

## **DEEPFISHMAN**

Management And Monitoring Of Deep-sea Fisheries And Stocks

**Project number: 227390**

Small or medium scale focused research action  
Topic: FP7-KBBE-2008-1-4-02 (Deepsea fisheries management)

## **Stakeholder workshop Lisbon, 4 December 2009**

**Title: Stakeholder workshop, Lisbon, 4 December 2009**

**Due date of deliverable:** Additional deliverable not scheduled in the project

**Actual submission date:**

**Start date of the project:** April 1<sup>st</sup>, 2009

**Duration :** 36 months

**Organization Name of lead coordinator:** Ifremer

**Dissemination Level:** PU (Public)

**Date:** 14 December 2009

Research project 2009-2012 supported by the European Union,  
Seventh Frame Work Programme



# Stakeholder meeting Friday 4 December

## 1. - Introduction

The aim of this stakeholder workshop was to meet stakeholder from Spain and Portugal. Invitations were distributed since September and several stakeholders expressed their intention to join the workshop. The workshop was then organised during the case study meeting of the project and the venue of the meeting was set in Lisbon, which appeared as a location where a significant audience would be willing to join.

During all the workshop, presentations and discussions were made in English, Portuguese and Spanish (no interpreters were hired), as sub groups were necessary for the work expected between project scientists and stakeholders. Most of the workshop was moderated by Pascal Lorange (Ifremer, France) and Ivone Figueiredo (IPIMAR, Portugal). The workshop was held at IPIMAR, it started at 9:30 and closed at 5:00.

The project aim, structure and consortium was first presented and the agenda of the day was shortly discussed. The Deepfishman case studies of major interest to the audience were presented:

- Case study 3c, Portuguese artisanal fishery for black scabbardfish in ICES sub-area IXa;
- Case study 3a, Fishery for red seabream in the Strait of Gibraltar
- Case study 5, fishery for Greenland Halibut in NAFO area.

For the agenda of the day, it was proposed to have an open discussion after the introduction and presentation of the project, to present the cognitive maps method and then to build up cognitive maps with stakeholders, and to have another discussion after the cognitive maps session for discussion of the outcome and continuation of the morning session and to discuss further exchange with and contribution of stakeholders. The comments and questions raised by stakeholders during open discussion sessions are given below in section 2, replies for project scientists are shortly given in section 3, the work with the cognitive maps is described in section 4 and plans for further work is given in section 5.

## 2. Open debate with stakeholders

Following introduction and presentations, a first session was dedicated to an open hearing of stakeholder views. The debate was structured with 3 questions. Text in square brackets [ ] have been added to the report to provided context on the aspects developed by stakeholders.

### 2.1. Question 1: who are stakeholders in deep-water fisheries?

For this question, the identification of the Deepfishman stakeholder community from the stakeholder meeting held in Brussels (29-30 June 2009) was presented and it was discussed

whether it was complete, what was missing. A few comment were made. Stakeholders considered obvious that the European Commission and national administrations are important stakeholders to have in the project all well as the the fishing industry, organisation of producers and fishing community that lives from the fishery (for local fisheries). Regional advisory council (RACs) were also considered essential.

## **2.2. Question 2: what are stakeholder's needs and interest from the project?**

Monica Verbeek: the main expectation from Deepfishman is an improved management of deep-water fisheries.

Sara Reis Gomes: one problem is the incompleteness of catch data because fish are not landed whole, some are gutted, headed or filleted. This induces unreliable data in terms of number and weight of fish caught from the stock. Another problem is stock identity; black scabbardfish stock should be dealt with as a whole, not only as parts of the stock. The maturity stages by area for this stock is also an aspect to take into account, North of Madeira black scabbardfish are immature.

[black scabbardfish is the main deep-water species exploited at Madeira, the current understanding is that there is one single large population in the Northeast Atlantic while assessment is made for several unit (ICES VI and VII; ICES IXa, CECAF (Commission for Eastern Central Atlantic Fisheries) area 34 1 2]

Juan Manuel Liria: It is important to have exchanges between people that have data [stakeholders] and those that use it [Deepfishman scientists]. It is important to include Fishermen's knowledge. Simple ways for organizing data exchanges need to be defined (this is especially important for socio-economic data). Management rules should be more practical and take account of the socio-economic aspect.

Carlos Macedo: the association ArtesanalPesca has been collaborating with Ipimar for several years, self-sampling in the artisanal fishery is carried out (within EU project LOT1). The association is keen to know more about the dynamics of species and to contribute to Deepfishman. The case study [CS3c, Portuguese fishery for black scabbardfish in ICES subarea IXa] should not be limited to the Portuguese area, the whole stock area should be considered. Efforts were made by the national administration to make fishery sustainable.

António Cabral: there are problems with stock assessments. Unreliable assessments have conditioned TACs. This impacts the sector. Widely changing TACs cause problems, the fishing industry prefers stable TACs because they allow to plan the fishing activity. Reductions in TACs should be slow and planned rather than abrupt.

João Correia: interested in two aspects:

- 1) all elasmobranchs should be included in TAC species list. In 2009, the TAC for deep-sea sharks was fished in July, which led to misreporting of deep-sea sharks species as other elasmobranch species that are not TAC managed;
- 2) fleet size reduction is now much talked about, the project should address the aspect of effort/fleet reduction and the interaction between fleet size and fishing efficiency. Fishermen and NGOs are working together on this topic.

Cristina Rosa: the management of deep-water fishery at EU level needs to consider what is the best way to manage stocks. Different types of fleets (artisanal, industrial) exploit the same stocks. Bycatch of shark is a problem. From 2010, there is 0 TAC for deep-sea sharks, this leads to discards. This is not a good way to manage the resource (discards are not profitable to anyone, catch data are lost). This project should consider this issue.

Monica Verbeek: two questions (1) On the socio-economic aspect, there are published articles stating that deep-water fisheries are not economically viable. It would be good to have more detailed results on economic viability, i.e. what kind of fisheries (high seas, coastal, small-scale,...) is more suitable. What will be the impact of increasing fuel costs on these fisheries? (2) On the biodiversity aspect, what will be done about biodiversity in Deepfishman? In the high seas vulnerable habitats are mapped, is something similar going to be done in Deepfishman?

Luís Calaça : Relationship with fishermen are important. Fishermen need to learn and profit from research, fishermen are interested in viable resource Scientific result should reach fishermen.. Legislation doesn't take regional differences or differences between artisanal and industrial fisheries into account, artisanal fisheries might loose out. Longline fisheries are selective, which make them different from trawling. Different measures should be adopted. EC management measures at exaggerated

### **2.3. Question 3: Management regime: opinions from stakeholders.**

**Two aspects of this question were discussed: (1) What is wrong with current management?; (2) What should be part of better management?**

#### **(1) What is wrong with current management?**

Monica Verbeek: everything is wrong. But this is a difficult question ; implementation of TACs was rather arbitrary in terms of which species was included in the regulation, there are problems with mixed fisheries. TACs are set based on little information and only for some species. Fisheries have expanded despite over passing precautionary limits. TACs were set too high to limit fisheries; these deep-water fisheries are very data poor fishery. Then the requirements are to know more about (i) stock size, effort deployed etc, (2) on the management side, to be precautionary, limits need to set much lower. Currently, the fishing capacity is too high, when we don't know what kind of fishing level species can sustain.

