utilise modern technology for surveillance, stock assessment, economic and sociological aspects

Questions/discussion at workshop:

Question/remark: (SME representative - Southern Italy) He found the questionnaire interesting. He asked what kind of interest environmental reference of sustainable fisheries has in the project. In the Mediterranean and in Italy as a whole there is a strong anthropological impact, economical, social and ecological sustainability. (Social, economical versus ecological, biological)

Does Eco finally mean, that you will not only focus on Ecology, but also Economy?

You will most likely need several Management Plans, since the European fisheries is very diversified, and there will be different targets and indicators that are relevant for different regions.

Answer: Anna Kristin Danielsdóttir answered and said, that the social issues will be more relevant in the project. How objectives are related and how to handle them. They do think differently. There are no specific questions and there are no right or wrong answers. The aim is to look at all interests of the participating stakeholders.

Conceptual Framework of EcoFishMan

Ólavur Gregersen, Bitland Enterprise, Faroe Islands

Abstract:

European fisheries are in a miserable state. In the Green Paper on the reform of the fisheries policy, the EU Commission characterizes the situation in the sector in terms of overfishing, fleet overcapacity, heavy subsidies, low economic resilience and decline in the volume of fish caught. Other problems, such as discards and social problems connected to regional development are also well known.

The vision of the EcoFishMan project is to contribute to a fundamentally new approach to fisheries management in Europe that will find acceptance among stakeholders within governance, industry and consumers, and thus have a significant impact on the future common fishery policy. The mission of the project is to analyse and draw on experiences with results-based resource management systems and propose a feasible implementation of such principles in European fisheries management, in particular to reduce the discard problem.

The EcoFishMan concept is based on the notion that major problems in fisheries, particularly within complex fisheries like those in Europe, are linked to the shortcomings of the particular form of management developed within the sector. The general objective of EcoFishMan is to develop and pre-evaluate a

responsive fisheries management system (RFMS) based on result based management principles. In this new RFMS, active stakeholder involvement is essential. The development and evaluation of the RFMS takes place in an iterative process to ensure that the RFMS is adapted to different types of fisheries and changes in the environment. Each iteration of the developmental work is based on a three-step-process:

1. Design the basic components of the RFMS (conceptualisation)
2. Develop general guidelines for making a management plan
3. Develop a management plan for the specific ecosystem

Through four case studies (three fully fledged case studies used for developing the RFMS and one approval test case study used to verify that the RFMS can be adapted to other types of fisheries), the RFMS will be adapted to the respective fisheries, and the effect of the RFMS will be evaluated. A final recommendation for an overall RFMS to be applied in all EU waters will be the main outcome of the project. This will contribute to a fundamentally new approach to fisheries management in Europe.

There is a variety of approaches, theories and methods within science that have been applied in studies on fisheries management and communities. However, many of the studies are based on one of the following scientific approaches: inductive, deductive, retroductive or adductive approach to analysis of fishing systems and communities. EcoFishMan aims at combining these approaches in the development of the responsive fisheries management system (RFMS). This multi-theoretical approach makes it possible to include the more diffuse ”human factor” into the models of the system. The research process must be flexible enough to account for different interpretations and opinions among the stakeholders about results and wanted outcome. Thus, it will be possible to implement the RFMS where the procedures and the transparency of the systems account for legitimacy and compliance even among those who disagree or have other goals. That means that a “good” RFMS can get approval despite the fact that stakeholders may have different agendas.

This combined approach is consistent with the interactive approach to management and governance introduced by Kooiman *et al.* The interactive approach defines management as interactions between the value definitions (from society, science included), institutions in which the values are embedded and the practical activities in everyday life. There is a continuous interaction between the three levels. So far there have been few successful examples of an application of this approach in practical science and management. EcoFishMan has the ambition to be the first to achieve this within the area of fisheries management, and is designed in a multidisciplinary manner where each research problem is approached from an interdisciplinary angle. If EcoFishMan succeeds, this can be a model for how to carry out interdisciplinary research in the future.

