

COOPERATIVE RESEARCH REPORT

No. 113

REPORT OF THE DIALOGUE MEETING, 18 SEPTEMBER 1981

ISSN 2707-7144

ISBN 978-87-7482-504-3

International Council for the Exploration of the Sea
Palægade 2-4, 1261 Copenhagen K
Denmark

February 1982

<https://doi.org/10.17895/ices.pub.5528>

TABLE OF CONTENTS

	<u>Page</u>
<u>DIALOGUE MEETING, 18 SEPTEMBER 1981</u>	1
Introduction	1
Presentation of the ACFM Reports	1
Presentation of Invited Statements	3
Discussion	3
Future Dialogue Meetings	6
 ANNEX 1: List of Participants	 7
ANNEX 2: Introduction to the July 1981 ACFM Reports	9
ANNEX 3: Review of Data Base for Stock Assessments	13
ANNEX 4: Statement by the Norwegian Delegation	25
ANNEX 5: Statement by the Commission of the European Communities (CEC)	27
ANNEX 6: Statement by the Dutch Delegation	31
ANNEX 7: Proposed Summary Section of the ACFM Reports	33

DIALOGUE MEETING, 18 SEPTEMBER 1981

Introduction

1. The meeting was chaired by the President of ICES, Professor G. Hempel, who briefly summarized the discussions and presentations made at the Dialogue Meetings on 20-21 May 1980 and 4 October 1980 (Cooperative Research Report No. 106), and referred to Cooperative Research Report No. 62 (Report of the ad hoc Meeting on the Provision of Advice on the Biological Basis for Fisheries Management).
2. The Chairman reminded the audience that it has been generally agreed that the Dialogue Meetings have been useful, and the October 1980 Meeting requested ICES to continue for the time being to invite to such meetings. It had also been felt desirable if at the third meeting the management representatives provided, as a feed-back, specific comments on the regulation objectives which were implicit or directly stated in the reports of ACFM. This task had been facilitated by ACFM spelling out the objectives it has accepted as the basis of its advice and the policy it advocates in order to reach them, in a separate section of its report.
3. The Chairman then outlined problems, which he suggested should be further discussed at the present meeting and these were agreed by the participants.

A list of participants is given in Annex 1.

Presentation of the ACFM Reports

4. The Chairman of the Advisory Committee on Fishery Management (ACFM), Mr K. Hoydal, presented the Committee's reports. He particularly drew attention to the introduction to the July 1981 Reports providing descriptions and explanations of the ACFM approach to meet requests from the previous Dialogue Meetings (see Annex 2).

The biological basis of fishery management and the corresponding advice on management were defined. In its 1981 reports, responding to repeated requests by managerial authorities to provide catch options within safe biological limits, the ACFM has grouped fish stocks into the following categories in order to differentiate the type of advice on them:

1. Stocks which are depleted or suffering from recruitment failure. In these cases, ACFM shall not calculate options but shall recommend a single figure.
2. Stocks which are fished at levels largely in excess of the levels indicated by biological reference points. In these cases, ACFM shall give options inside safe biological limits, and shall recommend one of these options, according to the general principles of aiming at more stable levels.
3. Stocks which are fished at levels not very different from the biological reference points. In these cases, ACFM shall give options inside safe biological limits, but shall not recommend any particular one of these. It shall only indicate a preference, which is in line with the general principles mentioned above.

4. Stocks where at present it is not possible to carry out any analytical assessment with an acceptable reliability. In these cases, ACFM shall indicate precautionary TACs to reduce the danger of excessive effort being exerted on these stocks.
5. In cases where fisheries on a stock are not subject to TAC regulation, there may be a danger of catches taken from stocks of the same species in adjacent areas being misreported as having been taken in areas of unregulated fisheries. To reduce the risk of this happening, ACFM, on occasion at the request of management bodies, has advised the implementation of TACs, and their levels on this basis. As in the majority of cases, the data on these stocks are inadequate for analytical assessment, they too will generally be recommended as precautionary TACs based on historical catch levels.

Responding to the criticism at the Dialogue Meetings of TAC as a regulatory instrument, resulting in such side effects as misreporting of catch data and a general deterioration of the data base, the ACFM explained that a TAC is only one amongst several possible indirect methods of controlling the fishing mortality rate. A more direct and thus a more efficient method would be to control the effective fishing effort directly. While this was entirely possible for some stocks, provided necessary basic data were made available to ICES, for other stocks, in particular those with a schooling behaviour, or those exploited by fleets with many different vessels of various sizes and efficiencies, the direct control of fishing effort would not be appropriate for limiting fishing mortality, at least not in the near future.