Sara Reis Gomes: in the future there is a need to differentiate between fishing strategies, e.g deep water trawling is a problem for habitat. Advices on less damaging fishing methods are expected.

Portuguese administration (name not recorded on participant list): deep-water effort has been frozen since 2003 in ICES area and NEAFC, so there is no longer expansion of fisheries, or only due to insufficient enforcement. Management based on effort can be difficult for mixed fisheries, hence it would be good for the project to consider TAC, effort management and transferable rights altogether. Such an approach could be suitable for the NAFO Greenland halibut fishery [i.e. Case Study 5 in Deepfishman].

Monica Verbeek: in NEAFC landings have increased three-fold since effort limitation was implemented, so there must be something wrong with effort management;

João Correia: Recent literature point towards ITQ as a successful management strategy eg abalone in Australia and numerous examples worldwide; so would like the project to consider ITQs.

Manuel Liria: No ultimate solution exists, each case needs a particular solution; for mixed fisheries effort management might be suitable but then the question arises how to measure effort ; TAC lead to discards ; fishermen want to maximise profit within effort limits.

*Carlos Macedo* : two points 1) problem of TAC for deep-water species. Sustainable levels of catch need to be known, taking into account all fisheries components exploiting the actual stock 2) ITQ: seen from artisanal fisheries, ITQ is not the best measure. There are examples of small fishery in Iceland that disappeared due to large companies buying ITQs from artisanal fisheries.

## **(2) What should be part of better management?**

What will be done for biodiversity : data limited, can respond to stakeholder views, know less on biodiversity when stock biology, VME,

Manuel Liria: in NAFO area Spanish administration is mapping vulnerable areas (results expected in 2011), has already done so in other areas ; results (footprint) seem to indicate that trawls avoid areas with corals and sponges

Monica Verbeek : differentiation of life history traits mentioned, until now all species have been treated in a similar manner, it would be good if project could contribute to provide insights into different species and suitable management measures (what kind of exploitation levels for which species?);

## **3. Information from project scientists (given as replies to stakeholder questions)**

The overarching concern from all categories (NGOs, fishing sector, administration ...) of stakeholders about suitability of management matches to central aim of Deepfishman: develop a management and monitoring framework for deep-water fisheries in the Northeast Atlantic. Integrating the views of stakeholders is here essential.

In respect to management again, the relationship between fleet capacity and fishing effort is one of the aspect that the project might take into account.

Stock identity: this question was raised mainly with respect to black scabbardfish. For this species the project will review stock identity. Further stock identity studies (included or not in the deepfishman) are on-going based upon genetics and other methods, the outcome from these studies will be included in the management and monitoring framework developed by the project. The project will develop models and analyses to assess the most likely stock structure and do assessment at stock level.

Zero TAC and by-catch of shark: this is an issue identified also by the project scientist. Aspects that the project plans to consider are (i) the sustainability of by-catch for species which landings are banned (0 TAC); (ii) integration of the management of these vulnerable species into the management and monitoring framework.

Socio-economic aspect: the project aims at assessing the economic part of deep-water fishery in the national economic picture (value chain, supplying industry,...) and project the economic impact of changes in management.

Biodiversity: the project aims at defining biodiversity indicators suitable for management using all available data (scientific survey, on-board observation, landings and effort statistics). Nevertheless, data on biodiversity are limited. Biodiversity aspects developed in Deepfishman will be in strong relationship with on-going work in the EU project CoralFISH. Strongly related to biodiversity is an approach of an ecosystem impact assessment of deep-water fisheries.

## 4. Cognitive maps

The aim and the method for cognitive maps was presented to the audience, then seven groups of stakeholders and project scientist were organised to draw seven cognitive maps to be used to identify what is important in deepwater ecosystems/fisheries and what are the main issues. Each group comprised stakeholders and scientists from the project who drew and coded the maps according to stakeholders' views (Table 1).

Table 1. Groups organised for cognitive maps drawing.

<u>Stakeholder group</u>	<u>Stakeholders</u>	<u>Deepfishman scientists</u>
<u>Scientists</u>	<u>Laura Wise</u> <u>Alberto Murta</u> <u>Filipe Rodrigues</u>	<u>Sveinn Agnarsson</u> <u>Leonie Dransfeld</u> <u>Dimitrios Damalas</u>
<u>NGOs</u>	<u>Monica Verbeek</u> <u>Rita Sá</u> <u>João Correia</u>	<u>Phil Large</u> <u>Pascal Lorange</u>
<u>Administration</u>	<u>Sara Reis Gomes</u>	<u>Juan Gil</u>
<u>Fishery (NAFO greenland halibut)</u>	<u>Antonio Cabral</u> <u>Juan Manuel Liria</u>	<u>Fernando Gonzalez</u> <u>Ricardo Alpoim</u>
<u>Fishey (artisanal, Azores, red seabream)</u>	<u>Manuel Pacheco</u>	<u>Inês Farias</u>
<u>Fishery (artisanal, Sesimbra, black scabbardfish)</u>	<u>Luis Calaçã</u> <u>Carla Rato</u> <u>Carlos Macedo</u> <u>Tiago Cagita</u>	<u>Ivone Figueiredo</u> <u>Guzman Diez</u>
<u>Fishery consultant</u>	<u>Luis Ambrosio</u>	<u>Verena Trenkel</u>

Cognitive maps were drawn in sub-groups for one and half hour. A short debriefing session gave the following feed back:

- overall the exercise was felt interesting and stakeholders are keen to see the result of the analysis.;
- groups were different in numbers. One group with only one interviewee found it difficult and thought that larger groups might be easier and was concerned of the impact on the analysis of different number of participant per group. This aspect can be accounted for in the analysis;
- it was more difficult than expected, it was good to limit time otherwise will go on for ever;
- it is difficult to describe relationships. It is important to well define bubbles as this determines links and later on it can turn out that it is difficult to define links if bubbles are not well defined;
- an analysis of differences across groups/maps should be interesting;
- the view may be different according to the group and main focus chosen, i.e. for the red seabream fishery the main focus was put on areas closed to fishing;
- the maps have been mainly drawn for the current situation [this was not intentional but derived from the descriptive aspect suggested by Deepfishman scientists]. Stakeholders suggested that this approach could be used to define future desirable situation.

