

ICES SGFI Report 2005

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Report of the ICES/NSCFP Study Group on the Incorporation of Additional In- formation from the Fishing Industry into Fish Stock (SGFI)

14–15 March 2005

Stavanger, Norway



International Council for the Exploration of the Sea
Conseil International pour l'Exploration de la Mer

**International Council for the Exploration of the Sea
Conseil International pour l'Exploration de la Mer**

H.C. Andersens Boulevard 44-46

DK-1553 Copenhagen V

Denmark

Telephone (+45) 33 38 67 00

Telefax (+45) 33 93 42 15

www.ices.dk

info@ices.dk

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1 Summary

The 2005 meeting of SGFI was reduced to a one-day meeting due to untoward weather conditions prevailing in Stavanger during arrival. As a result some of the presentations were given and discussed before the Chair and other members arrived.

The starting point of SGFI was the intention to evaluate the North Sea Stocks Survey (Fishers Survey), to examine its suitability for incorporation in the fish stock assessment procedure and, if possible, to come up with proposals for improvement. The main conclusion for the Fishers Survey is that it should be continued and quantitative results can only be expected after a couple of more years, when trends become conspicuous and can be correlated with assessment outputs.

Extensive discussions on the format of advice and what is presented in the Working Group Reports led to the conclusion that it is of prime importance to better explain what information has been used in the assessment process and why certain information was not used. This especially holds for the CPUE and LPUE data which in some assessments are used, in others not. It was repeatedly outlined that in some cases the trend in CPUEs could have indicated at a relatively early stage that assessments go wrong. The fishery offers offensively their support and data, at least as a tool for the assessment biologists to check whether their perception of the stock developments coincide or contradict the field experience of the fishery. In this context it was pointed out that for some stocks the fishery provides detailed information on haul positions on the log-book sheets, this data seems however to get lost in the process of data processing, to the effect that the data are simplified and pooled back on the ICES rectangle level, thus valuable information is getting lost.

The meeting then concentrated on the discussion and evaluation of the achievements of the three years of cooperation. It was concluded that SGFI was a valuable initiative and should in one way or the other continue, not however, in form of the Study Group as has been so far. The NSC will initiate a steering group to meet and design a platform for continuation of the cooperation possibly under the realm of the North Sea RAC. Other ways, including financing through the COM will also be explored.

2 TOR/Agenda

The following items were to be discussed during the third meeting of SGFI in Stavanger:

- a. Presentation of the Rijswijk workshop.
- b. North Sea RAC. Recent developments and future role of SGFI within the work of the RACs.
- c. CPUE (LPUE)-task forces within the RACs (joint forces)?
- d. Use of selected fleets as industry survey. What shall be recommended to NSRAC?
- e. Possible ways of cooperation on sampling and discard data.
- f. Fishers Survey 2004. Discussion on the future of the fisher's survey and recommendations to NSRAC.
- g. Review of SGFI and proposals for future developments
- h. Make and inventory containing options on possible improvement in data quality, starting from the EC-logbook system and focussing on a few major species from the North Sea (plaice, cod). In addition suggestions should be made how to expand the logbooks with information that is useful for the assessment work (position, haul duration *etc.*).
- i. Discussion of an alternative ACFM report.

3 Three Years SGFI

Looking back at three years of SGFI: Main issues discussed at (Newcastle (2003), The Hague (2004) and Stavanger (2005))

The starting point of SGFI was the intention of the North Sea Commission Fisheries Partnership (NSCFP) to evaluate the “Fishers Survey” that was initiated in 2002. For this reason SGFI was originally planned to take place only once in 2003. During this meeting in Newcastle a number of important points were discussed going far beyond the scope of this TOR of this meeting. As a result, it was agreed by ICES and the NSC that SGFI should continue as a joint ICES/NSC study group for another two years.

During the first meeting in Newcastle the Fishers Survey was evaluated and considered to be a valuable tool and should carry on for another year, before being re-evaluated by SGFI. Independent of this evaluation were the results of the Fishers Survey examined by ACFM and to some extent integrated in the ACFM-report. The nature of utilization of the results proved to be difficult due to the semi-quantitative nature of the findings of the Fishers Survey, such as “bigger”, “less” or “better”. Naturally, these results were differently reflected in the ACFM report, ranging from very generic reflection to quite detailed reflection of the fishery on the development of the stocks.

An example of very generic reflection is: *Information from the fishing industry:*

The fishing industry has provided information which has been included in considerations of assessments. Such information has contributed to the understanding of the fisheries, also in cases where information has not been in a form which enables direct inclusion in quantitative assessments.

An example of more extensive incorporation of information from the fishery is given by Figure 1:

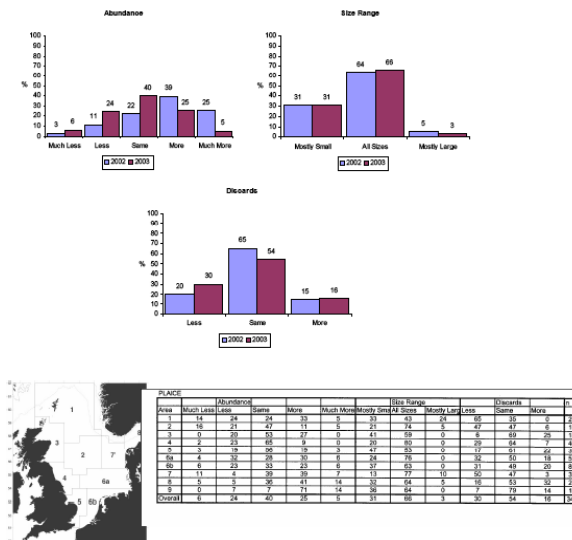


Figure 3.5.6.2 North Sea fishermen survey for plaice abundance, size range and discards for the same reference periods in 2002 and 2003. (Source: Europeche 2003).

Figure1 Illustration of the use of the Fishers Survey in an ACFM Report (ICES, 2003)

During the Newcastle meeting in 2003 a number of proposals were made by the fishery for ICES to take into consideration in the process of producing its products, i.e. the working group and ACFM reports. With regard to the working group reports the fishery expressed the wish to

have a section included containing a non-technical description on the stocks, describing the state and the development of the stocks without any assessment jargon, technical descriptors and mathematics. Moreover, the fishery emphasised that it was important for them to have a clear description in the WG-reports on what data material was used and what material was not used (with focus on the CPUE series). In addition the fishery desired a compendium explaining in layman language how the assessment procedure works. Embarking on this the fishery emphasized that training of scientists to better communicate with fishermen would be highly appreciated.

Along this line ways were proposed for a differently designed ACFM report. In such trends on *e.g.* fishing effort, predators, environmental parameters, composition of the fleets, or distribution on nets and engine power as well as landings should be graphically presented. An essential part of this would also be the graphical presentation of the spatial distribution of the effort.

Of particular concern for the fishery is the inconsistency of the assessment outputs of ICES. Examples were presented and discussed where assessment output obviously went wrong and the results were still used by the COM leading to false perception of the state of the stock and subsequently to inadequate TACs. It was repeatedly requested from the fishery to incorporate re-checking mechanisms (*e.g.* CPUE series) to identify discrepancies and misleading perceptions. Along this line assessment methods were desired which produce more stable results, omitting strong yearly fluctuations.

One frequently reoccurring issue was the scientific use or non-use of data provided by the fishery. It was outlined that in many occasions specific logbook data and very detailed CPUE-data are provided to the scientific process, giving insight into the “what, where and when” of the fishery and by means of this giving good insight into the current state of the fishery on a much finer scale than the very coarse ICES statistical rectangle basis. To the big frustration of some fishermen such efforts never had markedly effects on the current assessment procedure and outcome.

At the end it was concluded by SGFI that catch rates in space and time provide essential information, and that this is information which is rarely used by the administrations and only selectively by ICES.

It was recommended by SGFI that the NSC-Partnership needed to press for much better catch data, including discards, to be collected and forwarded to ICES. Fishers and scientists all agreed on their importance to the assessments and although it was recognised that improving the quality of the data was a difficult task every attempt should be made to improve on the current unsatisfactory position. The point was made that we are currently operating within a flawed fisheries management system which makes it extremely difficult for both fishers and scientists to do their jobs properly and which acts against fishing being carried out in a sustainable way. Scientists were being asked to produce certainty where it could not exist. A forum was needed in which these issues could be discussed between fishers, scientists and managers. **It was agreed that some of the issues over the current management regime could be addressed through a 2 day workshop on alternative fisheries management systems for the North Sea, to be organised by the NSC Partnership, aimed at bringing fishers, scientists, fisheries economists and fishery managers together.**

It was proposed to support the idea of running joint abundance surveys with research and commercial vessels. It was reported that Icelandic experiences with joint surveys were encouraging. Denmark and Scotland have started also with joint abundance surveys in sole and monkfish respectively. Spain has initiated joint surveys for a number of species.

