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REPORT OF THE
11th ICES DIALOGUE MEETING
ON
THE RELATIONSHIP BETWEEN SCIENTIFIC ADVICE
AND FISHERIES MANAGEMENT

Nantes, France
26–27 January 1999

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

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1 WELCOME AND INTRODUCTORY ADDRESSES

The Convener, Alain Maucorps (IFREMER), opened the 11th ICES Dialogue Meeting at 09.15 hrs on 25 January 1999 by welcoming delegates to Nantes. He drew attention to the history of these meetings, which started in the early 1980s following the establishment of the ICES Advisory Committee on Fisheries Management (ACFM) in 1977. The ICES Dialogue Meetings originally started as forums for interchange of views between scientists and managers. At various times, the meetings had been extended to include the consideration of the environmental aspects related to fisheries, and the participation of representatives of the fisheries industry. These forums serve as a useful mechanism for forthright exchanges of views on the challenges and difficulties that are faced, leading to a better understanding of the wider range of issues and the various responsibilities of the different sectors involved in fisheries.

Alain Maucorps's speech is further elaborated in Annex 1.

Delegates from ICES Member Countries, the Partner Commissions of ICES, and collaborating International Organisations were present (Annex 2).

1.1 The French Director of Fisheries

Jean-Marie Aurand, the French Director of Fisheries, expressed his appreciation for the valuable initiative shown by ICES in holding the meeting, and also for the selection of the venue in Nantes, France.

The ICES ACFM functioned as one of the key elements in the advisory process. The Committee is considered as being suitably objective and independent in producing the best available scientific advice for Member Countries and regulatory Commissions. However, those receiving the advice (e.g., managers) believe that there is a need to enhance various aspects of the product provided and how the various stakeholders may better accept the advice. Likewise, the scientists involved in the advisory process have views that ought to be better understood by the managers.

Fisheries management is actively responding to the Agenda 21 issues, including the integration of fisheries and environmental issues. In order to make tangible progress, it is necessary to have close collaboration between scientists and managers, as well as having clear and understandable communication channels on the relevant issues between all the stakeholders involved in fisheries.

Jean-Marie Aurand's speech is further elaborated in Annex 3.

1.2 The President of ICES

The President of ICES, Scott Parsons, expressed his thanks to IFREMER, the EC DG XIV, and the Loire Region for cosponsoring the meeting.

Speaking from experience having worked at various times as a fisheries scientist, a national fisheries manager, and as a delegate in several fisheries Commissions, he recognised that all those involved were facing escalating challenges in the current world.

The purpose of this meeting is to hold a frank and practical dialogue on some of the key issues as seen from the perspectives of scientists and managers. The topics identified for this meeting are viewed as being central to the challenges faced by the fisheries-related community. The dialogue should be a way to further cement the very important partnership involving ICES, its Member Countries and the Commissions that have been established. It is important that everyone makes a contribution in the proper spirit of the meeting in order to ensure a successful outcome.

ICES has actively reorganised its Science Committees as the Centenary of its establishment in 2002 approaches. A Strategic Plan is being developed, and consultation about this will be undertaken with the Member Countries as well as the Commissions. ICES welcomes feedback from those involved in this meeting as to how it may further develop its Advisory Function. The relevant bodies of ICES will carefully examine this feedback and appropriate actions set in motion.

Delegates were wished a successful meeting.

Scott Parson's speech is further elaborated in Annex 4.

1.3 The President of the Regional Council

Alain Maucorps passed on the apologies of François Fillon, President of the Loire Region Council, who had been unavoidably detained on other business. François Fillon wished the delegates a successful and enjoyable meeting in Nantes. Representatives of the Regional Council looked forward to meeting delegates at some of the social events that had been arranged.

2 TERMS OF REFERENCE AND BACKGROUND FOR THE DIALOGUE MEETING

The Convener drew attention to the Terms of Reference established by the Council of ICES for the meeting as given in Annex 5. These provided the wider justification for the meeting.

Attention was drawn to the Meeting Schedule given in Annex 6. The specific topics to be deliberated by the participants would be focused through the activities in the three Working Groups (see Sections 3, 4, and 5). The reports from these Working Groups would be presented and conclusions and possible recommendations arrived at in *plenum* (see Section 6). The special relationship between ICES and the Partner Commissions (EC, IBSFC, NASCO, NEAFC) would be noted through the Response they would provide to the conclusions (see Section 7). ICES would then reply to the Commissions interjection (see Section 8), before adjournment of the meeting by the President of ICES.

3 THE PRECAUTIONARY APPROACH

3.1 Summary of Presentation by Jean-Jacques Maguire (ICES)

International agreements such as the Rio Declaration, the Treaty of the European Union, the UN Agreement on Straddling Fish Stocks and on Highly Migratory Fish Stocks, and the FAO Code of Conduct for Responsible Fisheries, call on their signatories to apply a precautionary approach. Although being a signatory is a compelling reason to implement a precautionary approach, the main reason why a precautionary approach is needed, is the uncertainty inherent in assessing fish stocks and in quantifying the possible effects of various management actions.

Specific examples of uncertainties for sardine, Northeast Arctic cod, Northeast Atlantic mackerel, Western horse mackerel, and Northern hake will be described. The sardine provides an example where insufficient sampling of the age composition of the catch in the 1970s and subsequent changes in the age range used in the assessment because of the insufficient sampling, led to substantial revisions of past biomass estimates.

The Northeast Arctic cod is an economically very important stock, and currently the largest cod stock in the world. Good sampling for age composition is available since 1946, and several indices of stock size are used in the assessment. Yet, despite the relatively good data, a change in a minor assumption about how stock size indices related to the VPA estimates made a 250,000 t difference in the F_{med} catch estimate for 1998 in the 1997 assessments. This provides an example of the inherent variability in assessments even when long series of good data are available.

Northeast Atlantic mackerel currently forms a very profitable fishery supported by a relatively large biomass. The fishery on the Western component, currently the largest component, is relatively new, having begun in the early 1970s. Despite its economic importance, the assessment is based on egg survey estimates that are conducted every three years. Clearly this is insufficient to monitor yearly changes, either up or down, that may happen in the intervening two years when no surveys are conducted.

The Western horse mackerel fishery has developed based on the extraordinary strength of the 1982 year-class which is estimated to be approximately 14 times stronger than average. The paucity of information on Western horse mackerel is even more severe than for Atlantic mackerel. In addition, a decision must be made by fishery management agencies on how low the biomass can be allowed to decrease. ICES believes that SSB should not be allowed to decrease below that which produced the 1982 year-class. That value may be reached soon, and a discussion is urgently needed.

Northern hake has benefited from relatively stable recruitment, yet the SSB has been declining because of increasing fishing mortality. It provides an example of what can be expected to happen if effective fishery management is not implemented.

3.2 Summary of Presentation by Jóhann Sigurjónsson (Iceland)

Although the concept of the Precautionary Approach (PA) has not been systematically dealt with and formal methodology developed until the last 2–3 years, the concept of sustainable development and how to exercise caution in

order not to jeopardise the resource, has been on the agenda of fisheries advisory bodies for decades. In light of difficulties we have had in implementing such strategies in the past, development and formalisation of the PA concept is essential for future management of the fish resources.

In Iceland as elsewhere, one has worked hard towards improving both the scientific advice as well as the management mechanism. In recent years, approaches have evolved with respect to harvesting strategies and generation of advice that have proved extremely useful. In this presentation, the Harvesting Control Law (HCL) or Catch Rule for cod in Iceland (annual quota set at 25% of the fishable stock), that was scientifically tested (risk analysis) and evaluated with respect to stock development, multi-species interactions and economics, is discussed. The development of the Catch Rule involved experts in fish population dynamics, modelling and economics, as well as representatives from the industry. It was concluded by formal adoption and implementation of the harvesting scheme in 1995. Also, the case of the earlier depleted stock of Icelandic summer-spawning herring is discussed. The stock has fully recovered by application of a strategy of optimal fishing rate. And finally, the case of capelin around Greenland, Iceland and Jan Mayen is mentioned, where a strategy of securing sufficient amount of fish to spawn has been successfully practised for some twenty years.

The application of these widely accepted, but differently founded, harvest strategies has proved extremely important in managing and conserving these resources. The scientists need no longer take difficult political stances to questions as to how fast the stock is to be rebuilt. The managers have obtained a tool that will help them sustain the immense pressure from many sides, that often in the past resulted in too high catch quotas.

It seems as if when there is more than one party involved, the sentiment of PA is more difficult to get through. Several examples are presented, such as the international fishery for Greenland halibut off Iceland, the Faroe Islands and Greenland, where the depleted shared stock is not under a joint regulation scheme, which does not meet any PA standards. But even more clearly going against the PA sentiment is the international fishery for redfish in the Irminger Sea. Evidently, the main fishing pressure is exerted today towards the stock component that there is least - nearly nothing - known about, without any serious action being taken by NEAFC, the responsible management organisation. Similarly, NEAFC has not been able to negotiate a responsible harvesting regime for blue-whiting. In 1998 the recommended TAC was 650,000 t, while the catches exceeded 1 million t. This unsustainable harvest seems to be continuing in 1999.

It is concluded that PA will strengthen scientists in providing standardised, transparent advice based on well defined methodology. Further, this will facilitate managers having a much firmer basis for wise decisions. In this context HCLs will be a key factor in implementing PA. It is important that HCLs are based on local experience as far as possible. It is essential to involve all stakeholders and players when developing and adopting such strategies and procedures.

3.3 Summary of Discussion in the Working Group - Chair: Kjartan Hoydal (Denmark/Faroe Islands), Rapporteur: Per Sandberg (Norway)

Twenty persons attended the Working Group on Precautionary Approach (PA). The Chair referred to the two introductory speeches by Jean-Jacques Maguire and Jóhann Sigurjónsson and noted that ICES already has incorporated the PA in its advice. The Chairman further noted the importance of establishing management strategies for various fish stocks. Participants in the Working Group pointed out the need to address how to incorporate the PA for fish stocks where the biological knowledge is very limited and the need to incorporate PA in relation to the effects of fisheries on ecosystem.

It was noted that ACFM had adopted the PA and actively used it in its advice during the recent years, but it was questioned whether or not ACFM had done this as part of an instruction from some of its clients or if the initiative came from ICES. Irrespective of this, several participants in the WG referred to international treaties and conventions, which stressed the need to incorporate the PA in fisheries management.

Several members of the Working Group identified the need for management strategies for the various fish stocks. It was emphasised that competent management authorities in cooperation should develop such strategies with stakeholders like fishers and the fishing industry, and with the scientific community. One idea was to submit such strategies to ICES and ask ICES to judge whether or not the strategy could be classified to be in accordance with the PA.

One important aspect of management strategy is that it is a way to determine pre-agreed actions when reaching certain reference points. It was pointed out that such pre-agreed actions are important, but that they could never jeopardise the decision-makers' right to adjust the decisions in relation to new knowledge.

The position of a precautionary reference point and a possible limit reference point will depend upon the risk decision-makers are willing to run. Consequently, fishery managers should, in cooperation with scientists, work to establish such reference points.