The cognitive maps require further analysis. Electronic copies were drawn (Figures 1-4). Different groups of stakeholders put the emphasis on different aspect (e.g. socio-economy or ecosystem) and some maps suggest clear views form stakeholders about the possible managements at case study level (Figures 1-4). A full analysis is required, the analysis is not to be carried out based upon the graphical representation but upon the list of elements (bubbles) and interactions (direction, strength and time frame) identified by stakeholders. Nevertheless the maps suggest different emphasis from different stakeholders groups and different management perspective according to case studies.

Figure 1. Cognitive maps by case study fishery, Azorean fishery for red seabream (stakeholder from the fishing sector), and Madeiran deep-water fishery (stakeholder for the administration).

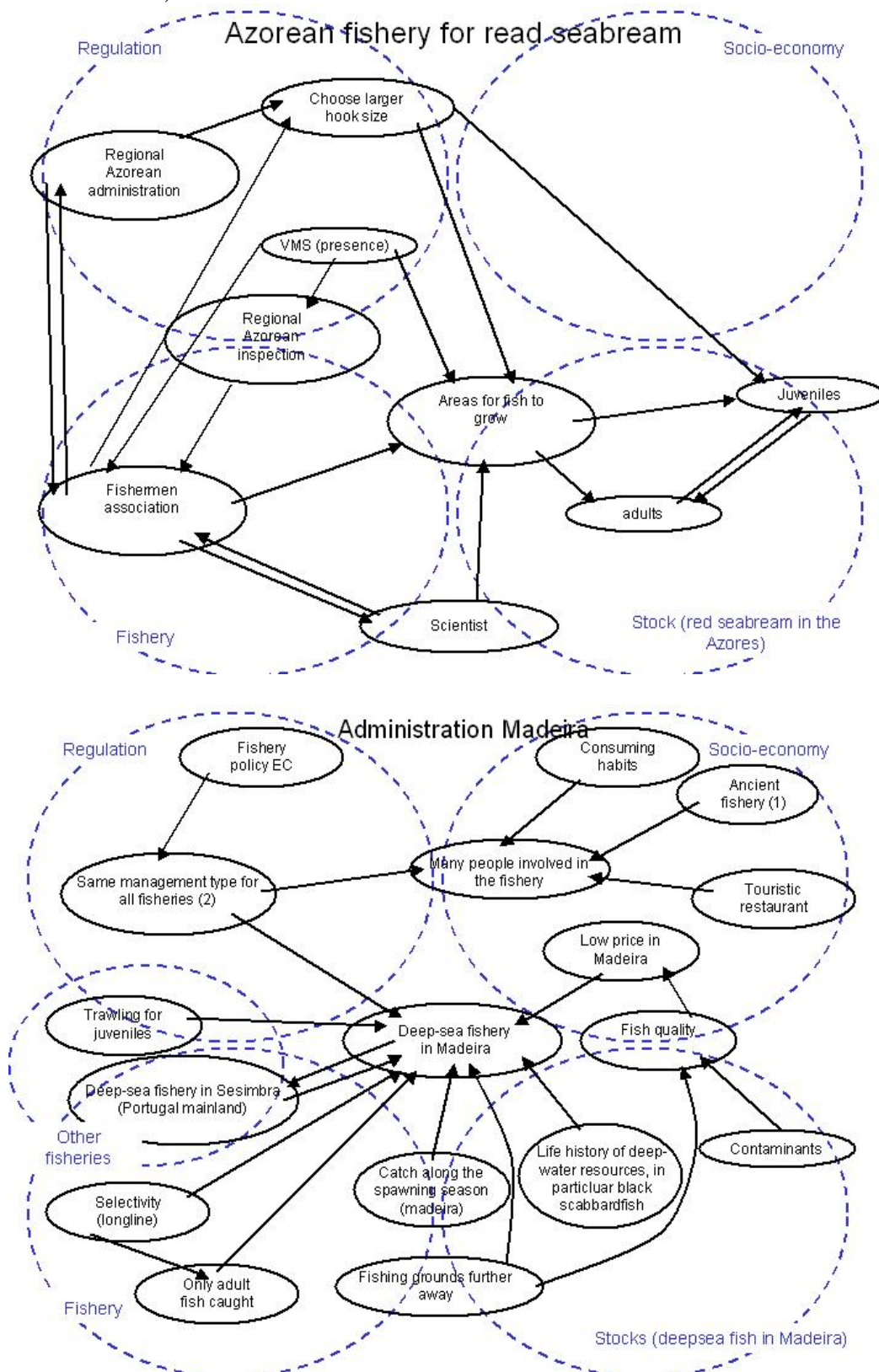




Figure 2. Cognitive maps by case study fishery, scientist working on a generic case and NGOs, working on the Portuguese black scabbardfish fishery.