The RFMS should take into account ecosystem concerns, improve gears to reduce bycatch and discards, reduce fleet sizes, improve fishery statistics and research, integrate the uncertainty in the state of the stocks in the decision, associate stakeholders and non-fishery users in decision-making and forecasting potential effects of climate changes. The precautionary approach to fisheries management should be applied, to take early management measures in order to avoid crisis and higher cost in the future. The purpose of the fishery is to maximize benefits to the fishermen subject to biological constraint. The management system involves biological, economic, social and political decisions and must be formulated with the active participation of fishermen and processors. To address these issues, EcoFishMan is structured into nine work packages (WPs). The first six WPs are scientific RTD, the WP7 is on stakeholder interaction, and WP8 and WP9 deal with dissemination and project management, respectively.

Questions/discussion at workshop:

Question/remark: Operators can be an active partner in responsive fisheries. It is a crucial aspect if it will be implemented. In EcoFishMan we hope that eco means both ecological AND economical. We will be pleased to be involved in this project. Responsive Fishery Management System on a European level is different in the various European seas. Now we have only one outcome but different results in relation to different seas and areas. Final result should be a self-management system, where fishery management, expectations and indications are included. EcoFishMan project should be developed in short time, because we do not have any time to loose in relation to the situation in the fishing sector. Policy should be both economic and ecological. Project may change the current scenario and the fishing sector should be more evolved

Answer: Ólavur Gregersen answered by saying that EcoFishMan both means ecology and economy. It is important to the project that fishery is treated as a business. It is very important that fishery societies make money and thrive. There is too little money made within the fishing business today. One aim of project is to manage the fisheries resources so that those societies make money on fisheries.

It is also very important to discuss outcome targets and indicators.

Comment from the political representative for Marche region: We need a bottom-up approach in fishery management plans.

There is a need for changes because the fishery is at its limits. It would be more successful if they are shared between actors. It would be better if the fisherman was to check/ monitor their own fishery and not in Brussels.

Ancona has been very good at organising the fishery sector, one of the best regions in Italy. And has been a reference on a regional level. Proven responsive fishery system on clamps. Working on system for fishery. Also working on a transparency system. Marche region to Adriatic macro management of fisheries. This new fishery system was established a couple of years ago.

The new system, Responsive Fisheries Management System

Jónas R. Viðarsson, MATÍS, Iceland

Abstract:

The objective of the EcoFishMan project is to develop a new methodology in fishery management that can contribute to the reform of the Common Fisheries Policy. This methodology will increase stakeholder involvement as they will be empowered with increased responsibility for managing their resources. The Responsive Fisheries Management System (RFMS) is built around three key components. They are outcome targets, indicators and management plans, but in simple terms they define where we want to go, how we want to get there and then measure if we are in fact heading in the right direction. Stakeholders will in cooperation define so called outcome targets for their specific fishery i.e. biological-, ecological-, economical- and social goals that they want to achieve with the management. They will then in cooperation come up with a management plan that is aimed at meeting these outcome targets. Indicators will then be used to monitor the success of the management plan and give the stakeholders opportunity to respond quickly if outcome targets are not being reached.

Four case studies have been selected to develop and test the RFMS in the project, where real data will be used to simulate the effects of implementing different management plans. The simulation will take on biological-, ecological-, economical- and social aspects surrounding the fishery as a whole i.e. fishing, processing, supporting industries, communities etc. The four case studies that have been selected are chosen with respect to complexity and data availability. The initial development will be made on a fairly simple fishery with excessive data availability, but as the project progresses the RFMS will be adapted to more challenging case studies. The case studies are:

1. The Icelandic demersal mixed fishery
2. The Portuguese crustacean bottom trawl fishery
3. The North Sea mixed demersal bottom trawl fishery
4. The Mediterranean mixed demersal trawl fishery

A key issue in the successful development of the RFMS is an active involvement of all stakeholders. Their participation in setting outcome targets and developing management plans will decide if this new bottom-up approach to fisheries management can work.