Several participants referred to the introduction made under "The Form and Nature of Advice" and stressed the need for ACFM to produce medium-term analyses of consequences of various TAC-options. Such indicators would typically include projections of stock, spawning stock, catch and the probability that certain pre-agreed reference points would be compromised through the period.

In relation to these requests for medium-term projections it was pointed out that the various Working Groups might not have the information to produce the desired output. On the other hand it was stated that such prognoses should be produced in order to stimulate research in the field that made it possible to improve the quality of these indicators in the future. In addition, it was emphasised that ICES should explicitly describe the conditions on which the prognoses had been made.

As the natural variability of fish stocks differs, it was suggested to classify stocks according to the corresponding level of risk (high-medium-low-risk stocks).

It was also noted that ICES might consider more simple and robust indicators in addition to those found in the regular ICES advice.

It was noted that reference points such as limit reference points will depend upon the state of the ecosystem, and that they need to be revised if important parameters in the ecosystem have changed.

In order for the advice to achieve credibility, the importance of transparency was noted.

3.4 Conclusions of Discussion in the Working Group

The Working Group made the following preliminary conclusions:

- The PA will be included in all advice in the future;
- Reference levels and risk levels have to be decided by the managers based on scientific evidence, and all stakeholders have to be involved in this process and in establishing harvest control rules (HCR);
- Annual TACs have to be set in the context of medium and long-term projections on different assumptions, given with confidence limits;
- Movement towards medium-term projections might alleviate the pressure on the scientists and shift the focus away from the present annual TAC calculations;
- The present advice from ICES only gives information on a restricted part of the environment. In the future, the PA will make heavier demands on information on other parts of the ecosystem;
- The Working Group raised the question of who should take care of bringing the fishers into the process, and also about ICES role in disseminating knowledge and information about stocks and fisheries and the advisory process to the general public.

3.5 Summary of Discussion after *Plenum* Presentation

The Chair of the Working Group on Precautionary Approach (PA) referred to the discussions in the Working Group on Tuesday afternoon, and presented the conclusions that had been made.

The discussion in *plenum* started off with a question on identifying the objective of applying the PA in fisheries management. Would it imply maximisation of economic rent, maximisation of catch or an objective of stability?

Several participants responded to this question. It was noted that the objectives for the management of fisheries most probably were the same before and after the introduction of the PA. However, the emphasis which the international

community had put on the PA implied a need to establish limit reference points; there should be obligations on what to do when the reference points were compromised. However, if the reference points were not compromised, the conventional degree of freedom to choose options/regulatory measures would still exist. In particular it was noted the necessity to separate between management actions which were not optimal in relation to some specified objectives and management actions which compromised limit reference points and by so doing compromised the PA.

It was also noted that there was an obvious need to establish a practical interpretation of the PA. It was argued that such interpretation should take care of the need to avoid a management which compromised limit reference point. However, taking account of the large uncertainty attached to the consequences of any management measure, it should not (as an extreme example) imply a ban on all fishing.

The plenary also addressed the need for management strategies. It was emphasised - as the establishment of such strategies implied choices and trade-off between short- and long-term consequences of fishing as well as risk to compromise limit reference points - stakeholders, managers and the scientific community should cooperate in order to establish such strategies. The benefit of management strategies where TACs take into account medium- and long-term considerations was noted. It was also noted that managers continually receive new information and to which they must react.

The Chair of the Plenary asked:

- if the participants felt that ICES should judge whether or not specific management strategies should be classified as in accordance with the PA;
- if it would be realistic that objectives for management of a fish stock could be maintained throughout the period for an established management strategy;
- if there is a need to make a clear statement of the background for establishing the PA this could include the development of reference points through the history of management of the stock.

It was noted that rather than being “a judge”, ICES or the scientific community should cooperate with fishery managers and stakeholders in the development of management strategies. If such strategies were developed, ICES could scrutinise whether the proposed strategy fulfils management objectives set by the fishery managers. ICES should not however take on the role of a judge in relation to the management schemes meeting the requirements under PA.

One of the conclusions presented by the Working Group was the need to set TACs in the context of medium- and long-term projections under different assumptions. Concerning this conclusion, it was noted that if managers wanted such projections it would be absolutely necessary that managers specified the exact medium- and long-term indicators it would like to receive.

If a mix of arguments determine a change in advice, the relative weighting of the various arguments (model assumptions, biological conditions etc) contributing to the change in advice should be made very clear.

In addition, there were also interventions addressing the relevance of the PA for the decision making system.

4 THE FORM AND NATURE OF THE ADVICE

4.1 Summary of Presentation by Peter Gullestad (Norway)

The advice on total allowable catch offered by ICES through ACFM has undergone changes during the last 20 years. In the period 1976 to 1990, the advice was to a large extent based on reference points in terms of some long-term fishing mortalities like F_{\max} or $F_{0.1}$. Whether or not advice or options were given depended both on the existing level of fishing mortalities as well as the existing level of spawning stock. In 1991, ACFM changed its nature for giving advice as advice only was given when spawning stocks were considered to be below what was labelled “Minimum Biological Acceptable Level” (MBAL). When stocks were considered to be above that level, only options were presented, leaving the actual choice of option to the managers. In 1997, ACFM changed its form of advice once more as advice is now offered when spawning stocks are below safe biological limits or when fishing mortalities are above some limit reference points.

Generally, the ICES advice consists of three elements. These are the assessment of the stock, the analysis of consequences of various catch options, and some possible advice on fisheries management.

As a manager, I would like the form and the nature of the ICES advice as follows:

1. The assessment of the stock should cover the historical development of stock, spawning stock, recruitment, fishing mortalities and landings. It should also present the current structure of the stock (e.g. age-structure) and reference points like B_{lim} , B_{pa} , F_{lim} and F_{pa} .
2. The analysis of consequences should cover an extended version of the option table. The option table should give medium-term (5–10 years) consequences of various levels of fixed fishing mortalities or fixed quotas throughout the period. Assumptions regarding such prognoses should be stated explicitly (recruitment, individual growth, natural mortality, oceanographic conditions etc.) and the consequences which should be stated for each year are development of stock, spawning stock, catch level or fishing mortality and the probability that the spawning stock should fall below B_{lim} .

Ideally, management strategies should be developed for the various fish stocks. However, if and as long as such explicit strategies are lacking, the management authorities need advice when stocks are considered to be below safe biological limits and options when they are above such limits. As B_{pa} for many fish stocks (by coincidence?) seems to be at the same level as the historical reference point MBAL, it seems proper that ICES gives specific advice when spawning stocks are considered to be below B_{pa} and to present options when spawning stocks are above B_{pa} . Advice on precautionary levels of fishing mortality could also be offered, but it should be stated explicitly that such levels should be respected in the long run.

4.2 Summary of Presentation by Ole Tougaard (EC)

The reality is that a substantial proportion of, if not most, fisheries managers has no training in biology, and indeed most are not fisheries biologists. They examine the advice with a view to understanding the logic in its construction and the parameters upon which it is based.

They seek consistency in the methodology and - if changes occur - they question the reasoning behind these changes and wish to be convinced that these will lead to improvements. If, during the year advice is changed - sometimes based on only a relatively minor modification of one of the input parameters in the assessment model - managers become uneasy, feeling that even a small amendment can sometimes cause substantial changes to the advice. Then they question how sure we are about what we are doing.

In certain situations, managers may also come under pressure from the fisheries sector or the authorities to consider socio-economic factors. Although legitimate and justified in specific circumstances, if this argument is too heavily used, it may have a severe negative effect on a stock over a period of time.

Managers may also be tempted to create “paper fish” in order to resolve specific problems related to the allocation of quotas. As an example, such a situation occurs in the Baltic Rim. However, if these “paper fish” are actually caught due to an unexpected development in the market outlet on the fishing capacity, then the stock may be seriously damaged.

Managers accept the uncertainty of the stock evaluation and consequently accept that we must take decisions based on probability assessment. They also like to be informed early on if there are warning signs indicating that a stock may face problems in the medium or longterm, even if the short-term assessment, as currently given, does not give rise to concern.

The Form and Nature of Advice

The Memoranda of Understanding now signed with ICES by NEAFC, IBSFC, and the European Commission, stipulate a comprehensive standard request for advice covering the biological state of the stocks, options for catch levels and other conservation measures. This should improve the advice and will need testing in the years to come.

Basic Requirements for the Form and Nature of the Advice

- The advice should be transparent; the underlying arguments and rationale must be clearly expressed (to avoid too widely optimistic and pessimistic interpretations);

- The option and forecast tables should cover a much wider range of fishing mortality and always be accompanied by a probability assessment;
- The short-term forecasts should be accompanied by projected medium and long-term consequences, including the assessment of possible impact of “warning signs” becoming a reality;
- The consequences of a given fishing strategy should be clearly expressed;
- If a stock is “outside safe biological limits” or outside “the precautionary approach”, safety limit options on remedial action should be provided with both short term (1–2 years) and medium term (2–4 years) solutions;
- Changes in perception of stock status or changes in assessment and input of value parameters must be clearly explained and understandable to “non-experts”;
- There should be more and more easily readable graphs and less text;
- The data content in the advice should satisfy both the managers and the fisheries biologists.

4.3 Summary of Discussion in the Working Group - Chair: Marc Vanbrabant (EC), Rapporteur: Peter Hutchinson (NASCO)

The Chair summarised the main points to emerge from the presentations by Peter Gullestad and Ole Tougaard and the subsequent discussions in plenary. The following points had been highlighted and were discussed by the Group:

The suggestion that advice should be structured under three groupings as suggested by Peter Gullestad.

a) General assessment of the stock

Managers expressed a need to have a general description of characteristics of a given stock (e.g., habitats, life-cycle, migration patterns; feeding patterns and interactions with other stocks; historical development of the fishery). It was concluded that this information should be available but not regularly reproduced in the ACFM advice. However, recent information on stock characteristics (stock structure and size) is needed to evaluate current trends in stock development. The Group also discussed the opportunities for introducing ecosystem and multi-species considerations. Certain scientists pointed out that insufficient knowledge was available to integrate this in stock assessments. The Group nevertheless felt that it would be possible and useful for ICES to report available information on ecosystems and to combine the single species assessments for several species in a given geographical area for consideration by managers. In addition to this general description ACFM should provide reference points for stock biomass and fishing mortality. Finally, the Group agreed on the need to avoid great changes in the assessment methodology and on the need for transparency in explaining why these changes occurred.

b) Analysis of consequences of various fishing mortalities or quotas

The Icelandic cod forecast model was referred to but not discussed. As an alternative the Group considered the merits of the North Sea herring option table elaborated by ACFM for 1999 and also the model described by Peter Gullestad in his presentation. The feasibility of the latter was discussed, but concern was expressed by scientists about retrospective criticism of their assumptions made under a medium term prognosis. The Group concluded nevertheless that medium term option tables/ forecasts would be a valuable management tool for stocks estimated to be within precautionary limits.

c) Advice on fishing mortality

For stocks outside precautionary limits the Group concluded that clear management advice was needed. For stocks below precautionary limits options could be provided (see b above).

