

ICES AMAWGC Report 2005

ICES Advisory Committee on Fishery Management

ICES CM 2005/ACFM:12

Report of the Annual Meeting of Assessment Working Group Chairs (AMAWGC)

ICES HEADQUARTERS

14 – 18 February 2005

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Conseil International pour l'Exploration de la Mer

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Recommended format for purposes of citation:

ICES. 2005. Report of the Annual Meeting of Assessment Working Group Chairs (AMAWGC), 14-18 February 2005, ICES Headquarters. xx pp.

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1 Introduction

The Annual Meeting of Assessment Working Groups Chairs [AMAWGC] is established to provide a mechanism to plan the annual work on the assessment working groups and specifically to ensure that emerging requirements for the ICES advice, methodological developments and data issues are communicated and discussed with assessment working groups. The first meeting is held in 2005 following more specialised meetings with assessment working group chairs regarding precautionary reference points in 2003 (ICES SGPRP 2003) and long term advice in 2004 (ICES SGLTA 2004). The terms of reference in 2005 are:

The Annual Meeting of Assessment Working Groups Chairs [AMAWGC] (Chair: P. Degnbol, Denmark) will meet jointly with WGRED at ICES Headquarters from 14 February 14:00 to 18 February 13:00 2005 to:

- a) Review the Table of Contents for the ICES Advisory Report for 2005 and for each Chapter identify what the Groups that shall contribute;
- b) Review and plan implementation of long-term management simulations and evaluations of recovery plans and harvest control rules as presented by the Study Group on Management strategies (SGMAS);
- c) Arrange for the inclusion of the work of the Working Group on Regional Ecosystem Description (WGRED) in the ICES advisory process regarding fisheries
- d) plan further implementation of fisheries-based advice by the Assessment Working Groups and integration of fisheries technology expertise;
- e) review developments in stock assessment methodology in relation to the implementation in the Assessment Working Groups;

AMAWGC will report by 31 March 2004 for the attention of ACFM.

Invited chairs: Under ACFM: HAWG, WGNPBW, NWWG, WGBFAS, AFWG, WGNSDS, WGSSDS, WGNSSK, WGNAS, WGMHSA, WGDEEP, WGNEW, WGHMM, WGEF, SGMAS, WGPAND (2); under ACE: WGECO, WGMMPD; under FTC: WGFTB; under RMC: SGFI, WGFS; chairs ACE and ACFM. Experts on management strategy evaluations.

2 Working group responsibilities in 2005

The tasks of the assessment groups are to identify and assemble relevant data, provide analysis and report as relevant to the terms of reference.

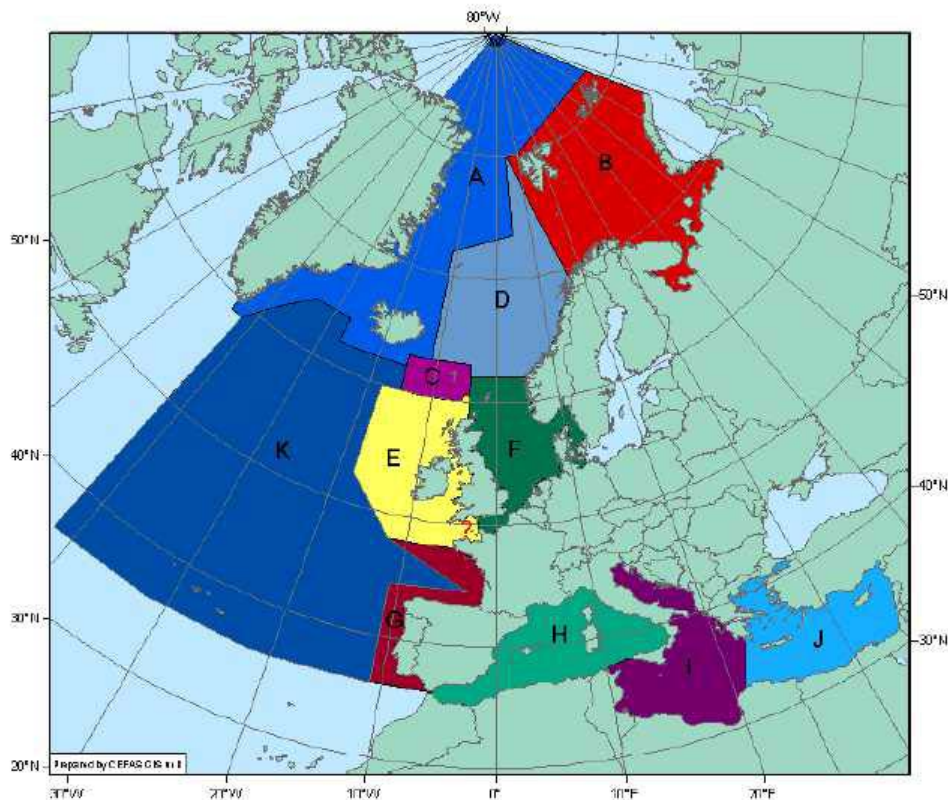
The WG is to produce drafts of

1. the single stock summaries in the ICES advisory report Book 2 according to the standardised template and
2. specific sections of the regional advice:
 - a. The fisheries and their impact (review WGRED – WGFTFB descriptions)
 - b. Stock status
 - c. Effect of fishing on the ecosystem (review WGRED description)

- d. Mixed fisheries and fisheries interactions (review WGFTFB descriptions)
- e. Short term implications (including mixed fisheries advice)
- f. Regulations in force and their effects
- g. Information from the fishing industry
- h. Factors affecting fishing operations
- i. Quality of assessments and uncertainties

For the regional advice the contributions by WG (see map of ecoregions below) is:

1. A: Greenland and Iceland Seas. NWWG (main responsibility),
2. B: Barents Sea: AFWG (main responsibility), WGPAND supplements, WGNPBW supplements
3. D: Norwegian Sea. There is no separate fisheries advice for the Norwegian Sea since the international stocks in the area are considered either in the context of the Barents Sea or Widely distributed stocks.
4. C: Faroe Islands: NWWG
5. E: Celtic Seas: WGNSSDS and WGSSDS (main responsibility), HAWG supplements for pelagic fisheries and WGNSSK for sandeel and Norway pout, WGHMM for MM
6. F: North Sea, Skagerrak and Kattegat and Eastern Channel: WGNSSK (main responsibility), HAWG, WGPAND and WGMHSA supplement regarding pelagic fisheries and stocks and Pandalus
7. G: The Bay of Biscay and Iberian Region: WGHMM (main responsible), WGMHSA for pelagics
8. Z: The Baltic: WGBFAS (main responsible), HAWG supplements for 22-24 herring
9. Widely distributed and Migratory stocks and populations: WGNPBW (main responsible), WGHMM supplements for hake, WGMHSA for mackerel and W horse mackerel, NWWG supplements for redfish
10. Deep water populations and habitats: WGDEEP (main responsible), WGDEC



Specific issues to be addressed as a part of the general TOR's:

TOR (1) for stocks where it is considered relevant, review limit reference points (and come forward with new ones where none exist) and develop proposals for management strategies including target reference points if management has not already agreed strategies or target reference points (or HCRs) following the guidelines from SGMAS (ICES SGMAS 2005), SGLTA (ICES SGLTA 2004), and AMAWGC (ICES AMAWG 2005);

Action: See section 3 below. For each WG a plan has been made for these evaluations, see separate section on management strategy evaluations. This is based on the following considerations:

Requests: Where requests for specific evaluations have been made, these are made intersessionally by groups consisting of members of the relevant WG and management strategy expertise. The exception is that the Anglerfish request will be dealt with by WGNMDS and the deep water stock request will be dealt with at a WGDEEP sub-group meeting.

Agreed management plans: On basis of SGMAS 2005 the WG's should evaluate any management plans which have been agreed and which have not been evaluated by ICES before. ICES gives different advice when management plans (including recovery plans) have been agreed and when no such plans have not been agreed.

Proactive explorations for dialogue: Using the guidelines in SGMAS 2005 WG's should select candidates for which exploratory scenarios for candidate management strategies may be presented to managers for their consideration in an interactive dialogue with ICES. A few candidate management strategies which are considered precautionary and meets the performance expectations which managers have indicated on the general level, are analysed and the trade off between different types of

objectives and performance criteria is presented. As an integral part of this process suitable trigger points for action and targets which within the management strategy will combine high long term yield with low risk relative to limit reference points should be identified.

TOR (2) comment on the outcome of existing management measures including technical measures, TACs, effort control and management plans;

Action: Clients have a large interest in having management measures evaluated at as early a time as possible after they have been instigated. The WG's should thus as a part of the account of regulations in place consider whether there is sufficient information available to evaluate these. Evaluations may be qualitative based on indications when sufficient hard data for full fledged analysis are not available and it is preferable to provide such qualitative remarks rather than saying nothing. It is extremely important that assessment methodologies which are conservative/incapable of reacting to changes in the last year are either replaced by methodologies which do not have this property or that assessments using such methods are supplemented with other assessments of the efficacy of recent management measures. An important case in point is the introduction of supplementary effort measures in the North Sea the efficacy of which by now must be evaluated. Continued use of assessment methods with considerable shrinkage may in this case be very misleading and should be carefully considered.

TOR (3) based on input from WGRED incorporate (where appropriate) existing knowledge on important environmental drivers for stock productivity and management into assessment and prediction, and important impacts of fisheries on the ecosystem;

Action: see section 4 below. WGRED has presented a list of candidates for fisheries-environment interactions which should be considered. For each of these an approach has been identified for integration in the assessment and advice in 2005.

TOR (4) update the description of fisheries exploiting the stocks, including major regulatory changes and their potential effects. The description of the fisheries should include an enumeration of the number, capacity and effort of vessels prosecuting the fishery by country;

Action: see section 5 below. WGFTFB will update the descriptions of mixed fisheries and fishing practices. These descriptions will then be reviewed by WG's. Enumeration tables to be produced by WG's.

TOR (5) where misreporting is considered significant provide information on its distribution on fisheries and the methods used to obtain the information;

Action: see section 6.1 below. The basics is that where significant non-reporting is indicated assessments may be based on survey data only or assessments may use catch data as minimum landings only. If the WG makes independent estimates of nonreporting based on interviews etc the methodology should be clearly described. Clients will be approached to advice on the options.

TOR (6) provide for each stock information on discards (its distribution in time and space) and the method used to obtain it. Describe how it has been considered in the assessment;

Action: see section 6.2 below. The availability of discard data should be explained and if discard data are lacking in the assessments it should be made clear whether the absence of discards data from the assessments are due to 1) that discards are considered a non-issue or 2) that data have never been collected/are considered too

incomplete to be of any use or 3) that data have been collected but have not been released by data owners for use by ICES or 4) whether data have been collected but ICES has not yet been able to include them in assessments due to raising or data hole issues.

(7) provide on a national basis an overview of the sampling of the basic assessment data for the stocks considered;

(8) provide specific information on possible deficiencies in the 2005 assessments including, at least, any major inadequacies in the data on landings, effort or discards; any major inadequacies in research vessel surveys data, and any major difficulties in model formulation; including inadequacies in available software. The consequences of these deficiencies for both the assessment of the status of the stocks and the projection should be clarified.

3 Management strategy evaluations

ICES is according to the MOU's with client commissions requested to produce advice as short term implications of long term management considerations. This means that basically all advice should be based on either agreed management strategies or some understanding between ICES and clients of what longer term considerations would be relevant. In order to fulfil this ICES is required to evaluate management plans as they are agreed, to respond to requests regarding management plan proposals and also to be proactive in clarifying longer term considerations for other stocks and providing a knowledge base for managers' decisions when management plans are considered.

Presently an agreed recovery plan for North Sea cod has not yet been evaluated by ICES and ICES has received requests to evaluate specific candidates for recovery plans or harvest control rules. An ad hoc group will be established and meet at ICES HQ 12-13 April to evaluate the recovery plan for cod, finalise responses to requests and produce a template evaluation on basis of the SGMAS framework. For anglerfish the evaluation will be made by WGNSDS.

The Study Group on Management Strategies (SGMAS 2005) has started the development of a framework for management strategy evaluations. Evaluations of specific harvest control rules (HCR) are considered to be a component in a harvest strategy evaluation which however includes issues beyond the decision rule itself, notably inclusion of considerations on the data available, the production of knowledge to guide decisions and implementation capacity.

AMAWGC notes that the SGMAS framework needs to be further developed for stocks for which limited information is available, when no assessments are available and management and advice must be based on trends. There is also a need to address the consistency of management plans in mixed fisheries situations.

On basis of the SGMAS work, the AMAWGC has continued the work by SGLTA 2004 by updating the inventory of management plans and by planning evaluations of existing plans and proactive exploration of candidate management plans for other stocks:

Identification of stocks for which management strategy evaluations may be relevant in 2005:

- Agreed plans (revisit of evaluations done before on basis of SGMAS criteria and process)
- Requests and agreed plans which have not been evaluated (evaluation on basis of SGMAS criteria and process)

- Proactive action - exploratory presentation of expected trade off between various objectives and performance criteria on basis of 2-4 management strategy scenarios for stocks for which the development of longer term management approaches is most pertinent

For each candidate stock identification of framework for revisit/evaluation/exploration:

- Context analysis – objectives (implicit or explicit), stock properties, implementation issues, data issues, ability to predict/adaptive approach etc
- For explorations – identify HCR’s variants which conform to different combinations of objectives/performance criteria and will illustrate trade offs
- Framework for HCR evaluations (simulation/judgement)
- On basis of this and if simulations are a part of the simulation – is suitable software available and which will be used?
- Plan for implementation

The outcomes for each working group are presented below.

3.1 AFWG

The NE arctic cod has been through HCR evaluations but there is now a revised HCR which has not been evaluated. The amended rule will be evaluated by the WG in 2005 within the SGMAS framework.

Management strategies for NE Arctic haddock will be evaluated. A special meeting will be arranged end 2005 or early 2006 to deal with that for consideration in 2006.

In 2005 the AFWG will make explorations for candidates for management strategies for saithe.

The response to the requests regarding cod and haddock will be drafted by the AFWG to be finalised by ACFM at its May meeting.