Moreover, the idea was brought forward to develop joint research projects. The Commission could take this into account in formulation of calls for research tenders and, in this way, providing incentives for cooperation and joint work.

A similar approach is the proposal for initiating stock- or regional-specific project groups to develop agreement and concepts for specific stocks. Ireland made good experiences with this approach and proposed such cooperation as a constructive alternative. In the advent of the RACs such an approach was considered to fall in the realm of these new organisations and left for later consideration.

Finally, the future of the SGFI was discussed. In summary, SGFI had specifically addressed the potential of improving data collection in collaboration with fishers. Presentations had been given to the Partnership from Iceland, Canada and the USA on data collection schemes involving fishers. Some national data collection schemes involving fishers had already been out in place in Denmark, England, Scotland, and other countries. These initiatives now needed to be taken forward on an international basis within the North Sea. In general, projects which brought together fishers and scientists had great benefits in instilling trust and improving communication as well as promoting particular projects. **The way to take the work of the SGFI forward might be to establish stock or regionally specific groups to develop collaborative projects. Projects on discards would be especially welcome and might receive funding from the Commission, which was committed to initiating a series of pilot projects on discards.** It was agreed that in one way or the other the process of communication and cooperation as started by SGFI should continue. Support should be sought on the EU level either applying for an ERA-Net or other EU-funding. A steering group was established which will identify form of collaboration and funding.

4 Fishers Survey 2004 – Report on the North Sea Stocks Survey

Presentation by Sue Marrs

2004 was the third year that a survey of fishermen's perceptions of the status of eight key demersal fish stocks in the North Sea (Figure 2) has been carried out. The survey contains a series of questions relating to cod, haddock, whiting, saithe, monkfish, nephrops, sole, and plaice across ten areas. The number of responses remained similar to previous years, with a total of 305 questionnaires returned from Belgium, England, Denmark, The Netherlands, and Scotland. The total number of responses by species and area was 2440. Responses were collated by area fished, vessel size and gear type and presented to the ICES Working Group on Demersal Fish Stocks (WGNSSK) for use in their assessments of the North Sea stocks.

WGNSSK have stated that they found the results of the survey to be useful in that they helped confirm (or otherwise) their perceptions of trends in the stocks. Industry representatives have also commented that they found the results were a useful resource when supporting their members.

In 2004 the steering group¹ that coordinates the survey benefited from the advice of two ICES scientists whose input improved the utility of the data for WGNSSK. Some changes were introduced to the survey format in 2004. An extra question was included where the respondents could indicate whether they had made a major change to the gear they used, which may influence their views on the state of the stocks. The views of the respondents (n = 8) who indicated this to be the case were omitted from the data set. The format of the questions relating to each of the species is presented in Table 1. As in previous years, the question on distribution of the catch was not considered to work well and has now been dropped from subsequent questionnaires.

¹ Steering Group members are: M.Andersen (Denmark), D. Beveridge (England), F. Brocken (Netherlands), F.Gowland (Scotland), A. Hawkins (Scotland)

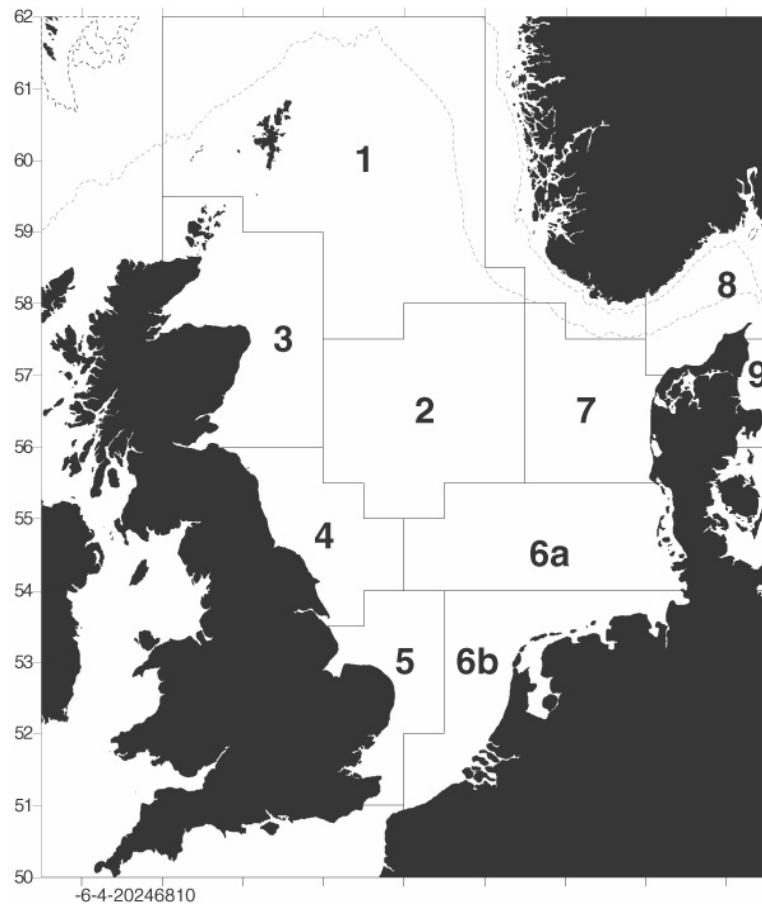


Figure 2 The ten fishing areas in the North Sea Stock Survey

As the results from the survey are neither quantitative nor absolute, the value of the data increases as the time series grows. A time series of abundance data was developed by CEFAS, whereby responses were assigned a score (-1,-0.5,0,0.5,1 for much less, less, same, more and much more respectively), a weighted score for each area and species was calculated ($\Sigma(\text{score} \times \text{percentage})$), thus giving an index of change for each year of ± 100 . The year 2001 was assigned a value of zero and the time series were generated by cumulatively summing the indices for each area over the years. An example for whiting is presented in Figure 3.

It was agreed by SGFI that the continuation of the North Sea Stock Survey should be recommended to the NSCFP. The value of the data will increase as the time series develops and the survey should be continued for several years. Interest was expressed in collating similar information for pelagic species. It was agreed, however, that as the two fisheries are quite distinct, the pelagic fisheries should be dealt with in a separate survey that may require a different approach. It was agreed that this proposal should be forwarded to the Pelagic RAC.



Figure 3 Abundance time series for whiting as presented in the WGNSSK report. See text for derivation.

COD									
Area of fishing (refer to map)	1		2		3		4		5
	6a		6b		7		8		9

Has the abundance of cod changed since last year? No Yes

If yes:

CHANGE IN ABUNDANCE	MUCH LESS		LESS		MORE		MUCH MORE	
----------------------------	------------------	--	-------------	--	-------------	--	------------------	--

Has your level of cod discarding changed since last year? No Yes

If yes:

CHANGE IN DISCARDS	MUCH LESS		LESS		MORE		MUCH MORE	
---------------------------	------------------	--	-------------	--	-------------	--	------------------	--

FOR THIS YEAR:

SIZE RANGE	MOSTLY SMALL			ALL SIZES			MOSTLY LARGE	
ABUNDANCE OF YOUNG FISH ABOUT TO ENTER FISHERY	LOW		MODERATE		HIGH		DON'T KNOW	
DISTRIBUTION	PATCHY				WIDESPREAD			

Table 1 Examples of the questions posed for cod in 2004.

It was concluded that the survey is popular with fishers' organisations as enables them to present fishers' views on the state of the stocks. The respective ICES Working Group finds the information valuable and had assisted with the presentation of the data, and the results had been referred to in the ACFM Report. **It was agreed that the Fishers' Survey will continue in 2005 under the auspices of the Partnership and that it would be coordinated by Sue Marrs.** It will cover 8 species as before. The questions would remain the same, but the one on fish distribution would be dropped as the responses were unclear. Scientists thought that information on distribution would be valuable to them, but they were told that unless they could come forward with good ideas on how the question could be framed to provide a clear response it would be removed from the survey. It was hoped that Norway and France would participate this year alongside Belgium, Denmark, England, Scotland, and the Netherlands. The question of extending the survey to pelagic stocks was raised but it was decided that this was really an issue for the new Pelagic RAC to consider. It was pointed out that the data from the survey would benefit from being analysed using methods specifically designed for subjective data. Sue Marrs would liaise with the chair of the Working Group and participants over the timing of the survey, which would follow the pattern laid down in 2004.