The Group also discussed the needs for a clear statement of management objectives and strategies. ICES indicated that it did not require such statements in order to be able to provide advice provided that reference points had been established but that scientific advice could be a useful tool in developing these objectives and strategies by managers.

The Group deferred to the next plenary session a discussion on the methods by which ICES can receive feedback on the way the ICES advice is interpreted and used by managers in their decision making.

4.4 Conclusions of Discussion in the Working Group

The Group considered that the future advice should consist of three main blocks:

Assessment:

Stock characteristics

- historical development (Recruitment, Total Biomass, Spawning Stock Biomass);
- present size (Total Biomass, Spawning Stock Biomass);
- present structure of stock (age structure);
- reference points for stock (B_{lim} , B_{pa}).

Characteristics of the fishery:

- historical landings and fishing mortalities;
- reference points for fishery.

Transparency:

- description of any changes to models used to provide catch advice and of impacts of any changes to the model on the advice.

Analysis of Consequences:

Spreadsheet covering medium term forecast of the expected development of stock and spawning stock and the expected development of catch/fishing mortality;

Clear statement of assumptions;

Probability that limit reference points will be compromised.

Advice on Harvest Levels:

Provided that the spreadsheets described above are available providing options, formal management advice will no longer be needed, except when a stock is below precautionary limits;

Statements of management objectives and strategies are not required for the provision of advice but scientific advice can be a useful tool to managers in developing these objectives and strategies;

The plenary session should consider further the methods by which ICES can receive feedback on the way the ACFM advice is interpreted and used by managers in their decision making.

4.5 Summary of Discussion after *Plenum* Presentation

The discussion recognised that there was overlap between the working group topics: Confidence will not be possible without a clear and transparent advice and implementation of the precautionary approach is an integral element in the nature of the advice.

Transparency in the advisory procedure and clear presentation of the advice were recognised as two primary requirements in the advice. It was further noted that the optimal form and nature of the advice would change dynamically and that therefore some institutionalisation of the feedback from managers to the scientist such as the Dialogue meetings should be a part of the nature of the advice.

A clear presentation of the advice includes an explanation of the assumptions on which the assessment is based. These assumptions include how the assessments deal with natural variability. The presentation should also consider problems with the phraseology of inside/outside of safe biological limits. In several cases the status of the stock will be uncertain. If the idea of presenting spreadsheet programs for the managers this must include guides to the use of these spreadsheets.

Finally it was noted that special care was needed to explain the biological reference points and the basis for these reference points. It was recognised that short and long term reference points are not necessarily the same.

The Assessment Working Group reports were found to be very technical and not very well suited for increasing the transparency in the advice. It was therefore suggested that a background document given the fundamentals of the assessments for a particular stock would be useful.

It was suggested that ICES should recognise three levels of advice:

1. Annual (recurring) assessments and advice on management;
2. Multi-annual - Projections for groups of stocks;
3. Not routine – Medium-term projections - Multi-species assessment.

It was noted that the nature of the advice had changed in recent years with the implementation of the precautionary approach. The introduction to the ACFM report - that was among the hand-outs to the participants - suggests that ACFM will act as the judge whether a particular management procedure is in accordance with the Precautionary Approach. There were several interventions that suggested that this was not the responsibility of the scientists - the precautionary approach should be developed as a cooperation between the scientists and the managers. It was formulated that governments had subscribed to the implementation of a precautionary approach to fisheries management however its practicality was yet to be defined. ICES had forwarded a proposal based on biological considerations.

This discussion was concluded with an offer by the EC seconded by Norway to establish a restricted group that could continue this discussion. This discussion would concentrate on the groundfish in the North Sea: cod, haddock, whiting, saithe, plaice and sole but the discussion may be extended to include mackerel.

A final point of the discussion was the need for timely advice. It was noted that ICES hitherto had provided advice using fairly bureaucratic procedures, i.e. that advice could only be produced with the entire ACFM in session. ACFM only has two sessions a year. The Commissions needed in several cases advice on a more flexible time schedule and therefore urged ICES to review its advisory procedures to meet such needs. This point was repeated from most Commissions.

5 CONFIDENCE BUILDING

5.1 Summary of Presentation by Michael Sissenwine (USA)

The controversial nature of scientific advice for fisheries management should come as no surprise. In 1919 Thompson pointed out that "proof that seeks to modify the way of commerce and sport must be overwhelming." This situation reflects the importance of fisheries and the inherent uncertainty in scientific assessments of their status. But in recent years, the intensity and frequency of the controversies (e.g., litigation, scrutiny at levels of government, demands for independent review, media attention) threaten both the scientists that provide fisheries management advice and the ability of fishery managers to fulfill their stewardship responsibilities.

There are no simple solutions to the problem of controversial fishery management advice. What is needed is a multifaceted approach to make fisheries management advice relevant, responsive, right and respected. Making it relevant means scientific advice that addresses the issues important to management. Making it responsive means being timely and in a form that managers can use. Making scientific advice right is about the quality of scientific data collection and scientific reasoning. Making it right does not assure that predictions always prove true, but it does certainly improve the odds. Making it respected (synonymous with credible) has many facets. They are: (1) past advice that has a good track record, (2) transparent and inclusive (e.g., of non-government scientists) processes for formulating advice, (3) creating mechanisms to assure advice is independent of perceived or real "agendas" for fisheries management, (4) communicating advice effectively, and (5) subjecting advice to peer review (which can take many forms).

Peer review is usually thought of as a sequential process of one scientist, or group of scientists, passing judgement on the work of others. Most scientists "grow up" professionally with peer review as a way of deciding on what papers are published, and what research is funded. But unlike the peer review for a publication or a research proposal, negative

peer review of the work of a scientist giving fishery management advice is public, and "non-fatal flaws" (often minor) in scientific advice are commonly used to undermine the advice, even after it has been acceptable by peer review.

Another problem limiting the use peer review for fisheries management advice is that the usual sequential process is time consuming. It is also expensive. Alternatively, the peer review process can be integrated into the preparation of fisheries management advice by including highly qualified and independent scientists in the process. Another way of improving respect for fisheries management is to develop standards of acceptable practice and to develop protocols for certification of scientists as qualified to give fishery management advice.

Much needs to be done to make fisheries management advice more relevant, responsive, right and respected. If steps are not taken to reduce the controversy around fisheries management advice, everyone will lose. This will certainly be the case if scientists become more cautious in giving advice (they face a lot of jeopardy by going out on a limb), just as managers are attempting to apply the precautionary approach.

5.2 Summary of Presentation by Sara White (Ireland)

The complexities and uncertainties of the marine resource and the marine environment are matched by the uniquely complex politics and economics of fisheries management.

This uncertain environment fuels controversy about the science and the management. Decision making becomes increasingly difficult as pressure on fisheries grows. This turn creates more demands on the scientific advice.

Confidence building is required on all fronts. Managers need confidence in the scientific advice; the scientists in the utilisation of their advice; the fishing industry needs confidence in both management decisions and the science. Collective change in the way we all do business is no longer an option but a necessity.

There is a seachange underway in terms of acknowledgement in public policy terms and in the sector that new approaches are needed (the precautionary principle). This creates increasing demands and expectations on the science.

The history of North Sea herring Area IV in recent decades is a useful case study in terms of crisis response by management and the role of scientific advice. Analysis of that fishery and the politics of the fishery gives grounds for both optimism and pessimism. A new mood is evident in the EU Council of Fisheries' Ministers explicit acknowledgement of the precautionary principle. The corollary of hard decisions is more questioning of scientific methodology and validation. Fishing industries are also acknowledging the need for change, and asking questions too.

Bridge building between administrator, scientists and the fishing industry is essential;
Scientists should be conscious that the good news has to be as credible as the bad;
Scientists need to acknowledge the very complex factors at work in the "politics of fish" and not the isolationist;
Scientists need to take account of the strengths and the weaknesses of their clientele.

Administrators and decision makers must be able to test the validity and robustness of all advice against key benchmarks including provenance, consistency, external healthcheck, motivation, value for money, methodologies, adequacy of resources.

The problem with parallel processing of fisheries and environmental advice needs to be critically assessed.

The crosswalks between fisheries control inspectorates and the scientists need to be developed and improved.

The timeframes of decision making and scientific advice need to be more closely aligned.

The EU needs to renew and sustain the debate about directions, priorities and needs of EU fisheries research.

All interventions in fisheries are a collective effort. The science, the politics and the industry are independent.

5.3 Summary of Discussion in the Working Group - Chair: John Robbs (UK), Rapporteur: François Gauthiez (France)

Introduction

1. The Working Group started by defining priorities for confidence building;
2. It was widely agreed that fisheries managers had confidence in their national fisheries scientists and a high regard for the advice produced by ICES. However, there was scope for improving fisheries managers' confidence in the latter;
3. For many participants there was a bigger problem in the lack of confidence by the fishing industry in fisheries science. In the case of the fishing industry, the problem was principally related to the science itself rather than the ICES process but the latter was a subordinate factor;
4. The Group also considered environmental non-governmental organisations. Here the principal problem was perceived to be the ICES process rather than fisheries science itself;
5. There are other areas and directions in which confidence building can usefully occur. But the areas listed above were the priorities identified by the Group.

Discussion of the problems

- A wide range of participants gave examples of problems relevant to the identified priorities. They covered both the quality of the scientific advice and non-scientists' understanding of the advice;
- It was recognised that there were considerable areas of uncertainty in the advice, disagreements among scientists and imperfections in the annual report produced by ACFM on the stocks. There was also a need to ensure that the advice was independent and to have quality control mechanisms;
- There was also the question of transparency of the ICES process. The exclusion of NGOs encouraged them to question the quality of the output;
- So far as understanding of the advice was concerned, some fisheries managers thought that ICES advice could be presented more clearly and concisely. Some fisheries scientists were concerned about the frequency of changes among fisheries managers. This meant that understanding of the science was reduced unless newcomers gave this area priority;
- In the case of the fishing industry, the experience in some countries was a fundamental lack of understanding of the basic elements of stock assessment let alone the complexities of the precautionary approach. This was in itself a major problem for fisheries managers because of the political pressures that resulted.

5.4 Conclusions of Discussion in Working Group

Possible improvements

The Working Group did not reach firm conclusions but it identified possible ways of improving present practice in order to reduce problems and build confidence.

In the case of the quality of ICES advice, options were:

- a) for identified stocks, invite ICES scientists to specify the principal causes of uncertainty in their assessments so that the scope for diminishing uncertainty can be considered strategically;
- b) invite ICES Working Groups to ensure that their reports are accepted by all participants, so that dissident scientists do not subsequently undermine the report and so that customers receive advice which incorporates qualifications reflecting the whole range of scientific expertise;

- c) review the ACFM process so that it does not try to do too much too quickly, e.g., do not have so many full assessments each year, or have a larger meeting or split ACFM into two committees;
- d) consider inviting outside independent scientists to ACFM (“non-club members”) to apply the discipline of peer review;
- e) consider whether new safeguards are necessary to ensure the independence of the advice from non-scientific influences.