5. The Chairman of ACFM then indicated that, like last year, the reports contain figures which show the effects of various changes in fishing mortality on yield in the year of prediction and on spawning stock biomass in the following year. Although these figures enable managers to consider options other than those given in the text of the ACFM reports, they should not be considered in isolation without taking into account medium- or long-term prospects. Therefore, ACFM would be prepared to add to these figures tables and figures indicating the short-, medium- or long-term consequences of certain fishing mortality levels. However, in order not to end up with an endless number of figures, it would be necessary for managers to indicate a restricted number of such levels.
6. At the October 1980 Dialogue Meeting, it was suggested that ACFM should specify in its report more clearly deficiencies in the data base with respect to individual assessments. The response from the Assessment Working Groups to the corresponding request from ACFM was poor this year, and Working Groups will be urged to deliver this information in their 1982 reports. Meanwhile, therefore, ACFM has asked its Chairman to prepare a preliminary review of a general character.

Mr Hoydal then presented the Review of Data Base for Stock Assessments (Annex 3). The review gave a description of data required as input parameters for stock assessment models. It drew attention to the fact that in the case of multi-species assessments or fisheries interaction, the amount of data required by the models used would increase very significantly. The present availability of required data was illustrated in an example of North Sea roundfish, and a general picture for most of the stocks was summarized in Annex 3, Table 7. The dependence of improvements in the accuracy of assessments on better and more complete data, particularly fishery-independent data, was stressed. This will inevitably call for increased effort to be put into surveys by research vessels, and manpower and funds to be made available to this type of research.

Presentation of Invited Statements

7. Written statements were tabled by the Norwegian Delegation (Annex 4), the Commission of European Communities (CEC) (Annex 5) and the Dutch Delegation (Annex 6). They were introduced by the respective representatives.
8. In all statements, the usefulness of the Dialogue Meetings was indicated; it was particularly appreciated that ACFM has implemented requests from the previous Dialogue Meetings for provision of advice in the form of options and for improving the readability of the reports. However, further suggestions for improving the readability and format of the reports were made in the statements and during the ensuing discussion.
9. The Norwegian and Dutch Delegations spoke in favour of longer-term predictions with options within safe biological limits. The CEC statement indicated that medium- and long-term prognoses would be of no use to management if they were modified and updated each year, while recognizing the usefulness of having an evaluation of the possible interpretations which could be placed on the data available, the possible courses of action, and the risks associated with these courses. The Dutch statement also indicated a preference for the objective of stable annual catches, even if based on rough assumptions, rather than for annual refinements of TACs based on improved knowledge of changed recruitment and fishing mortality.
10. All three statements agreed with ACFM on the long-term management strategy to reduce fishing mortality on heavily overfished stocks in steps towards a more optimal level. However, the CEC statement, supported by the Dutch one, stressed firmly that in the absence of an agreed, overall management plan for the fish stocks for which the CEC was either sole or joint manager, the ACFM's rigid adherence to TAC recommendations based on annual decreases in fishing mortality from one year to the next, irrespective of what had happened in the previous year, was hindering the prospects for obtaining agreement, even on, at least, stabilizing the fisheries at their present level of exploitation. This situation was made worse when the recommendations were based on reductions of fishing mortality which exceeded 10% a year, since options associated with large reductions of fishing effort were not considered by the industry to be realistic in the present situation.
11. The Dutch statement suggested to set an overall TAC for the North Sea demersal species, provided this was done on a long-term stable basis, due to the mixed (multi-species) character of the fisheries in the area in question.
12. Both the CEC and Dutch statements further indicated, inter alia, considerable difficulties with the timing of the ACFM advice, particularly when revisions of TACs for the current year were recommended.

Discussion

13. In reply to the CEC statement, the Chairman of ACFM indicated that reductions in fishing mortality were compared with the 1979 level, since, if only the previous year's fishing mortality rates were used as a reference point, the picture of trends would have been biased, particularly if the ACFM recommendations on reducing fishing mortality in the previous year compared with 1979 had not been followed.
14. Replying to the CEC and Dutch statements, he indicated that difficulties in implementing revised TAC estimates for the current year mainly stemmed from the timing of the ACFM meetings, leading to the revised advice being received by managers too late in the year.