WG	STOCK	RATIONALE	EXISTING OR PROPOSED MANAGEMENT PLANS	AMAWGC COMMENTS
AFWG	NEA cod	HCR	<p>Management objectives: At the 31st Session of The Joint Norwegian-Russian Fishery Commission in November 2002 the HCR was agreed and at 33^d Session it was amended for rebuilding situations. The following decision was made:</p> <p><i>“The Parties agreed that the management strategies for cod and haddock should take into account the following:</i></p> <p><i>conditions for high long-term yield from the stocks</i></p> <p><i>achievement of year-to-year stability in TACs</i></p> <p><i>full utilisation of all available information on stock development</i></p> <p><i>On this basis, the Parties determined the following decision rules for setting the annual fishing quota (TAC) for Northeast Arctic cod (NEA cod) from 2004 and</i></p>	<p>Formal requests in 2003 and 2005.</p> <p>In 2004 ICES evaluated HCR and stated that the rule was incomplete in the last part and for performing the evaluation it was amended by ICES. The amended HCR was considered by ICES as consistent with the precautionary approach. The HCR was tested by doing long-term stochastic simulations using PROST software.</p> <p>The rule was amended by Fishery Commission in 2004 by different way and ICES was requested to evaluate it.</p> <p>The same approach for evaluation will be used by</p>

			<p>onwards: <i>estimate the average TAC level for the coming 3 years based on F_{pa}. TAC for the next year will be set to this level as a starting value for the - year period.</i> <i>the year after, the TAC calculation for the next 3 years is repeated basing on the updated information about the stock development, however the TAC should not be changed by more than +/- 10% compared with the previous year's TAC.</i> <i>if the spawning stock falls below B_{pa}, the procedure for establishing TAC should be based on a fishing mortality that is linearly reduced from F_{pa} at B_{pa}, to $F=0$ at SSB equal to zero. At SSB-levels below B_{pa} in any of the operational years (current year, a year before and 3 years of prediction) there should be no limitations on the year-to-year variations in TAC."</i></p>	<p>AFWG in 2005 taking into account ACFM recommendations from previous evaluation and SGMAS guidelines:</p> <ul style="list-style-type: none"> - possible bias in future assessments should be taken into account; - the rule needs tests on its robustness to implementation errors, such as presently exist unreported landings; - efficiency of the HCR in rebuilding situation should be tested by simulations.
	NEA Haddock	HCR	<p>Management objectives: At the 31st Session of The Joint Norwegian-Russian Fishery Commission in November 2002 the same decision as for NEA cod was made for haddock: <i>"The Parties agreed on similar decision rules for haddock, based on F_{pa} and B_{pa} for haddock, and with a fluctuation in TAC from year to year of no more than +/-25% (due to larger stock fluctuations)."</i></p>	<p>Formal requests in 2003 and 2005. The same simulation as for NEA cod will be done using PROST software in 2006, after revision of data on weight and maturity. The HCR will be commented by AFWG in order to answer 2005 request.</p>
	Norwegian coastal cod		<p>Management objectives: There are no explicit management objectives for this stock.</p>	<p>No formal request for 2005.</p>
	NEA Saithe	Management plan under development	<p>Management objectives: There are no explicit management objectives for this stock. In practice the TAC in recent years has been set based on F_{pa} advice.</p>	<p>No formal request for 2005. WG will attempt to propose management strategies in relation to long-term sustainable yield taking into account SGMAS guidelines. A target F may be proposed.</p>
	G. halibut			<p>No formal request for 2005.</p>
	Sebastes marinus			<p>No formal request for 2005.</p>
	Sebastes mentella			<p>No formal request for 2005.</p>
	Barents sea capelin	HCR	<p>Management objectives: The fishery is managed according to a target escapement strategy, with a harvest control rule allowing the SSB (with 95% probability) to be above the proposed B_{lim}, taking into account predation by cod.</p>	<p>No formal requests for 2005 and no proactive plan.</p>

3.2 HAWG

The NS herring is managed within a HCR regime and there is no urgent need to revisit this.

For Via south herring and Celtic Sea herring management strategies should be developed which are not dependent on annual assessments. However, there are probably no resources in the national labs involved to explore candidates for such strategies.

WG	STOCK	RATIONALE	EXISTING OR PROPOSED MANAGEMENT PLANS	APPROACH
HAWG	North Sea herring	Management plan	Management objectives: Maintain the SSB above 800,000 tonnes. An SSB reference point of 1.3 million has been set (=Bpa) above which the TACs will be based on an $F=0.25$ for adult herring and $F=0.12$ for juveniles. If the SSB falls below 1.3 million tonnes, other measures will be agreed and implemented. No strategy on catch volatility or explicit recovery measures.	HCR has been evaluated in EU-Norway expert group (June 2004), based on a step function in F when SSB is below Bpa (this is more than in the agreed management plan). To be done: explore effects of bias in assessment on robustness of HCR. Explore alternative states of nature (high/low productivity regimes)
	Celtic sea herring	Local management plan	Management objectives: A EU spawning closed box regulation exists. The Irish Southwest Pelagic Management Committee was established to manage the Irish fishery. This committee has the objective to build the stock to a level whereby it can sustain annual catches of around 20,000 t. In the event of the stock falling below the level at which these catches can be sustained the Committee will take appropriate rebuilding measures. It can introduce measures to prevent landings of small and juvenile herring including closed areas, and or appropriate time closures and aims to ensure that that all landings of herring should contain at least 50% of individual fish above 23 cm. It also maintains and if necessary can expand the spawning box closures in time and area.	No reliable stock assessment exists for this stock. Targets relating to SSB levels are difficult to evaluate without an assessment. No information on the historical performance of the assessment. The management strategy is inconsistent with the knowledge base. To be done: Recommend investigating measures not dependent on stocks assessments such as fishing industry information, tagging, surveys (poor on this stock at present), age profiles etc.
	Herring in VIa South	Local management plan	Management objectives: In 2000 the Irish North West Pelagic Management Committee was established to take responsibility for the management with the following objectives: to rebuild this stock to above the Bpa level of 110,000 t, and then to further rebuild the stock to the level at which it can sustain annual catches of around 25,000 t. Also to implement a closed season from March to October and regulate effort further through boat quotas allocated on a weekly basis in the open season. (the mechanism for this is not clear, specifically with regard to the impact on discarding behaviour).	No reliable stock assessment exists for this stock. Targets relating to SSB levels are difficult to evaluate without an assessment. No information on the historical performance of the assessment. The management strategy is inconsistent with the knowledge base. To be done: Recommend investigating measures not dependent on stocks assessments such as fishing industry information, tagging,

				surveys (poor on this stock at present), age profiles etc.
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North Sea Herring

Management Objectives	Maintain the SSB above 800,000 tonnes. An SSB reference point of 1.3 million has been set (=Bpa) above which the TACs will be based on an $F=0.25$ for adult herring and $F=0.12$ for juveniles. If the SSB falls below 1.3 million tonnes, other measures will be agreed and implemented. No strategy on catch volatility or explicit recovery measures.
Conformity of a HCR to the management strategy	The HCR conforms specifically to the management plan when the stock requires rebuilding. Recruitment has been impaired at lower SSBs. The HCR fails to account for changes in the spatial nature of spawning when the stock is at lower biomasses, and does not prescribe the recover methods to be enacted at lower biomasses. The management agreement assumes a high degree of certainty in the assessment. It does not consider the optimum fishing mortality to maximise yields.
HCR simulation parameterisation	The initial HCR was based on Patterson et al (1997). The HCR was again re-assessed in 2004 by applying it to a simulated population in a 10 years time perspective. All of the parameterisation assumes that patterns in the past will reflect those in the future. There are two independent fleets (adults and juveniles). Recruitment: Both Beverton and Holt and Ockhams razor were investigated and Ockhams was found to reflect the recruitment better. The distribution was truncated to avoid values outside the range that has been recorded historically. Initial numbers were drawn randomly from a multivariate normal distribution of the logarithm of the numbers. The mean values and the variance-covariance matrix were obtained from the most recent ICA assessment. Weights-at-age and maturities at age were drawn from historical values without trend. The selection at age was as estimated by ICA for 2003, split on fleets according to the catches in 2003. If SSB was below 1.3 million tonnes the adults then experienced $F=0.2$ and juveniles 0.05 until the stock recovered.
Management measures	Fixed TAC and fixed F scenarios
The Robustness of the management strategy	A fixed bias in the assessment was investigated (10% with normal SD 20%). No variable bias in the assessment was assumed. Different spawning components of the stock (spatial) do exhibit different recruitment dynamics. Homogeneity of effort is assumed in the future. No explicit modelling of the assessment process. An investigation of overfishing of the stock (20% with normal SD 20%) was carried out. However no further dynamic overfishing behaviour (which co-vary with management measures) was investigated. Although it is difficult to say whether HCRs are successful, compared to saying that they have failed, the stock has recovered since the implementation of the agreement.
Additional information that should be provided in the conclusions of the management strategy study	No information on the historical performance of the assessment. Evidence from the recent past suggests that the assessment is unstable during periods of management change, this has to date not been accounted for.
To improve on the dialog can we bring out information on management issues that may be helpful?	The HCR can be further developed if the management agency will give renewed priority to the management objective of year-to-year stability in catches. Measures included could be catch ceiling and/or maximum change in year to year TAC. Multi-annual TAC could also be considered as a part of the HCR for this stock. Survey only based HCR rules could be considered.
Communication strategy	No explicit communication strategy of results considered.

Celtic Sea Herring

Management Objectives	A EU spawning closed box regulation exists. The Irish Southwest Pelagic Management Committee was established to manage the Irish fishery. This committee has taken on responsibility for management to build the stock to a level whereby it can sustain annual catches of around 20,000 t. In the event of the stock falling below the level at which these catches can be sustained the Committee will take appropriate rebuilding measures. It can introduce measures to prevent landings of small and juvenile herring including closed areas, and or appropriate time closures and aims to ensure that that all landings of herring should contain at least 50% of individual fish above 23 cm. It also maintains and if necessary can expand the spawning box closures in time and area.
Conformity of a HCR to the management strategy	There is no HCR to conform to the management plan. The management plan only considers the rebuilding of the stock. Maximising yield is not considered.
HCR simulation parameterisation	There has been no evaluation of the management plan or of the effect of the closed areas. There is no robust assessment of the stock, so the objectives of the management plan are difficult to simulate in a quantitative, projective manner.
Management measures	NA
The Robustness of the management strategy	As stated above the assessments are not robust at present, so there are no simulations. The management strategy is aimed at protecting spawning fish and the reducing the catch of small fish. These have not been evaluated.
Additional information that should be provided in the conclusions of the management strategy study	Targets relating to SSB levels are difficult to evaluate without an assessment. No information on the historical performance of the assessment. The management strategy is inconsistent with the knowledge base.
To improve on the dialog can we bring out information on management issues that may be helpful?	Recommend investigating measures not dependent on stocks assessments such as fishing industry information, tagging, surveys (poor on this stock at present), age profiles etc.
Communication strategy	No explicit communication strategy of results considered, although the fishing industry has been heavily involved throughout the process.

VIaS Herring

Management Objectives	In 2000 the Irish North West Pelagic Management Committee was established to take responsibility for the management with the following objectives, to rebuild this stock to above the Bpa level of 110,000 t, and then to further rebuild the stock to the level at which it can sustain annual catches of around 25,000 t. Also to implement a closed season from March to October and regulate effort further through boat quotas allocated on a weekly basis in the open season. (the mechanism for this is not clear, specifically with regard to the impact on discarding behaviour).
Conformity of a HCR to the management strategy	There is no HCR to conform to the management plan.
HCR simulation parameterisation	There has been no evaluation of the management plan or of the effect of the closed seasons. There has not been a quantitative stock assessment of VIaS herring for many years, so the objectives of the management plan are difficult to simulate in a quantitative, projective manner.
Management measures	NA
The Robustness of the management strategy	As there are no assessments at present it is difficult to assess the robustness at present. The management strategy is aimed at reducing fishing mortality and increasing yield. These have not been evaluated.
Additional information that should be provided in the conclusions of the management strategy study	Targets relating to SSB levels are difficult to evaluate without an assessment. No information on the historical performance of the assessment. The management strategy is inconsistent with the knowledge base.
To improve on the dialog can we bring out information on management issues that may be helpful?	Recommend investigating measures not dependent on stocks assessments such as fishing industry information, tagging, surveys (poor on this stock at present), age profiles etc.
Communication strategy	No explicit communication strategy of results considered, although the fishing industry has been heavily involved throughout the process.

3.3 NWWG

The WG will undertake explorations for several stocks. Specifically for Iceland cod and Faroe cod explorations of candidate management strategies will be performed which address the present situation of low biomasses and also considers the specific management systems including effort management at the Faroe Islands.

WG	STOCK	RATIONALE	EXISTING OR PROPOSED MANAGEMENT PLANS	APPROACH
NWWG	Icelandic summer spawners	Management plan	Management objectives: The practice has been to manage this stock at $F=F_{0.1}=F_{pa}$ for more than 20 years. However, no formal management strategy has been adopted.	Jakobsson and Stefansson (1999) made a risk analysis and stated that the probability of stock collapse needs no further consideration as long as the target fishing mortality is kept below 0.25 The target $F_{0.1}=0.22$. No formal request for evaluation of HCR. WG will revisit former evaluation in relation to the SGMAS guidelines.
	Icelandic capelin	HCR	Management objectives: The fishery is managed according to a two-step management plan which allows for a minimum spawning stock biomass of 400 000 t by the end of the fishing season. The first step in this plan is to set a preliminary TAC based on the results of an acoustic survey carried out to evaluate the immature (age 1 and most of age 2) part of the capelin stock about a year before it enters the fishable stock. This preliminary TAC is set at 2/3 of the TAC calculated on the condition that 400 000 t of SSB should be left for spawning. The second step is based on the results of another survey conducted during the fishing season for the same year classes. This result is used to revise the TAC still based on the condition that 400 000 t of SSB should be left for spawning. ICES has not evaluated the management plan with respect to its conformity to the precautionary approach.	No formal request and no proactive plans for 2005. Any evaluation of HCR of capelin need to take into account its importance as prey for other species in the ecosystem.
	Icelandic cod	HCR	Management objectives: A formal Harvest Control Rule was implemented for this stock in 1995. The TAC for a fishing year was set as a fraction (25%) of the “available biomass” which is computed as the biomass of age 4 and older fish, $B(4+)$, averaged over the two adjacent calendar years. In the long-term, this corresponds to a fishing mortality of	No formal request for evaluation of HCR. WG will review of the newly proposed HCR and evaluate in relation to the SGMAS guidelines and in relation to MSY proxies. Alternative HCR rules (equivalent to rebuilding strategies) with more

			<p>about 0.4. This harvest control rule was considered by ICES to be in accordance with the precautionary approach.</p> <p>In spring 2000 the government introduced an amendment to the catch rule limiting inter-annual changes in catches to 30 000 t. Limited studies, using a similar approach as when the initial catch rule was adopted were the basis for this amendment. ICES has not evaluated the amendment.</p>	stringent short term losses in yield order to build SSB up more rapidly will be explored.
	Icelandic haddock		<p>Management objectives: There are no explicit management objectives for this stock.</p> <p>In practice the TAC in recent years has been set based on Fpa advice</p>	No formal request for 2005. WG will explore Ftargets, with scenarios on constraints on variation in annual yield, in relation to MSY proxies taking into account WGMAS guidelines. A target F may be proposed.
	Icelandic saithe		<p>Management objectives: There are no explicit management objectives for this stock.</p> <p>In practice the TAC in recent years has been set based on Fpa advice</p>	No formal request for 2005 and no proactive plans.
	Faroe cod		<p>The management objective is to achieve sustainable fisheries. An effort management system was implemented in the Faroese demersal fisheries in Division Vb in 1996. From the outset the aim of the effort management system was to harvest on average 33% in numbers of the exploitable stock of gadoids. This translates into an average F of approximately 0.45. This average F is higher Fpa of 0.35.</p>	No formal request for 2005. WG will attempt to i) review the appropriateness of the current reference points, ii) estimate uncertainty in the assessment using risk analysis and relate that to limit reference points as well as the 33% rule. Rebuilding scenarios will be performed with focus on yearly constraints in effort changes.
	Faroe haddock		<p>The management objective is to achieve sustainable fisheries. An effort management system was implemented in the Faroese demersal fisheries in Division Vb in 1996. From the outset the aim of the effort management system was to harvest on average 33% in numbers of the exploitable stock of gadoids. This translates into an average F of approximately 0.45. This average F is higher than Fpa of 0.25.</p>	No formal requests for 2005. WG will attempt to review the appropriateness of the current reference points.
	Faroe saithe		<p>The management objective is to achieve sustainable fisheries. An effort management system was implemented in the Faroese demersal fisheries in Division Vb in 1996. From the outset the aim of the effort management system was to harvest on average 33% in numbers of the exploitable stock of gadoids. This translates into an average F of approximately 0.45. This average F is higher than the Fpa of 0.28.</p>	No formal request for 2005. WG will attempt to review the appropriateness of the current reference points.
	S. marinus			No formal request for 2005.
	Shelf S. mentella			No formal request for 2005. Experience of past

				adaptive rules will be evaluated by the WG.
	Pelagic S. mentella			No formal requests for 2005 and no proactive plan.
	Greenland halibut			No formal requests for 2005 and no proactive plan
	Greenland cod			No formal requests for 2005 and no proactive plan.