5 The Institute for Fisheries Management

Presentation by Doug Wilson on issues related to the fisheries management knowledge base.

IFM has developed two images that describe our general approach to questions around the knowledge base for fisheries management. They appear in Wilson and Degnbol (2005), which is also the source for this descriptive text. Figure 4 we call the integration of fisheries management across scales. The effectiveness of all management is finally determined by the be-

havior of those who are physically present in the environment. In fisheries management this usually means the fishing vessel. Management decisions, however, must be taken at an institutional level matching the largest biological unit of management, usually the stock (Figure 4). In between, is the level of management execution, *i.e.*, the level for which the decision is taken and the management measure defined. For example, a decision about allowable mesh sizes is made for a particular fleet by a management institution concerned with an entire stock. In this case, the fleet is the level of execution of the management measure. The level of execution is also the resolution at which information related to these measures must be collated and communicated. This includes both information that will be used to trigger management decisions and to evaluate their impact. The management institution responsible for a stock, for example, must know the impact of that fleet with that mesh size limit. The upshot is that fisheries management requires information at multiple resolutions. Few actors in fisheries management are still willing to accept that the problem can be reduced to simply modeling data points over a large area and basing both science and management on the parameters of such models (Degnbol, 2003).

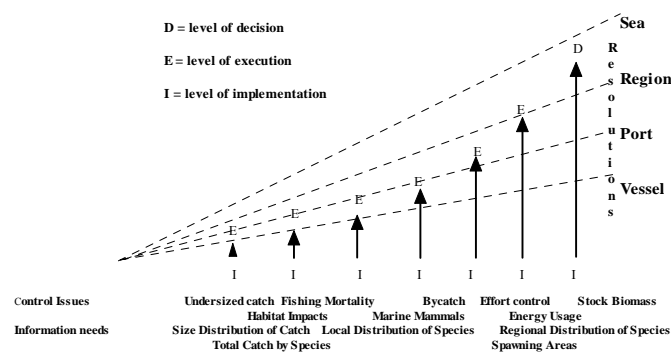


Figure 4 The integration of management institutions across levels

The issue of scale in fisheries management crystallises in the very common case where the most effective approach available to the management institution concerned with the entire stock is to allow the devolution of certain decisions to the level of execution. The central question then becomes accountability. How can the higher-scale institution hold the lower-scale institution effectively accountable for the management needs of the entire stock? This means both holding them accountable for sustainable behaviour in respect to that stock and to faithful and accurate reporting about their activities and the condition of the resource. Such accountability, furthermore, is a two way street (Figure 5). The higher scale is also accountable to the lower. First, the higher level must recognize and support some institution at the lower level, this is necessary if it is going to be possible for the stakeholders at the lower level to work together effectively (Wilson, 2003). Second, the higher level is accountable to the lower level for requiring them to bear the minimum costs that are necessary for the sustainable management of the whole stock.

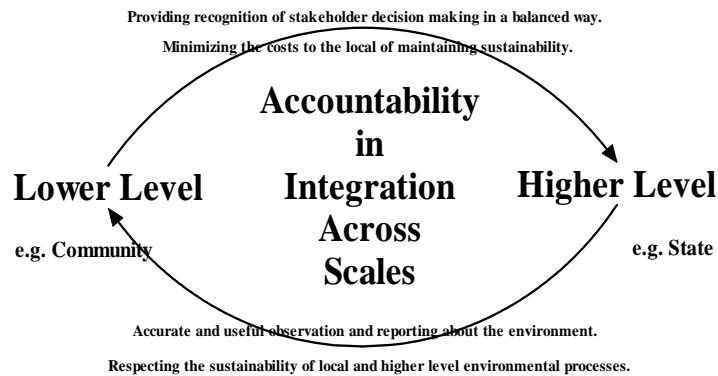


Figure 5 Accountability in integration across scales

IFM is involved in a number of research projects dealing with the practical implications of these issues. The KNOWFISH (CEC Framework 5 INCODEV) project deals with the question of how Local Ecological Knowledge (LEK) in developing countries can be used to make management more effective. It begins with an investigation into the reliability of such knowledge and the ways that it is affected by the interests and perspectives of different types of fishers. The project uses a method called consensus analysis which assumes that the degree of agreement among fishers can be used as a test of reliability. This method also allows the investigator to identify which groups of fisheries are the most knowledgeable about the LEK as it is defined by the local cultural consensus. An interesting result is that we found in three different countries that fishers using smaller gears that are either illegal or frowned upon by the government have the highest LEK. The project also uses a method called a Q-sort to build a picture of the different perspectives that stakeholder groups have on both the fishery and its management. The focus here is on conflict resolution.

Policy and Knowledge in Fisheries Management (PKFM) is also a CEC Framework 5 project focused on how policy, knowledge and science are linked in EU fisheries management. One of the issues we are tracing is how the TAC system is linked historically with VPA methods. We are also working on how different kinds of accountability in the management system have an impact on how fisheries science is done. We have found that there is a widening demand for a “science” stamp on management decisions. Part of this come from the scientists’ commitment to the Precautionary Approach which influences many of their internal decisions about data and models. Another is the demand to give advice related to fisheries instead of fish stocks, which leads fisheries scientists having to relate their advice to a social rather than a biological unit. Then there is a demand for “equitable” advice which leads to questionable understandings of consistency because “equity” is not at all a scientific concept. Finally, the scientists are faced with both a demand that advice be both flexible and not open to interpretation. The industry is demanding that scientists pay greater attention to technical measures.

One of the project main findings is how the advice system is affecting the working conditions of scientists. There is a growing “disillusionment” among many fisheries scientist who are working under great pressure linked to the uncertainty of their task and often trying to meet a demand to find certainty where there isn’t any.

IFM also has some new projects related to these topics, both of which are funded through science studies programmes rather than fisheries. Scientific Advice for Fisheries Management on Multiple Scales (SAFMAMS) is a CEC Framework 6 project that examines forms of scientific advice at three scale levels: Europe, the RACS and small- scale eco-system management efforts. We also have a small grant from the US National Science Foundation called Experienced-based Knowledge in a Science Policy Context. Through this grant we will be doing interviewing in Netherlands, UK, and Denmark in respect to collaborative research between fishers and scientists.

6 Inventory of electronical logbook data. Introduction of an E-Logbook in the Basque Country fleet

Contribution by Isabel Gozález Herralz

The Basque Country has a fleet of 375 vessels, from which 265 are organized in fishermen associations, distributed in 14 base ports. They land in 8 main ports and have an average of 198 gross tonnes and 388 KW of engine power. Their overall length is on average 28 m, being 16 years of age.

The fleet could be split in four main groups: cod fishing vessels, tuna freezing vessels, artisanal vessels and the group of bottom trawlers, high-opening paired trawlers and longliners.

In Basque Country sales notes, owners data, inquiries and EU logbooks are gathered by routine by AZTI. This institute has developed an electronic logbook in order to collect directly from the fishermen information by fishing operation.

In a first step, the fisherman must record the technical characteristics of the gear, to make after effort calculus. First the fisherman enters the information of the trip, including date, hour and port of departure, gear, date, hour and port of arrival. For each haul the information collected is descriptive (date, hour, latitude, longitude, characteristics of the gear), biological (species, size, weight, number of individuals) and environmental (water temperature, wind strength and direction, tide, moon phase, current direction and strength, type of bottom and depth). Also it is possible to include haul highlights and sale prices.

This electronic logbook allows to record catches that are sold out of the fishermen associations or that are not sold, to have spatial distribution of catches and effort and to provide environmental information of each fishing operation.

The software includes a filter that permit to select, print and map the catches of one species for a period, geographical situation, temperature, current strength or direction, wind strength or direction, tide or moon phase and all the possible combinations of these factors. It is possible also to print all the data of the hauls of a trip, a list of the vessel gears with their characteristics and a list of the available trips. So, the fisherman can relate in detail his catches with the environmental and climatological information that he has collected.

The participation of the fishermen in the data collection is favoured by a close relationship with AZTI in several projects.

The software is installed in more than 40 artisanal vessels at the moment, mainly with toll line, that are already providing information.

7 Alternative ACFM advice

Presentation by Wim van Densen

A proposal was presented for improvements of the ACFM advice of ICES. This proposal was not meant to substitute the traditional ACFM advice, the achievements of it were well recognized by the group. However the presentation proposes some amendments to the ACFM report to meet the needs of the public to better understand the traditional ACFM report and to provide information that is not available through the traditional report.