Interaction Dynamics (I)

Questions/discussion at workshop:

Italian Group: Project is simulating stakeholders' interests. This project is appreciated because it involves the fishermen. Many feel responsible for changing the situation in fishery. The preliminary part is good.

We need to do something as soon as possible. We need to find shared solutions. Need to see the fishermen directly involved. Division of monetary control and self-management.

English speaking Group: The characteristic of the fishery must be changed. The biological science must be respected, otherwise we can't get any results.

- Very good turn-out by fishermen. We need to act fast because problems are serious.
- Reduce fishing effort (number of vessels)
- Change the trawling gear (make it more selective)
- Respect biological science.
- It's the fisherman's problem, and we need to solve it ourselves.

Regione Marche, Italian Stakeholder

Croatian Stakeholder

Interaction Dynamics (II)

The two groups (English speaking and Italian) debated and selected five targets of a new fishery management system.

Targets of English speaking Group:

- Maximise value
- Reduce the number of vessels and people in the industry
- More selective fishery/fishing gear

- Introduction of quota in context of the above issues
- Improve or ban destructive fishing gear for example dredges?
- Introduction of areal closures (periodic) or marine protective areas

Targets of Italian Group:

- Re-establish the same qualities and quantities of fish stocks as it was in the past. (Increase size of catch increase the value of catch)
- Rationalisation of market in all its forms (shorten supply chain of fishery products, traceability of products)
- Quotas
- More homogeneous rules and regulations
- Management across of geographical areas.

The objective is not to increase profit, but to recover from the present crisis.

Italian Group

English Group

EcoFishMan Stakeholder Involvement in Italy

Alessandro Lucchetti, CNR-ISMAR, Italy

Abstract:

Mediterranean demersal trawl fisheries are noteworthy for the large number and variety of commercially important species caught. Stocks are managed and conserved by regulations defining closed areas and seasons, minimum landing sizes (MLS) and minimum mesh sizes (MMS). It is recognised that in multi-species fisheries, there is rarely a single MMS in the codend of towed nets, which is appropriate for all the species caught in an area, due to differences in body shape and size at maturity. A mesh size appropriate for one species will be unsuitable for many others Mediterranean demersal trawl fisheries traditionally operate using small diamond-shape meshes in the codend which tend to retain almost all animals. Furthermore, the use of such small mesh sizes leads to a by-catch, which is of low commercial value and often almost entirely discarded. In this area the bottom trawl may simultaneously catch target species, such as whiting (*Merlangius marlangus*), Norway lobster (*Nephrops norvegicus*), hake (*Merluccius merluccius*), squid (*Loligo vulgaris*), short-finned squid (*Illex coindetii*), monkfish (*Lophius* spp.), red mullet (*Mullus barbatus*) or other species. Most of them attain different sizes when fully grown, have different shapes and behaviours and finally have different Minimum Landing Sizes (MLS). In addition to the target species the codend retains large quantities of non-target organisms; this affects the habitat at an ecosystem level influencing the prey-predator relationship and the food web.

Presently information on stock biomass, selectivity of fishing gears and other information on the impact of fishing activity are currently available from different source of information. Mediterranean stock assessment studies recently evidenced the over-exploitation of several commercial important Med-stocks. Therefore an

innovative approach for the management of fisheries resources is essential for the sustainability of fishing activities in the Mediterranean. In the EcoFishMan project Italian scientists, management bodies and fishermen will work together in order to find possible management measures that can take into account eco-biological, economic and social issues.

Questions/discussion at workshop:

Question/remark: (SME representative - Southern Italy). Fishermen are owners and responsible for the boat, and are also working on the boats and I would like this to be taken into account. This has not been considered preciously. Nothing has been done the last 10 years. Unemployment rate is high in fishing industry. The fact that nothing has been done has increased the unemployment rate in Italy dramatically. We would like every policy to greeting the fishermen. Want the fishermen in the core of the policy. We are not ready to accept a new regulation on core. We have a devastating impact on the industry.