3.4 WGBFAS

For eastern Baltic cod a management plan proposal was evaluated by ICES in 2004 and basically rejected on basis of the history of non-implementation and non-availability of the data required to guide the decisions as specified in the candidate management plan. There is a need to develop a management plan which is less dependent on catch and spawning stock predictions and the WG will consider which indicators – preferably survey based – might be used to guide decisions in an adaptive framework. See details in the tale below.

For pelagic stocks there is no urgent need to be proactive in exploring new management plans. The main issue is that catch composition data are poor and mending this is a prerequisite for more refined management strategies.

WG	STOCK	RATIONALE	EXISTING OR PROPOSED MANAGEMENT PLANS	APPROACH
WGBFAS	East and west Baltic cod	Target F and B	<p>Management objectives: In resolution XX, in June 2003, the IBSFC agreed to implement the following management plan for the two cod stocks, Eastern and Western Stocks in the Baltic:</p> <p>“IBSFC agrees to implement the following management plan for the two cod stocks, Eastern and Western Stocks, which is consistent with the precautionary approach, ensures sustainable exploitation and provides for stable and high yield. This management plan replaces IBSFC resolutions X and XVII.</p> <p>1. Management targets The management targets are to maintain the Spawning Stock Biomass (SSB) at levels greater than 23,000 tonnes for the Western stock and 240,000 tonnes for the Eastern stock.</p> <p>2. Management areas The Contracting Parties agree to implement two management areas, one for the Western cod stock and one for the Eastern cod stock.</p> <p>3. Setting total allowable catches <i>a) IBSFC shall only adopt TACs that are predicted by ICES to generate an annual fishing mortality rate not exceeding 0.6 for the Eastern stock and 1.0 for the</i></p>	<p>In 2004 ACFM concluded that the IBSFC MP formally is in accordance with the PA. In addition, the envisaged time frame to bring the eastern cod stock above Bpa within 5 years is in accordance with the PA. It was also noted by ACFM that this can only be successful, if the implementation error of the MP is small, i.e. the resulting effects can be measured with sufficient accuracy and the assessments is sufficiently unbiased.</p> <p>However, in the light of the significant IUU fisheries in the past years, this is unlikely to be the case.</p> <p>New management measures have been implemented for the Baltic Sea in 2005 (Council Reg. St14171.en04), introducing an array of measures for protection of the cod stock. These measures are parts of a MP in SGMAS-standards, since the measures encompass a wide range of actions, i.e. TAC limitations, landing sizes, selection of allowed landing sites, sampling requirements, closed areas, closed seasons, gear restrictions, inspection schemes etc. These measures are designed to restrict both the</p>

		<p><i>Western stock.</i></p> <p><i>b) Where the SSB is estimated by ICES to be greater than or equal to the target levels defined in chapter 1, the TACs shall not exceed a level which, according to ICES, will result in the SSB being below the target levels at the end of the year of the application of the TACs.</i></p> <p>Within the constraints laid down in paragraph 3a, the TACs shall not be set at levels which are more than 15% less or 15% greater than the TACs of the preceding year.</p> <p><i>c) Where the SSB is estimated by ICES to be less than the target levels defined in chapter 1 but above 9,000 tonnes for the Western stock and 160,000 tonnes for the Eastern stock, the following rules shall apply:</i></p> <p><i>i) the TAC shall be fixed at a level which, according to ICES, will result in an increase of at least 30% in the SSB or in a SSB greater than the target levels, defined in chapter 1, at the end of the year of the application of the TAC;</i></p> <p><i>ii) where it will not be possible, according to ICES, to achieve the increase in the SSB indicated in paragraph 3a, the TAC shall be set at the lowest possible level.</i></p> <p>Within the constraints laid down in paragraph 3a, the TACs shall not be set at levels, which are more than 15% less or 15% greater than the TACs of the preceding year.</p> <p><i>d) Where the SSB is estimated by ICES to be less than 9,000 tonnes for the Western stock or 160,000 tonnes for the Eastern stock, the following rules shall apply:</i></p> <p><i>i) the TAC shall be fixed at a level which, according to ICES, will result in the SSB being above these levels at the end of the year of the application of the TAC and will give an increase of at least 30% in the SSB;</i></p> <p><i>ii) where it will not be possible, according to ICES, to increase the SSB to 9,000 tonnes for the Western stock or 160,000 tonnes for the Eastern stock within one year, the TAC shall be set at the lowest possible level.</i></p> <p>4. Technical measures limiting fishing effort and mortality</p> <p><i>a) IBFCA shall provide for consistency between gear selectivity and the minimum landing size for cod, in order to reduce discards and fishing mortality on juvenile cod.</i></p> <p><i>b) The minimum landing size of 38 cm for cod shall be kept under regular review. In accordance with the development in the stocks and</i></p>	<p>legal and the level of IUU catches.</p> <p>To be done:</p> <ul style="list-style-type: none"> - Comment on the likelihood of success of these technical measures in the light of the estimated most recent IUU catches and the uncertainty of the assessment. - Design, if possible, an alternative measure for the state of the stock, not necessarily based on conventional surveys.
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		<p><i>the selectivity in the fisheries, the minimum landing size shall be revised no later than 2005 with a view to adopting an increase to apply from 2006.</i></p> <p><i>c) IBSFC shall, for all fisheries targeting cod, from 2003 keep under regular review the development in the fishing activities, including the impact of closed areas and seasons, and gear regulations in terms of control, conservation and sustainable exploitation objectives. On the basis of scientific advice and any review carried out, IBSFC shall adopt, where appropriate, adjustments to the fishery rules.</i></p> <p>5. Control and enforcement</p> <p><i>The Contracting Parties of IBSFC shall continue their co-operation on control and enforcement with the aim of establishing a comprehensive and efficient Control and Enforcement Scheme, which supports this management plan and ensures compliance with IBSFC recommendations and Fishery Rules.</i></p> <p>6. Review of the management plan</p> <p><i>This management plan shall be reviewed as necessary, on the basis on scientific information and advice, not later than 2006.”</i></p>	
	Baltic sprat	<p>Management objectives: In Resolution XIII, September 2000, the IBSFC agreed to implement a long-term management plan for sprat in the Baltic:</p> <p><i>“The IBSFC agreed to implement a long-term management plan for the sprat stock which is consistent with a precautionary approach and designed to ensure a rational exploitation pattern and provide for stable and high yields. This plan shall consist of the following elements:</i></p> <p><i>Every effort shall be made to maintain a level of spawning stock biomass (SSB) greater than 200 000 t.</i></p> <p><i>A long-term management plan, by which annual quotas shall be set for the fishery, reflecting a fishing mortality rate of 0.4 for relevant age groups as defined by ICES shall be implemented.</i></p> <p><i>Should the SSB fall below a reference point of 275 000 t, the fishing mortality rate referred to under paragraph 2 will be adapted in the light of scientific estimates of the conditions then prevailing, to ensure safe and rapid recovery of the spawning stock biomass to levels in excess of 275 000 t.</i></p> <p><i>The IBSFC shall, as appropriate, adjust management measures and</i></p>	<p>The Management Plan has not been evaluated. The 2003 review has not been conducted but the current high level of the stock and successive high recruitments does not make re-evaluation of the current management plan urgent.</p>

			<p><i>elements of the plan on the basis of any new advice provided by ICES. A review of this arrangement shall take place not later than in the year 2003."</i></p>	
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3.5 WGDEEP and Elasmobranchs

There is a need to develop management strategies specifically for stocks for which very little data is available, but where general biological characteristics imply that development of exploitation should only take place very gradually and on basis of continuous monitoring of outcomes. WGDEEP and WGEF are encouraged to develop a plan for proposing candidate management strategies for these stocks.

3.6 WGHMM

The main challenge is to contribute to the development of the adaptive management plan for southern hake and Nephrops by identifying indicators which may use to evaluate the efficacy of management measures and serve as a basis for decisions for corrections to these regulations.

WG	STOCK	RATIONALE	EXISTING OR PROPOSED MANAGEMENT PLANS	APPROACH
WGHMM	Northern hake	Recovery plan	<p>Recovery plan: Rebuilding of the hake stock can be obtained by reducing the fishing mortality, or by a reduction in F combined with an improvement of the selection pattern. Direct effort reduction rather than just TAC controls, are required to promote reduction in fishing mortality. Closed areas and seasons may contribute to stock recovery, but only if accompanied by major reductions in effort.</p> <p>The minimum legal mesh-size was increased from 55/65 mm to 70 mm in the Bay of Biscay since 1 January 2000. An emergency plan for Northern hake was implemented on 1 September 2001 (Council Regulations N°1162/2001, 2602/2001, 494/2002). These plans combines a low TAC in recent years, and requires the use of a 100mm mesh size for trawlers targeting hake in the Bay of Biscay and for trawlers operating in two non-<i>Nephrops</i> areas (one in the Bay of Biscay, one in the Celtic Sea). Following this emergency plan, the Commission proposed a regulation [COM(2001) 724] which included harvest control rules for the selection of TACs for a number of fish stocks including northern hake. For hake, the proposals were that the TACs shall not exceed a level for which scientific evaluation has indicated that they will result in an increase in the quantities of mature fish in the sea of 15% and that yearly variation in TACs should not exceed 50%.</p> <p>A STECF Subgroup on Review of</p>	Make simulations using the CS5 or other equivalent Programs using scenarios considering the current management actions already proposed by EC

			<p>Stocks (SGRST) met on 20-22 March 2002 to evaluate the risks and benefits of the proposed harvest control rules. The software CS (v. 4) was used to evaluate HCRs. Biomass based and/or fishing mortality based harvest control ruled were tested. From the scenarios tested, it was found that most had a high probability to achieve a recovery (SSB above Bpa) during a 10 years period.</p> <p>ICES has not been able to quantify the likely impact of these changes in mesh size, but, since hake is a late maturing fish, any improvement in the selection pattern that reduces the catch of younger fish (ages 0-2, ~ less than 30 cm) will have little short-term effect on SSB and only increase SSB in the medium-term. An improvement of the selection pattern would increase the probability that a reduction in fishing mortality will allow the rebuilding of SSB.</p> <p>The recovery plan proposed by the EU Commission [COM(2003) 374] in July 2003 aimed at an annual increase of the SSB of 10% with a limit on the annual TAC variation of 15%.</p> <p>Measures for the recovery of the northern hake stock that were finally established in 2004 (EC Reg. No 811/2004) are different from the one tested above and have not yet been evaluated. The recovery plan is aimed at achieving a SSB of 140,000 tonnes (Bpa) by limiting fishing mortality to $F=0.25$ and by allowing a maximum change in TAC between years of 15%. It is important to note that since HCR evaluation conducted in 2002, the perception of stock status has also changed due to recent improvements in recruitment level. Current fishing mortality is just above F_{pa} and recovery of the stock is expected to occur at medium term under status-quo F.</p> <p>ICES has not evaluated this plan. ICES notes that the reductions indicated in the proposed plan are very far from cuts in fishing mortality that could rebuild the stock in the short-term. The catch option table presented by ACFM 2004 suggests that a reduction in fishing mortality of 25% in 2005 would rebuild the stock in the short-term.</p>	
	Southern hake	Proposed recovery plan with Iberian Nephrops stocks	<p>Rebuilding plan: In 2002, ACFM recommended very drastic measures for the Southern Hake stock and the Iberian stocks of Nephrops: as close to zero as practicable in the case of Southern hake, and a zero TAC for Nephrops.</p> <p>Regarding Nephrops, due to the mixed nature of the fisheries, ICES recommended that suitable technical measures (closed areas, closed seasons, etc.) were investigated for implementation at the earliest possible opportunity in order to help rebuild the</p>	making the most logical scenarios proposed by EC Regulations (based on F and/or SSB rules) with an ad-hoc software[e.g. CP (Azevedo and Jardim)]. However, it should be considered that main population estimates are too sensitive (bias and trends) based on the current perception of this stock for recent years and

			<p>stock.</p> <p>A meeting of the Subgroup on management Objectives of STECF took place in 2003 to develop a stock recovery plan for southern hake and <i>Nephrops</i> in VIIIc and IXa (SGMOS 2003). The recovery plan is yet to be implemented, but ICES will reconsider its advice in the light of its evaluation.</p> <p>A recovery plan for this stock is under development. The proposed measures intend to rebuild both stocks in terms of SSB. In the case of the Southern Hake the SSB target was the level reached in late 80s and early 90s (around 23,000 t); but for <i>Nephrops</i>, no target was possible to indicate due to the complex dynamics of this species. Closure of the fishery in five areas around the Iberian peninsula.</p> <p>At present the proposal of the recovery plan is under discussion, due to some difficulties on the agreement between the Industry and Administration in relation to the size and period of the proposed closed areas.</p> <p>Management objectives: There are no yet specific management objectives for this stock.</p>	<p>it should be desirable to avoid the influence of older estimates which can lead to an spurious answer in medium-term of different management scenarios proposed. An adaptive management procedure should be considered to solve, in relative terms, these problems for simulations evaluating and tracking the system's response of the measures proposed.</p> <p>An effort control scheme can be considered to represent the best overall management scheme for the fisheries for southern hake and Iberian <i>Nephrops</i>, which in fact, are in the same EC proposal, but account needs to be taken of the problems associated with defining and regulating effort in artisanal fleets.</p> <p>For <i>Nephrops</i> annual reductions in F were proposed based on the strategy for hake – gradual F reductions (10% p.a.) to achieve F0.1 for hake of 0.15 over a recovery time of 5-10 years. Since this was deemed insufficient to allow effective recovery of <i>Nephrops</i> stocks, closures of some areas of high <i>Nephrops</i> were also recommended. Only limited scope for the use of gear regulations was identified, given the mixed nature of the fisheries, but some minor changes were suggested.</p>
	Iberian peninsula <i>Nephrops</i> stocks	Proposed recovery plan with Southern hake	Rebuilding plan: See Southern hake's comments.	See Southern hake's comments.