This initiative has developed out of the frequent criticism brought forward that the ACFM report is too difficult to read, has adopted quasi a “lawyer-orientation”, and requires deep understanding of the assessment procedure to understand it. However, due to its significant impact on the fishing industry the report has become increasingly a public document that is in-

terpreted by all kinds of interest groups, and used for their arguments, not only ICES itself but also the European Commission and all institutional bodies in the surrounding.

Along with this the ACFM report has grown in size with the integration of environmental aspects and the multi-species interdependency of fish stocks and subsequently the fishery. The format of the report stems from traditional templates and tables and figures are produced by older software that, at its time, was appropriate by is in need for modernization. This however cannot easily be done since the production of a new layout requires for more than just a change in programme. Due to severe time stress under which ICES constantly works, is it not realistic to expect a smooth change to more user-friendly ACFM report.

Bearing this in mind proposals are made for figures which could be included in the ACFM report, either as part of the stock descriptions or as an extra chapter or even as an extra volume.

Still, it is perceived by SGFI that a lot of important information that needs to be known to better comprehend the report implications is not given in the report. SGFI came to the conclusion that this is first of all information on the effort distribution in time and space, *i.e.* to include and present the spatial and temporal patterns of the fishery and to enable also non-specialists to develop educated judgement on the matter. This might include figures on environmental parameters such as the development of the sea surface temperature (*e.g.* Figure 7), nutrient development (Figure 8), the development of predators (Figure 9) or structural issues in the fleets (*e.g.* horse power) (Figure 10).

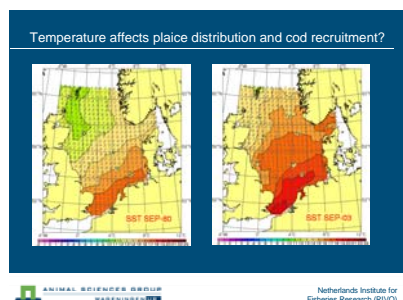


Figure 7

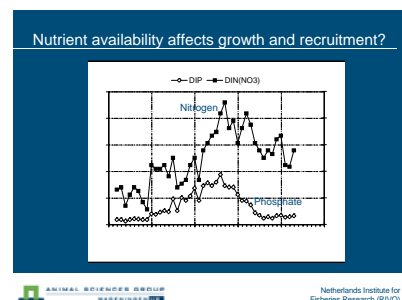


Figure 8

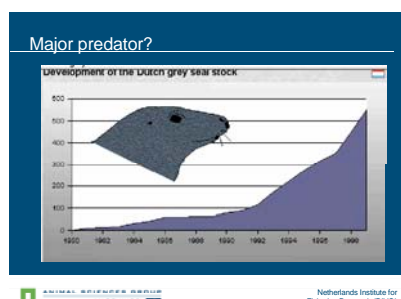


Figure 9

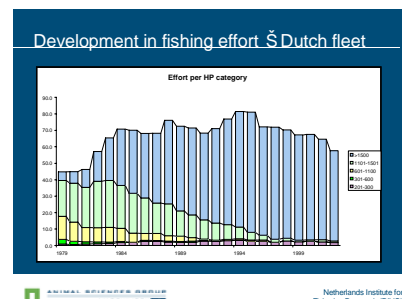


Figure 10

Another aspect is that the ACFM report does (for a number of reasons) not produce the uncertainty of the estimates, *i.e.* the variances are not given. However, there are different uncertainties involved. One derives from the limited number of samples that can be taken in the field (Observation Uncertainty), an uncertainty in the actual estimated (System Uncertainty), a Model Uncertainty (*i.e.* receiving different results with different models), and Bias or Systematic Error (*e.g.* due to IUU or the selection of information for the model input). It was felt by SGFI that these uncertainties must be clearly reflected in the ACFM report to provide a better base for a qualified interpretation.

It was suggested that for each fleet an almanac could be produced, containing standard information for the fleets (Figure 11).

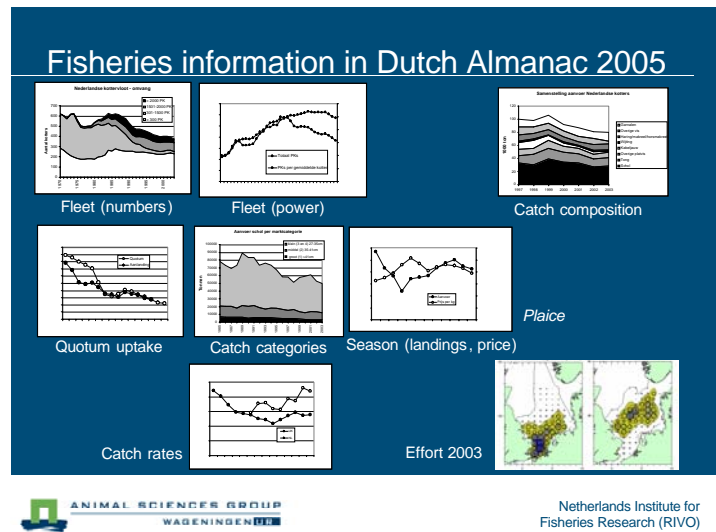


Figure 11.

In such an almanac the distribution of the effort and catches could also be presented and render very valuable information (*e.g.* Figure 12) and could be then compared with information from the surveys (Figure 13)

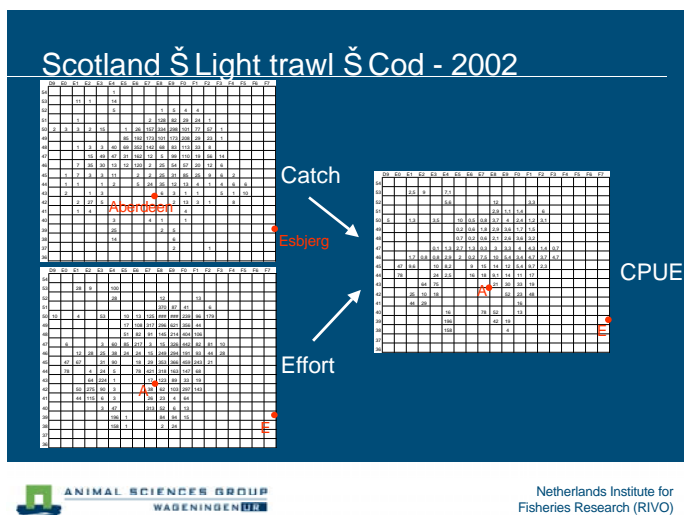


Figure 12

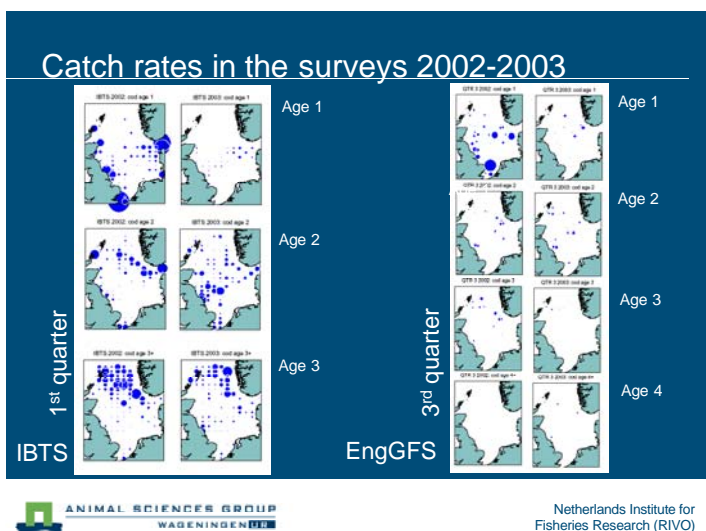


Figure13

Finally, it was brought forward that the provision of information is an obligation to ICES and must be seen in the context of the Article 8 of the EC-Directive 2003/4/EC on Quality of Environmental Information, which states that “Member States shall ensure that any information that is compiled by them or on their behalf, is up to date, accurate and complete. Upon request authorities shall reply to requests on the place where the information can be found on the measurement procedures, methods of sampling and pre-treatment of samples, using in compiling the information, or referring to a standardised procedure used.”

8 Report of the Rijswijk Workshop

An intersessional workshop with only a few participants was organized to make a first step to make fisheries information more available and accessible for use, and to test which obstacles are encountered in attempting so. The workshop was therefore in the framework of the NSCFP – SGFI activities, and the venue was the Dutch Fishermen Organization, Rijswijk, the Netherlands, 7-9 June 2004.