Social sustainability is about allowing the fisherman to live the live they want.

Women are important stakeholders (Women for fishing – Donne Bella Pesca)

We need a different approach and attitude on fisheries. We should not be seen as sea hunters but as sea farmers. Fisherman must take the segments of the logistics back.

You say you will listen to the stakeholders, but at the same time the commission acts as if they have not spoken to the fishermen, but only other stakeholders.

Answer: We want to interact with you and not to consult afterwards. Have an interactive dynamics.

Question/remark: (Croatian fisherman) There is an issue with the number of vessels (too many), size of engines and equipment (no selection of spices). The catch has declined more than 50% during the last 20 years. The income of the fisherman has declined significantly. Today vessels are struggling with making money for fuel.

Answer: We are here to change that

Dissemination – info on project (i.e. homepage, leaflet, etc.)

Marco Frederiksen, EUROFISH, Denmark

Abstract:

A www.EcoFishMan.com homepage has been created and all that are interested can get information about the project from here. This page will be continuously updated with news and results during the project. An EcoFishMan flyer and a poster have been made as well and they were presented at the fair in Ancona.

Several dissemination activities are planned during this project:

- Three project workshops
- Two annual meetings
- Three stakeholder events
- A concluding ICES symposium in Vigo Spain in February 2014

Please visit the EcoFishMan homepage for more information about the events. Information will be present on the homepage when the events are planned and scheduled in detail.

Publications will also be presented in Eurofish Magazine as well as in other relevant magazines and newspapers during the project period. In the end of the EcoFishMan project it is planned to make a collection of the project articles in an electronic "EcoFishMan Magazine" that will be distributed for free.

Questions/discussion at workshop:

Question/remark: (Grímur Valdimarsson, Icelandic stakeholder): You should ask the stakeholders to come with ideas on how to improve the webpage and to ask people to contribute. There is a lot of passion among the stakeholders to, how we can contribute to make the fishing industry get improved.

Technological innovations in fisheries

EPCIS – a tool for food supply chain traceability

Valur Norðri Gunnlaugsson, MATÍS, Iceland

Abstract:

Since the application of the European Union (EU) the Common Food Law 178/2002, each food business operator must be able identify all those who delivered food, feed or ingredients that were used in their products. Electronic traceability systems based on automatic data capture systems and software applications are by many believed to be the most effective solution for providing relevant food safety information to the food industry and consumers in a fast and effective way. The rapidly increasing application of RFID (Radio Frequency Identification) and other types of electronic product codes (EPC) give opportunities to increase the efficiency and accuracy to monitor and control the flow of goods and materials within and between actors in the value chain. EPC provides a method for unique identification of all items in a supply chain and makes it possible to register internal and external events electronically that are related to the movement of tagged items. A technical concept that has been established and evaluated, but little tested for chain traceability in the food industry, is the Electronic Product Code Information Services (EPCIS) standard which originates from EPC Global. EPCIS is proposed as a general, multipurpose software architecture that also has promising properties related to food traceability and thus food safety within and across enterprises. In the project eTrace, the aim was to identify, develop and implement a traceability system based on the EPCIS standard, where different information sources related to food safety and suitable enterprise management systems are integrated to improve product safety and information sharing. In a recent eTrace pilot, preformed in HB Grandi groundfish processing plant in Reykjavik, a newly introduced methodology for modelling traceability information using the EPCIS framework and UML statecharts was applied. During the pilot, one day catch of deep sea redfish (*Sebastes mentella*) from one of HB Grandi wetfish trawlers was followed throughout the company, from catch to packaged items ready to depart the premises with help of RFID and EPCIS software. RFID tags from CONFIDEX were attached to fish tubs at HB Grandi, both tubs coming from ships and internal tubs used inside the premises during processing. Temperature loggers where situated around and inside selected tubes and at numerous places inside the premises. When the same tub was scanned multiple times at different steps in the process, or divided into smaller cases, that information was also stored, creating a production and transport history for the fish from that tub. In general, EPCIS-based traceability systems performed well in this pilot and opens up new possibilities for internal traceability like in this pilot and eventually for supply chain traceability if such systems are put in use by stakeholders in the value chain. The use of RFID and automatic information gathering seems to be a good method to ensure traceability.