For both stocks of Hake and *Nephrops* in Iberian peninsula, SGMAS 2005 has extensively described all the problematic aspects in relation to HCRs affecting to these stocks.

3.7 WGMHSA

For mackerel evaluations were made in 2004. These should be updated in relation to robustness to bias and precision and presented to ACFM.

For horse mackerel a separate process has been established to respond to a request.

For anchovy, proposals for a management strategy can only be developed in very close interaction with managers as the problems to be addressed largely relate to distribution between fleets rather than to biology.

WG	STOCK	RATIONALE	EXISTING OR PROPOSED MANAGEMENT PLANS	APPROACH
Wgmhsa	Nea mackerel	N-ec agreement	Management objectives: fixed f strategy (f between 0.15-0.20). Change f if stock is below bpa to ensure safe and rapid recovery. No explicit management measures proposed for what to do when stock is below bpa , although it is stated that measures should aim for safe and rapid recovery. No definition of how safe and how rapid.	Two hcr simulation studies present to wgmhsa 2004. Fixed assessment bias was assumed. Single stock recruitment relationship. Uncertainty in starting populations. Approach: $stpr$ and a different coding of an $stpr$ like approach. To be done: explore robustness of hcr to implementation bias, assessment bias (and uncertainty) and different productivity regimes.
	Anchovy sub area viii	Hcr	Management objectives: there are no explicit management objectives for this stock.	A hcr was evaluated by wgmhsa 2003. Single stock recruitment curve used, corrected for m . Population dynamics derived from biomass based model as in wgmhsa 2002. No explicit testing of robustness to assumptions about the natural systems or adaptation by fishermen. To be done: start process to interest managers and stakeholders in setting objectives and defining management strategy.
	Western horse mackerel	Request by ec-norway	Management objectives: there are no explicit management objectives for this stock.	No simulations have been carried out for candidate hcrs for this stock. Also no agreed assessment of the state of the stock exists as the fishery has largely been sustained by one big yearclass (1982) but recently the fishery has changed to catching younger fish. To be done: explicit invitation by ec-norway to come up with proposals for objectives (sic!) And management strategies for this stock. Consider methods that do not rely on analytical stock assessments.

Mackerel

Management Objectives	Fixed F strategy (F between 0.15-0.20). Change F if stock is below Bpa to ensure safe and rapid recovery. No explicit management measures proposed for what to do when stock is below Bpa, although it is stated that measures should aim for safe and rapid recovery. No definition of how safe and how rapid. No explicit yield or socio-economic objectives.
Conformity of a HCR to the management strategy	Current management strategy operates with three year cycle of egg-survey, but annual estimates of stock size and annual advice.
HCR simulation parameterisation	Two HCR simulation studies present to WGMHSA 2004 (Roel, Skagen) looked at fixed TAC regimes. Fixed assessment bias was assumed. Single stock recruitment relationship. Uncertainty in starting populations. Approach: STPR and Roel's own coding of an STPR like approach.
Management measures	Fixed TAC and fixed F scenarios
The Robustness of the management strategy	No explicit modelling of the assessment process. Single stock recruitment relationship used. No explicit modelling of changes in nature (productivity) or fleets (selectivity).
Additional information that should be provided in the conclusions of the management strategy study	No information on the historical performance of the assessment. No information on implementation bias and not considered in the assessments. Subsequent to the WG, ACFM changed the perception of the stock by altering the type of relationship between egg-survey and stock size. This indicates that the stock estimates are highly dependent on relatively arbitrary assumptions. This has not been explored in the evaluations. This highlights the need to explore the effects of assessment bias and sensitivity in evaluations of harvest control rules.
To improve on the dialog can we bring out information on management issues that may be helpful?	A status quo assumption is used to model the resource productivity and the fishery response. No implementation error considered even though widely varying estimates of misreporting are around.
Communication strategy	No explicit communication strategy of results considered. For the moment the results have only reached ACFM and have not been passed on to stakeholders or managers.

Western Horse mackerel

Management Objectives	No explicit management objectives set for this stock
Conformity of a HCR to the management strategy	No explicit management strategy agreed. General objectives as specified in the precautionary approach. However no agreed reference points exist for this stock.
HCR simulation parameterisation	No simulations have been carried out for candidate HCRs for this stock. Also no agreed assessment of the state of the stock exists as the fishery has largely been sustained by one big yearclass (1982) but recently the fishery has changed to catching younger fish.
Management measures	Fisheries is currently managed by TACs.
The Robustness of the management strategy	For any management strategy to be implemented for western horse mackerel, it should be based on: independence of accurate stock assessments robust to tactical decision making (TACs have mostly been set higher than the advice)
Additional information that should be provided in the conclusions of the management strategy study	
To improve on the dialog can we bring out information on management issues that may be helpful?	The primary issue on this stock is the definition of objectives. Where do managers want to go with the stock and the fishery. The fishery for horse mackerel is carried out mainly by pelagic trawlers that are also fishing for mackerel and herring (and ...) during other times of the year. Horse mackerel is used mainly for exportation to Africa and Japan (juveniles) Historical catch trends indicate that around four strong yearclasses occurred in the 20 th century (Guus Eltink, pers comm). These strong yearclasses can sustain the fishery for a long time because Horse mackerel is a long lived species. In order for this to happen, the fishing mortality should be kept at a low level. Management strategies should acknowledge different fisheries for juveniles and adults (that also serve different markets). The current TAC does not apply to the distribution area of the stock.
Communication strategy	For a management strategy to be developed for Western horse mackerel it is important to set up an dialogue process between managers, stakeholders and scientists in order to set the objectives and to devise ways of tracking the development of the stock that do not rely on stock assessment results alone. Other possible indicators of stock development that could be explored are: egg survey data; age profiles in the catches in different areas, information from the fishing industry (interviews, logbooks), tagging experiments, ... It might be useful to estimate the effort that is dedicated to catching Horse Mackerel (e.g. searching time) as an indication of the level of fishing mortality that can be expected.

Anchovy in subarea VIII

Management Objectives	No management objectives agreed.
Conformity of a HCR to the management strategy	Not applicable
HCR simulation parameterisation	A HCR was evaluated by WGMHSA 2003. Single stock recruitment curve used, corrected for M. Population dynamics derived from biomass based model as in WGMHSA 2002.
Management measures	TAC rule split into an initial TAC and a final TAC set half way the year based on results of the survey. Different permutations of the management measures were considered.
The Robustness of the management strategy	No explicit testing of robustness to assumptions about the natural systems or adaptation by fishermen.
Additional information that should be provided in the conclusions of the management strategy study	No incorporation of implementation error or assessment error in the evaluation?
To improve on the dialog can we bring out information on management issues that may be helpful?	Status quo assumption used for the resource system and fishery (response) system.
Communication strategy	Results have not passed beyond ACFM so far. Deadlock in progress on HCR/Management strategy because of disagreements at the political level.

3.8 WGNPBW

The Norwegian spring spawning herring is managed under a fixed F strategy with provisions for action at reduced stock levels. Given the nature of this stock and the disputes about assessment methods the WG may evaluate this in relation to alternative states of nature and robustness to bias and precision of assessments.

For blue whiting ICES must explore and present management strategies which are not dependent on short term catch and SSB predictions but will be able to catch crash situations. The main problem has been that predictions have performed poorly and high catches have been maintained through a period of high recruitment. A fixed TAC strategy with a mechanism to react quickly on imminent crash in the event of poor yearclasses should be investigated and presented to managers.

WG	STOCK	RATIONALE	EXISTING OR PROPOSED MANAGEMENT PLANS	APPROACH
WGNPBW	Norwegian spring spawning herring	Proposed Management plan	Management objectives: Fixed F strategy. Maintain a level of Spawning Stock Biomass (SSB) greater than the critical level (Blim). The TAC should be consistent with a fishing mortality rate of less than 0.125. Should the SSB fall below a reference point of Bpa, then the reduction in F should at least be linear from 0.125 at Bpa to 0.05 at Blim.	Seastar based HCR simulations have been carried out. Assessment (starting point) error and stochastic S/R included. Bias in assessment and implementation not taken into consideration. To be done: Incorporate alternative states of nature (high/low productivity regimes), precision and bias of the assessment process and implementation errors.
	Blue whiting	Proposed management plan	Management objectives: Fixed F strategy. Change F if stock is below Bpa to ensure safe and rapid recovery. No explicit management measures proposed for what to do when stock is below Bpa. Management plan has not been implemented	HCR have been evaluated in SGPA 2002, but based on assumptions that are no longer valid (e.g. catch ceiling of 1.2 million tonnes). Robustness has only been evaluated against the starting population of the simulation. To be done: Explore alternative states of nature (high/low productivity regimes), precision and bias of the assessment process and implementation errors. Explore fixed TAC strategy with ability to capture crash situation.

Norwegian Spring spawning herring

Management Objectives	Every effort shall be made to maintain a level of Spawning Stock Biomass (SSB) greater than the critical level (Blim) of 2 500 000 t. The TAC should be consistent with a fishing mortality rate of less than 0.125. Should the SSB fall below a reference point of 5 000 000 t (Bpa), then the reduction in F should at least be linear from 0.125 at Bpa (5 000 000 t) to 0.05 Blim (2 500 000 t). No explicit socio-economic objectives.
Conformity of a HCR to the management strategy	This aspect was considered by the Coastal State wg. The broad stock characteristics were a large pelagic stock with spasmodic recruitment. Thus a low fishing mortality was desired in order to be able to utilize the strong year classes over a longer period.
HCR simulation parameterisation	The management agency requested from ICES medium term simulations on yield (range of F's from 0.1 to 0.175) and risk of falling below Blim. These simulations were carried out by the ICES Northern Pelagic working group, using the SeaStar assessment program, and there was a prerequisite from the managers that these simulations should be the basis for the HCR considerations. The considerations of the Northern Pelagic working group on S/R, growth parameters etc were evaluated in a routine sense as ACFM reviewed the assessment report from the Northern Pelagic working group. Change in spatial structure not taken into account.
Management measures	TAC
The Robustness of the management strategy	Assessment (starting point) error and stochastic S/R included in the medium term simulations. Bias in assessment not taken into consideration. Implementation error not considered.
Additional information that should be provided in the conclusions of the management strategy study	Consider bias in assessment and implementation error as well.
To improve on the dialog can we bring out information on management issues that may be helpful?	
Communication strategy	The results are discussed at the Coastal States meetings. Managers, stakeholders and scientists take part in these meetings.

Blue whiting

Management Objectives	Fixed F strategy. Change F if stock is below Bpa to ensure safe and rapid recovery. No explicit management measures proposed for what to do when stock is below Bpa. The management plan has not been implemented yet. In the absence of agreements on a TAC for 2002, 2003 and 2004, the Coastal States and the Russian Federation each implemented unilateral catch limits for these years. The combined total of the catch limits greatly exceed the provisions of the agreed management plans. ICES has not evaluated the management plan in relation to the precautionary approach. No explicit socio-economic objectives.
Conformity of a HCR to the management strategy	There are inconsistencies between Bpa and Fpa as used in the (not implemented) management plan
HCR simulation parameterisation	Medium and long-term simulations based on the 2001 assessment were presented to the SGPA in March 2002 (Lisbon). The group suggested to extend the reference point framework to a harvest control rule of the same general design as already agreed by the coastal states (May 2002). The harvest control rules explored included: A fixed fishing mortality at high SSB Below an 'action level' of SSB, the fishing mortality was reduced linearly with SSB, to reach F=0.05 at and below a Blim of 1.5 million tonnes. A maximum allowable catch of 1.2 million tonnes. Some alternative runs

	<p>were made with 0.8 million tonnes instead of 1.2 million tonnes. Runs were made with and without a normally distributed error with C.V. = 30% in the stock estimates on which decisions about next years fishing mortality was made.</p> <p>Medium term simulations were made to explore some possible alternatives to the present advisory framework. The simulations were done with the STPR software. For detailed information see SGPA report 2002. Note that one of these HCR has a maximum of 1.2 million tonnes, but the catches has been higher than that since 1999.</p>
Management measures	TAC
The Robustness of the management strategy	Robustness has only been evaluated against the starting population of the simulation. Alternative states of nature (high/low productivity regimes) have not been explored. Precision and bias of the assessment process have not been explored
Additional information that should be provided in the conclusions of the management strategy study	Implementation failures would need to be considered in formal evaluations of HCRs but also in the agreement on new management strategies. TAC measures have not been restricting the fishery in the past because the TAC does not apply to the whole distribution area of the stock.
To improve on the dialog can we bring out information on management issues that may be helpful?	Given the uncertainty in the assessment process, management strategies would need to be developed that are less sensitive to the assessment results. This could be achieved by incorporating a buffer before action is taken. Another possibility would be to agree with managers and stakeholders what the relevant knowledge base would be and to develop a management strategy that is based on that knowledge base
Communication strategy	The results are discussed at the Coastal States meetings. Politicos, stakeholders and scientists take part in these meetings.

3.9 WGNSSK

Management plans for several stocks were partly evaluated by an STECF study group in 2004. Requests regarding plaice, cod, sandeel and Norway pout will be dealt with at an ad hoc group meeting in April.

The cod recovery plan agreed in 2004 has not been evaluated by ICES which created some confusion around the ICES advice in 2004. ICES must evaluate this plan in 2005 as a prerequisite to its advice. The WG does not have capacity to do this but the ad hoc group will meet in April to make this evaluation.