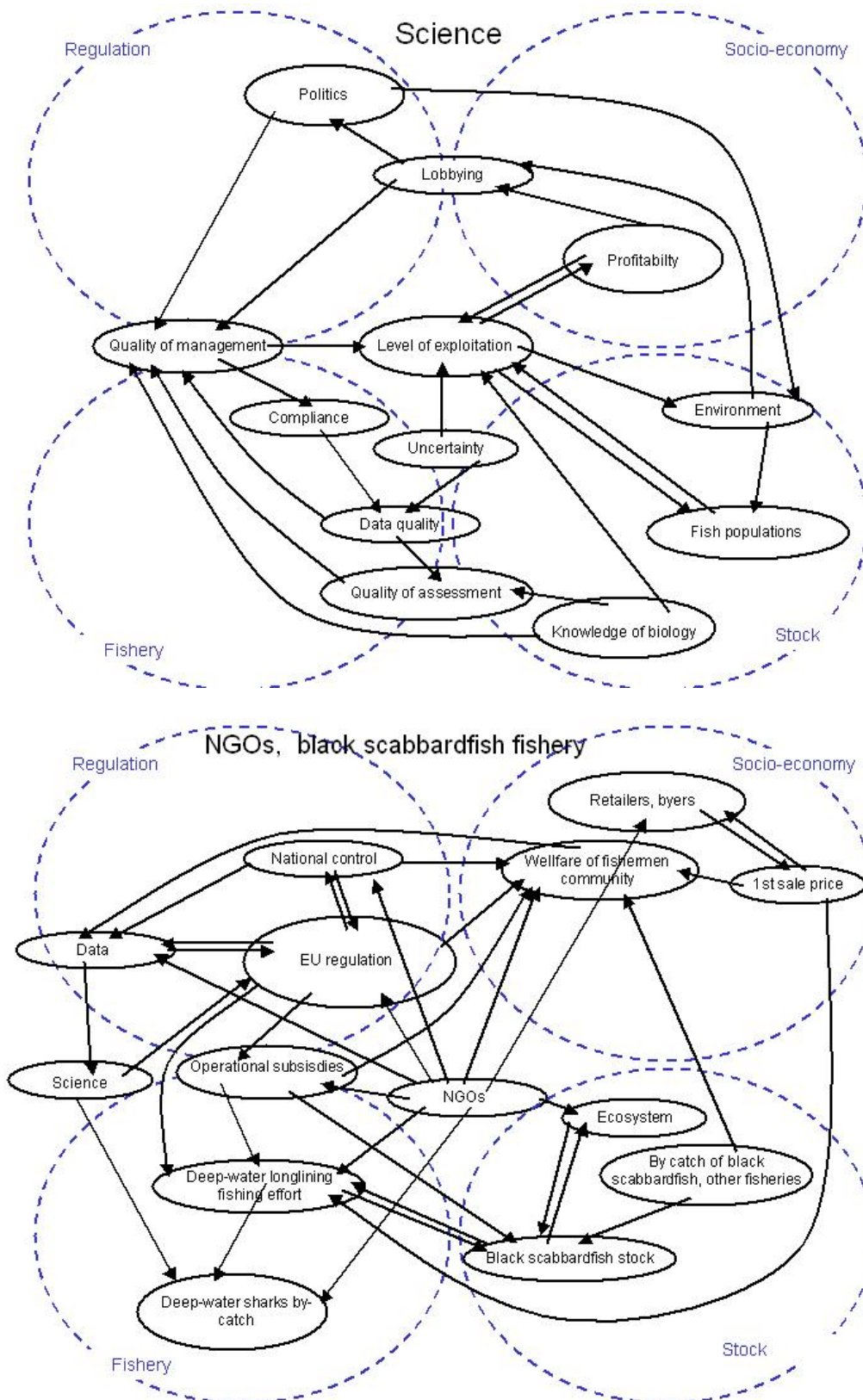


Figure 3. Cognitive maps by case study fishery. Stakeholders from the fishing sector, Greenland Halibut fishery in the NAFO area and Portuguese black scabbardfish fishery.

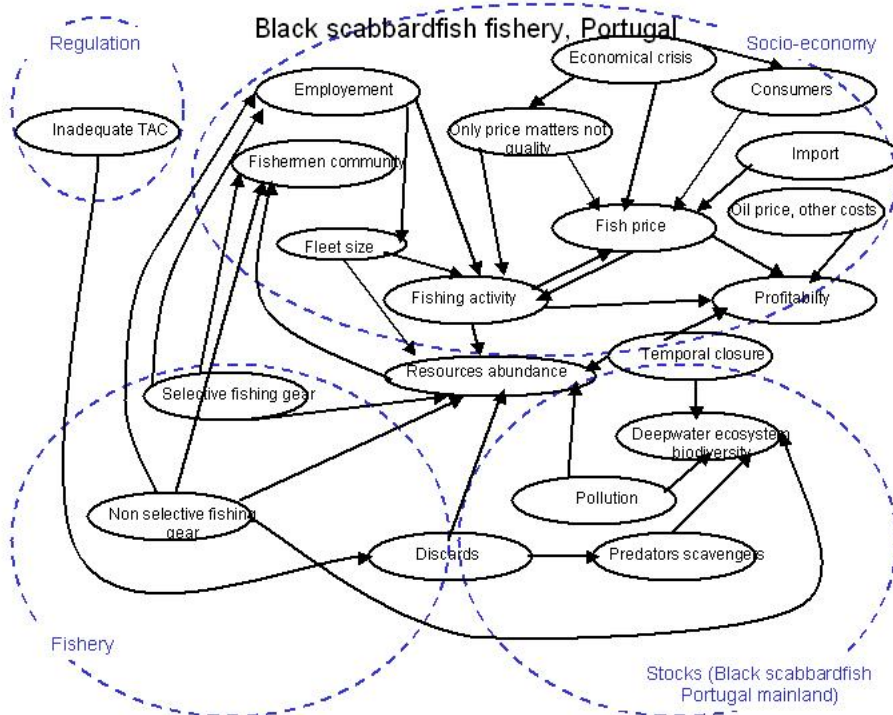
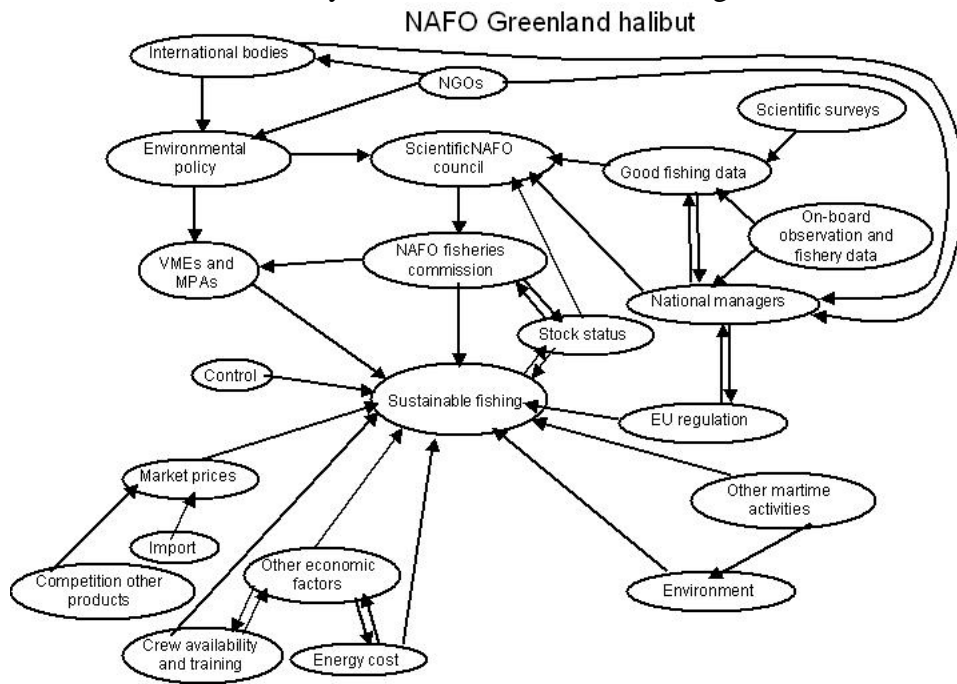
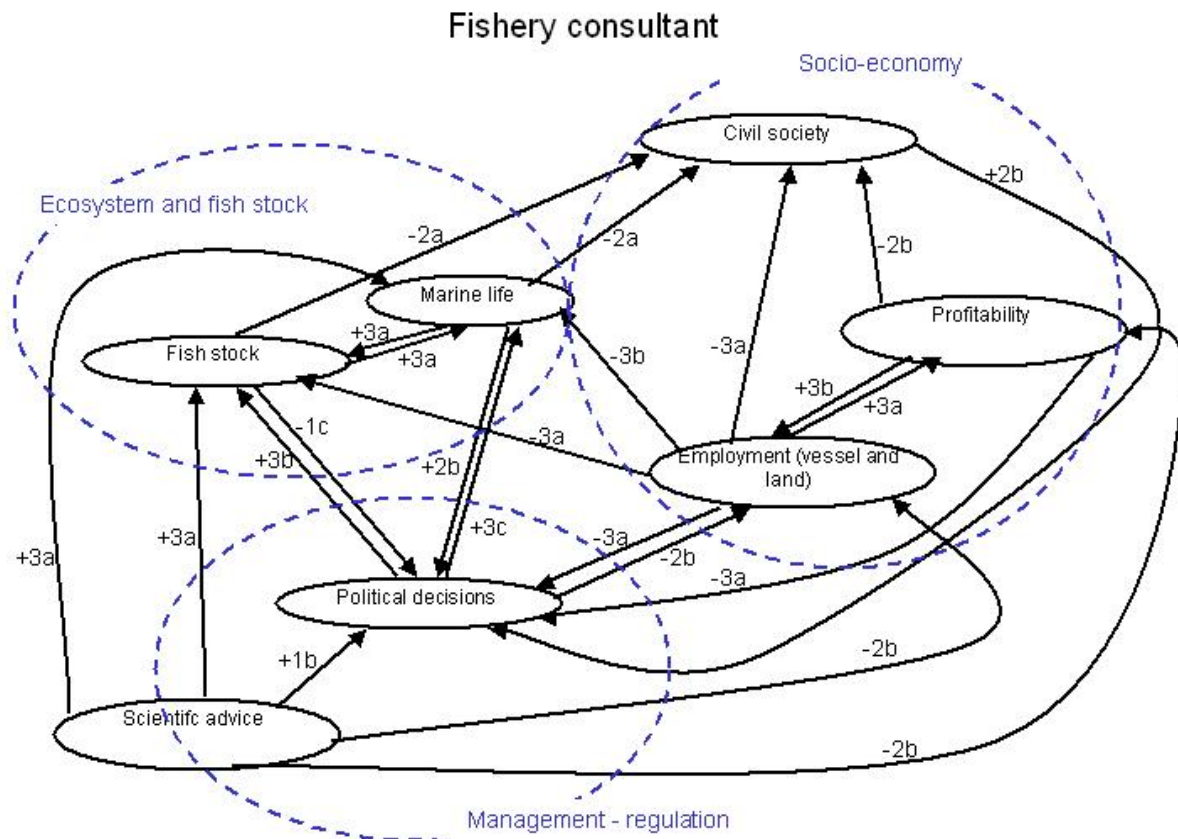