15. He further indicated that medium- and long-term forecasts provide only expected values (i.e., on the basis of an average recruitment and assumed exploitation pattern, all other things being equal) to assist managers in assessing the expected consequences of their choice between options of the short-term prognosis. These expected values would still have to be adjusted each year when improved data became available.

If a long-term prognosis is to be based on a stable catch level, the same assumptions as mentioned above should be applied but, inevitably, on a more cautious level, particularly regarding recruitment. Thus, in years of strong recruitment catches would have to be unduly restricted.

16. Referring to cases where the data base is inadequate for analytical assessments, some managers queried the advisability of precautionary TACs based on the current level of catches or on a historic average, particularly when fisheries could be switching from one species to another to achieve higher catch rates. They were inclined to have the possibility to increase catches by a certain percentage over the historic average level.

Other administrators were inclined to receive from ACFM, like at present, preferred options and precautionary TACs, so that it would be for the managers themselves, afterwards, to decide whether to accept the scientific advice or to choose any other option on the basis of socio-economic factors.

It was concluded that in cases where precautionary TACs were set because of insufficient data or when the fishery was in a development stage, a certain extra percentage on top of the average historic level might be acceptable, provided that the monitoring of effects of increased effort was possible. However, some participants found that no extra percentage could be advisable when precautionary TACs were set in order to prevent misreporting of catches with overfishing of areas subject to TAC regulations, particularly in the case of by-catches.

17. The next agenda item which was discussed referred to F_{max} or $F_{0.1}$ (i.e. the biological reference point) as the final management goal, taking into account the problem of mixed and industrial fisheries. Several participants agreed in principle with the criteria and categories propagated in the ACFM Reports and, hence, with the stepwise reduction of F approach in order to monitor effects on the ecosystems of major changes in abundance of several of the main fish stocks in the system.

From the scientific side, it was said, in addition to the points mentioned in paragraph 15, that for longer-term stable TACs the fishing mortality rate should be reduced, since it was particularly a too high fishing mortality that caused the current fluctuations. Simultaneously, the exploitation pattern should be improved to increase recruitment to the spawning stock biomass. Besides, variations in recruitment cannot always be predicted, since for some stocks they could be of an order of magnitude of 16-24 times or more. Therefore, even with F_{max} as a reference point, catches could not be guaranteed to be stable for a period of years, because of fluctuations in recruitment. To achieve stable catches, the resulting total yield would in the long run be lower than the sum of annually adjusted catches, due to the necessity to safeguard against such great variations in recruitment.

18. The general feeling on multi-species assessment and management was that managers seemed to be increasingly interested in multi-species assessments and fisheries interaction. Discussions between managers should continue

in order to reach consensus on what species should be given preference as target species, alongside the continued scientific work to improve the technique and to gather necessary data for existing assessment models.

19. Having considered the theoretical possibility of "pulse" fisheries, i.e., fisheries concentrating effort on one stock for the short period of high initial catch rates and thereafter with redirected effort to another stock, the meeting agreed that since stocks in the ICES area were usually exploited by a number of fleets, each of which with effort directed towards a limited number of species, such an approach would be totally impracticable.
20. Following the presentation by the Chairman of ACFM of Annex 3 to the present report, the discussion of the data base for assessments indicated its general deterioration as a side effect of the international management by TACs. It was suggested that ACFM should study alternative methods of fishery regulation, e.g., closed seasons and areas, minimum mesh and landing sizes, etc., which were supposed not to lead to false catch and effort statistics. From the scientific side, it was repeated that management by TACs was only an indirect way of controlling fishing effort; direct regulation of effort would be a more efficient and probably easier enforceable means of controlling fishing mortality. Besides, until fishing effort had been adjusted to biologically safe levels of fishing mortality, any management approach would have to be restrictive in character and, most probably, would cause similar consequential problems for accurate and comprehensive reporting of data.

The ACFM Chairman indicated that it was with the particular intention of facilitating the managers' implementation and enforcement of TACs, that ACFM this year had provided a range of options, only indicating its preference for one amongst them, so that the managers themselves could choose the most suitable one within safe biological limits.

It was realized that data on discards ought to be as good as on landings, particularly where small-sized fish were removed in great numbers from some stocks, e.g., North Sea whiting.