WG	STOCK	RATIONALE	EXISTING OR PROPOSED MANAGEMENT PLANS	AMAWGC COMMENT:
WGNSSK	North Sea Cod	Recovery plan	<p>Management objectives: In 1999 the EU and Norway have "agreed to implement a long-term management plan for the cod stock, which is consistent with the precautionary approach and is intended to constrain harvesting within safe biological limits and designed to provide for sustainable fisheries and greater potential yield. The plan shall consist of the following elements: Every effort shall be made to maintain a minimum level of SSB greater than 70 000 t (B_{lim}).</p> <p>For 2000 and subsequent years the Parties agreed to restrict their fishing on the basis of a TAC consistent with a fishing mortality rate of 0.65 for appropriate age groups as defined by ICES.</p> <p>Should the SSB fall below a reference point of 150 000 t (B_{pa}), the fishing mortality referred to under paragraph 2 shall be adapted in the light of scientific estimates of the conditions then prevailing. Such adaptation shall ensure a safe and rapid recovery of SSB to a level in</p>	ICES has not yet evaluated the cod recovery plan. The current EU-Norway joint request asks for an evaluation of harvest control rules for North Sea cod, and this is being addressed largely by correspondence. However, addressing this request will not constitute a full evaluation of the recovery plan, which will still need to be done. An ad hoc meeting will be called to address this.

			<p><i>excess of 150 000 t.</i></p> <p><i>In order to reduce discarding and to enhance the spawning biomass of cod, the Parties agreed that the exploitation pattern shall, while recalling that other demersal species are harvested in these fisheries, be improved in the light of new scientific advice from, inter alia, ICES.</i></p> <p><i>The Parties shall, as appropriate, review and revise these management measures and strategies on the basis of any new advice provided by ICES."</i></p> <p>Cod recovery plan: The cod recovery plan is formulated in Council Regulations 423/2004 (26 Feb 2004), 1928/2004 (25 Oct 2004) and Annex IVa to 27/2005 (22 Dec 2004). The first named of these Regulations is the principal one, which allowed for subsequent modifications where deemed appropriate. The salient points of the current version of the plan (following the last named regulation above) are as follows:</p> <p>The plan applies to all cod stocks in EC waters.</p> <p>Recovery is deemed to have occurred when SSB has estimated to have been above the defined B_{pa} for two consecutive years. This is expected to take between five and 10 years.</p> <p>The principal instruments of regulation are TACs, effort restrictions and technical measures.</p> <p>The rates of recovery are to be at least a 30% annual increase in SSB, under the condition that TACs do not change by more than $\pm 15\%$ annually. The first condition is allowed to override the second if estimated SSB is less than the defined B_{lim}. In addition, TACs should be set so that the resultant fishing-mortality rate is less than the defined F_{pa}.</p> <p>Days-at-sea restrictions apply to all fisheries in EC waters, unless they are subject to derogations. There are a number of these, relating to such aspects as percentage of cod retained on board, fishing in the Irish Sea, 120 mm square mesh panels, and so on.</p> <p>Vessels are required to give prior notification to authorities (at least four hours in advance) if they are to be landing more than one tonne of cod. Vessels landing more than two tonnes of cod must in addition only do so at designated ports.</p>	
	North Sea Plaice	Agreement	<p><i>Management objectives: In 1999, the EU and Norway have "agreed to implement a long-term management plan for the plaice stock, which is consistent with the precautionary approach and is intended to constrain harvesting within safe biological limits and designed to provide for sustainable fisheries and greater potential yield. The plan shall consist of the following elements:</i></p> <p><i>Every effort shall be made to maintain a minimum level of SSB greater than 210 000 t (B_{lim}).</i></p> <p><i>For 2000 and subsequent years the Parties agreed to restrict their fishing on the basis of a TAC consistent with a fishing mortality of 0.3 for appropriate age groups as defined by ICES.</i></p> <p><i>Should the SSB fall below a reference point of</i></p>	<p>The EU-Norway agreement given here relates to old estimates of biological reference points, which have now been changed following the inclusion of discards in the assessment. ICES needs to a) determine whether the EU-Norway agreement has been updated to include new reference points, and b) evaluate the ability of these reference points to achieve management goals.</p> <p>In June 2004, an <i>ad hoc</i> STECF WG produced an evaluation of the plaice box. A lack of pre-defined evaluation criteria, and the absence of a corresponding control region, made a full statistical evaluation impossible, and the WG were forced to infer conclusions from trends in stock parameters. There was no direct</p>

			<p>300 000 t (B_{pa}), the fishing mortality referred to under paragraph 2 shall be adapted in the light of scientific estimates of the conditions then prevailing. Such adaptation shall ensure a safe and rapid recovery of SSB to a level in excess of 300 000 t.</p> <p><i>In order to reduce discarding and to enhance the spawning biomass of plaice, the Parties agreed that the exploitation pattern shall, while recalling that other demersal species are harvested in these fisheries, be improved in the light of new scientific advice from, inter alia, ICES.</i></p> <p><i>The Parties shall, as appropriate, review and revise these management measures and strategies on the basis of any new advice provided by ICES."</i></p>	<p>evidence that the plaice box had had a positive effect on stock biomass, yield or discarding practices, while there was limited evidence for some transient improvement in recruitment. None of the proposed environmentally-driven hypotheses were supported, although there is clear evidence that the distribution of juvenile plaice has changed such that the importance of the box has decreased for these life stages.</p>
	North Sea Haddock	Agreement	<p>Management objectives: In 1999 the EU and Norway have "agreed to implement a long-term management plan for the haddock stock, which is consistent with the precautionary approach and is intended to constrain harvesting within safe biological limits and designed to provide for sustainable fisheries and greater potential yield. The plan shall consist of the following elements:</p> <p><i>Every effort shall be made to maintain a minimum level of SSB greater than 100 000 t (B_{lim}).</i></p> <p><i>For 2000 and subsequent years the Parties agreed to restrict their fishing on the basis of a TAC consistent with a fishing mortality rate of 0.70 for appropriate age groups as defined by ICES.</i></p> <p><i>Should the SSB fall below a reference point of 140 000 t (B_{pa}), the fishing mortality referred to under paragraph 2 shall be adapted in the light of scientific estimates of the conditions then prevailing. Such adaptation shall ensure a safe and rapid recovery of SSB to a level in excess of 140 000 t.</i></p> <p><i>In order to reduce discarding and to enhance the spawning biomass of haddock, the Parties agreed that the exploitation pattern shall, while recalling that other demersal species are harvested in these fisheries, be improved in the light of new scientific advice from, inter alia, ICES.</i></p> <p><i>The Parties shall, as appropriate, review and revise these management measures and strategies on the basis of any new advice provided by ICES."</i></p>	<p>The haddock-box scheme contained in Annex V to EC Regulation 2287/2003 no longer applies.</p> <p>For all stocks with EU/Norway agreements: These agreements have not been evaluated in accordance with SGMAS guidelines. However, if the basis for assessment has not changed then there is no point in re-evaluation of the PA parameters defined in the agreement.</p>
	North Sea Saithe	Agreement	<p>Management objectives: In 1999 the EU and Norway have "agreed to implement a long-term management plan for the saithe stock, which is consistent with the precautionary approach and is intended to constrain harvesting within safe biological limits and designed to provide for sustainable fisheries and greater potential yield. The plan shall consist of the following elements:</p> <p><i>Every effort shall be made to maintain a minimum level of SSB greater than 106 000 t (B_{lim}).</i></p> <p><i>For 2000 and subsequent years the Parties agreed to restrict their fishing on the basis of a TAC consistent with a fishing mortality rate of 0.40 for appropriate age groups as defined by ICES.</i></p> <p><i>Should the SSB fall below a reference point of</i></p>	<p>For all stocks with EU/Norway agreements: These agreements have not been evaluated in accordance with SGMAS guidelines. However, if the basis for assessment has not changed then there is no point in re-evaluation of the PA parameters defined in the agreement.</p>

			<p>200 000 t (B_{pa}), the fishing mortality referred to under paragraph 2 shall be adapted in the light of scientific estimates of the conditions then prevailing. Such adaptation shall ensure a safe and rapid recovery of SSB to a level in excess of 200 000 t.</p> <p>The Parties shall, as appropriate, review and revise these management measures and strategies on the basis of any new advice provided by ICES.”</p>	
	Sandeel	Agreement	<p>The EU adopted the following ‘ad hoc’ harvest control rule for the 2005 fishery for sandeel in the North Sea at the Council meeting in December 2004:</p> <p>a The maximum number of kilowatt-days referred to below shall be revised by the Commission as early as possible and not later than 15 May 2005, based on advice from the STECF on the size of the 2004 year class of North Sea sandeel, in accordance with the following rules:</p> <p>(a) where STECF estimates the size of the 2004 year class of North Sea sandeel to be at or above 500 000 million individuals at age 0, no restrictions in kilowatt-days shall apply for the remaining of 2005;</p> <p>(b) where STECF estimates the size of the 2004 year class of North Sea sandeel to be between 300 000 million and 500 000 million individuals at age 0, the number of kilowatt-days shall not exceed the level in 2003 as calculated in point 4(a);</p> <p>(c) where STECF estimates the size of the 2004 year class of North Sea sandeel to be below 300 000 million individuals at age 0, fishing with demersal trawl, seine or similar towed gears with a mesh size of less than 16 mm shall be prohibited for the remaining of 2005. However, a limited fishery will be allowed in order to monitor the sandeel stocks in the North Sea and the Skagerrak and the effects of the closure. To this end the Member States concerned shall in cooperation with the Commission develop a plan for the monitoring fishery.</p>	<p>It is noted that this ‘ad hoc’ HCR is annual and the actual real time management plan following this HCR is a repetition of the management for 2004. AMAWGC notes that for this short lived species data on the recruiting year class (age 1) are crucial for any stock based management and such (fishery dependant) data have not been available until the year of management.</p> <p>The actual implementation on the management is based on the methodology established by an ‘ad hoc’ STECF WG to determine the strength of the incoming 1-group. This methodology was evaluated in 2004 by STECF, where the magnitude of the uncertainty was pointed out. AMAWGC notes that the WGNSSK (2004) has also considered alternative management options (including TAC restrictions) for the fishery in the North sea for this species. Here it is also highly recommended that fishery independent indices be collected.</p> <p>Due to the real-time nature of the HCR, the WGNSSK is unable to evaluate the HCR in year. WGNSSK evaluations of the HCR will therefore be limited to an evaluation of historical performance.</p>
	Norway pout	Agreement	<p>A new EU / Norway request for Management Strategy evaluation has been formulated.</p>	<p>Following a precipitous decline in pout abundance in recent years, there is no longer a commercial fishery for this species. The assessment will probably therefore be based on relative trends from surveys, which will lead in turn to revision of reference points. The efficacy of these will require evaluation.</p>
	<i>Nephrops</i>		<p>Technical measures specific to <i>Nephrops</i> fisheries need to be listed here.</p>	<p>Specific technical measures for <i>Nephrops</i> fisheries have not been evaluated.</p>

3.10 WGNSSDS

Due to doubts about recent catch data management strategy evaluations cannot be based on recent catch data. The WG will in 2005 first attempt to establish an assessment – starting from previously accepted assessments – on which evaluations can be made. Exploratory evaluations of strategies which do not rely on catch forecasts, based on past assessments can then be made by the WG.

An evaluation of management strategy options for anglerfish will be developed as response to request by the WG.

WG	STOCK	RATIONALE	EXISTING OR PROPOSED MANAGEMENT PLANS	AMAWGC COMMENT:
WGNSDS	West of Scotland cod / Irish Sea cod	Recovery plans	<p>Cod recovery plans:</p> <p>The cod recovery plan is formulated in Council Regulations 423/2004 (26 Feb 2004), 1928/2004 (25 Oct 2004) and Annex IVa to 27/2005 (22 Dec 2004). The first named of these Regulations is the principal one, which allowed for subsequent modifications where deemed appropriate. The salient points of the current version of the plan (following the last named regulation above) are as follows:</p> <p>The plan applies to all cod stocks in EC waters.</p> <p>Recovery is deemed to have occurred when SSB has estimated to have been above the defined B(pa) for two consecutive years. This is expected to take between five and 10 years.</p> <p>The principal instruments of regulation are TACs, effort restrictions and technical measures.</p> <p>The rates of recovery are to be at least a 30% annual increase in SSB, under the condition that TACs do not change by more than $\pm 15\%$ annually. The first condition is allowed to override the second if estimated SSB is less than the defined B(lim). In addition, TACs should be set so that the resultant fishing-mortality rate is less than the defined F(pa).</p> <p>Days-at-sea restrictions apply to all fisheries in EC waters, unless they are subject to derogations. There are a number of these, relating to such aspects as percentage of cod retained on board, fishing in the Irish Sea, 120 mm square mesh panels, and so on.</p> <p>Vessels are required to give prior notification to authorities (at least four hours in advance) if they are to be landing more than one tonne of cod. Vessels landing more than two tonnes of cod must in addition only do so at designated ports.</p>	<p>As there are currently no accepted assessments ICES has been unable to present definitive forecasts or revised CS4/5 evaluations as requested in the recovery plan proposals. WGNSDS₂₀₀₅ will therefore first try to achieve an acceptable assessments. A proactive approach is to provide stochastic projections based of previous accepted assessments.</p>
	Rockall haddock	Proposed recovery plan	<p>The European Community, after consultation with Russia, has requested ICES advice concerning Rockall haddock recovery plans. ICES evaluated the proposed measures in January 2004 at an <i>ad hoc</i> Expert Group meeting.</p>	<p>As there is currently no accepted assessment ICES has been unable to present definitive forecasts or evaluation of specific HCRs, as requested in the recovery plan proposal. WGNSDS₂₀₀₅ will therefore first try to achieve an acceptable assessment. Previous Expert Group meetings have proposed alternative Management Strategies.</p>
	Anglerfish		<p>A new EU / Norway request for Management Strategy evaluation has been formulated.</p>	<p>The is no accepted assessment so ICES could propose Management Strategies based on anecdotal information (CPUE, Industry logbooks) or by proxy with other data-poor fisheries (eg. deep-water) with an accompanying data-collection program. Consider biological aspects only?</p>

3.11 WGPAND

There are no HCR for the *Pandalus* fisheries, neither in the North Sea area nor in the Barents Sea. There seems to be no urgent needs for this regarding the *Pandalus* stocks. In the Barents Sea significant interactions with the cod fishery are significant. In 2005 WGPAND is meeting jointly with the NAFO shrimp assessment groups.

WGPAND	<i>Pandalus</i> in IIIa and IV	No specific management options. Small meshed fishery. Technical measures specific to <i>Pandalus</i> fisheries. By-catch limitations. Mixed fishery relations are important and should be considered.	No assessment available to base any evaluations on. Stock variation probably more dependent on predation than fishery.	
	<i>Pandalus</i> in I and II (Barents Sea)	No specific management options. Small meshed fishery. Technical measures specific to <i>Pandalus</i> fisheries. By-catch limitations. Mixed fishery relations are important and should be considered..	No assessment available to base any evaluations on.	