In the case of the understanding of ICES and other scientific advice, options were:

- a) give high priority to training fisheries managers in the key aspects of fisheries science and ICES practices;
- b) make it a high priority of fisheries scientists (at national level) to communicate with the industry and develop greater understanding, e.g., by meetings leaflets and articles in the fishing press;
- c) look at the scope for ICES advice being made more accessible to the fishing industry, e.g., by producing short summaries of the conclusions excluding complex terminology;
- d) consider ways of increasing the transparency of the ICES process, e.g., by establishing an ICES contact group where ICES scientists can meet (separately or altogether) managers, industry and environmental organisations – perhaps once a year – to discuss ICES business and developments.

5.5 Summary of Discussion after *Plenum* Presentation

It was noted that all stakeholders should be part of the advisory process. It was recognised that the advisory process is long and consists of several sub-processes: assessing the state of the stock, formulating the scientific advice, interpreting the scientific advice and agreeing on appropriate management measures just to mentioned some of the elements. It was further recognised that all stakeholders need to be brought into the process at some stage but also that not all stakeholders need to be involved in all stages. In particular it was noted that the science needs to be free from political overtones. Discussion occurred, but no conclusion was reached, on who would be responsible for the process to bring other stakeholders, e.g. fishers, into the advisory process. This was noted that the scientists could benefit from such an interaction in performing their tasks.

It was noted that there are divergent views based on sound scientific arguments between scientists, and it was discussed how such views could be reflected in the scientific advice in such a manner that the managers could use these. It was remarked from several managers that a minority statement in reports was not a useful route to reflect such divergent views. Rather, the scientific bodies should aim for consensus reports. Such consensus reports will obviously need to reflect possible different interpretations of the data and model simulations, but these different views should be reflected as the basis for uncertainty in the projections that lead to the advice.

Concerning who should take the lead in actions resulting in improved confidence in the advice, several interventions noted that this was a joint task for managers and scientists. The strategy from the two groups would obviously be different, but both the scientists and the managers desired that the discussions with the industry and other stakeholders could be based on a common understanding on stock status and stock development. It was noted that this process is already underway and that confidence in the scientific inputs is gradually increasing.

It was underlined that a fundamental pre-requisite for improved confidence in the scientific advice is that the advisory process becomes as transparent as possible and underpinned by appropriate quality management. Another important pre-requisite is consistency in the advice and very clear explanations when basis assumptions on stock dynamics are changed.

Finally it was mentioned that scientists could benefit from co-operation with control and enforcement but also noted that this could have severe consequences on the needed cooperation between scientists and the fishing industry.

6 SUMMARY AND CONCLUSIONS OF THE *PLENUM* DISCUSSION

David de G. Griffith summarised the findings and the discussions that were held during the Wednesday morning session. He pointed out that his presentation was to be seen together with the conclusions that had been reached in the

three Working Groups, and that several of the specific proposals would be found in these sections of the report while his summary would be in more general terms. The presentation pointed to initiatives needed for further actions by ICES and Commissions either separately or as joint efforts. These actions aim to improve the quality, timeliness and transparency of the advice. He followed in his presentation the structure suggested by the Working Groups.

6.1 Precautionary Approach

The starting point of these discussions is that the Precautionary Approach (PA) presents “A commitment by governments” but governments have not necessarily signed up to ICES interpretation of it. The development of the Precautionary Approach is a joint effort by ICES and the Commissions where the role of ICES in developing PA principles and procedures shall be to help in defining reference points and in particular be responsible for the technical evaluation of proposals on harvest control laws (HCL). In this work it is important that ICES involves all stakeholders in the fisheries. The invitation by the EC to convene a group to clarify/develop PA management issues, with reference to North Sea shared stocks, was noted as being very positive.

The management Commissions will adopt a strategic plan to establish objectives and priorities. The time frame of this work is five to ten years and ICES is prepared to participate as requested by the Commissions. The strategic plan will include annual review and adjustments; ICES role will include monitoring and reporting. The EC made an attempt to initiate such a discussion in the early 1990s and the EC noted that the response from the scientists had not been supportive of this attempt. The scientists had in the view of the EC started technical disputes on the actual setting of the reference points. This had confused the discussions of the basic principles. The EC will try again but urged ICES to better understand the process; the EC needs the support of scientists in these discussions and ICES is willing to lend support within its area of competence.

The Precautionary Approach implies that a buffer to absorb uncertainty is established. There is considerable knowledge, about fish and fisheries while the knowledge available for other components of the ecosystem is less. Risks are therefore lower for the fish stock compartments than for other parts of the ecosystem and therefore more research is needed on these.

ICES has proposed a framework for the implementation of the Precautionary Approach. In the light of the comments presented at this meeting this framework should be developed and revised in close cooperation with managers. ICES is ready to enter into such discussions.

6.2 Form and Nature of the Advice

The present fish stock analysis as presented in the annual ACFM report is largely based on data from fisheries and from abundance surveys. The advice should be expanded to include biological and relevant hydrographical information for each stock. This may not necessarily be as part of the annual ACFM report but could be provided as background documents easily available to managers.

The ACFM report should include a section that explains errors in hindsight, and the ACFM report should explain the assumptions on which assessments and forecasts are based. The suggestion of providing the managers with spreadsheets (or similar possibilities for making forecasts) will be seriously considered.

ICES will review its procedures reporting the time frame for providing advice. The aim with this overhaul is to meet the expressed wishes from the Commissions for both more speedy advice and for more flexibility in the time frame.

Types of advice

The proposal made by the Working Group on Form and Nature of the Advice was noted. ICES will seriously consider producing three types of advice documents:

1. Strategic Policy. This document would include:

- Medium-Term Projections
- Harvest Control Laws
- Multispecies Trades-off
- Complex Simulations

2. Annual Evaluation of Stocks. This document would largely be the present ACFM report.
3. Regional Seas. This document would examine management plans in aggregate to see if ecosystem objectives (yet to be defined) are being met. Attempts to meet such need are currently conducted through the ACME report, e.g. based on input from the Working Group on Ecosystem Effects.

Scientific procedures

These procedures should be able to respond to complex hierarchical decision-making procedures outside ICES/ACFM. This will involve re-consideration of the timeliness of the ACFM advice. The review will be done under the following assumptions:

- It is a partnership process (managers and scientists to develop strategies together; involve fishers);
- Governments and managers have (main?) roles to play in boosting confidence; managers should give high priority to becoming knowledgeable;
- Confidence in management needs to be enhanced as well as in science. Management must be open and transparent too;
- Frequent changes in scientific procedures and models reduce confidence;
- Fishers want to be more involved in the process. ICES must be prepared to listen (despite any accompanying difficulties).

Confidence Building

A key element in the success of fisheries management based on scientific input is that there is widespread confidence in the scientific advice. To boost confidence the following two points will be considered;

- Working Group reports and ACFM report should be, if at all possible, consensus reports. These should include a full account of the uncertainties that exist in the assessment and in the advice;
- Control authorities may have useful information relevant to assessments (e.g. accuracy of commercial data).

Finally, it should be noted that ICES is not the only organisation with advisory tasks in fisheries management. ICES could learn from the experiences of other international bodies regarding ways to increase transparency and confidence.

7 COMMENTS ON THE SUMMARY AND CONCLUSIONS BY REPRESENTATIVES OF THE ICES PARTNER COMMISSIONS

7.1 EC/DG XIV (Alain Laurec)

In spite of numerous discussions between the EC and ICES, and some criticism by the EC of ICES, the European Commission is fundamentally happy that ICES exists and that ICES provides management advice on fish stocks. Fisheries management, and in particular the management decisions, is the result of a process where many partners each play a well-defined role. It is important to achieve a transparent and rational decision-making process, and in order to achieve this each player must have a keen understanding of their roles. ICES has two roles: 1) to provide information of status of the stocks and if possible more generally of the status of the ecosystems and 2) to provide advice on fisheries management based on the stock status. The dialogue as it has taken place during this Dialogue Meeting was, therefore, a fortunate opportunity to discuss these roles - those of the fisheries scientists and of the managers involved with management decisions.

While ICES has to be aware of its own roles – scientific advice is only advice and scientists should recognise this fact – managers have a similar obligation to be conscience of their role. This initial understanding is particularly important when managers formulate their requests for scientific advice.

The ICES structure has several very strong points: ICES is primarily isolated from the political system and therefore, better than other set-ups, can provide independent scientific advice. Another element of strength is that both Canada and USA participate in the work. These scientists are not involved with the decision making process and, therefore - better than European scientists - are able to provide an independent peer review of the fish stock assessments. In that context it should be noted that although ICES provides neutral advice, ICES is not seen to be a completely independent scientific organisation by all stakeholders and therefore in line with the general trend of the meeting more transparency in the ICES advisory process is required. However, overall, DG XIV is very content with the general institutional arrangement with ICES as an independent scientific body providing information on stock status and advice on fisheries management on a scientific basis.

Nevertheless, there are a number of specific points that warrant consideration. ICES advice needs substantial translation before it can be directly related to management decisions, e.g. ICES advice is on a fish stock basis while management regulates fisheries. ICES is therefore urged to conduct further research that would better allow this translation. It should be noted that ICES advice is very much geared to output regulation, i.e. TAC management, while the EC is also using input control, e.g. restrictions in effort and capacity. Also on these topics the EC sees a need for re-direction of research. There is a distinct need for information on the state of fish stocks in general, including non-TAC species that are not regularly assessed. On this vein, one should note the discussion of biodiversity where more scientific input is urgently needed to clarify these issues. The EC considers that fisheries science is somewhat isolated and finds it important that ICES develops analysis methods to provide a quantitative basis in the discussion between fisheries and environment.

The ICES advice is not always timely and ways and means to improve timeliness of the advice should be sought.

The meeting raised the issue of minority statements in scientific reports. Managers prefer consensus reports whenever possible and one prefers that ICES continues to work on this basis. It should be recognised that a few scientists occasionally had felt overwhelmed by majorities at the assessment working groups and, so, voiced their disagreement with the assessments after the meeting was concluded. This, however, is detrimental to a rational decision process and ICES is therefore urged to strive towards consensus, making sure that all opinions are heard and properly reflected – based on the scientific strength of the argument – in the assessment and in particular when presenting uncertainties.

7.2 NEAFC (Ole Tougaard)

I wish to recall that NEAFC's basic text stipulates collaboration with ICES and we are very happy to do so. I also wish to congratulate ICES for convening this meeting. I feel it has been very well structured and it has been constructive. In general, I subscribe to all the comments made by my colleague Alain Laurec. I therefore wish to be short and simply sum up what I feel we have got out of these two days' deliberation.

First in relation to the form and nature of the advice: I think we have made really substantial progress on this topic. We need to continue the process and be prepared to make adaptations as appropriate along the way. The key issue is that the advice be as clear as possible *inter alia* in everybody's best interest.

With regard to the precautionary approach, it's my impression that we have shed at least some light on this very complex issue. We have had a good discussion on what the precautionary approach means – to avoid the development of an irreversible situation. We also clarified, and I hope there is consensus on this point, that there is a clear separation of the responsibilities on development and implementation of the precautionary approach. Clearly, on this topic we have a lot of work in front of us. We therefore have a need to decide on priorities, as our resources are in short supply. The client Commissions must now start identifying their priorities, objectives and strategies. These priorities and objectives shall be handed over to the scientists, and together we shall initiate common reflection on how to achieve the results I believe we all wish. I want to make one point clear: the final decision on how to implement the precautionary approach lies with the manager.