Figure 4. Cognitive maps by on the management of deep-water fishery from a fishery consultant.



## 5. Future stakeholder meeting

It appeared that following to this workshop, stakeholders were keen to meet the project again. The option of a future stakeholder meeting in April 2011 was discussed. At this period one year before the end of the project, it will be possible to present a draft monitoring and management framework and there will be still time to integrate view from stakeholders into it.

This stakeholder workshop in 2011 would be larger as stakeholders from the workshops in Brussels and Lisbon might be keen to join again and further works with stakeholders will be made at case study level. The participation of the EC at this 2011 workshop will be required. This is a significant change from the Deepfishman plan for stakeholder workshops as scheduled in the Deepfishman contract with the EC (Deepfishman, annex II, Description of the Work (DoW) pages 51-52) so that it needs to be agreed by the EC. Nevertheless, it is an improvement to hold a stakeholder workshop one year before the end of Deepfishman rather than closer to the end when it would be more difficult to take into account of stakeholder comments.

## **6. Any other business**

The website and wiki sites were presented and stakeholders were invited to visit these to keep informed of what is going-on in the project and to access to reports and other products. The web-based questionnaire was presented and a paper version in Portuguese will be distributed to a few stakeholders to whom it is more convenient.

## Annex 1: list of participants

### Annex 1.1. Stakeholders

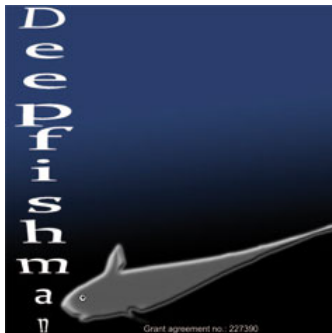
Name	Organisation	Stakeholdertype	Country	e-mail, telephon
Luís Calaça	Coopescamadeira	Fishing Industry (catching)	Portugal	00351291230317
Manuel Pacheco	Porto de Abrigo do Propesca CRL	Fishing Industry (catching)	Portugal	00351296201550
Luis Ambrosio	PROBITEC S.L.	Fishing Industry (catching)	Spain	<a href="mailto:lambrosio@probitec.com">lambrosio@probitec.com</a>
Carla Rato	AAPLCLZO	Fishing Industry (catching)	Portugal	<a href="mailto:aaplclzo@sapo.pt">aaplclzo@sapo.pt</a>
Filipe Rodrigues	Escola Superior de Turismo e Tecnologias do Mar, Peniche	Student	Portugal	<a href="mailto:filipe.shoter@gmail.com">filipe.shoter@gmail.com</a>
Sara Reis Gomes	DSIP - Direcção Regional de Pescas da Madeira	National (Regional) Administration	Portugal	<a href="mailto:sararg.dsip@gmail.com">sararg.dsip@gmail.com</a>
Manuela Corvo	DGPA - Direcção Geral de Pescas e Aquacultura	National Administration	Portugal	<a href="mailto:mcorvo@dgpa.min-agricultura.pt">mcorvo@dgpa.min-agricultura.pt</a>
António Cabral	ADAPI	Fishing Industry (catching)	Portugal	<a href="mailto:adapi.pescas@maiol.telepac.pt">adapi.pescas@maiol.telepac.pt</a>
Juan Manuel Liria	CEPESCA	Fishing Industry (catching)	Spain	<a href="mailto:mliria@iies.es">mliria@iies.es</a>
Carlos Macedo	ArtesanalPesca	Fishing Industry (catching)	Portugal	<a href="mailto:artesanalpesca@mail.telepac.pt">artesanalpesca@mail.telepac.pt</a>
Tiago Cagita	Câmara Municipal de Sesimbra	Local Government	Portugal	<a href="mailto:pescas.ruralidade@cm-sesimbra.pt">pescas.ruralidade@cm-sesimbra.pt</a>
Rita Sá	LPN / PONG-Pesca	NGO	Portugal	pongpesca@gmail.com; rita.sb.sa@gmail.com
Monica Verbeek	Seas At Risk	NGO	Portugal	<a href="mailto:mverbeek@seas-at-risk.com">mverbeek@seas-at-risk.com</a>
Maria Cristina Rosa	DGPA - Direcção Geral de Pescas e Aquacultura	National Administration	Portugal	<a href="mailto:crosa@dgpa.min-agricultura.pt">crosa@dgpa.min-agricultura.pt</a>
Carla Frias	DGPA - Direcção Geral de Pescas e Aquacultura	National Administration	Portugal	<a href="mailto:cfrias@dgpa.min-agricultura.pt">cfrias@dgpa.min-agricultura.pt</a>
Emilia Batista	DGPA - Direcção Geral de Pescas e Aquacultura	National Administration	Portugal	<a href="mailto:ebatista@dgpa.min-agricultura.pt">ebatista@dgpa.min-agricultura.pt</a>
Teresa Moura	IPIMAR	Scientist	Portugal	<a href="mailto:tmoura@ipimar.pt">tmoura@ipimar.pt</a>
Alberto Murta	IPIMAR	Scientist	Portugal	<a href="mailto:amurta@ipimar.pt">amurta@ipimar.pt</a>
Laura Wise	IPIMAR	Scientist	Portugal	<a href="mailto:lwise@ipimar.pt">lwise@ipimar.pt</a>
Cristina Rosa	DGPA	Administration	Portugal	
João Correia	Fishery school director and founder of APECE, elasmobranch protection association	NGO	Portugal	<a href="mailto:mail@apece.pt">mail@apece.pt</a>

Annex 1.2: Deepfishman scientists.