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8.1 Problem

Fishermen and their representatives are poorly documented on fishery statistics and thus also weakly prepared for discussions on fleet size, fishing effort, total catch and catch rate in fisheries management. This causes unequal positions where fishermen discuss management issues with fisheries managers and scientists and deadlocks in study groups dealing with the use of fishery information for management purposes, like the SGFI of the NSCFP and ICES (chaired by C. Hammer and H. Andersen).

The 1998 Aarhus Convention on public access to environmental information stated that full participation of all stakeholders in management matters requires not only the technical availability of information but also its accessibility via clear displays. Information management on North Sea fisheries scores poorly in terms of availability and accessibility of the fisheries statistics that are of direct use in participatory management. At the same time the EC has high standards for governmental principles like participation and transparency, which principles are articulated via its Common Fisheries Policy 2003–2012.

8.2 Terms of Reference chosen

1. To come up with an **inventory of fisheries information by country and at EC-level that is publicly available** (spatial and temporal patterns in catch, effort, catch rates, market categories);
2. To discuss the accessibility of the information in terms of readability and the value of the various types of information for fishermen and their organizations;
3. To **give suggestions on the format for fisheries information publicly available** that prepares fishermen better for discussions on data quality (*e.g.* in SGFI) and on management options (*e.g.* in RAC).

To make a start in the assessment of availability and accessibility of fisheries information it was felt necessary to focus initially on one fishing area (North Sea), on a limited number of countries (Denmark, Scotland (UK), Netherlands) and fish species (cod, plaice, sole) and on yearbooks that are publicly available in the national language.

8.3 Availability

The national statistical services of the UK, Scotland and Denmark produce yearbooks with fisheries statistics. The UK and Danish yearbooks contain text accompanying the tables and graphs. The Danish yearbook is written in Danish and English. All yearbooks are downloadable from the websites of the statistical services as well.

UK <http://statistics.defra.gov.uk/esg/publications/fishstat/default.asp>

Scotland <http://www.scotland.gov.uk/stats/bulletins/sfs02-00.asp>

Denmark <http://www.fd.dk/info/system/English.htm>

Fisheries statistics in the Netherlands are not made available via national services but via a research institute on agro-economics. Their yearbook is less comprehensive and more geared to the economical performance of the fishery. It is downloadable from: www.lei.dlo.nl.

8.4 Data flow and availability (see Figs 1 to 3)

Individual fishing vessels above a particular size report their effort and catch of cod, plaice and sole via the mandatory EC-logbook system. The ways in which these data are channeled and processed by the national administrations show similarities between the three countries, simply because the national recording systems serve the purpose of TAC-control and enforcement.

The catch and effort data are used by fisheries scientists as an input to their stock assessment models (catch in combination with market sampling for a break-down into catch per age-group and year) and for calibration of model outcome (time-series of catch per unit of effort). Fisheries scientists combine total catch and effort data into a catch rate as catch per unit of effort at their own initiative, because the national administrations do not provide for this (see below). In Scotland and Denmark the database for fisheries research is more directly linked to the database maintained by the national administration and guarantees timely and easy access of the fisheries data for scientists. In the Netherlands fisheries scientists obtain fisheries data more indirectly and at annual intervals via the research institute for agro-economics.

8.5 Accessibility and display

8.5.1 Denmark

The Yearbook of Fishery Statistics 2002 is published in September 2003. The 2003 yearbook was not yet downloadable in January 2005. The yearbook contains chapters on the fleet (Ch. 1) and on catches (Ch. 2), all for the reporting year (2002). There is a distinct chapter 7, called 'Decennium statistics' that reports on developments in the 10-years period 1993–2002. Information for larger time frames is not displayed. Almost all information is presented in the form of tables.

In chapter 1 the fleet is specified in terms of numbers, length, tonnage, category (gear type) and district and their combinations and there is a table with information on decommissioning. In chapter 7 the developments in the fleet is sketched with less combinations of its characteristics (Figure 4). There is no information given on actual effort in terms of fishing days or days at sea.

In chapter 2 quota and catches are specified by species, fishing area, month, vessel category and vessel district. The Danish nominal catch of cod for the North Sea in 2002 was 9017 t with some seasonality in monthly catches (Figure 5) and with slightly more than 50% of cod taken by the gear category of netters, liners and trap setters (Figure 6). In chapter 7 the Danish nominal catch of cod from the North Sea shows as sharply decreasing since the mid 1990s (Figure 7).

The yearbook does not contain any information on spatial patterns in catch or effort, *e.g.* per ICES-statistical area within the North Sea.

In all there are no statistics on developments in catch rates, let alone spatial patterns therein for further nuances in interpreting catch rates averaged for the North Sea as a whole.

Basic data on catch and effort can be made available on request. Data on catch and effort were retrieved from the Danish database on the request of Michael Andersen (Danish Fishermen's Organization) for the purpose of this workshop. These were data for catch and effort (# days for gillnets and for gears combined) per ICES quadrant for cod and plaice as taken by the Danish fleet in 2002. These data were processed during the workshop for a display of spatial patterns in catch, effort and catch rates per ICES quadrant (Addendum 1).

8.5.2 Scotland

The Scottish report combines data for the reporting year 2002 with data for the 11 years period 1992–2002. It displays information in table format mainly but it contains some graphs and bar diagrams as well.

Figure 8 on fleet structure is based on figures in Table 6 from the report. There are no data on total catches of cod, plaice and sole taken from the North Sea by Scottish-based vessels, but there is information on total landings by Scottish-based vessels for the 5-years period 1998–2002 (Figure 9). Landings of sole were marginal; from 52 t in 1998 until 11 t in 2002.

Fishing effort is displayed as fishing days by Scottish based vessels over 10 meters per ICES-area (see below, extract from Table 32).

2002	DEMERSAL	PELAGIC
Northern North Sea (IVa)	44580	516
Central North Sea (IVb)	9180	23
Southern North Sea (IVc)	121	-
Total	74820	1465

The Scottish fisheries scientist Anne McLay provided the workshop with maps with spatial patterns for catches of cod and for days absent from harbour and hours fishing for cod per gear type and per ICES-quadrant. Similar maps for catch rate per ICES-quadrant as in case of the Danish fishery could have been made, but Anne McLay thought this to be misleading because of the poor standardisation and recording of the fishing effort in case of the Scottish fleet. But as she says, the maps for total catch and effort still show fishermen and the wider public by approximation the concentration areas of the Scottish fishery in terms of catch and effort.

The quota uptake in Chart 7 (bar diagram) in the yearbook shows that in 2002 cod and plaice uptake was around 90%. TACs as such are not given in the Scottish report.

In the UK-report there is a distinct section on European fisheries with information on the fleet size and structure per country and with TACs, quotas and uptake per species, fishing area and country for the reporting year (Chapter 6).

Only the UK yearbook that encompasses information from the Scottish fishery, gives figures for seasonality in landings per species (Figure 10).

The UK yearbook is the only one that contains biological information on the stocks. In Chapter 5 'Main stocks and their level of exploitation' Colin Bannister from CEFAS informs on annual spawning stock biomass and recruitment for the full period over which these two parameters are estimated.

8.5.3 The Netherlands

Until 1987 the Dutch administration published its yearbook on fisheries statistics. The Institute for Agro-economics (LEI) publishes some of the fisheries statistics for vessels operating under the Dutch flag. The annual report focuses on the economical functioning of the fleet, is written in Dutch with an English summary and contains tables only.

Cod, plaice and sole are taken with cutters. There is detailed information on the size and structure of the fleet of cutters as number of cutters per engine category. Total engine power is given for the period 1997–2003 and only differentiated as percentage share for three indicative years 1993, 2002 and 2003 (Figures 12 and 13).

Fishing effort of the cutter fleet is detailed in numbers of HP-days per fleet segment (Figure 14).

Total catches by the fleet of Dutch cutters are given for a time window of seven years (1997–2003). Quota uptake per year is not given but reconstructed by combining catches with quota given in an addendum of the yearbook (Figure 15).

Information on seasonal patterns as total catch per species and month is not given in the yearbook, but was retrieved for reasons of comparison from the website of the semi-governmental organisation for Dutch fisheries (Figure 16). This organisation has its own website www.pvis.nl with information on Dutch fisheries, but budgetary constraints hamper its maintenance and consistent display.