We have over the last two years established a new relationship between ICES and the client Commissions. We have very recently in NEAFC signed a Memorandum of Understanding with ICES and I think this has been a very important move forward. We are now in a situation, which I would refer to as a grown-up relationship, and we should enter into a close partnership. The Commission now pays the full price for the ICES advice. We also expect and wish to receive the full product. We wish the advice to be delivered timely and be produced as economically as possible. We will in the future express new wishes related to this product. Two examples:

- Why can we not have the autumn advice on 15 October, instead of receiving it in the beginning of November? This gives us a problem, because very serious negotiations bilaterally and multilaterally in NEAFC start just after that date;

- Why do we have to wait so long time in order to get an answer to our requests? I briefly referred to it this morning, we have a problem with cod advice in the Baltic, and I believe Dr Ranke (IBSFC) made the same reference just before. I appeal to everybody; we need flexibility from ICES. It is extremely difficult to explain to our political masters, to the industry, to the NGOs, why it takes so long.

I also mentioned this morning that I feel there was a need to look at the process in ICES. This is ICES's own responsibility but as a client I wish to be given even more satisfaction than at present in relation to the timely manner to which we receive the product.

I have found this Dialogue Meeting, as I said before, extremely constructive and useful. We have had some frank exchange of views, as I think we must, otherwise we will not make the progress we wish to do. I think we should now start reflecting on how we continue this dialogue. I feel there are important issues that have surfaced during these last two days. We need to have a continuing dialogue in one form or another.

7.3 IBSFC (Walter Ranke)

Having heard the comprehensive statement made by Alain Laurec from the European Commission, I am now in a position to shorten my contribution because in general I share the view expressed by him. This is not surprising because the European Community and we, as a regional fishery organisation, are faced with similar problems. They in the Northeast Atlantic and its adjacent seas and the Baltic Sea; we in IBSFC in the semi-enclosed Baltic Sea where EC is a Contracting Party.

Before proceeding to the IBSFC point of view, allow me to make a brief remark from a somewhat historical point of view.

Almost 10 years ago - in November 1989 - a Dialogue meeting was held in London closely connected with the NEAFC annual meeting. I was at that time the NEAFC President engaged in the preparation and the implementation of this meeting. At that time we had a frank exchange of views between managers and scientists but it was more of a general nature.

Nowadays we can see the progress that has been made. In tackling the precautionary approach, we are considering a new quality of the co-operation in the interest of the protection and rational exploitation of the living marine resources. Now there is a clear goal we jointly want to achieve.

Coming now to the actual problem IBSFC is faced with, I have to start with the Agenda 21 for the Baltic Sea Region - Sector Fisheries covering the period till 2030. IBSFC at its Extraordinary Session in February 1998 defined under its Action Programme as the Priority Action 1: to develop long-term strategies for the major fish stocks i.e. Cod, Salmon, Herring and Sprat.

This includes the:

- Baltic Cod Strategy Plan
- IBSFC Salmon Action Plan 1997–2010
- Long-term strategy for Pelagic Species

To implement this challenging Action Programme we need, more than in the past, the advice from ICES. We see the need to improve the single species assessments but we also believe that we should - where possible - also take into account multispecies aspects.

There is a need to make an effort to overcome the drastic "ups and downs" of the stocks in the Baltic Sea - this means from a managerial point of view the TACs- to come to a more balanced stock abundance and to more balanced TACs. These up and downs are illustrated in particular by the development of the Cod and Sprat stocks over the last 20 years. 20 years ago we had strong Cod stocks and high TACs leading towards extremely low Sprat abundance - a Sprat TAC for the whole Baltic Basin of 40 000 t only. Nowadays we have strong Sprat stocks and again - after a short period of improvement - decreasing Cod abundance.

It would already be a remarkable step in the right direction if we could soften these "ups and downs"; they might have also positive economic and possibly even social benefits for the fishing communities around the Baltic Sea.

There might also be a need for further cooperation between IBSFC and ICES in the field of identification of biological indicators for the Baltic Sea.

In our Baltic 21 Sector report Fisheries we have defined three indicators:

- Spawning Stock Biomass;
- Fishing mortality;
- Recruitment.

Coming to the end, I want to make a remark concerning Public Awareness. This is another field where IBSFC and ICES should have closer cooperation to show to the public what we jointly do to protect the resources but also what is done to minimise the economic dislocations for the fishers in the coastal communities in the Baltic Region.

This is important for us since it has become an almost normal procedure to blame fisheries for not doing enough to protect the Baltic Sea environment while others, such as industry, transport, agriculture etc. are much less criticised by environmentalists.

7.4 NASCO (Peter Hutchinson)

It is a pleasure to participate in this the Eleventh ICES Dialogue Meeting. Firstly, I have been asked to convey to the meeting the greetings of the President of NASCO, Einar Lemche, and the Secretary, Dr Malcolm Windsor. They both regret that they were unable to participate in this continuing Dialogue between ICES and the Commissions, which we in NASCO value greatly.

For those of you unfamiliar with the work of NASCO, the Organisation was established in 1984 to contribute to the conservation, restoration, enhancement and rational management of salmon. In doing so, the Organisation is required to take into account the best scientific information available to it, including advice from ICES. We have sought advice from ICES on an annual basis since our inception and we share Alain Laurec's sentiments that we are very pleased that ICES exists. Those involved in drafting the NASCO Convention clearly believed that it was desirable to separate science and management so as to obtain scientific advice free from political influence. This is an important consideration when discussing the nature of the advice, and the question has been raised at this meeting as to whether safeguards are needed within ICES to ensure this. I certainly believe that this feature of the advice must be safeguarded.

In 1993, ICES, NASCO and IBSFC cooperated in holding a very successful Dialogue Meeting on Atlantic Salmon. A number of important issues and principles were discussed at this meeting. These included the:

- need for predictive advice on which management decisions could be based;
- need for scientists to communicate their findings clearly to managers;
- need for the advice to be structured so that managers can see clearly the response to the specific question posed, and which they have spent considerable time in formulating;
- need for the scientific advice to be delivered on a timely basis to allow adequate time for the advice to be translated, studied and negotiating mandates obtained.

ICES has responded to many of these issues. Environmental variables are now used to predict abundance of North American origin stocks for management purposes and progress is being made in relation to European stocks. I think it is fair to say that the advice from ICES has played an increasing role in our work in recent years. We welcome the progress that has been made through on-going research programmes conducted by the Contracting Parties.

But it is not all good news. We are continuing to liaise with the ICES Secretariat to try to improve the timeliness of the advice which we often receive just before our annual meeting. We are also liaising on some administrative issues, which we hope can be resolved in the near future.

An important issue that has emerged over the last two days is that there is the need for improved transparency in the fisheries management system and I'm pleased to say that for Atlantic salmon this process is underway. We already request that ICES provide a detailed explanation of changes to assessment models and of the impacts of changes made to the model and ICES has responded. We are also improving the transparency of the management process through allowing NGOs to attend, and to a limited extent, contribute to our meetings: we now have three times as many observer organisations as Contracting Parties. The Council has welcomed this participation which has had mutual benefits. In this regard, we would be happy to share our experiences with ICES if that would be helpful. We are also developing more detailed reporting systems in relation to our various Resolutions and Guidelines.

The point was made yesterday that the form of the advice will vary in different situations and for different stocks. This is certainly so for the Atlantic salmon for which a wide range of issues in addition to those concerning harvests have been addressed to ICES over the years.

Another important principle, which emerged from the Salmon Dialogue, was the need for adoption of the Precautionary Approach in order to arrest the decline in the wild salmon.

NASCO and its Contracting Parties have now agreed to adopt and apply a Precautionary Approach to the conservation, management and exploitation of salmon in order to protect the resource and preserve the environments in which it lives. Accordingly, NASCO and its Contracting Parties have agreed to be more cautious when information is uncertain, unreliable or inadequate and the absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management resources. This does not diminish the need for the best scientific advice. On the contrary, it suggests that where knowledge is inadequate it should be a priority to obtain better information.

We have recognised that the application of the Precautionary Approach should involve all parties concerned with salmon conservation, management and exploitation. As this meeting has recognised, this is necessary to secure the necessary commitments.

We envisage a specific role for ICES in our work on the Precautionary Approach. We have reformulated our request to ICES for scientific advice to ensure its consistency with the Precautionary Approach and have asked ICES to advise on a framework for stock rebuilding programmes. We have also asked that ICES advise on the risks of not achieving objectives by considering uncertainties in the state of the stocks, in biological reference points and in fishery management systems, and provide catch options with associated risk assessments. This leaves the managers in NASCO to take account of the risks and uncertainties, and other factors, in a way that they consider most appropriate when making management decisions under the Precautionary Approach.

We are presently developing an Action Plan on Application of the Precautionary Approach. Under this Action Plan we will in the coming years be considering further aspects such as procedures for developing management targets and pre-agreed management actions and how socio-economic aspects can be incorporated into the Precautionary Approach. We do not believe that it is in ICES best interests to incorporate socio-economic factors into its advice, since this could compromise the ability to provide advice free from political influence. We will also need to develop our thinking on aspects such as the standard of proof and the burden of proof, which have been discussed briefly in this forum.

This has been a most valuable dialogue and I will of course report back to the Council of NASCO on the issues discussed and the conclusions drawn. I would like to thank the organisers of the meeting and the ICES Secretariat, and in particular our French hosts, for the arrangements made and their excellent hospitality.

We look forward to continued dialogue and cooperation between our two organisations in the precautionary era that lies ahead.

8 RESPONSE TO THE COMMISSIONS

Niels Axel Nielsen, Chair of the Coordinating Group on ICES Advice (CGADV) presented ICES reaction to the interventions by the Commissions. He noted that several of the Working Groups who's Chairs reported this morning had pointed to possible improvements in the advice and that many of these points had been taken up by David Griffith in his summary. He noted that ICES lives in a dynamic world and must respond to changes. However, he also noted that ICES has started an analysis of the problems and that the CGADV is working under the following four general heading in 1998/1998:

Improve definition and scope for the advice

Detailed checklists of the work process and existing quality management procedures are being developed as background for focused actions for improving the advice. The other significant element in this work is holding dialogues with client Commissions such as at this meeting. However the dialogue is not confined to formal meetings but is considered by ICES to be an ongoing process.

Select best ICES forum for giving advice

The present structure for formulating the advice based on ACFM/ACME is under scrutiny. ICES aims for more flexibility its Advisory Committees. As an example, there are no longer specific nominations by Member Countries of candidates to ACFM and ACME separately. Now the countries are asked to nominate a pool of experts - currently five experts per country - from which ICES can select and thereby establish a competent Advisory Committee taking the scientific topics into account.

Improve the form of advice

This topic is on the agenda of the CGADV but is pending recommendations from the current Dialogue Meeting.

Quality Assurance

CGADV has initiated a study of the quality management procedures of the ICES advisory process. This study will include proposals for improvements both in the documentation of the advice - transparency - and in the organisation of the work. ACFM is internally discussing similar matters. The tasks that shall be addressed in 1999 are

- Formulate an ICES Quality Policy;
- Develop Quality Management Procedures.