Name	Organisation	Country	email
Sveinn Agnarsson	University of Iceland	Iceland	sveinnag@hi.is
Ricardo Alpoim	Ipimar	Portugal	ralpoim@ipimar.pt
Dimitrios Damalas	HCMR	Greece	shark@ath.hcmr.gr
Guzman Diez	Azti-Tecnalia	Spain	gdiez@suk.azti.es
Leonie Dransfeld	Marine Institute	Ireland	leonie.dransfeld@marine.ie
Inês Farias	Ipimar	Portugal	ifarias@ipimar.pt
Ivone Figueiredo	Ipimar	Portugal	ivonefig@ipimar.pt
Juan Gil	IEO	Spain	juan.gil@cd.ieo.es
Fernando Gonzalez - costa	IEO	Spain	fernando.gonzalez@vi.ieo.es
Phil Large	Cefas	UK	phil.large@cefas.co.uk
Pascal Lorange (project coordinator)	Ifremer	France	pascal.lorange@ifemer.fr
Lionel Pawlowski	Ifremer	France	lionel.pawlowski@ifemer.fr
Verena Trenkel	Ifremer	France	verena.trenkel@ifemer.fr



## Annex 2 : invitation



## Management and Monitoring of deep-sea Fisheries and Stocks

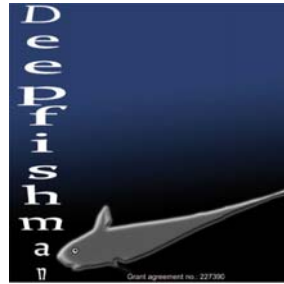
**Stakeholder Workshop  
4 December 2009  
Lisbon**

Deepwater fisheries pose particular difficulties for management. Target species are difficult to assess and they are generally vulnerable to overfishing. The EU project DEEPFISHMAN will develop a range of strategy options for the management of deepwater fisheries in the NE Atlantic that will take account of these factors. Firstly, the aim will be to identify new and more effective assessment methods, reference points, control rules and management strategies to be used in the short term, making better use of available data. Secondly, a reliable long-term framework will be developed for which additional data needs will be specified in order to fill current information gaps to achieve reliable long-term management requirements. This work will be developed by examining a range of case studies selected to reflect the diverse characteristics of the different types of deepwater fishery. The socio-economic profile and projected impact of the management strategy options will be examined. The project outputs will aim to provide robust guidelines for deepwater fisheries management suitable for adoption within the Common Fishery policy.

**The workshop will provide short descriptions of the three-year project tasks and partners.**



## Annex 3



### **Preliminary agenda for the Stakeholder meeting Friday 4 December 2009, Lisbon**

**9:00- 9:30 welcome**

**9:30- 10:00 Introduction to the project Deepfishman. P. Lorance (project coordinator)**

**10:00 – 10:30 Case studies of interest to stakeholders present at the meeting**

**10:30 – 10:45 Presentation of cognitive maps tools (V. Trenkel)**

**10:45-11:15: Coffee break**

**11:15 - 12:30 Building cognitive maps with stakeholders**

**12:30 – 13:00 Marine strategy framework directive, relationship with deepfishman**  
Presentation from P. Lorance

**13:00- 14:00 lunch break**

**14:00-15:00 Questionnaire to deep-sea fisheries stakeholders**

Questionnaire to be distributed and filled in by stakeholders

**15:00-15:30 Stakeholder analysis**

Open discussion about :

- who are the stakeholders in deep-water fisheries (stakeholder present at the workshop to make list of other stakeholders of importance to the project?)
- stakeholders needs and interest
- Management regime : opinions from stakeholders

**15:30-16:00 Coffee Break**

**16:00-16:30 Stakeholder analysis (continued)**

**16:30-17:00. Contribution of stakeholders to the project**

- organizing the communication with stakeholders
- how stakeholder can contribute to the project

**17:00-17:30 Wrap up**



# Annex 4: Opening presentation of the project

## Stakeholder workshop

Lisbon  
4 December 2009

<http://deepfishman.hafro.is/doku.php>

DEEPPISHMAN Stakeholder workshop Lisbon, 4 December 2009

## DEEPPISHMAN general aim

- Develop management and monitoring frameworks for deepwater fisheries in the NE Atlantic
  - Appropriate/new
    - Stock assessment methods
    - Biological reference points (BRPs)
    - Harvest Control rules (HCRs)
    - Managements strategies
  - Account of
    - Stock sensitivity
    - Biodiversity/ecosystem and VMEs sustainability and conservation
  - Specify additional monitoring data requirements
    - (e.g.) lack of scientific cruises, economics data missing in some fisheries, poor knowledge of high resolution spatial distribution of fishing effort

DEEPPISHMAN Stakeholder workshop Lisbon, 4 December 2009

## Current situation: assessment

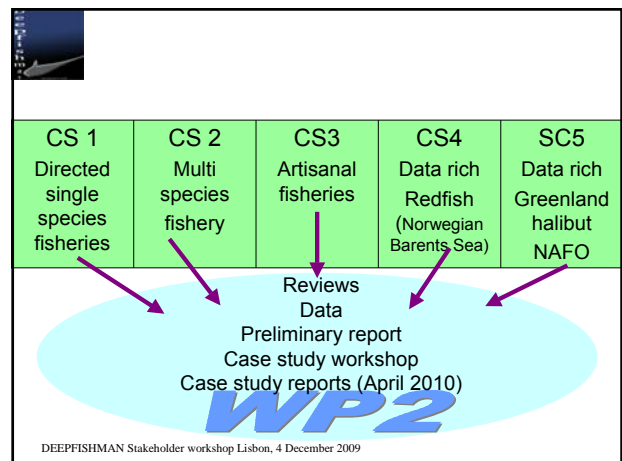
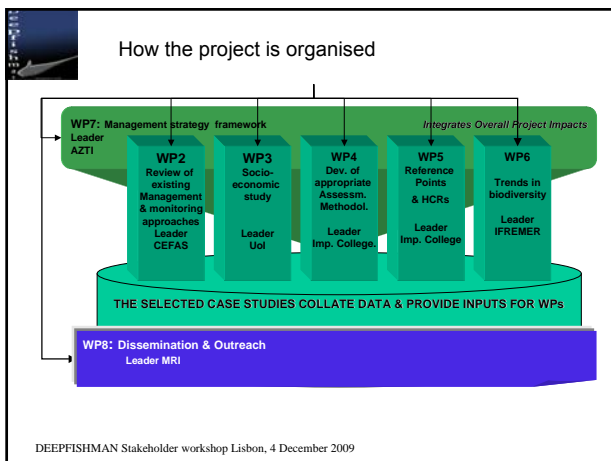
- Exploratory/unreliable in most CSs
- Existing data no all available to assessment groups (e.g. ICES/WGDEEP)
- No protocole to integrate some data (e.g. on-board observations)