3.12 WGSSDS

The WG will evaluate three stocks in 2005, see below.

WG	STOCK	RATIONALE	EXISTING OR PROPOSED MANAGEMENT PLANS	APPROACH
WGSSDS	PLE VIIfg	ICES recommends recovery	proactive action	Adaptive - F reductions by means of effort
WGSSDS	SOL VIIe	ICES recommends recovery	proactive action	progressive F decrease and SSB increase with limits on TAC variations
WGSSDS	COD VIIe-k	up to 2005 ICES recommended recovery / industry proposal to reduce F on cod in 2005 / Council regulation 27-2005	Closure in ICES Division VII included in the following ICES rectangles: 30E4, 31E4, 32E3. This prohibition shall not apply to beam trawlers in the month of March.	landing and effort redistribution

COD VIIek

Context

In 2003 ICES recommended a strong F reduction or else a recovery plan for the management of Celtic sea cod in 2004. No recovery plan or management plan was actually implemented that year and the stock was managed by TACs. In 2004 professional fisheries organisations of France, Ireland and the UK sat together and proposed a plan to reduce fishing mortality on the stock in 2005. Their aim was to reduce F with 20% based on seasonal closures. Scientists were asked to evaluate their proposal. They concluded that in order to reduce landings by 20% (no simulations were made which effect this would have on F) 4 rectangles must be closed during

the first quarter of 2005. To be effective this closure should be accompanied with effort reductions. This proposal partly turned up in Council Regulation 27/2005 of 22 December 2004: *Until 31 March 2005, it shall be prohibited to conduct any fishing activity within that part of ICES Division VII included in the following ICES rectangles: 30E4, 31E4, 32E3. This prohibition shall not apply to beam trawlers in the month of March.*

Management objectives

No explicit management objectives were set but the intention of the professional organisations was to reduce F by 20% (short term objective).

HCR conformity to management plan and strategy

In theory, seasonal closures could be an effective measure to protect cod. In many cases they have proven not to work effectively (e.g. closures in the North Sea and the Irish Sea). Two reasons to explain their failure are: (1) They are not accompanied with effort reductions (which results in temporal and geographical displacement of effort), and (2) in many cases some (highly valuable) fisheries are allowed to keep on fishing within the closed area. In this particular case, effort reductions are not part of the plan and beam trawlers are partly allowed to fish during the closure.

The main expected effect related to the regulation is the displacement of effort. Since flatfish are normally fished on in the closed rectangles during the first 5 months (and the last couple of months) every year, it is expected that this fishery (which takes about 5% of the total cod landings) will concentrate in those rectangles after they have been opened. Effort displacement of most demersal fisheries during the closure into neighbouring areas (e.g. the Irish Sea) is likely to happen. It should be possible to quantify the effort displacement.

Stock simulation parameterisation

Biological component

Not applicable

Management measures

It will be difficult to quantify the effect of the temporal closure on the status of the stock. The effect of the closure on the effort displacement can be quantified.

The robustness of the HCR to uncertainty and bias information

The closure of the rectangles is based on landing statistics only. Discards are not included (and the discard information is not gathered for one of the major fleets). If discard practises between rectangles and fisheries are similar, this will not have a major influence on the final choice of rectangles to be closed.

A better approach would be to close rectangles based on abundance information from surveys. If that information is not available, CPUE (or LPUE) per rectangle can give an idea of the abundance distribution of the cod stock (although it is hardly possible to standardise CPUE between different fisheries). The advantage of such an approach is that you close the areas with the highest abundance of cod. High landings do not necessarily mean high abundance. This can be explained with a simplified example. Suppose you fish 50 ton cod in 10000 hours in rectangle A and 10 ton cod in 1000 hours in rectangle B than you would close rectangle A based on the landings, but you would close rectangle B based on the LPUE data. Moreover, if the closure of rectangle A results in an effort shift to rectangle B you create the opposite effect you anticipated (because effort is shifted to an area with a higher cod abundance).

Simulation of technical measures

The closure measurement will not be simulated quantitatively (no tools available?).

Semi quantitative simulations on effort redistribution and landings.

Items that should be provided in the conclusions of the HCR study

As stated several times before, closed areas must be accompanied with effort reductions.

The effect of the closure will be difficult to quantify.

Cod are caught in mixed fisheries, any measurement for cod take account of the mixed nature of the fisheries.

Realization

Effect of the closure on effort redistribution and landings is of importance for short term predictions and this analysis (if the 2005 data will be available) should be done before WGSSDS meets

Proactive actions**SOL VIIe***Context*

Western Channel sole is classified as being at risk of reduced reproductive capacity and to be harvested unsustainable. SSB is estimated to be at the lowest observed level. Misallocation of landings from VIIe into VIIId is a major problem, but has been taken into account in the assessment. Over the last years, official landings have been in the range of 400-600 tonnes, while estimated landings were about 1000 tonnes. For 2005 ICES recommended a recovery plan or else a strong reduction in F (corresponding to landings of about 230 tonnes).

Some professional organisations proposed mesh size increases to reduce fishing pressure on VIIe sole. Different scenario's were tested and evaluated by ICES. If mesh sizes of all fleets were increased to an equivalent of 90 mm selectivity or more, SSB could be increased considerable in the short term and would be above or close to Bpa in the longer term.

In the end the Council of ministers decided to manage the stock by TAC alone. To avoid the misallocation problem they added an amount to the advised TAC of 230 tonnes.

Management objectives

No explicit management objectives are set.

Proactive objectives

In analogy with other management plans, proactive management objectives for this stock could be a progressive reduction in F and a progressive increase in biomass (targets Fpa and Bpa?). Biomass increases should be around 10-15%, F reductions around 10-15%?? On top of that: limited TAC variations.

Technical measures: mesh size increase.

HCR conformity to proactive management plan and strategy

SSB is the lowest observed and F is above Fpa. A forceful reduction in F has been advised before but never been realised, been implemented or been complied with. HCRs with progressive adaptation of F and SSB are therefore an option. Yearly TAC variations must be limited. The council of ministers has increased the TAC considerable (compared to the advised TAC)

to overcome the misallocation problem. When the TAC is allowed to vary considerable, misallocation will occur again.

Most sole are fished at with 80 mm mesh sized nets. Any increase in mesh size will surely improve the selectivity for sole. Since the mean length of VIIe sole is higher compared to other sole stocks a mesh size increase is acceptable for some fishery organisations. But not all fishermen are very keen to increase their mesh size because they fish in different areas during the same trip and thus targeting other sole stocks with lower average lengths. If they are only allowed to have 1 type of net onboard they will encounter unacceptable losses of those stocks (according to the fishermen).

Stock simulation parameterisation

This stock is XSA assessed. Data on recruitment, natural mortality (assumed to be constant), growth and maturity (constant) are available. Mixed species interactions are not taken into account. Fleet based data are available for 1 of the 2 important fleets.

The robustness of the HCR to uncertainty and bias information

Reaching the preconceived targets (in the progressive HCR approach) is very dependent on the starting point. The outcome of the assessment (and most recent estimates) is very dependent on the choice of the plus group.

Simulation of technical measures

Update of the WG2004 simulation

Implementation failures to be considered in simulation

Misallocation has frequently occurred in the past. There is no guarantee that this will not happen again when the TAC becomes restrictive. This should be considered in the simulations.

Simulations assume the equivalent to a 90 or 100 mm selectivity. In reality that is never going to be the case.

Can we point out management issues that may be helpful

Mesh size increases will result in short term losses of sole. The increase in mesh size will have less effect on the selectivity for most other target species (and thus less loss).

Suitable software

CS4/5

STRP

Realisation

Progressive HCR approach: intercessional or special WG meeting

Technical measures: if necessary update could be done intercessional

PLE VIIfg

Context

Celtic Sea plaice is classified as being at risk of suffering reduced reproductive capacity. Since 1990 SSB declined rapidly and is now estimated to be just above Blim. The cause is reduced recruitment rather than an increase in F. To bring SSB at Bpa a strong reduction in F is necessary. If such a strong reduction is not possible a recovery plan including a sustained reduction in fishing mortality has been recommended by ICES. Plaice are caught in a mixed beam trawl

fishery with amongst others on sole or in a mixed trawl fishery with amongst others on cod. TACs are not a useful tool to regulate fishing mortality of plaice. Direct effort reductions, rather than TAC controls are required.

Management objectives

No explicit management objectives are set.

Proactive objectives

A strong reduction of F is not expected in the short term. Although plaice could benefit from measures to reduce fishing pressure on cod, they are also caught in a mixed fishery with sole for which no strong F reductions are advised. Because of this a progressive reduction in F should be envisaged. This reduction should be regulated with effort (fishery based) rather than with TACs (stock based). At the moment such an approach is not supported with the necessary data. Therefore an adaptive approach should be considered.

HCR conformity to management plan and strategy

An adaptive approach is necessary since the current knowledge base does not support a beforehand planned progressive reduction in F.

Stock simulation parameterisation

This stock is XSA assessed. Data on recruitment natural mortality (assumed to be constant), growth and maturity (constant) are available. Mixed species interactions are not taken into account. Discard data are not included and are considered to be important. Fishing mortality is successively revised upwards (and SSB downwards).

The robustness of the HCR to uncertainty and bias information

The adaptive approach is depending on (recent) estimates of fishing mortality which have been revised upwards in most recent years.

Simulation of technical measures

Not applicable

Implementation failures considered in simulation

Not applicable

Suitable software

4M-HCR ??

Realisation

Intercessional or special WG meeting

4 Ecosystem approach

The WGRED (2005) has identified a range of environmental signals which will be considered in this year's assessments and advice. These interactions are described and discussed in detail in the WGRED report. In summary they are:

4.1 ICELAND – GREENLAND area:

Anomalously warm in North and West.

Less overlap of capelin with cod and other predators. Shrimp biomass, another important prey source is at a very low level. These factors are likely to effect growth rate of cod.

WG should carefully evaluate the cohort based model for weight prediction that was used last year, in particular the exclusion of information of ZERO capelin availability to cod.

4.2 BALTIC

Different maturity ogives for cod

Effects of ice winters on sprat

Check on magnitude of January 2005 North Sea inflow

No immediate need for changes in 2005 but the inflow in 2005 will require longer term considerations on recruitment

The 2003 inflow effect should be evaluated in 2005

4.3 BARENTS SEA

Several assessments (esp cod) already have a lot of biology in them

Much more Blue Whiting migrated into the Barents Sea than usual

Level of Immature herring in Barent's Sea 2002 and 2004 strong – affects capelin, which affects cod.

The assessments are picking these changes up through the biological parameters in the assessment on empirical basis and some stocks interactions are incorporated in the assessments already.

4.4 NORTH SEA

Lack of Sand eel, Norway pout & *Calanus*

Look at herring growth weights at age, and maturation vector

Seabird success will be problematic

Kell et al model – indicates that cod will be suffering, and might spread to other species.

Influences unlikely to be detectable in the short term forecast but longer term considerations needed.

Longer term considerations on incursion of southern species and changed distributions of species already in the area.

Nephrops abundance has increased – to be investigated.

4.5 IBERIAN & BISCAY

In progress

(Signal in plankton)

5 Fisheries based advice and mixed fisheries

5.1 Updating fisheries descriptions

The regional overviews include a section on mixed fisheries and their interactions. These sections will be updated by WGFTFB and forwarded to WG's for review. The chair of WGFTFB has provided a proposal which is included as Annex 2.

5.2 Mixed fisheries advice

ICES is requested to provide advice which is consistent across stocks for mixed fisheries. Attempts have been made to produce fisheries based forecasts and the MTAC model has been developed for this purpose (SGDFF 2003 and 2004, STECF 2003). It has through this process been realised that fleet based predictions in the traditional quantitative sense will not be practical as an advisory input to management. This is both due to the multidimensional and multioptional nature of such predictions and to the point that decisions on distribution of fishing rights on fleets is a political rather than a technical issue. It is furthermore a problem that the data required to run such models, notably discards data, do not exist on the resolution required. MTAC models may be used to explore and understand the linkages between the exploitation of various stocks which is the first step in a more qualitative approach to mixed fisheries advice.

It is suggested that mixed fisheries advice is given on a qualitative basis in four steps:

1. Identification of major linkages between the exploitation of stocks and the main fisheries which are the basis for such linkages. This identification is based on expert judgement and may be qualified by correlation analysis in an MTAC type model.
2. Identification of the flexibility in the coupling between the exploitation of various stocks. Fisheries interactions are not cast in stone but are to the contrary subject to considerable variation as fisheries adapt to regulations, markets and the changing distributions of fish in the sea. Mixed fisheries management (and thus advice) must take the possibility of such adaptations into consideration.
3. On basis of the above a description of the fishing fleets which are the basis for the coupling between stocks and their possibilities for decoupling the exploitation of stocks
4. The advice which summarises the analysis above and states the main couplings and flexibilities which should be taken into consideration when management on stocks which are connected through fisheries interactions is decided.

A synopsis describing this format will be sent to clients for discussion and a meeting will be arranged to discuss and decide on the format of the mixed fisheries advice in 2005.

The approach (a draft synopsis) can be illustrated as follows:

- 1) The **interaction between fisheries**: The table below is the interaction between fisheries – expert judgment, from ICES Advice 2004 (ICES 2004):

Two clusters of coupling between stocks is apparent, one between the roundfish stocks (whitefish and nephrops trawl) and one between the flatfish (beam trawl). Nephrops interacts with both roundfish and flatfish. [more text explaining the coupling and the fisheries]

2) The **flexibility in the coupling** between critical stocks and other stocks, in this case the cod is the critical stock. The table below is the historical link between Fs from 1992-2001. This is taken as the “elasticity” of the fleets. The advice is to reduce F proportional to the required reduction on the critical stock(s). If the flexibility is 0 the F on that stock should be reduced as much as the required reduction on the critical stock, if the flexibility is low (L) the required reduction is close the required reduction on the critical stock while if flexibility is high (H) no reduction may be required on basis of fisheries interaction grounds.