Questions/discussion at workshop:

Question/r emark: Have you focused on internal entities, or also between different stakeholders?

Answer: We have focused on different stakeholders. Standards on how to share information between stakeholders.

Question/remark: Is it possible to control temperature? Will it in the future be possible to integrate other parameters?

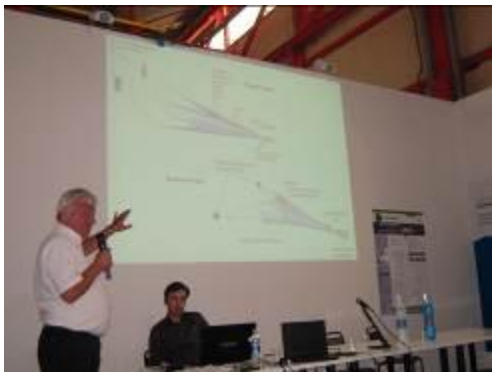
Answer: We use temperature in tubs and plant. The cost of 10 labels is 1 euro.

Precise registration – Trustworthy documentation

Henning Skjold-Larsen, SCANMAR, Norway

Abstract:

For more than 30 years SCANMAR as, Norway, has developed and manufactured Catch Control and Catch Monitoring systems for commercial fishing vessels and Fishery Research vessels. More than 250 Fishery Research vessels and thousands of commercial fishery vessels all over the world are equipped with Scanmar equipment.



The system presents all data real time for immediate action, and logged data for later analysis. The system is developed for best possible control of fishing gear performance at any time, independent on fishing condition. Extensive logging functions are provided for later analysis, correction of gear, documentation and planning of further activities.

The SCANMAR systems monitor and log data from:

- **Gear performance** (such as trawl gear geometry, trawl door efficiency, trawl functionality, towing speed and direction, and the functionality of gear, sweep lines etc).
- **Environmental data** (such as exact position of influx, water temperature, included temperature profile of water column, underwater currents).
- **Catch** (influx and continuous detailed volume registration).

SCANMAR equipment is widely used by Fishing Research vessels to monitor quality of each haul, documentation and analysis.

Commercial fishing vessels are using Scanmar equipment for best possible performance, reporting and planning.

Documented results are; improved over all economy due to increased efficiency (reduced fuel consumption, reduced repair and wear and tear on fishing gear and vessel) and improved quality of the catch.

In addition comes better planning of trips and seasons, and less harm to the environment due to correctly adjustments of fishing gear.

There is little doubt that use of Scanmar equipment contributes to sustainable fisheries by better control, reduced operational costs and better planning.

Questions/discussion at workshop:

Question/remark: (Antonello Sala) The main problem for the Italian fisherman is the cost of the system. It is difficult for them to buy decent fishing equipment. How can we solve this problem together?

Answer: The system is expensive all over the world. The challenge is to get the fishermen to focus on what they save, when they invest in such a fishing system, instead of focusing on what they spend. We need to

have a generation shift in the industry in order to get the new and more profitable systems on board of the vessels. The old generation is not so keen on adapting to new systems/fishing gear.

Question/remark: What do you mean that we should work with you?

Answer: I want you to learn from my experience.