DEEPPISHMAN Stakeholder workshop Lisbon, 4 December 2009

## Current situation: management of deep-water fisheries in EU waters

- Main management tool= TACs
- Effort limitation (ceiling on total effort/ member country licensing scheme)
- Existing technical measures: e.g. spatial and seasonal closures for blue ling
- Ecosystem/biodiversity assessment: not integrated with stock assessment
  - Some MPAs designed for VMEs conservations

DEEPPISHMAN Stakeholder workshop Lisbon, 4 December 2009



## Aim of the workshop

- Meeting between stakeholders and DEEPFISHMAN scientists
- Provide an opportunity for stakeholders to express their views
- Allow scientist to include stakeholder knowledge and account for stakeholders needs and requirements in work carried out in DEEPFISHMAN

DEEPFISHMAN Stakeholder workshop Lisbon, 4 December 2009

## Agenda of the day (main points)

- Case studies of interest to stakeholders
- Open discussion view of stakeholders
- Cognitive maps
- Questionnaire

DEEPFISHMAN Stakeholder workshop Lisbon, 4 December 2009

## Case studies...

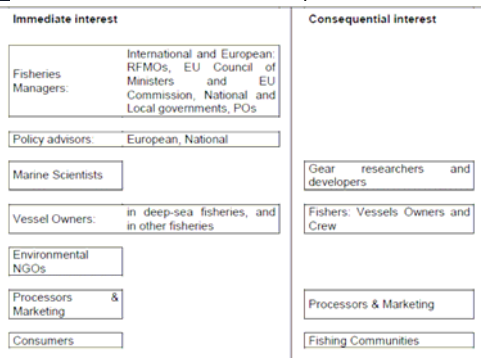
DEEPFISHMAN Stakeholder workshop Lisbon, 4 December 2009

## Stakeholders views

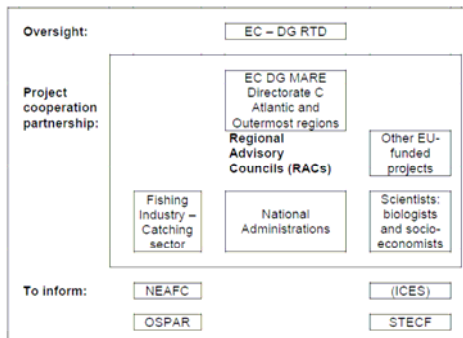
- Who are the stakeholders in deep-water fisheries?
- Stakeholders needs and interest
- Management regime : opinions from stakeholders
  - (1) What is wrong with current management?
  - (2) What should be part of better management?

DEEPFISHMAN Stakeholder workshop Lisbon, 4 December 2009

### Who are the stakeholders in deep-water fisheries?



See full Brussels workshop report on <http://deepfishman.hafro.is/doku.php>



DEEPFISHMAN Stakeholder workshop Lisbon, 4 December 2009



## QUESTION 2

Stakeholders needs and interest

DEEPFISHMAN Stakeholder workshop Lisbon, 4 December 2009




## QUESTION 3

Management regime : opinions from stakeholders

DEEPFISHMAN Stakeholder workshop Lisbon, 4 December 2009

# Annex 5: Presentation of the Case study Portuguese fishery for black scabbardfish

**Case study 3C:  
Black scabbardfish in ICES area IX**




NE ATLANTIC Deep-water fisheries

**FISHERIES** directed to deep-water species usually occur at depths below 400 m.

*High-sea* fisheries started in late 1960's

Expansion in late 1980's (product marketing)

- State of exploitation of traditional resources
- Adoption of more restrictive management strategies



DEEPPISHMAN Framework


**Case-studies**

**CS 1: Direct single species fisheries**

Highly vulnerable – orange roughy in Namibian waters – NatMIRC  
 Highly vulnerable – orange roughy in ICES VI & VII – MI  
 Less vulnerable – blue ling (*Molva dypterygia*) in Vb, VI, VII – Cefas

**CS 2: Mixed demersal fisheries**

French trawl fishery for roundnose grenadier (*Coryphaenoides rupestris*), black scabbardfish, deep-water sharks in Vb, VI e VII – IFREMER



DEEPPISHMAN Framework

**CS 3: Artisanal fisheries**

Vulnerable:


- Fisheries for red (blackspot) seabream in the Gibraltar Strait and Bay of Biscay – IEO
- Fisheries for red (blackspot) seabream in the eastern Mediterranean – HCMR

**CS 4: Data rich stock**

NE Atlantic redfish - IMR

**CS 5: Data rich stock**

Greenland halibut stocks in the NAFO area – IEO



DEEPPISHMAN Management measures


EU – Fisheries not regulated until 2003

EU management measures

- biannual TAC (EC, 2002b, 2004, 2006, 2008)
- Fishing effort (EC, 2004, 2006)
- Licensing scheme (EC, 2002a)

Member States with deep-water fisheries

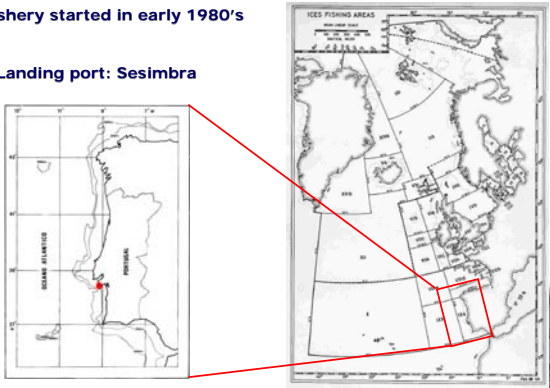
- establishment of biological sampling schemes
- establishment of onboard observing schemes