Based on interventions from the floor and from the Chairs of the Working Groups, Niels Axel Nielsen noted the following proposals and conclusions to be added to his list for the work within CGADV concerning the advisory procedures;

Improve definition and scope for the advice

- Shorten time span between requests and advice and increase the flexibility.

Select best ICES-forum for giving advice

- Advice including other parts of the ecosystem (other than by commercial exploited fish) should be developed.

Improve Form of Advice

- Mid-term and long-term predictions should be provided; preferably in the form of simulation tools. Predictions should include risks and uncertainties. Those tools form an important basis for development of strategies (Harvest Control Rules) within the Precautionary Approach;
- Form of advice and simulation tools to be fitted to the specific problems in each area; this will depend on the knowledge base. (Further development of ACFM Precautionary Approach framework. EU – Norway cases)
- General description of the biology, the fishery, possibly also ecosystem interactions, should be available, but not regularly given;
- If change in methodology is needed very detailed background information should follow;
- The report from the Working Group on the “Form and Nature of Advice” listed details of an appropriate form of advice;
- A feedback mechanism from managers on the form of advice should be established.

Quality Assurance

- Specify principle causes of uncertainty and strategy for diminishing these uncertainties;
- Peer review process and inclusion of "outside experts";
- Strive towards consensus assuring that uncertainties are fully reflected;
- Enhance the transparency of the scientific procedure (or rather the management procedure);
- Possible reduction in the number of annual assessments;

9 CLOSING OF THE DIALOGUE MEETING

Scott Parsons emphasised that the meeting is part of a broader process of positioning ICES to better achieve its objectives as it enters the next century. ICES has been undergoing a process of examination and restructuring on the science side, and it also has restructured its internal Committees and processes to modernise its Annual Science Conference and Science Committees. There has been extensive discussions about the advisory process. He concluded that this meeting has provided useful feedback on the current form and nature of the advice and suggestions had been made that ICES will act on.

The meeting touched on the respective roles of the various players in the fisheries management system and it was emphasised that a clear understanding on the respective roles of national scientists/national fisheries managers, international Commissions and ICES is needed. ICES has a very important role to play in the provision of scientific advice on fisheries management, but it is only one of many players in one of the many fisheries management system.

Scott Parsons believed this meeting had been successful. A large part of this he attributed to the fact that so many senior fisheries managers from Member Countries and the Commissions showed up for this meeting. He saw this meeting as the beginning, not the end, of a process. Some of the participants emphasised the need for more regular contact, more dialogue between ICES and scientists, fisheries managers and the fishing industry perhaps once a year. Scott Parsons agreed with the need for more dialogue of this nature. The Council will consider how such a dialogue can be pursued on a more regular basis. Scott Parsons welcomed suggestions on how frequent this should occur, and who should be involved.

In closing the meeting, Scott Parsons thanked IFREMER, the European Commission and the Région des Pays de la Loire for helping in various ways to organise this meeting. He particularly expressed gratitude to Alain Maucorps for his willingness to act as Convener for this meeting and to David Griffith for chairing this morning's plenary session. He also thanked the six individuals who contributed their time as Chairs and Rapporteurs of the three Working Groups, and the ICES Secretariat for contributing to the success of the meeting.

Scott Parson's speech is further elaborated in Annex 7.

ANNEX 1

OPENING SPEECH BY ALAIN MAUCORPS

Monsieur le Président, Messieurs les Directeurs et Secrétaires Généraux, Messieurs les Conseillers, Chers Collègues, Mesdames, Messieurs.

C'est un honneur et un plaisir que de vous souhaiter la bienvenue à cette onzième réunion de dialogue organisée, sous l'égide du Conseil International pour l'Exploration de la Mer, par l'Ifremer et avec les soutiens du Conseil Régional des Pays de la Loire ainsi que de la Direction générale pour la pêche de la Commission Européenne.

Cette nouvelle réunion de dialogue s'inscrit dans un processus d'échange dont l'origine remonte à la création du Comité d'Avis sur la Gestion des Pêches lors de la Conférence scientifique annuelle du CIEM en 1977. Cette création était la réponse du Conseil aux profondes modifications engendrées par le changement du droit de la mer, la création des zones économiques exclusives et les nouvelles conditions de l'exercice des responsabilités en matière de gestion des pêches. L'ACFM tenait ses premières réunions en 1978 et transmettait l'avis du CIEM aux Etats membres et aux Commissions *ad hoc* en charge de la gestion et de la réglementation des pêches. Il est vite apparu un besoin de communiquer autrement que par rapports et courriers entre scientifiques et gestionnaires. Il était indispensable de pouvoir apporter des explications complémentaires pour aider à la compréhension des avis formulés mais aussi pour clarifier les questions posées et les difficultés rencontrées dans les tentatives d'application des recommandations. Ce besoin était d'autant plus grand qu'il n'y avait plus alors de véritable cadre de dialogue au niveau international permettant de tels échanges.

Les deux premières réunions de dialogue furent ainsi organisées en mai et octobre 1980. L'instauration de la Politique commune des pêches, avec ses divers outils dont le Comité scientifique, technique et économique de la pêche, et le Comité consultatif, a quelque peu déplacé le cadre des discussions en raison de l'importance du fait communautaire. Pour autant, le besoin d'échanges directs entre les différents acteurs du système de pêche n'a pas été totalement satisfait. A partir de 1985, les représentants du secteur de la production furent associés aux réunions de dialogues du CIEM qui devinrent un lieu de rencontre et d'expression des 3 types d'acteurs (les scientifiques, les pêcheurs, les responsables de la gestion aux niveaux national et international).

Toutefois des controverses se développent, ici et là, sur l'adéquation entre les besoins exprimés en matière d'avis et la capacité des organisations scientifiques d'y répondre de manière appropriée. Cette évolution préoccupante reflète aussi les critiques formulées à l'encontre de processus peu transparents tant dans l'élaboration de l'avis que dans la prise de décision. Dans le même temps, la demande d'avis s'est accrue considérablement en raison de l'augmentation du nombre de ressources fragilisées par une exploitation excessive et de l'interrogation concernant l'impact de la pêche sur l'environnement marin qui suscite des demandes d'avis d'un type nouveau. Quelle est l'origine des difficultés rencontrées ? Quelles solutions peuvent être apportées ? Les unes et les autres ne sont pas uniques et l'ensemble du processus doit faire l'objet d'une analyse critique, la démarche scientifique, la pratique des responsabilités et leurs interactions.

Le CIEM a décidé de s'attaquer à ce problème qui ne lui est pas spécifique car toutes les structures scientifiques nationales et internationales y sont plus ou moins confrontées. Il a la volonté de réduire le hiatus pouvant exister en certaines occasions entre l'attente des responsables de la gestion des pêches et de l'environnement marin d'une part, et les avis délivrés par les scientifiques d'autre part. Une des conditions nécessaires pour y parvenir est d'améliorer la qualité des échanges dans les deux sens, de mieux comprendre les contraintes respectives en établissant un dialogue franc et ouvert auquel notre réunion doit contribuer.

ANNEX 2

LIST OF PARTICIPANTS AND ALLOCATIONS TO WORKING GROUPS

REPRESENTATIVES OF INTERNATIONAL ORGANISATIONS

NAME	ADDRESS	ORGANISATION	WORKING GROUP
Antonio Cavaco	European Commission DG XIV European Commission Directorate General XIV Fisheries Rue de la Loi 1049 Bruxelles, Belgium	CEC DG XIV	Confidence Building
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COUNTRY	PARTICIPANT	WORKING GROUP
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ANNEX 3

OPENING SPEECH BY JEAN-MARIE AURAND

Je voudrais tout d'abord saluer l'heureuse initiative prise par le CIEM de convier les gestionnaires des pêches à cette réunion de dialogue. Je me réjouis de ce que la France accueille cette manifestation et souhaiterais remercier l'Ifremer pour avoir assuré son organisation à Nantes dans les locaux du Conseil Régional des Pays de la Loire, avec le soutien de l'Union Européenne.

Si je me réfère à l'état des relations entre scientifiques et administrations au plan national, celles-ci sont excellentes. Les scientifiques (essentiellement les chercheurs de l'Ifremer pour ce qui est du suivi des pêcheries se trouvant dans les eaux nationales et communautaires) sont en effet des interlocuteurs privilégiés pour les administrations et les professionnels, tant au plan local qu'au plan national, ainsi que dans le cadre des relations avec la Commission Européenne.

Dans le même temps, les relations entre l'administration nationale des pêches et le CIEM en tant qu'institution sont très limitées, pour ne pas dire inexistantes. Cette situation est certainement regrettable, dans la mesure où les avis scientifiques formulés par l'ACFM constituent notamment l'un des éléments clés du processus de décision concernant le volet TAC et quotas de la PCP.

Il est, naturellement, essentiel que les scientifiques puissent travailler en toute indépendance. A cet égard, on ne peut que se féliciter de ce que le CIEM ait su préserver cette indépendance permettant aux scientifiques d'effectuer leurs travaux dans un climat serein, garantissant ainsi la crédibilité des avis formulés par l'ACFM. Néanmoins, face à l'extrême diversité des scénarios de gestion possibles et des modes d'élaboration d'un avis scientifique, il paraît indispensable de mettre en place un dialogue plus nourri entre les gestionnaires des pêches et les scientifiques du CIEM.

De par son échelle internationale, le CIEM formule des avis pour la gestion de stocks gérés dans le cadre de Commissions régionales de pêche ou dans le cadre de la Politique Commune des Pêches. L'échelle d'un dialogue bilatéral entre un pays et le CIEM ne semble donc pas adaptée; dans le cas des pêcheries communautaires, le nécessaire dialogue entre le CIEM et les Etats Membres de l'Union Européenne devrait être réalisé sous les auspices de la Commission. Cette insuffisance de dialogue ne facilite pas la compréhension réciproque.

Quels sont les griefs des gestionnaires à l'égard des scientifiques ? Un certain nombre de reproches sont classiquement adressés à l'encontre des scientifiques qui élaborent les avis pour la gestion des pêches:

- Les variations brutales de TAC qui sont parfois proposées sont jugées irréalistes, voire irresponsables et de toutes façons économiquement et politiquement inacceptables.
- La qualité des avis scientifiques pourrait parfois être mise en cause. Pour ne prendre que quelques exemples, on ne peut que s'étonner que les scientifiques aient recommandé un TAC de quasiment 1 million de tonnes pour le cabillaud du Nord-Est Arctique pour 1997, pour ensuite faire une proposition à 500 000 tonnes pour 1998 et enfin 360 000 tonnes pour 1999 ! De même, les propositions de TAC concernant la sole du Golfe de Gascogne ont connu des variations pour le moins surprenantes; le Conseil des Ministres de l'Union Européenne a d'ailleurs fait un choix de variations plus raisonnables dans le montant des TAC, à la hausse comme à la baisse.
- Il se dégage parfois une impression de manque de transparence, un peu comme si le monde scientifique, après une délibération à huis clos, livrait le résultat de ses travaux sans qu'une véritable concertation ait eu lieu préalablement sur la manière de présenter les choses et sur les modes de gestion associés à l'avis. Il apparaît ainsi que le mode d'élaboration " par défaut " de l'avis scientifique correspond à des choix de gestion implicites qui ne sont pas forcément clairs ou justifiés aux yeux des gestionnaires.