Application of Dolphin Dissuasive Devices (Pingers) in the semipelagic trawl fisheries of the Adriatic Sea

Francesco De Carlo, CNR-ISMAR, Italy

Abstract:

In the last decades the international scientific community is focusing on the impact and the effect of fishing activities on marine ecosystem. By-catch, the unintended catch of non-target species, is one of the primary conservation challenges facing fishery managers today; conservation and responsible exploitation of fish stocks, together by-catch and discards reduction are among the most important factors for the achievement of a sustainable fisheries. Bycatch of marine mammals occurs in fisheries, ranging from artisanal to industrial throughout the world, due to an overlap in distribution and utilization of areas with high prey density by cetaceans and fisheries. The interaction between dolphins and fishing activity is the result of different factors such as, difficult location/avoidance of the net and the opportunistic predation of catches on the net.

EU Regulation 812/2004 calls member states for the implementation of monitoring schemes for incidental catches of cetaceans by means of fishery observers on fishing vessels, and the activation of scientific projects to study the effects of pinger use. In 2010 the Fishing Technology Unit of CNR-ISMAR of Ancona have been involved in the National Reserach Project BYCATCH III, working on the development and the experimentation of *Bycatch Reducing Devices* (TED, pingers)and the monitoring of semi-pelagic trawler by means of observers. A total of 158 hauls have been monitored among 40 fishing days on board of different commercial vessels operating in the Middle Adriatic Sea to catch anchovies and sardines.

Data regarding sightings of dolphin in relation to presence/absence of the pinger, geographic position and duration of the hauls, catch data and by-catch data, have been collected. Bottlenose dolphin was the only one marine mammal species observed, mostly at the end of the hauls feeding on the net. The current study revealed the potential of pingers as a good instrument for the reduction of interactions between dolphins and fisheries. In fact the percentage of sightings of dolphins decreased almost of the 50% when pinger was mounted on the net. Future works should include underwater observation of dolphin behavior approaching the net and the study of the effect of pinger on the catch.

Questions/discussion at workshop:

Question/remark: Is it possible to put it on the line every 100 meters?

Answer: The spread of the gear is dependent on the distance apart of the two towing vessels. The Pinger has a frequency emission ranging between 1 and 500 KHz, and works between 10 and 200 m.

Question/remark: (Ó. Gregersen) Do you have any experience/or do you think the Pinger could have the same effect on seals as it has on dolphins?

Answer: I don´t know, we have not tried that.

The study revealed the potential of pingers as a good instrument for the reduction of interactions between dolphins and fisheries. This potential is supported by the success of pingers among fishermen.

e-Audit: energy evaluation onboard Italian fishing vessels

Emilio Notti, CNR-ISMAR, Italy

Abstract:

Overfishing and the excess of products in the market with the consequent decrease in their price as well as the rise of fuel price have contributed to diminish profitability in the fishing sector where fuel expenses can go over 50% of the total income. As the price of fuel increases, it becomes more difficult for vessel operators to maintain sustainable profit levels. There are only two possible ways for vessel operators to increase their profits: decrease operating costs, or increase the amount received for their product. Most operators are not able to influence the price they can receive for their catch. As a result, it is very important that they find ways to decrease operating costs and first of all fuel costs, reducing fuel consumption. Large number of fishing vessels is not energy efficient usually because of outdated technology. The reduction of fuel consumption can be achieved by improving energy efficiency of fishing activities.

To identify feasible ways to reduce energy consumption is necessary a methodical approach and the Energy Audit represents the instrument of this.

In the current experiment some fishing vessels, representing the various fleet sectors of the Italian Fisheries, were selected for an energy audit. Vessels were divided on the basis of type of fisheries and vessel size. An energy audit template was developed to assess the main vessel and equipment features: engine usage, trip scheduling, propeller, etc. Onsite visual inspections were performed during the audit. Using an appropriate acquisition system few parameters were recorded, offering a real-time dynamics. On the basis of the raw data acquired, detailed analysis of energy usage was carried out. Energy performance indicators were developed to display the effective energy efficiency of each vessel, relating to the energy usage and the effective fuel consumption.