21. The meeting noted that most of the Assessment Working Groups seemed to lack data to estimate the current exploitation rate, and that therefore the only way to improve short-term assessments would be by comparing fishery-independent (e.g., survey) data with findings from conventional assessments (i.e., VPA) and correlating them.
22. When discussing the language and the format of the ACFM reports, a number of points were made to improve their readability and apprehension. Amongst them were suggestions that criteria and definitions should be repeated annually in the ACFM reports, perhaps as annexes; that abbreviations in the text tables should be clarified by footnotes; that actual values of fishing mortality should be indicated in all relevant tables, and not only in the text; that on yield and spawning stock biomass curves for prediction, the points F_{max} , $F_{0.1}$, F present and F recommended, should be indicated; and that greater use of block capitals should be made in the headings and sub-headings, e.g., for each new species/stock.
23. The Chairman of ACFM demonstrated an example of a possible summary section to be included in the report for quick reference purposes (see Annex 7). It was recognized that such a section was not intended as a substitute to the corresponding text section of the report, but as an additional brief summary, it being part of the official ICES advice. The prevailing feeling

was that such a summary section would be very convenient for managers, particularly regarding stocks described in lengthy text sections.

24. A number of specific points regarding the 1981 ACFM reports were raised and clarified. Since CEC had sent a detailed list of questions to the ACFM Chairman, it was agreed that both the letter and the reply to it should be circulated amongst the participants in the Dialogue Meeting, but should not be appended to the report itself.
25. Regarding the timetable of the ICES advice, the meeting was informed that following the conclusions of the October 1980 meeting, ICES had decided to hold two ACFM meetings in 1981, i.e., in July and November. The meeting noted that this, in itself, was a considerable improvement over the situation in the past. However, dissatisfaction was expressed by some participants (see also paragraph 12) with delayed timing of recommendations on TAC revisions for the current year which causes considerable difficulties for the management, particularly when TACs were revised downwards.

The Chairman of ACFM explained that for a number of stocks, particularly for herring and North Sea roundfish, assessments were heavily dependent on the updated estimates of recruitment obtained from the International Young Fish Surveys (IYFS) conducted in February each year. The ACFM, however, was meeting only in July, hence the delay with the revised advice.

One of the alternatives discussed was to regulate the affected fisheries, not on a calendar year basis, but from 1 July to 30 June. This would have also helped in improving the accuracy of assessments of sprat stocks. However, due to the complexities with the Common Fishery Policy (CFP) within EEC, it was felt that at least for 1982 an extra, i.e., a third, ACFM meeting would be more preferable than a change in the management year. It was agreed to bring the attention of the Council to this request for the third ACFM meeting in the spring of 1982, although the President of ICES indicated that this would lead to heavy financial consequences.

Future Dialogue Meetings

26. There was a general agreement that while several of the subject matters were discussed repeatedly at the meetings, a clearer and deeper understanding and clarification had been reached. Besides, a number of new subjects and points were raised and discussed at each of the Dialogue Meetings. Apparently, the result was a certain progress in the increasing mutual understanding between representatives of the industry, managers and scientists participating in the meetings, and this was reflected in the ACFM reports. Therefore, there was a unanimous agreement that the Dialogue Meetings were useful, and hence ICES should be requested to continue to convene them. The increasing participation of administrators and representatives of the industry in the dialogue was considered as a strong indication of the usefulness of the meetings. Taking into account a possible role of the new NEAFC as a potential forum for such deliberations in the future, there was a substantial discussion on the frequency of further Dialogue Meetings. The consensus was that the Dialogue Meetings should be convened on an annual or biannual basis, with the next meeting possibly to be held in the fall of 1982.

There was no "other business", and the meeting was adjourned at 16.30 hrs.

ANNEX 1

LIST OF PARTICIPANTS

Mr K. Andreassen,
Færøernes Landstyre,
3800 Tórshavn,
FAROE ISLANDS

Mr F. Bergesen, Jr.,
Fiskeridepartementet,
Drammensvn. 20,
Oslo Dep., Oslo 1,
NORWAY

Mr A.C. Burd,
Fisheries Laboratory,
Lowestoft, Suffolk NR33 OHT,
ENGLAND

Mr J. Møller Christensen,
Danmarks Fiskeri- og Havundersøgelser,
Charlottenlund Slot,
2920 Charlottenlund,
DENMARK

Mr J. Cormack,
57, Cragmount Avenue North,
Edinburgh,
SCOTLAND

Mr A.C. Freiling,
Ministry of Agriculture and Fisheries,
Bezuidenhoutseweg 73,
2594 AC 's-Gravenhage,
NETHERLANDS

Dr F.A. Gibson,
Department of Fisheries and Forestry,
Agriculture House 6E,
Kildare Street, Dublin 2,
IRELAND