TECHNICAL INTERACTIONS MATRIX	COD IN DIVISION VIIA	HADDOCK VIIA	NEPHROPS FU 15 & FU 14	PLAICE VIIA	SOLE VIIA	WHITING VIIA	RAYS VIIA	HERRING VIIAN	SCALLOPS	WHELKS	RAZOR FISH
Cod in Division VIIa		L	L	L	M	L	H	H	H	H	H
Haddock VIIa	Whitefish trawl, Semi-pelagic trawl, Seine-net	
<i>Nephrops</i> FU 15 & FU 14	<i>Nephrops</i> trawl fishery	<i>Nephrops</i> trawl fishery									
Plaice VIIa	Flatfish beam trawl, <i>Nephrops</i> trawl	<i>Nephrops</i> trawl	<i>Nephrops</i> trawl								
Sole VIIa	Flatfish beam trawl, <i>Nephrops</i> trawl	Flatfish beam trawl	<i>Nephrops</i> trawl	Flatfish beam trawl							
Whiting VIIa	Semi-pelagic trawl, <i>Nephrops</i> trawl, Whitefish trawl	Whitefish trawl, Semi-pelagic trawl, Seine-net	<i>Nephrops</i> trawl	<i>Nephrops</i> trawl	Beam trawl						
Rays VIIa	Ray otter and beam trawl	Ray otter and beam trawl	<i>Nephrops</i> trawl	Beam trawl	Beam trawl	Ray otter and beam					

	fishery	fishery				trawl fishery				
Herring VIIaN	None	None	None	None	None	None	None			
Scallops	None	None	None	None	None	None	None			
Whelks	None	None	None	None	None	None	None	None		
Razor Fish	None	None	None	None	None	None	None	None	None	

3) A summary of the fisheries – which are the basis of the coupling and what is their flexibility

4) The **advice** is to [summary of tables and fisheries description above]

6 Data and methods

6.1 Mis and non-reporting

It is no longer acceptable to make estimates of mis- and nonreporting and make corrections to catch data without revealing the sources of both the data and the problems. If the estimation process involves making estimates of mis- or nonreporting in countries and fleets, the transparency must include transparency regarding this. This will with high probability close the information channels used to make such estimates. There is thus a very real trade off between transparency and the information available to assessments.

Alternatively mis- or nonreporting may be estimated or at least explored by investigating inconsistencies between survey and catch data. WGNSSK explored the problem with North Sea cod through an ADAPT model. In 2005 they will move towards survey based assessments. WGNSSK made similar investigations. Such explorations (and possibly estimates of missing fish) can be made transparent without any confidential or sensitive information being revealed. In those cases where survey data exist it may thus be an option to change to larger emphasis on surveys and either treat catch data as minimum estimates or change to assessments entirely based on survey data.

When changing to survey based assessments it may not be feasible to produce quantitative forecasts. Assessments will be trends-based and management advice will be qualitative and directed towards corrections of regulatory measures which basically would be adaptive rather than predictive.

However, the choice between various approaches should be discussed with clients as the trade off between transparency and the quality of assessments (and thus the advice) basically is a political choice. Clients are requesting ICES to do two incompatible things simultaneously (to reveal any information about the sources of a non-reporting problem while still making the best possible assessments and predictions) and it should be left to clients to choose the trade off.

Furthermore, ICES should be consistent across stocks in dealing with this. If transparency is required for some stocks the same standards should be applied across stocks which means that

a requirement for full transparency for Baltic cod should then also apply to North Sea herring for instance. The consequence may be that a wide range of assessments and advice may need to change to not using catch data. This has extensive repercussions on the nature of the advice it will be possible to give.

The process which will be pursued is:

A list of stocks with mis/nonreporting problems is produced and notes are made on the implications for assessments and advice if mis/nonreporting is not considered are listed.

This is presented to clients and it is made clear what the route should be in 2005 in terms of either making estimates of misreporting or providing qualitative advice.

Four approaches are possible – and clients are asked to contribute to the choice:

- Make estimates through interviews/logbooks etc but make sources of information and problems transparent.
- Estimate mis- nonreporting from comparing survey with catch data – possibly change to survey based assessments and advice.
- Make assessments which treat catch data as minimum estimates
- Ignore the problem (not an option but would be the result if the present condition is perpetuated)

This procedure may be biased because ICES may be ignoring (not knowing) misreporting for several stocks. It is therefore necessary to scrutinise all stocks which have not been scrutinised in this respect yet. Data may not always be available to do this.

An inventory of mis- or nonreporting issues is tabulated below:

AREA	WG	STOCK	MISREPORTING ISSUES AND POSSIBLE APPROACHES TO ADDRESSING THEM	CONSEQUENCES FOR THE ADVICE OF NOT INCLUDING MISREPORTING ESTIMATES IN THE ASSESSMENT
Baltic	WGBAST	Salmon in the Gulf of Finland (Subdivision 32)		
Baltic	WGBAST	Salmon in the Main Basin and the Gulf of Bothnia (Subdivisions 22-31)		
Baltic	WGBAST	Sea Trout		
Baltic	WGBFAS	Brill in Subdivisions 22 to 32	Unknown.	There is currently no assessment.
Baltic	WGBFAS	Cod in Subdivisions 22-24 (including Subdivision 23)	Unreported landings assumed to be low. Misallocation possible.	Little effect.

AREA	WG	STOCK	MISREPORTING ISSUES AND POSSIBLE APPROACHES TO ADDRESSING THEM	CONSEQUENCES FOR THE ADVICE OF NOT INCLUDING MISREPORTING ESTIMATES IN THE ASSESSMENT
Baltic	WGBFAS	Cod in Subdivisions 25-32	Strong evidence of under-reporting: -Survey based assessment (SURBA).	Any assessment based on total catch will not be possible.
Baltic	WGBFAS	Dab	Unknown, but some misreporting occurred in the mid nineties.	There is currently no assessment.
Baltic	WGBFAS	Flounder	Unknown, but some misreporting occurred in the mid nineties.	There is currently no accepted assessment.
Baltic	WGBFAS	Herring in Subdivision 30, Bothnian Sea	No misreporting in last years.	No effect.
Baltic	WGBFAS	Herring in Subdivision 31, Bothnian Bay	Not considered important.	There is currently no accepted assessment.
Baltic	WGBFAS	Herring in Subdivisions 25-29 (excluding Gulf of Riga herring) and 32	No information on the level of misreporting in the mixed pelagic fishery.	Uncertainties in the catch statistics, assessment and catch predictions.
Baltic	WGBFAS	Herring in the Gulf of Riga	Level of misreporting decreased in recent years.	Any assessment based on total catch will not be possible.
Baltic	WGBFAS	Plaice	Unknown.	There is currently no assessment.
Baltic	WGBFAS	Sprat in Subdivisions 22-32	Level of misreporting in the mixed pelagic fishery is unknown.	Uncertainties in the catch statistics, assessment and catch predictions.
Baltic	WGBFAS	Turbot in Subdivisions 22 to 32	Unknown.	There is currently no assessment.
Barents Sea	AFWG	Barents Sea capelin	Not considered an important issue.	No effect.
Barents Sea	AFWG	Greenland halibut	Unknown.	Unknown.
Barents Sea	AFWG	NEA cod	<p>Estimations of discards were presented by different scientists. The results are substantially different. The discard was found to be highly variable over time and affected mainly age groups 3 and 4. The further investigation on level of discarding is continuing.</p> <p>Information about unreported landings for 1990-94, 2002-2003 was presented to the Group and used in assessment.</p>	<p>Estimates of unreported catches and discarding are quite provisional and requires more precise estimation.</p> <p>Discarding and under-reporting create uncertainties in the catch statistics, assessment and catch predictions.</p> <p>Incorporation of unreported catches for some years may lead to inconsistent corrections in the long-term series back in history if unreported catches took place there.</p>

AREA	WG	STOCK	MISREPORTING ISSUES AND POSSIBLE APPROACHES TO ADDRESSING THEM	CONSEQUENCES FOR THE ADVICE OF NOT INCLUDING MISREPORTING ESTIMATES IN THE ASSESSMENT
Barents Sea	AFWG	NEA haddock	No explicit information on level of discarding and unreported landings. Data collection on board of commercial vessels is needed.	Inaccuracies in the catch statistics continue to represent one of the serious uncertainties in stock assessments.
Barents Sea	AFWG	NEA saithe	Unknown.	Unknown.
Barents Sea	AFWG	Norwegian coastal cod	Unknown.	At the present not an issue, advice has been zero fishing.
Barents Sea	AFWG	Sebastes marinus	Unknown.	At the present not an issue, advice has been zero fishing.
Barents Sea	AFWG	Sebastes mentella	Unknown.	At the present not an issue, advice has been zero fishing.
Biscay and Iberian	WGHMM	Anglerfish in Divisions VIIIc and IXa (L. piscatorius and L. budegassa)	Reported both species combined. Not important issue. Problems with species' assignment.	Assessment is done for both species combined
Biscay and Iberian	WGHMM	Hake - Southern stock (Divisions VIIIc and IXa)	Estimates of landings derived from different sources, mainly from selling sheets. Maybe, non-reported juveniles.	Problems with younger ages estimates
Biscay and Iberian	WGHMM	Megrim (L. boscii and L. whiffiagonis) in Divisions VIIIc and IXa	Reported both species combined. Not important issue	
Biscay and Iberian	WGMHSA	Anchovy in Division IXa		
Biscay and Iberian	WGMHSA	Anchovy in Subarea VIII (Bay of Biscay)		
Biscay and Iberian	WGMHSA	Sardine in Divisions VIIIc and IXa		
Biscay and Iberian	WGMHSA	Southern horse mackerel (Trachurus trachurus) (Divisions VIIIc and IXa)		
Celtic seas	HAWG	Celtic Sea herring	Area misreporting, landing under-reporting dealt with through various estimation methods - survey based assessments or compliance with TAC	Any age based assessment will not possible.

AREA	WG	STOCK	MISREPORTING ISSUES AND POSSIBLE APPROACHES TO ADDRESSING THEM	CONSEQUENCES FOR THE ADVICE OF NOT INCLUDING MISREPORTING ESTIMATES IN THE ASSESSMENT
Celtic seas	HAWG	Irish Sea herring	Area misreporting, landing under-reporting dealt with through various estimation methods - survey based assessments or compliance with TAC	Any age based assessment will not possible.
Celtic seas	HAWG	VlaN herring	Area misreporting, landing under-reporting dealt with through various estimation methods - survey based assessments or compliance with TAC	At present the age based ICA assessment will not possible.
Celtic seas	WGHMM	Anglerfish in Divisions VIIb-k and VIIIa,b (L. piscatorius and L. budegassa)	Landings are reported for both species combined. Problems with species' assignment.	Affecting mainly to younger ages estimates
Celtic seas	WGHMM	Megrim (L. whiffiagonis) in Subarea VII and Divisions VIIIa,b,d	Estimates of landings derived from several sources, mainly from selling sheets. Quality considered relatively adequate.	
Celtic seas	WGNSDS	Anglerfish IIIa, IV & VI (Kattegat & Skagerrak, North Sea, West of Scotland & Rockall)	Misreporting thought to be substantial. Survey data inadequate. Use of industry logbooks / diaries a possibility but there is currently no accepted assessment.	There is currently no accepted assessment
Celtic seas	WGNSDS	Cod VIa (West of Scotland)	Incorrect reporting of landings - species and quantity - is known to occur. Survey based analyses to obtain indications of total mortality and relative biomass Down-weighting of catch data (rather than complete exclusion), in alternative model formulations.	Survey based assessment only
Celtic seas	WGNSDS	Cod VIIa (Irish Sea)	Attempts to quantify mis-reported landings for some fleets are made, and estimates of these are included in the assessment. However, availability of the information has recently been denied, and misreporting has had to be assumed to have continued at the same rate as in recent years. Alternative approaches include Survey based analyses to obtain indications of total mortality and relative biomass Down-weighting of catch data (rather than complete exclusion), in alternative model formulations.	Substantially altered stock perception, assessment based on catch-at-age data inappropriate
Celtic seas	WGNSDS	Haddock VIa (West of Scotland)	Incorrect reporting of landings - species and quantity - is known to occur. Survey based analyses to obtain indications of total mortality and relative biomass Down-weighting of catch data (rather than complete exclusion), in alternative model formulations.	Survey based assessment only

AREA	WG	STOCK	MISREPORTING ISSUES AND POSSIBLE APPROACHES TO ADDRESSING THEM	CONSEQUENCES FOR THE ADVICE OF NOT INCLUDING MISREPORTING ESTIMATES IN THE ASSESSMENT
Celtic seas	WGNSDS	Haddock VIb (Rockall)	Extent of mis-reporting unknown. Bigger problem is the lack of discarding data from European fleets. This has been addressed by approximating the Russian Catch as EU landings equivalents above the EU minimum landing size. This approach was necessary to avoid the possible mis-interpretation of the sudden appearance of the Russian catch of smaller haddock as evidence of strong recruitment. However, the approach underestimates the total catch from the fishery.	Survey based assessment only
Celtic seas	WGNSDS	Haddock VIIa (Irish Sea)	Landings data are uncertain because of species misreporting. Restrictive quotas for some countries caused extensive misreporting during the 1990s. Misreporting has been estimated from quayside observations in one country only. However, availability of the information has recently been denied, and misreporting cannot be assumed to have continued at the same rate as in recent years. Alternative approaches include Survey based analyses to obtain indications of total mortality and relative biomass Down-weighting of catch data (rather than complete exclusion), in alternative model formulations.	Substantially altered stock perception, assessment based on catch-at-age data inappropriate
Celtic seas	WGNSDS	Megrim in Subarea VI (West of Scotland & Rockall)	Extent of misreporting unknown but there is currently no accepted assessment.	There is currently no accepted assessment
Celtic seas	WGNSDS	Plaice VIIa (Irish Sea)	There are no data available on the extent of mis-reporting of landings from this stock. Whilst mis-reporting was considered to be occurring in this fishery during the late eighties and early nineties it has, in more recent years, been considered to be less of a problem. However, reductions in the TAC since 2002, made in line with the sole fishery, have resulted in a more restrictive plaice quota which may lead to an increase in the levels of misreporting in this stock.	Maintains the status quo. If mis-reporting is actually substantial then the assessment based on catch-at-age data may be inappropriate
Celtic seas	WGNSDS	Sole VIIa (Irish Sea)	No data are available on the extent of mis- or under-reporting of landings from this stock.	Maintains the status quo. If mis-reporting is actually substantial then the assessment based on catch-at-age data may be inappropriate