Questions/discussion at workshop:

Question/remark: (Macina is an engineer. He has worked on energy savings for 40 years) I think this index is normally used. (Preliminary results: Sailing Phase). If we have the same boats with different speed. The speed must be taken into account. We are open to discussion. These are indicators that we invented.

Answer: We tried to work before the EU decided. Energy audit is a systematic approach to evaluate energy consumption. Our methodology is being changed in relations to our findings.

We are also looking into indexes like Relative speed and other parameters.

Control of the Fishing Effort for the Mediterranean Bottom Trawl Fleet

Augustín Mayans, SIMRAD, Spain

Questions/discussion at workshop:

Question/remark: This is a system for fishery management. For monitoring. Could it be used for the fisherman as well?

Answer: The system has been developed for the fishermen in order to control fuel consumption. It could be served for both the management of fishery and the fishermen.

Question/remark: How much does the system cost?

Answer: A full system costs about □100.000 and fuel saving program can provide 40% grants.

Improving energy efficiency on trawlers by reduction of fishing gear resistance

Ignacio Soler, SIMRAD, Spain

Questions/discussion at workshop:

Answer: The price of the product is around □60/kg and cannot be used at a places in the trawl net because it is so expensive. But you can use nylon for the bottom trawl.

The challenge is to save fuel without losing on catch value.

Fuel saving otterboards

Antonello Sala, CNR-ISMAR, Italy

Abstract:

A new otterboard has been designed by the Danish Thyboron door manufactures to reduce hydrodynamic drag coefficient and impact on the seabed, as well as to increase door spread. The results have been compared with a traditional Vee door commonly used in the Mediterranean commercial demersal trawl fisheries. The purposes are to discuss the differences between doors, observed during the engineering sea trials. The main results show that it is possible to design new otterboards with up to 15-20% less fuel consumption and up to 40% more door spread.

Questions/discussion at workshop:

No discussion/questions were asked here!

Assessment of fishing gear impact and performance using Sidescan sonar technology

Massimo Virgili, CNR-ISMAR, Italy

Abstract:

The increased sensibility of the International scientific community toward the exploitation of fishery resources, promoted the development of new technologies to study the behavior and the impact of fishing gears on seabed. In the last ten years the physical disturbances caused by trawling has been widely investigated by using the sidescan sonar technology. In the Mediterranean, changes to marine habitats that are caused by fishing are most pronounced in otter trawls, Rapido and hydraulic dredge fisheries. Sidescan sonar technology permitted to identify these fishing gears impact. Hydraulic dredges and Rapido trawls are basically similar in their seafloor impact by flattening and ploughing seabed features. While the effects of

otter trawling varies greatly depending on the amount of gear contact with the bottom, together with the depth, nature of the seabed, and the strength of the currents or tide. Generally otterboards imprint distinct tracks on the seabed, ploughing a groove which can vary from a few cm up to 30 cm deep. Also the present work suggests a further step in using this technology, by analyzing in real time the behavior, the geometry and the performance of different fishing gears in addition to quali-quantitative evaluation of their impact on the seafloor.

Questions/discussion at workshop:

No discussion/questions were asked here!

Annex 1. Participants

Name	Affiliation
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Valur Norðri Gunnlaugsson, Scientist	Matís Ltd., Iceland
Guðbergur Rúnarsson, Icelandic stakeholder	Federation of Icelandic Fish Processing plants
Grímur Valdimarsson, External project Advisor	The Ministry of Fisheries and Agriculture in Iceland
Marta Ballesteros, WP7 leader and PMG	CETMAR, Vigo, Spain
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Svjetlana Krstulović Šifner, Croatian Stakeholder	University of Split, Center of Marine Studies, Croatia
Petar Baranović, Croatian Stakeholder	President of Croatian fisheries Association, Croatia
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Uriano Meconi, Italian stakeholder	Regione Marche, Italy
Antonio Angotti, Italian stakeholder	Lega Pesca, Italy
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