DEEPPISHMAN Portuguese fishery for black scabbardfish in IX

**Fishery started in early 1980's**

**Landing port: Sesimbra**



DEEPFISHMAN Portuguese fishery for black scabbardfish in IX

### Species characterization



**Black scabbardfish**  
***Aphanopus carbo* Lowe, 1839**

- Habitat: bathypelagic
- Depth: 200-1700 m
- Feeding: fish

• **Reproduction:**

- Spawning from September to December;
- Determinate fecundity - the standing stock of vitellogenic oocytes is fixed prior to the onset of spawning period;
- Ripe individuals only caught in Madeira and Canary Archipelagos




DEEPFISHMAN Portuguese fishery for black scabbardfish in IX

### Fleet characterization

- No. vessels: 14
- Length-over-all:  $17.3 \pm 2.7$  m <sup>(1)</sup>
- Engine's power:  $238.6 \pm 82.7$  HP <sup>(1)</sup>
- Tonnage:  $43.3 \pm 26.5$  <sup>(1)</sup>
- Gear: longline
- Total annual catch: ~3400 ton (in 2007) [INE, 2008]
- No. hooks: 5500-9000
- Soaking time: 1-2 days
- Depth: 600-800 fathom (1000-1400 m)
- Landings: 3x/week


<sup>(1)</sup> In 2004, according to Machado & Figueiredo (2008)



DEEPFISHMAN Objectives

### 1. To review

- salient characteristics of the deep-water environment in the NE Atlantic;
- the major features of selected fisheries (this will require input from the Industry and the collation and analysis of socio-economic data);
- the life history characteristics and vulnerability to fishing of the stocks/species targeted in these fisheries;
- the current availability of fisheries, ecosystem and biological data;
- the current methods used for monitoring, assessing and managing the state of stocks;
- the current state of deep-water stocks in the NE Atlantic
- the outcomes and guidelines from the Commission of the European Communities, specific RTD programme "Specific Support to Policies", SSP-2004-22745 "Probabilistic assessment, management and advice model for fishery management in the case of poor data availability" (POORFISH) of relevance to deep-water stocks.



DEEPFISHMAN Objectives

- To draw lessons from the current management and monitoring frameworks for deep-water species used internationally, to identify strengths and weaknesses.
- To examine and trial stock assessment methods not previously used or not fully developed for use on deep-water stocks.
- To examine appropriate biological reference points and harvest control rules for deep-water stocks.
- To explore catch data from appropriate case study fisheries for trends in biodiversity and to identify protocols for monitoring biodiversity (of both vertebrates and invertebrates) in the deep-water ecosystem.
- To develop a range of strategic options for the exploitation of deep-water stocks and ecosystems.
- To develop a socio-economic profile of selected fisheries and to evaluate projected socio-economic impacts of management strategy options as applied both through a short- and long-term management framework.

# Annex 6: presentation of the method for cognitive maps

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## Using cognitive maps to elucidate stakeholder views on deep-sea ecosystem and fisheries

*Uso de mapas cognitivos para elucidar o ponto de vista dos representantes da pesca sobre ecossistemas e pescaria de profundidade*

Verena Trenkel  
Ifremer, Nantes, France

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www.ifremer.fr

## A fictive example / Exemplo fictício

**Direction of links / Direcção da relação**  
 + positive / positiva  
 - negative / negativa  
 +/- unknown / desconhecido

**Time frame / Duração**  
 a: within 1 yr / < 1 ano  
 b: 2-5 yrs / 2-5 anos  
 c: more than 5 yrs / > 5 anos

**Strength of links / Intensidade das relações**  
 1: low / fraca  
 2: medium / média  
 3: strong / forte

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## Overview / Visão geral

- What are cognitive maps?
- **O que são mapas cognitivos?**
- Example: Stakeholders' perceptions of the Eastern English Channel ecosystem and fisheries
- **Exemplo: Ponto de vista dos stakeholders do Este do Canal Inglês sobre o ecossistema e pescaria**
- Deep-sea ecosystem and fisheries
- **Ecosistema e pescarias de profundidade**

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## Case study: Stakeholder perceptions of the Eastern English Channel

**Exemplo: Ponto de vista dos stakeholders do Este do Canal Inglês**

Stakeholders interviewed / Stakeholders entrevistados

- Trawlers
- Arrastões
- Gill netters
- Redes de emalhar
- Scallop dredges
- Dragas para vieira
- Mussel farmers
- Cultivo de mexilhão

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## What are cognitive maps? O que são mapas cognitivos?

-They are mental maps representing a given system including the links between units  
 - São mapas mentais que representam um determinado sistema, incluindo as relações entre as unidades.

increase in A leads to increase in B / aumento de A implica aumento de B

increase in B leads to decrease in A / aumento de B implica diminuição de A

Additional information that can be represented:  
 - strength of link  
 - time frame for link

Informação adicional que pode ser representada:  
 - intensidade da relação  
 - duração da relação

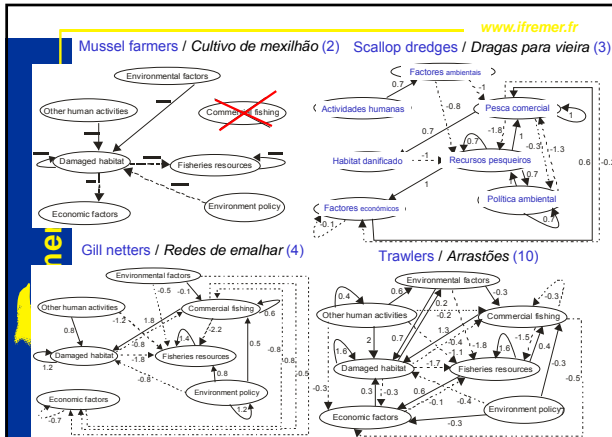
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## Results: a cognitive map Resultados: mapa cognitivo

Diagram drawn by the interviewee showing the main components and interactions in the ecosystem (incl. strength and time frame)

Diagrama desenhado pelos entrevistados que mostra as principais componentes e interações do ecossistema (incluindo Intensidade e duração)



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## Deep-sea ecosystem and fisheries Ecosystema e pescaria de profundidade

**Objectives / Objectivos**

- By group, draw cognitive map of deep-sea ecosystem and fisheries including all important components and driving factors
- *Por grupo, desenhar mapa cognitivo do ecossistema e pescaria de profundidade incluindo todas as componentes e factores importantes*
- Add links and code strength of link and time frame
- *Acréscetar relações e códigos de intensidade e duração*

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## Groups / Grupos

- **1** NAFO & Spanish high sea fishing industry  
*NAFO & Indústria espanhola*  
(Fernando & Ricardo)
- **2** Black scabbardfish longlining  
*Palangre de peixe-espada preto*  
(Ivone & Guzman)
- **3** Azorian fishing sector  
*Sector da pesca açoriano*  
(Juan & Nuno)
- **4** NGOs  
*ONGs*  
(Pascal & Phil)
- **5** Gov/Administrators  
*Governo*  
(Verena & Ines)
- **6** Scientists  
*Cientistas*  
(Leonie & Dimitros)

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