Dans le même temps, les gestionnaires des pêches peuvent faire l'objet de reproches de la part des scientifiques:

- Si manque de transparence il y a, et si la forme de certains avis peut paraître arbitraire, c'est aussi parce qu'il n'existe encore qu'un nombre limité de pêcheries pour lesquelles sont spécifiés clairement les objectifs et les attentes des gestionnaires.

- Alors que la demande d'avis scientifiques va grandissant, les scientifiques sont confrontés au problème majeur de la dégradation des statistiques de pêche, dont la responsabilité de la collecte incombe le plus souvent aux administrations.
- Certains scientifiques peuvent ressentir un certain découragement ou une certaine frustration face au comportement du Conseil des Ministres de l'Union Européenne ou d'autres instances décisionnelles qui ne suivent pas nécessairement leurs recommandations.

Au travers de ces observations sont en fait posées, tout à la fois, la question de la traduction opérationnelle de l'approche de précaution (la traduction actuellement mise en œuvre par l'ACFM est-elle la seule possible ?) et, plus globalement, celle de la compatibilité entre les modes de gestion des pêches et la forme des avis scientifiques. Je ne doute pas que les réflexions que nous mènerons ensemble durant ces deux jours permettront de trouver des débuts de réponse à ces questions.

Deux autres sujets méritent que je m'y arrête quelque temps. Il s'agit de la question environnementale et de la question socio-économique.

Le débat technique autour de la gestion des pêches est, classiquement, gouverné par une optique "productiviste": il s'agit en premier lieu de rechercher une adéquation idéale entre, d'une part, les capacités de production offertes par les ressources naturelles et, d'autre part, les capacités de capture pouvant être mises en œuvre. Néanmoins, de nombreuses questions liées à l'environnement se font jour et constituent un défi nouveau pour les scientifiques et les gestionnaires:

- D'une part, bien que la pêche soit l'un des seuls facteurs sur lesquels il soit possible d'agir, on pourrait souhaiter que soit davantage pris en compte l'effet du forçage environnemental sur le fonctionnement des populations exploitées.
- Par ailleurs, les actions de l'homme ne se limitent pas à la pêche: l'effet des pollutions, des apports divers d'origine terrestre ou encore de certains aménagements ne semblent pas être pris en compte.
- Enfin, la question de l'impact de la pêche sur l'environnement est certainement appelée à occuper une place plus importante dans les débats.

Face à ces défis, les questions scientifiques relatives au fonctionnement des écosystèmes restent nombreuses. Plusieurs écueils devraient être évités:

- L'élargissement du débat résultant de la prise en compte de la dimension environnementale implique une complexification des questions. Pour que l'avis scientifique reste intelligible et opérationnel, il convient certainement que l'élargissement de son champ soit progressif et repose sur des méthodologies robustes.
- La multiplication des phénomènes à prendre en compte implique une multiplication des sources d'incertitude. Il conviendra dès lors de réfléchir aux modalités de mise en œuvre de l'approche de précaution: en effet, une application trop brutale de l'approche de précaution conduira inévitablement, en présence d'un nombre accru de sources d'incertitudes, à des restrictions toujours plus grandes à l'égard de la pêche.
- Enfin, lorsqu'un problème environnemental est posé, il conviendra d'éviter, sous le prétexte éventuel qu'il serait plus facile à étudier ou à contrôler, de considérer seulement l'impact de la pêche en omettant les autres actions de l'homme.

Il faut dès à présent que les scientifiques se mettent en mesure de prendre en compte cette dimension environnementale. Ce qui suppose, n'en doutons pas, un investissement intellectuel très important.

Une source récurrente de malentendus, voire de désaccords, entre scientifiques et gestionnaires provient du fait que les avis scientifiques ne sont pas entièrement suivis, le plus souvent au nom de considérations "socio-économiques".

Ces considérations sont légitimes. En effet, la pêche est avant tout une activité économique. Il est par conséquent naturel qu'un Ministre ou un gestionnaire des pêches se préoccupe de ces questions. Dès lors, il est surtout attendu de la part des scientifiques qu'ils indiquent quelles sont les "fenêtres de viabilité" et, à l'inverse, quelles sont les décisions qui seraient de nature à compromettre la conservation des ressources. Au-delà, les questions relatives à un mode donné

d'exploitation, en particulier l'arbitrage entre le court terme et le long terme, doivent être considérées comme relevant uniquement de la responsabilité de l'échelon politique.

Certains pourraient être tentés d'élargir le champ de l'avis scientifique, pour y inclure des considérations socio-économiques. Or, il est déjà difficile d'élaborer un avis qui soit à la fois opérationnel et intelligible, et qui prenne néanmoins en compte de façon pertinente l'ensemble des facteurs relatifs à la ressource et aux caractéristiques des flottilles qui l'exploitent. Par ailleurs, on l'a vu, l'intégration de la dimension environnementale ne fera que rendre plus complexe cet exercice. Enfin, il paraît plus difficile encore de chercher à mettre en équations des contraintes "socio-économiques" aussi diverses que l'aménagement du territoire, les équilibres entre ports et entre flottilles, les intérêts des divers étages de la filière, etc. Au contraire, le poids de ces différentes contraintes apparaît plus clairement au travers des relations entre professionnels et administration, entre l'administration des pêches et les autres administrations nationales ou entre la France et ses partenaires. Il apparaît donc que la négociation doit demeurer le vecteur privilégié de la prise en compte des diverses contraintes socio-économiques.

Ces réflexions n'ont d'autre but que de contribuer au débat. Si je devais, à ce stade, formuler quelques suggestions, je dirais qu'il conviendrait certainement de mettre en place une structure permanente de concertation entre la Commission, les Etats Membres et le CIEM. Une telle structure permettrait notamment de réfléchir sur les points suivants:

- Modalités de mise en œuvre de l'approche de précaution.
- Nature des "variables de contrôle" à privilégier: captures ou mortalité par pêche ?
- Définition d'objectifs de gestion, élaboration de stratégies pluriannuelles.

De façon plus générale, un dialogue plus nourri entre scientifiques et gestionnaires (pas seulement la Commission) devrait permettre de clarifier les objectifs de gestion et d'adapter la formulation des avis scientifiques vis-à-vis de ces objectifs.

ANNEX 4

OPENING SPEECH BY SCOTT PARSONS

I am very pleased that ICES has decided to hold this 11th Dialogue Meeting here in Nantes. We are very happy that IFREMER, with the support of the Conseil Régional des Pays de la Loire, as well as the Directorate of Fisheries of the EU, has organised this meeting. It is hoped that this meeting will help us to improve the dialogue between the scientists and the managers concerning the scientific advice on fisheries management. I am very pleased that we have a broad representation of managers and scientists from the member countries of ICES and representatives of the Client Commissions, which request scientific advice from ICES.

The heavy demand for fisheries management advice is increasing as more resources become subject to intensive exploitation. Concerns about the effects of fishing on the environment is creating demands for new types of advice. The kind of advice needed is also determined by the methods of fishery management. Unlike most of my predecessors as President of ICES, I have had experience in the practical application of fisheries management, as well as fishery science. Based on my personal experience fisheries managers are always faced with difficult decisions, hoping to reconcile conservation and protection of the resource with sometimes severe economic and social consequences. There is little tolerance for mistakes, or even for scientifically sound predictions that do not turn out to be accurate. At the same time scientists are faced with extremely heavy workloads and under such pressure to produce the needed assessments with the risk of mistakes being increased. In some cases the quality of the data available to use in assessments has deteriorated substantially. There are also scientific limitations in stock assessment methods reflecting limitations in understanding of marine ecosystems. These are barriers to improving scientific advice. In addition, the complex nature of marine ecosystems means that scientific advice is by its nature uncertain under any circumstances. Scientists can seldom provide precise advice without reservations or qualification as might desired by fisheries managers. ICES is now nearly one hundred years old. It will celebrate its Centenary in 2002. In fact the Centenary begins with this year's Annual Meeting in Stockholm where one hundred years ago the first meeting leading to the establishment of ICES was held. As ICES approaches its second century, it is re-examining and re-evaluating the way it does business. It has made substantial changes to its internal structure over the past couple of years to improve the design and implementations of scientific research programmes, and to improve international collaboration and cooperation. ICES is developing a strategic plan for the coming decade. In doing so, it is necessary that we examine the way we develop and communicate scientific advice for fishery management.

In the first half of its existence ICES was preoccupied with the study and investigations of the sea and the living resources of the sea. It was not until the 1970s that ICES became heavily involved with the production of scientific advice. With my colleagues and predecessors as President of ICES, Alain Maucorps of France and David Griffith of Ireland, who are both present here today, I was involved with the Advisory Committee of Fisheries Management in its early years.

In recent years ICES has become heavily preoccupied with the development and communication of scientific advice. But for many of our clients the ICES scientific process at times seems like a black box; we hope that this meeting will assist in opening up the black box to see how the scientific advice is generated.

The purpose of this meeting is to foster a frank and practical dialogue or discussion between scientists and fisheries managers. This morning we will hear presentations on the Precautionary Approach, the Form and Nature of the Advice and Confidence Building. The real dialogue will commence this afternoon in the three Working Groups. This should be more conducive to a frank and practical dialogue than here in this parliamentary setting.

I look forward to meeting as many of you as possible and to hearing your views and suggestions on how ICES may improve the development and communication of scientific advice.

This meeting should be the beginning, not the end, of a process of dialogue. What we need is a regular, ongoing dialogue. This meeting should be the start of such a process. We hope that this meeting will help us in moving forward on practical applications of a precautionary approach, improving the form and nature of advice and help us to build confidence in the advice. At the same time we must recognise that confidence building is a challenge for the entire fisheries management system, not just for the fisheries science.

Best wishes for a successful meeting.

ANNEX 5

TERMS OF REFERENCE FOR 11TH DIALOGUE MEETING

The Council recognises that:

- The fisheries-management advice provided by ICES has an excellent track record. In the vast majority of cases, the advice has been accurate and precise enough to support sound conservation and management decisions. Yet controversies over the scientific advice that supports fisheries management are increasing worldwide. This disturbing trend has many causes, including, most notably, the mismatch between perceived needs for fisheries-management advice and the capability of scientific institutions to provide it. The controversies also reflect concern about non-transparent governmental processes such as those often used to prepare the advice.
- The heavy demand for fisheries-management advice is increasing as more resources become subject to intensive exploitation. Concern about the effects of fishing on the environment (e.g., alteration of benthic communities as a result of trawling) has created demands for new types of advice. The kind of advice needed is also determined by the method of fishery management used since some methods are more demanding than others. Fisheries managers are faced with difficult decisions that may have severe economic and social consequences, thus there is little tolerance for mistakes, or even for scientifically sound predictions that do not turn out to be accurate. Ironically, many of the stresses that are generating the air of controversy surrounding scientific advice and fisheries management today stem from past decisions that have ignored advice urging a more conservative approach.
- At the same time, scientists are faced with extremely heavy workloads and work under such pressure to produce the needed assessments that the risk of mistakes is increased. In some cases, the quality of the data they use in assessments has deteriorated. There are also scientific limitations in stock-assessment methods (reflecting limitations in understanding of marine ecosystems), which are barriers to improving scientific advice. Finally, the complex nature of marine ecosystems means that fisheries-management advice is inherently uncertain under any circumstances.
- There are some things that ICES can do and is doing to improve the quality assurance of the fisheries-management advice it provides, but a serious gap remains between the demands and expectations for advice and the capability to provide it. Closing the gap will require a combination of changes in management so that it becomes both less demanding and more robust in the face of uncertainty, and

scientific investments to increase the capability to provide advice. The latter is largely the role that the ICES science programme is intended to fulfil. The credibility of the advice and its usefulness can also be enhanced by improving understanding of the basis of the advice and how it is prepared, and by effective communication of the advice.