A Dutch project on improving cooperation and communication between fishermen, scientists and the administration on the management of the beamtrawl fishery for plaice and sole has a distinct chapter on the accessibility of fisheries information. In the framework of this four years project (F-project, 2002–2006) graphs with temporal patterns in catch rates and maps with spatial patterns for catch, effort and catch per unit effort per ICES-quadrant were generated. These graphs and maps based on EC-logbook data and produced by the Dutch fisheries biologists Martin Pastoors and Sarah Kraak are discussed with fishermen during small harbour meetings. The temporal patterns in annual catch rate per species are calculated from averages per ICES-quadrant to account for spatial shifts in fishing activity throughout the resource area (Addendum III).

8.6 Conclusions on yearbooks

- a. Most information is in table format, seldom graphical;
- b. Time windows are small, mostly 5–10 years at the most, and in combination with the table format (a) this make it difficult for fishermen to perceive and evaluate developments over time in for instance fleet size and structure, quota, landings per species, quota uptake *etc.*;
- c. None of the information on effort or landings is spatially differentiated, as for instance effort or catches per ICES-quadrant or fishing ground. Sometimes there are specifications by technical and biologically less meaningful administrative spatial units like fishing ports and coastal districts;
- d. Fishing potential is always to approach with the size of the fishing fleet in numbers, total tonnage or total engine power, graded by categories for vessel length, tonnage or engine power. In Scotland actual fishing effort is given as fishing days in the fishery for demersals by ICES-area; in the Netherlands fishing effort is quantified as HP-days by gear type and by vessel category for engine power;
- e. Landings per species are differentiated by gear type in Denmark and Scotland; not in the Netherlands. The same for landings per month. The display of such would enable the identification of gears and periods of the year for which catch rates are possibly more indicative for annual developments in stock size;
- f. National quotas are given but their uptake is only displayed in the Scottish and Danish yearbooks in time windows of one year only, although for all other nations as well. In the Netherlands such uptake can only be reconstructed from the combination of national quota and landings per species;
- g. Landings per species are never graded per market (size) category;
- h. Catch rates are never displayed;
- i. Biological information on the state of the stocks is only presented in the UK-yearbook.

8.7 Effort, catch and catch rates in the ACFM-report

Although the ACFM report is a scientifically based advice of ICES, many, including the EC-management, use the graphed information therein for extension purposes. See for instance the Green Paper on the Common Fisheries Policy 2003–2012 with graphs per species for annual landings, recruitment, fishing mortality and spawning stock biomass. The same four graphs are prominent on the websites of the national research institutes.

In the species wise chapters in the ACFM report 2004 there is no information given on fleet size and structure, on fishing effort or on catch rates. In the chapters on cod, plaice and sole landings are given as nominal landings from the North Sea per country and year, with adjustments for unallocated landings, either positive or negative, by the WGNSSK.

Apart from the unallocated landings for cod, ICES estimated unreported landings, discards and cod as bycatch in the industrial fishery. But these constituent parts of the total catch were not distinctly displayed. The nominal landings of cod in 2003 from North Sea, Skagerrak and Eastern Channel together, were 31108 tonnes, the WGNSSK-estimate was 30872 tonnes and their estimated total catch including discards was 77997 tonnes.

For plaice these figures for the year 2003 were 65 688, 66 502 and 141 338 t. The difference between the latter two figures was the estimated figure for plaice discarded: 74 836 t. The graphed time series in the ACFM-report showed the amount of plaice landed and of plaice discarded.

Chapter 3.4 in the ACFM-report on the North Sea (Subarea IV) has tables on total landings. Table 3.4.1.2 gives nominal landings for major fish species from the North Sea since 1970, or in a time window of 34 years. Table 3.4.1.3b has North Sea landings and discards by species and country, gear and mesh size range as estimated by the working group. It specifies landings of cod, plaice and sole by gear type and mesh size, a detail that is not available in any of the yearbooks.

Time series with catch rates per age group are important for fisheries scientists to calibrate their estimates for annual spawning stock biomass and fishing mortality as model outcome. The series for cod and plaice has been disqualified for a number of years already because of poor standardisation of fishing effort. For plaice this might be due to the possible interference between the allocation of fishing effort in space and time and the fishing opportunities as governed by the TAC-constraint. But besides a remark on its use, as in case of sole, or its rejection, as in case of cod and plaice, more information on these time series with catch rates is never presented. Such is only to be found in the WGNSSK-report, but that is beyond the scope of the average fishermen even more so than the ACFM report. An exception is the graphed time series for catch rates in a small fleet of Dutch beam trawlers fishing under UK flag in the chapter on plaice in the ACFM report.

In all, the ACFM report contains only information on landings and catches and not on fleet size, fishing effort or catch rates. Although catch and effort is recorded per ICES-quadrant and some of these data are averaged into annual catch rates for the whole of the resource area by the WGNSSK, neither this information nor its spatial detail reaches the more publicly available ACFM report.

8.8 Conclusions and suggestions

- Denmark, Scotland and the Netherlands differ in the way they have organised the processing and display of fisheries information. Denmark produces a fully documented yearbook. In the Netherlands the yearbook doesn't give a full statistical overview and is geared to the economic performance of the fishery.

- Information on the national fisheries in the three countries as presented in the publicly available yearbooks is incomplete. There is no information on catch rates and for none of the parameters spatial patterns are displayed.
- The accessibility of the information is constrained by the display of the data in table format and for smaller time windows mainly. This hampers the evaluation of short- and long-term trends in the fishery.
- The less publicly available and accessible ACFM-report is poor in presenting information on the fishery, although data on catch, effort and catch rates are crucial for stock estimates and the formulation of management advice. Such data are contained in the WGNSSK-reports in less accessible formats.
- It is suggested to compose a set of standardised graphs with larger time windows for fleet size and structure, for fishing effort, for landings and where possible catches, for catch composition by market categories, and for catch rates. For the time being catch rates could be nominal catches over effort per gear type and range of mesh size per ICES-quadrant, ultimately averaged over the resource area. Such information could be made available for the major fish species via the EC-logbook system. Its display would stimulate discussions on how to improve data quality, standardisation of fishing effort and ultimate use for stock assessment and advice.

8.9 Participants

Michael Andersen
 Danish Fishermen's Association
 H.C. Andersens Boulevard 37
 Box 403
 DK-1504 Copenhagen V
 DENMARK Tel.: +45 70 10 40 40
 Fax: +45 33 32 32 38
 E-mail: ma@fiskeriforening.dk

Fiona Gowland (by phone)
 Secretary Scottish Fishermen's Federation
 14 Regent Quay
 AB11 5AE Aberdeen
 United Kingdom
 Phone +44 (01224) 582583
 Fax +44 (01224) 574958
 E-mail fiona@sff.co.uk
 Web site www.sff.co.uk

Nils Hammer
 Director Federal Research Center for Fisheries
 Institute for Baltic Sea Fisheries
 Institut für Ostseefischerei (IOR)
 An der Jägerbäk 2
 D-18069 Rostock
 Germany
 Tel.: 0049 381 810 344, and -446
 Fax: 0049 381 810 445
 Mobile: 0049 173 6120 703
 email(1): chammer@ior.bfa-fisch.de
 email(2): cornelius.hammer@ior.bfa-fisch.de
www.bfa-fisch.de
www.clupea.net

Fenneke Brocken
 Productschap Vis
 Treubstraat 17
 P.O. Box 72
 2280AB Rijswijk

The Netherlands
Tel 31-70-3369600
Fax 31-70-3999426
Email fbrocken@pvis.nl

Floor Quirijns
Netherlands Institute for Fisheries Research (RIVO)
P.O. Box 68
1970AB IJmuiden
The Netherlands
Tel 31-255-564646
Fax 31-255-564644
Email floor.quirijns@wur.nl

Wim van Densen
Netherlands Institute for Fisheries Research (RIVO)
P.O. Box 68
1970AB IJmuiden
The Netherlands
Tel 31-317-42319, mobile 31-6-51123610
or 31-255-564646
Fax 31-255-564644
Email wim.vandensen@wur.nl

Ann McLay (by phone)

Doug Beveridge (consulted and by phone)

8.10 Figures

Figure 1 Data flow in Denmark

Figure 2 Data flow in Scotland

Figure 3 Data flow in the Netherlands

Figure 4 The Danish fleet 1993-2002. Engine power per Kw-category (based on Table 7.1).

Figure 5 Danish nominal catches from the North Sea in 2002 by month (Table 2.5 in yearbook)

Figure 6 Danish nominal catches from the North Sea including the fjords in 2002 by vessel category (Table 2.15 in yearbook).

Figure 7 Danish nominal catches from the North Sea by species (Table 7.6 in yearbook).

Figure 8 The Scottish fleet. Engine power per length category (Table 6 in yearbook).