AREA	WG	STOCK	MISREPORTING ISSUES AND POSSIBLE APPROACHES TO ADDRESSING THEM	CONSEQUENCES FOR THE ADVICE OF NOT INCLUDING MISREPORTING ESTIMATES IN THE ASSESSMENT
Celtic seas	WGNSSDS	Whiting VIa (West of Scotland)	Incorrect reporting of landings - species and quantity - is known to occur. Survey based analyses to obtain indications of total mortality and relative biomass Down-weighting of catch data (rather than complete exclusion), in alternative model formulations.	Survey based assessment only
Celtic seas	WGNSSDS	Whiting VIIa (Irish Sea)	Misreporting levels unknown – the bigger issue is poor discard estimation & inadequate sampling. But there is currently no accepted assessment.	There is currently no accepted assessment
Celtic seas	WGSSDS	Bay of Biscay sole	Misreporting not taken into account - no estimate of dimension of the problem	not analysed but no indication of behavioural change because of e.g. TACs that are becoming more and more restrictive
Celtic seas	WGSSDS	Cod in Divisions VIIb-k	Misreporting not taken into account - no estimate of dimension of the problem	not analysed / discarding seems to become a bigger problem in most recent years
Celtic seas	WGSSDS	Haddock in Division VIIb-k (Celtic Sea and West of Ireland)	Misreporting not taken into account - no estimate of dimension of the problem	not analysed - discarding is main issue
Celtic seas	WGSSDS	Plaice in Southwest of Ireland (Division VIIh-k)	misallocation - not taken into account	advice based on average landings over recent years
Celtic seas	WGSSDS	Plaice in the Celtic Sea (Division VII f and g)	misallocation - not taken into account	not analysed
Celtic seas	WGSSDS	Plaice in the Western Channel (Division VIIe)	Misreporting not taken into account - no estimate of dimension of the problem	not analysed but no indication of behavioural change because of e.g. TACs that are becoming more and more restrictive
Celtic seas	WGSSDS	Plaice in West of Ireland (Division VII b,c)	Misreporting not taken into account - no estimate of dimension of the problem	advice based on average landings over recent years
Celtic seas	WGSSDS	Sole in Southwest of Ireland (Division VIIh-k)	misallocation - taken into account	advice based on average landings over recent years
Celtic seas	WGSSDS	Sole in the Celtic Sea (Divisions V II f,g)	misallocation - taken into account	misreporting increased (since the exceptionally strong 1998 YC entered the fishery), if not taken into account F estimated to be lower
Celtic seas	WGSSDS	Sole in the Western Channel (Division VIIe)	misallocation - taken into account (based on satellite monitoring)	

AREA	WG	STOCK	MISREPORTING ISSUES AND POSSIBLE APPROACHES TO ADDRESSING THEM	CONSEQUENCES FOR THE ADVICE OF NOT INCLUDING MISREPORTING ESTIMATES IN THE ASSESSMENT
Celtic seas	WGSSDS	Sole in West of Ireland (Division VIIb,c)	Misreporting not taken into account - no estimate of dimension of the problem	advice based on average landings over recent years
Celtic seas	WGSSDS	Whiting in Division VIIe-k (Celtic Sea)	Misreporting not taken into account - no estimate of dimension of the problem	TACs not restrictive - discarding is major problem
Deep-water Fisheries Resources South of 63°N	WGDEEP			
Faroes	NWWG	Faroe Bank cod (Subdivision Vb2)	May be misreporting with Faroe Bank cod	
Faroes	NWWG	Faroe haddock (Division Vb)	Not considered an important issue	
Faroes	NWWG	Faroe Plateau cod (Subdivision Vb1)	May be misreporting with Faroe Plateau cod	
Faroes	NWWG	Faroe saithe (Division Vb)	Not considered an important issue	
Iceland and Greenland	NWWG	Capelin in the Iceland-East Greenland-Jan Mayen area (Subareas V and XIV and Division IIa west of 5W)	Not considered important	
Iceland and Greenland	NWWG	Deep-sea <i>Sebastes mentella</i> on the continental shelf in Subareas V, VI and XIV	Estimates of catches derived from information of various sources. Quality considered adequate.	
Iceland and Greenland	NWWG	Greenland cod (ICES Subarea XIV and NAFO Subarea 1)	Unknown	At the present not an issue, advice has been zero fishing.
Iceland and Greenland	NWWG	Greenland halibut in Subareas V and XIV	Unknown	
Iceland and Greenland	NWWG	Icelandic cod (Division Va)	Not considered an important issue	
Iceland and Greenland	NWWG	Icelandic haddock (Division Va)	Not considered an important issue	

AREA	WG	STOCK	MISREPORTING ISSUES AND POSSIBLE APPROACHES TO ADDRESSING THEM	CONSEQUENCES FOR THE ADVICE OF NOT INCLUDING MISREPORTING ESTIMATES IN THE ASSESSMENT
Iceland and Greenland	NWWG	Icelandic saithe (Division Va)	Not considered an important issue	
Iceland and Greenland	NWWG	Icelandic summer-spawning herring (Division Va)	Not considered important	
Iceland and Greenland	NWWG	Pelagic fishery for <i>Sebastes mentella</i> in the Irminger Sea	Estimates of catches derived from information of various sources. Recent VMS data indicate that catches may be underreported. Continuous monitoring recommended.	
Iceland and Greenland	NWWG	<i>Sebastes marinus</i> in Subareas V, VI, XII and XIV	Estimates of catches derived from information of various sources. Quality considered adequate.	
North Sea	HAWG	IIIA spring spanners	Area misreporting, landing under-reporting dealt with through various estimation methods - survey based assessments or compliance with TAC	At present the age based ICA assessment will not possible.
North Sea	HAWG	North Sea	Area misreporting, landing under-reporting dealt with through various estimation methods - survey based assessments or compliance with TAC	At present the age based ICA assessment will not possible.
North Sea	WGNSSK	Cod IV, IIIa, VIId	Strong evidence of under-reporting. Four proposed approaches: Multi-survey SURBA. ADAPT (as last year). Survey-based TSA. Modification of Fournier-Archibald method.	Assessment not appropriate.
North Sea	WGNSSK	Haddock IV, IIIa	Misreporting not thought to be substantial.	Little effect.
North Sea	WGNSSK	Nephrops 3, 4, 5, 6, 7, 8, 9, 10, 32 and 33	Unknown	Unknown
North Sea	WGNSSK	Norway pout	Fishery is effectively closed, and assessment will be survey-based and generate estimates of relative stock trends. Misreporting is therefore not an issue.	No effect.
North Sea	WGNSSK	Plaice IIIa	Misreporting not thought to be substantial.	Little effect.
North Sea	WGNSSK	Plaice IV	Misreporting not thought to be substantial.	Little effect.
North Sea	WGNSSK	Plaice VIId	Misreporting not thought to be substantial.	Little effect.
North Sea	WGNSSK	Saithe IV, VI, IIIa	Extent of misreporting unknown. Lack of comparative survey data.	Unknown
North Sea	WGNSSK	Sandeel	Extent of misreporting unknown. Lack of comparative survey data.	Unknown

AREA	WG	STOCK	MISREPORTING ISSUES AND POSSIBLE APPROACHES TO ADDRESSING THEM	CONSEQUENCES FOR THE ADVICE OF NOT INCLUDING MISREPORTING ESTIMATES IN THE ASSESSMENT
North Sea	WGNSSK	Sole IV	Under-reporting thought to be likely. Approach as for cod is proposed.	Assessment may not be appropriate.
North Sea	WGNSSK	Sole VIIId	Under-reporting thought to be likely. Approach as for cod is proposed.	Assessment may not be appropriate.
North Sea	WGNSSK	Whiting IV, VIIId	Extent of misreporting unknown. Strong conflicts between catch and survey data. Issue to be addressed at SG.	Unknown.
Widely Distributed and Migratory Stocks	WGHMM	Hake - Northern stock (Division IIIa, Subareas IV, VI and VII and Divisions VIIa,b,d)	Estimates of landings derived from several sources, mainly from selling sheets.	
Widely Distributed and Migratory Stocks	WGMHSA	Mackerel (combined Southern, Western and North Sea spawning components)		
Widely Distributed and Migratory Stocks	WGMHSA	Western horse mackerel (Trachurus trachurus) (Divisions IIa, IVa, Vb, VIa, VIIa-c, e-k, VIIIa,b,d,e)		
Widely Distributed and Migratory Stocks	WGNPBW	Blue whiting combined stock (Subareas I-IX, XII and XIV)		

6.2 Discard data

Data which earlier have been blocked by national administrations are now available to ICES.

However, there have been problems in identifying raising procedures due to undersampling and holes in data.

In pelagic fleets there has been undersampling, methods to raise the data have not been identified (herring, mackerel, horse mackerel, blue whiting).

Southern shelf: most important fleets are covered except French trawlers, exempted from sampling.

There is a need to document data – sampling methods, coverage and raising procedures. This is done as part of the WG work in 2005.

Raising procedures should not be developed by WG's, specialised study groups should develop framework.

7 Other issues

7.1 When to accept assessments

Doc 17 presented proposals for decision rules regarding acceptance of assessments.

It was welcomed to have a description of responsibilities and criteria. The proposal should be developed further, specifically to

- Be general regarding the 'assessment' concept – not just focusing on VPA but also other approaches and more judgement based approaches
- Specify criteria for the various categories better

7.2 Communicating the advice and the science behind it

A working document (Pastoors and van Densen) was presented.

The message is to present primary information and aspects of the environment and fisheries which are of interest to stakeholders and which is the basis for the analysis as well, then proceed to present the stock dynamics and finally the advice which should relate clearly to options rather than being prescriptive.

The new format can accommodate more background information in ecosystems and fisheries, but the advice format is steered by the immediate clients which are not the industry or environment stakeholders.

A change in the format will have implications in the way the advice is developed and this change is required anyway. First look at the information, then at trends and the conclusions and the advice may then be based on a less predictive basis than presently. The changes must to some extent start in the working groups.

It is a problem that it is difficult to reconcile two needs – the advice to the clients which have specific technical requirements and the need to communicate to industry and other stakeholders. ICES immediate customers are the client commissions and this is the overriding concern.

7.3 Secretariat services

The following issues were discussed:

- Tables on official stats are not sent for the full time series

Official data 1973-2003 are available in FishStatPlus format and it will be possible to download these from the FAO website. FishStatPlus allows simple extraction into an Excel spreadsheet. These data are to be supplemented with data from the latest year reported to ICES from the so-called rec. 12 program (Preliminary Catch Statistics data). Data for the latest year will be loaded into a database in ICES that will be accessible to Working Groups.

- Standard graphs – there are still issues about labelling etc.

WGs have asked for changes being made to the standard graphs to be able to include discards. This is on a priority list of tasks to be done by the Secretariat and hopefully time and resources will allow this task to be fulfilled this spring.

- ICES has decided to discard nominal landings tables and deliver these data on CD. The system still needs to be fully implemented

It was the intention to have this procedure already in 2004 but unfortunately due to lack of resources, this was not possible. It is the hope that the system can be implemented fully in 2005.

- Maillists for WG's do often not reflect the real and active membership. Delegates do not always update memberships.

The Secretariat can assist the WG chairs by setting up distribution list in Outlook to include all official members of the particular WG. Only the delegates can add or remove a person to the official member list, so the maillist will have to include all on this official list. With a distribution list the WG chair will only have to mail to one address and thereby get the mail distributed to all members. The Secretariat will set up these maillists as soon as possible and inform WG chairs.

- A template spreadsheet for the options table should be made available to WGs including the % change in SSB and catch.

A template will be developed by the secretariat and will be distributed to WGs.

- Guidelines for reviewers and update/benchmark assessments

The review guideline has been updated based on suggestions from AMAWGC.

No comments or suggestions for improvements were received for the neither the update/benchmark guideline nor the chair's handbook.

8 References

ICES 2004. Report of the ICES Advisory Committee on Fishery Management and Advisory Committee on Ecosystems, 2004.

ICES SGPRP 2003. Report of the Study Group on Precautionary Reference Points For Advice on Fishery Management. ICES CM 2003/ACFM:15.

ICES SGLTA 2004. Report of the Study Group for Long Term Advice. ICES CM 2004/ACFM:16.

ICES SGMAS 2005. Report of the Study Group on Management Strategies. ICES CM 2005 /ACFM:09.

ICES WGRED 2005. Report of the Working Group for Regional Ecosystem Description. ICES CM 2005 /ACE:01.

ICES AMAWGC 2005. Report of the Working Group on the Annual Meeting of Assessment Working Group Chairs. ICES CM 2005/ACFM:12.

Annex 1: List of participants

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Annex 2: Proposed structure for Working Document on “Fisheries – a technological perspective” to assist stock assessment working groups.

[HAWG, WGNPBW, NWWG, WGBFAS, AFWG, WGNSDS, WGSSDS, WGNSSK, WGNAS, WGMHSA, WGDEEP, WGNEW, WGHMM, WGEF, SGMAS]

Norman Graham, Chair ICES-FAO Working Group on Fishing Technology and Fish Behaviour.

Based on the WG tasks identified in 2005 report of AMAWGC

a. The fisheries and their impact

WGFTFB to provide a detailed description of the principal fisheries based on the ICES Eco-region descriptions. This should include information relating to vessel and gear types, comments on recent technological changes within the fisheries, provide an assessment (quantitative/qualitative) of how the potential changes may influence efficiency. Quantitative descriptions of fleets should be provided by assessment WG's.

This will be an iterative process due to the considerable work involved, particularly for countries with large and diverse fleets. In 2005, WGFTFB will form sub-groups based on the ICES eco-regions, which will meet each year to deal with this and other aspects of the WGFTFB input.

b. Stock status

c. Effect of fishing on the ecosystem

To be discussed further with WGRES. Fisheries with significant discard and ghost fishing problems will be identified if data is available, this will be done in collaboration with the FTC Study Group on Unaccounted Fishing Mortality (Chair Mike Breen, Aberdeen). In the future this study group may be able to provide data on escape and discard mortality for a number of key species, as this information becomes available it will be included. This aspect needs to be discussed with the chair of the SG.

If gear related technical measures have been shown to be effective in reducing the problems, these will be highlighted. Similarly, if technical measures have been tested and found to be ineffective, this will also be noted.

d. Mixed fisheries and fisheries interactions (review WGFTFB descriptions)

WGFTFB will review fisheries matrix for each assessment WG. This will be iterative process due to the large number of areas to be considered. If WGFTFB/SGUFM have information on medium or high discard practices, the matrix interactions could also be defined based on catch rather than landings data/information. If more localised species interactions are considered relevant, these will be noted.

e. Short term implications (including mixed fisheries advice)

f. Regulations in force and their effects

WGFTFB will provide a summary of the legislation pertaining to fishing gear construction and operation for each of the eco-regions. Best estimates of the selective properties as per legislative description will be provided if available. If circumvention of regulations is considered to be a problem, then information on how circumvention is being conducted and the extent will be provided. A number of regulations are 'optional'; FTFB will attempt to quantify the degree of uptake. If there are aspects of gear design/operation that can have a significant effect on selection/ecological effect that are not currently regulated but should be, these will be noted.

g. Information from the fishing industry**h. Factors affecting fishing operations**

If major changes in fishing patterns are noted by the FTFB regional sub-groups, these and their potential cause will be reported. Similarly, if it is foreseen that fleet operational changes may take place, these will be noted.

i. Quality of assessments and uncertainties