- ICES is not alone in facing a mismatch between the scientific capability to provide advice, and demands and expectations for the advice. This is a worldwide problem facing virtually all international and national organisations that provide fisheries-management advice.

With this as background, the Council resolved at the 1997 Annual Science Conference (85th Statutory Meeting) to:

Convene an Eleventh ICES Dialogue Meeting on the Relationship between Scientific Advice and Fisheries Management to address:

1. Steps that are being taken to improve quality assurance of stock assessments;
2. The workload of Assessment Working Groups and ACFM, and options for reducing it without jeopardising quality;
3. Deterioration in the quality of fisheries data used in stock assessments, and ways of dealing with the problems created;
4. Alternative strategies and methods of fisheries management that are more consistent with the capability to provide fisheries-management advice, such as the precautionary approach;
5. Research needed to improve the capability to provide fisheries-management advice in the future, including advice on emerging ecosystem issues, such as the effects of fisheries on the environment;
6. A strategy to make expectations about fisheries-management advice (e.g., its precision) more realistic yet without jeopardising support for fisheries management (especially the will to make difficult decisions in the face of uncertainty);
7. The credibility of fisheries management advice, and ways of improving it;

8. Similarities and differences in the types of advice required for fisheries management and environmental decisions, with a view toward further developing the framework for providing operational advice on environmental issues;
9. Action that should be taken to implement the points above.

The Dialogue Meeting will be effective only if candid discussion is facilitated. Accordingly, attendance must be restricted and the number of participants limited. Those invited to attend should include: senior representatives of the fisheries-management commissions (including the

European Commission's DG XIV) and environmental commissions that receive ICES advice, as well as fishery managers from ICES Member Countries. Representatives of international organisations that provide fisheries-management advice (e.g., NAFO, ICCAT, CCAMLR, FAO) should also be invited.

ICES should only fund participation of its own officials.

The Dialogue Meeting should be conducted during 1998.*

* [NOTE: subsequently scheduled for 26–27 January 1999.]

ANNEX 6

SCHEDULE FOR 11TH DIALOGUE MEETING

TUESDAY 26 JANUARY 1999

a) Plenum (Chair: Alain Maucorps)

- i) Welcome and Introductory addresses (09:15–09:45)
- ii) Presentations by Invited Speakers
 - Topic: The Precautionary Approach (09:45–10:45)
 - Jean-Jacques Maguire [20 min. plus 10 min. comment and clarification]
 - Jóhann Sigurjónsson [20 min. plus 10 min. comment and clarification]

[Coffee: 10.45–11.00]

Topic: The Form and Nature of the Advice (11:00–12:00)
Peter Gullestad [20 min. plus 10 min. comment and clarification]
Ole Tougaard [20 min. plus 10 min. comment and clarification]

Confidence Building (12:00–13:00)
Michael Sissenwine [20 min. plus 10 min. comment and clarification]
Sara White [20 min. plus 10 min. comment and clarification]

[Lunch: 13:00–14:30]

b) Working Groups (14:30–17:00, with a Coffee Break about 15:45)

- i) Topic: The Precautionary Approach (Chair: Kjartan Hoydal; Rapporteur: Per Sandberg)
- ii) Topic: The Form and Nature of the Advice (Chair: Marc Vanbrabant; Rapporteur: Peter Hutchinson)
- iii) Topic: Confidence Building (Chair: John Robbs; Rapporteur: François Gauthiez)

WEDNESDAY 27 JANUARY 1999

c) Morning Plenum (Chair: David de G. Griffith)

- i) Topic: The Precautionary Approach (09:00–10:00)
 - Findings and Conclusions from the Working Group by the Chair (20 min)
 - Discussion (40 min)
- ii) Topic: The form and Nature of the Advice (10:00–11:00)
 - Findings and Conclusions from the Working Group by the Chair (20 min)
 - Discussion (40 min)

[Coffee: 11:00–11:30]

- iii) Topic: Confidence Building (11:30–12:30)
 - Findings and Conclusions from the Working Group by the Chair (20 min)
 - Discussion (40 min)

[Lunch: 12:30–14:30]

Afternoon Plenum (Chair: Alain Maucorps)

- i) Summary of the Findings and Conclusions of the Dialogue Meeting by the Chair of the Morning Plenum Session (14:30–15:00)
- ii) Comments by the ICES Partner Commissions — each Commission (EC, IBSFC, NASCO, NEAFC) is invited to give a 10 minute reaction to the summary just presented and to the discussions in general (15:00–15:45)

[Coffee: 15:45–16:00]

- iii) Response to the Commissions by Niels Axel Nielsen (Chair of the Coordinating Committee on ICES Advice) (16:00–16.15)
- iv) Closing by Scott Parsons (President of ICES) (16:15–16:30)

ANNEX 7

CONCLUDING REMARKS BY SCOTT PARSONS

In my introductory remarks yesterday I indicated that I hoped that this meeting would be a true Dialogue meeting leading to a frank and practical exchange on the relationship between scientific advice and fisheries management. Listening to the comments over the past couple of days I believe that this goal has been achieved.

My personal assessment is that this meeting has been useful and productive. This is supported by the feedback I have received. In particular, bridges are being built between scientists and fisheries managers. The meeting ended up being focused more on the scientific advisory process and in particular ACFM than on the more general topic of the relationship between scientific advice and fisheries management. Perhaps more general discussions would have been useful.

I will not try to repeat the conclusions outlined by David Griffith and Niels Axel Nielsen's comments on the specifics earlier this afternoon, but just a few comments. Regarding the Precautionary Approach it is clear that policy makers/managers need to give further thought to the question of implementation and application of the PA; ACFM has moved forward to incorporate a particular approach to the PA in its recent advice. Some concern has been expressed about the manner in which this was implemented. We will ask our Coordinating Group on ICES Advice, chaired by Niels Axel Nielsen to take a look at this.

We touched on the respective roles of the various players in the fisheries management system. We need a clearer understanding on the respective roles of national scientists/national fisheries managers, international commissions and ICES. While ICES has a very important role to play in the provision of scientific advice on fisheries management, it is only one of many players in the fisheries management system. What we need is a partnership process recognising our respective and shared responsibilities.

A clear wish was expressed for medium-term projections specifying the assumptions and confidence limits. Many participants expressed a need to move away from the current focus on annual TAC setting. However, in doing so, we must ensure that managers' expectations are realistic and do not exceed the limitations of the science.

From the discussions of the form and nature of the advice useful suggestions were made on the structure and nature of the information, which ICES produces.

Emphasis was placed on the need to avoid great changes in the assessment methodology and on the need for explaining why these changes occurred.

Regarding confidence building, some participants expressed concern that the discussion had focused too narrowly on the scientific aspects of ICES. Confidence building is, of course, something which applies to the entire fisheries management system, not just to the scientific advice produced by ICES. It was encouraging to hear that fisheries managers had confidence in their national fisheries scientists and a high regard for the advice produced by ICES. There seemed to be agreement that more is needed to be done at the national level in terms of building confidence by fishers and the fishing industry, both in the scientific process and the management process. In some countries, there appears to be a fundamental lack of understanding of the basic elements of stock assessment and the precautionary approach. There was emphasis on the need to involve fishers more in the process. Action is needed at the national level to address this problem where it exists.

There were also some useful suggestions about making ICES advice more accessible to the fishing industry. We will consider how this can be addressed. I mentioned the data quality issue yesterday. Not much discussion about that. This could be Achilles' Heel of all our discussions, because of the well-known adage "if you put garbage in, you get garbage out."

On a more general level, this meeting is part of a broader process of positioning ICES to better achieve its objectives as it enters the next century. ICES is not synonymous with ACFM; ICES is a broader organisation. It provides scientific advice through its two Advisory Committees, and it provides some advice on environmental issues through the Advisory Committee on the Marine Environment (ACME). ICES has been undergoing a process of examination and restructuring over the past couple of years. On the science side we have restructured our internal Committees and processes to modernise our Annual Science Conference and Science Committees. As Niels Axel Nielsen referred to, there has also been extensive discussion about how we can improve and strengthen the advisory process. This meeting has provided useful feedback on the current form and nature of the advice and suggestions which we will act on.

I believe this meeting has been successful. A large part of this can be attributed to the fact that so many senior fisheries managers from Member Countries and the Commissions showed up for this meeting. I said yesterday that I saw this meeting as the beginning, not the end of a process. Some participants emphasised the need for more regular contact, more dialogue between ICES scientists, and fisheries managers and the fishing industry, perhaps once a year. I believe we need more dialogue of this nature. The Council will consider how we can pursue such a dialogue on a more regular basis. I would welcome suggestions on how frequently this should occur, and who should be involved. I very much appreciated the views expressed by the representatives of the Fisheries Commissions. We will discuss the practical issues that have been raised in terms of timeliness etc. The Bureau - the Executive Committee of ICES - will be meeting here in Nantes over the next two days following the closing of this meeting tonight. One of the the issues we will be discussing is the result of this dialogue meeting and the steps that we should take in terms of follow-up and how we can make progress on the issues that been raised.

I would like to thank IFREMER, the European Commission and the Région des Pays de la Loire for helping in various ways to organise this meeting. I am particularly grateful to my colleague Alain Maucorps for his willingness to act as Convener for this meeting and to David Griffith for his role today. I would also like to thank John Robbs, Marc Vanbrabant, Kjarten Hoydal, Per Sandberg, Peter Hutchinson and François Gauthiez who contributed their time as Chairs and Rapporteurs of the three Working Groups,

Finally, I would like to thank those many individuals from IFREMER and the ICES Secretariat who worked hard behind the scenes to make this meeting a success.

On a personal note I would like to thank Marc Vanbrabant of the European Commission for his help and assistance over the past couple of years in advancing cooperation between the Commissions and ICES. We have come a long way in a short time in developing Memoranda of Understanding between the Commissions and ICES. Marc, along with David Griffith, played a vital role in moving this forward. Marc, we wish you all the best in your new assignment. We will miss you in our discussions of fisheries matters.

I hope to see most of you at the dinner being hosted by our French colleagues this evening. To those who are leaving this evening I wish you a safe journey home.