Figure 9 Landings of cod and plaice by Scottish based vessels into the UK and abroad 1998-2002 (Table 27 in Scottish yearbook).

Figure 10 Monthly landings of cod, plaice and sole by UK vessels in the UK (Table 3.9 in UK yearbook 2003).

Figure 11 Landings in 2002 of Scottish based vessels by species and gear type (Table 31 in Scottish yearbook 2002).

Figure 12 Size and structure of the Dutch cutter fleet 1997-2003 as number of vessels per HP-category plus total engine power of the fleet (Table 3.1 in yearbook).

Figure 13 Percentage composition of the Dutch cutter fleet by HP categories in 1993, 2002 and 2003 (Table 3.5 in yearbook).

Figure 14 Fishing effort as number of HP-days beam trawling by the Dutch cutter fleet differentiated by categories for engine power (based on Table 3.7 in yearbook).

Figure 15 Dutch quota and landings by Dutch vessels 1997-2003 (based on Addendum 1 in yearbook (quota) and Table 3.10 (landings)).

Figure 16. Monthly landings by Dutch based vessels in 2003 (based on figures from the website of the Productschap Vis, a semi-governmental organisation for Dutch fisheries).

Addendum 1

Spatial patterns in catch, effort and catch per unit of effort for cod in the Danish fishery for the year 2002.

Addendum 2

Spatial patterns in catch, effort and catch per unit of effort for cod in the Scottish fishery for the year 2002.

Addendum 3

Spatial patterns in catch, effort and catch per unit of effort of plaice in the Dutch fishery for the year 2002

Data flow Scottish fisheries

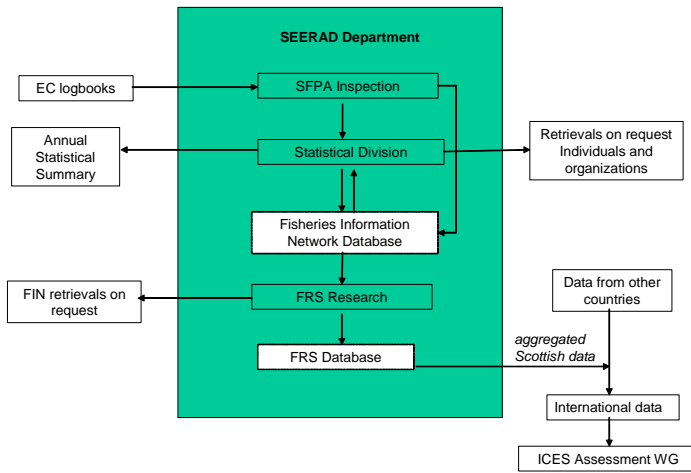


Figure 14

Data flow Danish fisheries

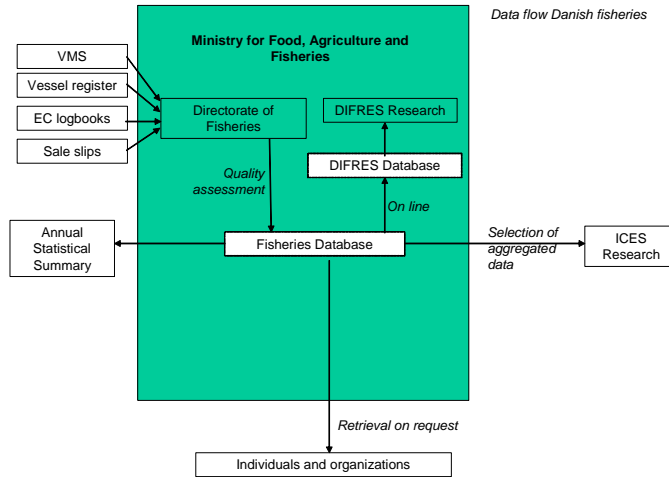


Figure 15

Data flow Dutch fisheries

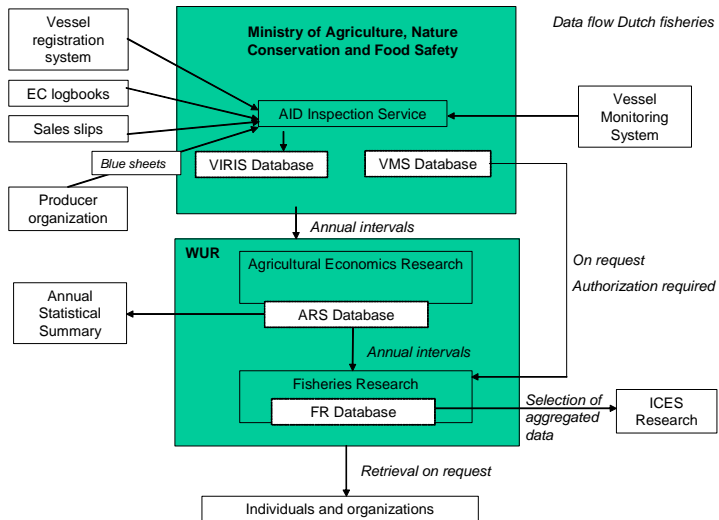


Figure 16

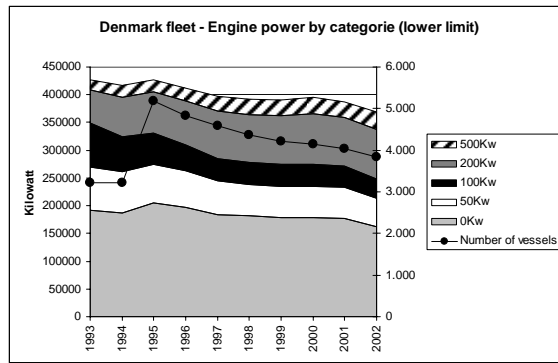


Figure 17

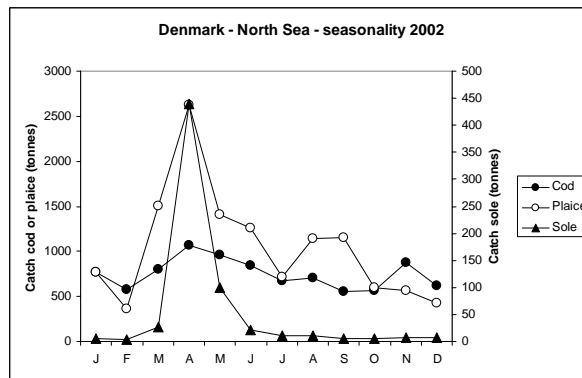


Figure 18

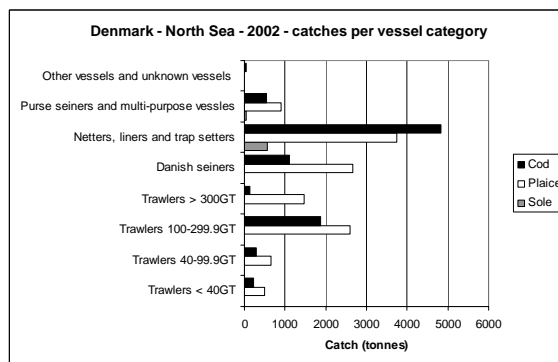


Figure 19

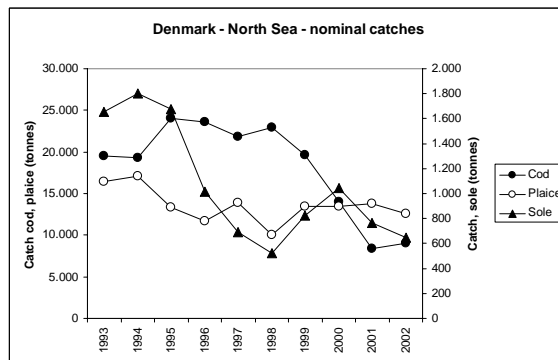


Figure 20

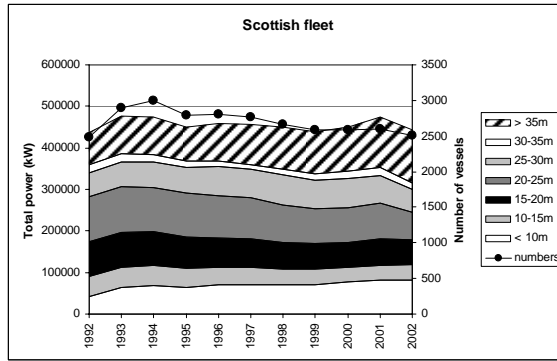


Figure 21

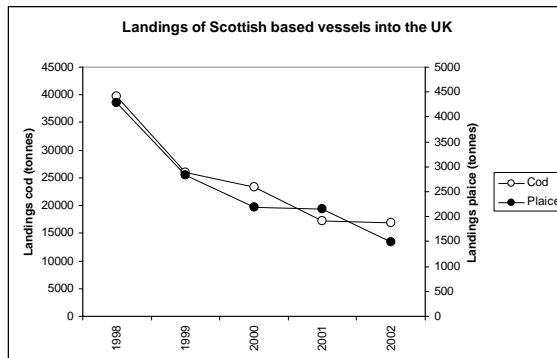


Figure 22

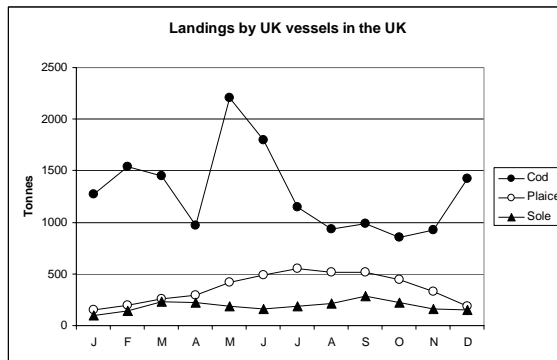


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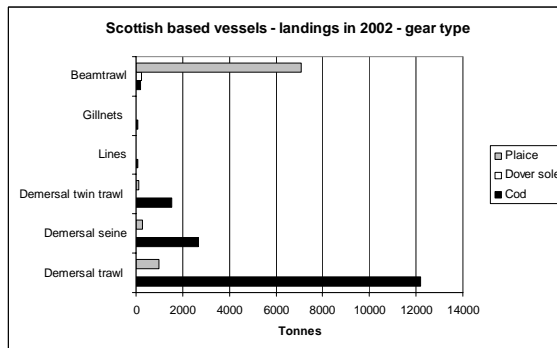


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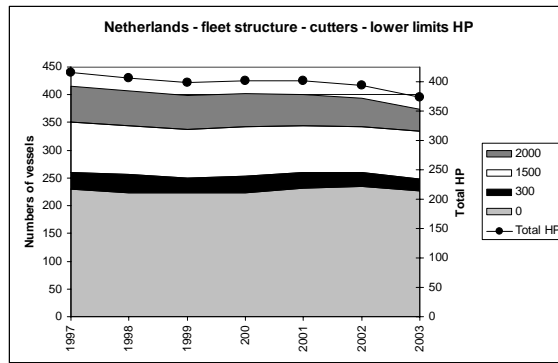


Figure 26

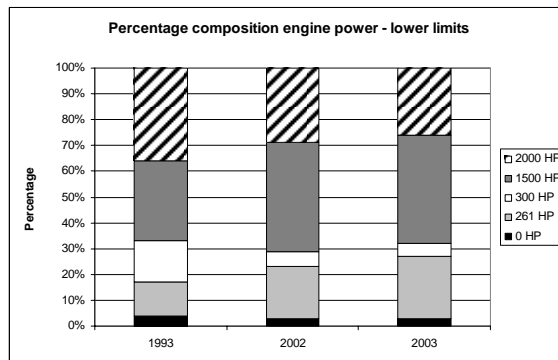


Figure 27

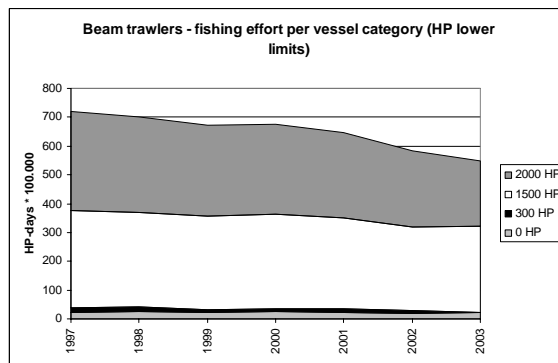


Figure 28

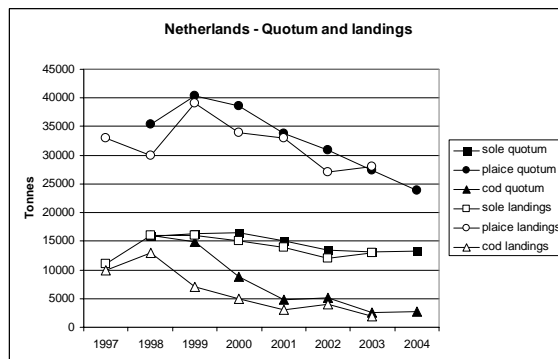


Figure 29

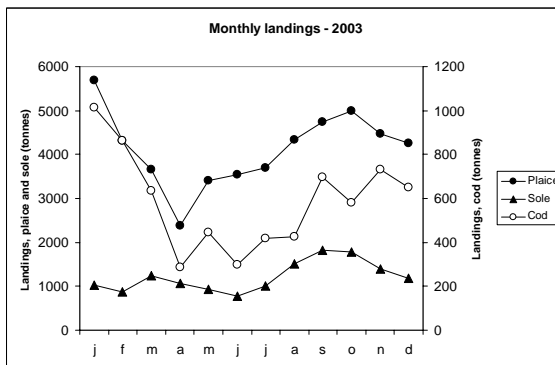


Figure 30

9 References

ICES. 2003. Report of the ICES Advisory Committee on Fishery Management. ICES Cooperative Research Report, 261.

Degnbol, P. 2003. Science and the user perspective: the gap co-management must address. *In* The Fisheries co-management experience: accomplishments, challenges and prospects. Ed. By Wilson, D.C., Nielsen, J.R., and Degnbol, P. Kluwer Academic Publishers. Dordrecht.

Wilson, D.C. and Degnbol, P. 2005. fisheries management institutions and scale: implications for the regional advisory councils. Working Paper No. 1-2005. Institute for Fisheries Management & Coastal Community Development

Annex 1: List of participants

NAME	ADDRESS	PHONE/FAX	EMAIL
Cornelius Hammer (D) (Chair)	Fed. Res. Centre for Fisheries, Inst. For Baltic Sea Fisheries	0049-381-810-344 0049-381-810-445	chammer@ior.bfa-fisch.de
Thomas Rimaud (F)	AGLIA (Assoc. du grand Littoral Atlantique)	0033-297 834336 0033-297 377842	ocipesca_sole@yahoo.fr
Steven Mackinson (E)	CEFAS	0044-1502 524295 0044-1502 524511	s.mackinson@cefaf.co.uk
Isabel Gonzáles Herralz (ESP)	AZTI	0034-94 602 94 00 0034-94 687 00 06	Igonzalez@suk.azti.es
Wim van Densen (NL)	RIVO	0031-317 423139 0031-255 564644	wim.vandensen@wur.nl
Erling Skatoy (N)	Norwegian Fishermen's Organisation	0047-905 50502 0047-5149 3052	eskaato@online.no
Flemming Kristensen (DK)	Denmarks Fiskeri Forening	0045-20430111 0045-33323238	No e-mail
Michael Andersen (DK)	Denmarks Fiskeri Forening	0045-70 104040 0045-3332 3238	ma@fiskeriforening.dk
Fenneke Broken (NL)	Dutch Fish Production Board	0031-70 336 9606 0031-70 399 9426	fbroken@pvis.nl
Steen Christensen (DK)	DIFRES		sc@dfu.min.dk
Anne McLay (SCO, UK)	FRS	0044-1224 295 463 0044-1224 580 454	a.mclay@marlab.ac.uk
Doug Wilson (DK)	Institute for Fishery Management	0045-9894 2855 0045-9894 4268	dw@ifm.dk
Fiona Gowland (SCO, UK)	Scottish Fishermen Federation	0044-1224 582583 0044-1224 574958	fiona@sff.co.uk
Sue Marrs (SCO, UK)	North Pacific Fisheries Course Scotland	0044-1595 772303 0044-1595 772010	sue.marrs@nafc.uhi.ac.uk
John Cotter (E)	CEFAS	0044-1502 52 4323	a.j.cotter@cefaf.co.uk
Svein Iversen (N) (parttime)	IMR	0047-55 238407 0047-55 238687	sveini@imr.no
Fans van Beek (NL) (parttime)	RIVO	0031-255 564 646 0031-255 564 644	vbeek@wur.nl
Daan Delbare (B)	SFD		daan.delbare@dvz.be
Ann Bell (SCO, UK)	NSC	0044-1224 665341 0044-1224 664713	nsrac@aberdeenshire.gov.uk
Tony Hawkins (SCO,UK)	NSC	0044-1224 868984	