Mr T. Gustavsson,
Jordbruksdepartementet,
Ministry of Agriculture,
103 33 Stockholm,
SWEDEN

Prof. G. Hempel,
Inst. für Meereskunde an der
Universität Kiel,
Düsternbrooker Weg 20, 2300 Kiel,
FEDERAL REPUBLIC OF GERMANY

Mr R.C. Hennemuth,
Northeast Fisheries Center,
NMFS/NOAA,
Woods Hole, Mass 02543,
USA

Mr J. Hertoft,
Ministry of Fisheries,
Stormgade 2-4,
1470 Copenhagen K,
DENMARK

Mr K. Hoekstra,
Pyramideweg 6,
8321 Cl. Urk,
NETHERLANDS

Mr M. Holden,
Directorate General for Fisheries,
EEC,
200, rue de la Loi,
1040 Brussels,
BELGIUM

Mr R.J.A. Jansoone,
Ministry of Agriculture,
Sea Fisheries Office, Koninginnelaan 59,
8400 Ostend,
BELGIUM

Mr J. Keohane,
Department of Fisheries and Forestry,
Agriculture House 6E,
Kildare Street, Dublin 2,
IRELAND

Dr G. Kurc,
ISTPM,
B.P. 1049, rue de l'Ile d'Yeu,
44037 Nantes Cédex,
FRANCE

Mr W. Kwakkelstein,
Westhavenkade 66,
Vlaardingen, 2408 AA The Hague,
NETHERLANDS

Dr D.J. Langstraat,
Prins Mauritzplein 24,
2508 AA The Hague
NETHERLANDS

Mr K. Løkkegaard,
Ministry of Fisheries,
Stormgade 2-4,
1470 Copenhagen K,
DENMARK

Mr W.E. Mason,
Ministry of Agriculture, Fisheries and
Food,
Whitehall Place,
London SW1A 2HH,
ENGLAND

Dr H. Oostrom,
Ministry of Agriculture and Fisheries,
Bezuidenhoutseweg 73,
2594 AC 's-Gravenhage,
NETHERLANDS

Mr T.S. Paulsen,
Ministry of Fisheries,
Box 8118, Oslo Dep.,
NORWAY

Mr T.K. Pitt,
Dept. of Fisheries and Oceans,
NW Atlantic Fisheries Centre,
POB 5667, St John's, Nfld. A1C 5X1,
CANADA

Mr K. Postuma,
Netherlands Inst. for Fishery
Investigations,
POB 68, 1970 AB IJmuiden,
NETHERLANDS

Mr A. Preston,
Fisheries Laboratory,
Lowestoft, Suffolk NR33 OHT,
ENGLAND

Mr H. Rasmussen,
Fiskeridirektoratet,
Møllendalsvej 4,
5000 Bergen,
NORWAY

M E. de Salas,
Ruiz de Alarcon 1,
Madrid 1,
SPAIN

Prof. A. Schumacher,
Inst. für Seefischerei,
Palmaille 9,
2000 Hamburg 50,
FEDERAL REPUBLIC OF GERMANY

Mr A. Saville,
Marine Laboratory,
POB 101, Aberdeen AB9 8DB,
SCOTLAND

Mr Ø. Ulltang,
Institute of Marine Research,
POB 1870,
5011 Bergen-Nordnes,
NORWAY

Mr K. Hoydal,
Fiskirannsóknarstovan,
Debessartørd,
3800 Tórshavn,
FAROE ISLANDS

ANNEX 2

INTRODUCTION TO THE JULY 1981 ACFM REPORTS

Introduction

At the two Dialogue Meetings between representatives of the management authorities and ICES scientists, clearer ideas emerged as to how the advice on fish stock management should be given in order to improve the usefulness of this advice to the management bodies.

The Biological Basis of the Management

Ideally, the biological basis of the management advice should contain a full description of the present state of exploitation of each stock and an assessment of its general productive capacity. This is, however, not always possible in practice, although the methods necessary for this task are available to the scientific community.

The limiting factor is the amount and quality of the data available for assessment work. Reliable catch data are absolutely essential for any meaningful assessment. As has already been pointed out during the Dialogue Meetings, there was a deterioration in the reliability and adequacy of catch statistics over a wide area in recent years. If management want reliable, accurate scientific advice, they must take the necessary steps to ensure that the statistical data base is complete and accurate. Basic assessments of the state of a stock are usually carried out by the relevant ICES Working Groups, but the responsibility for the validity and precision of the assessments, within the constraints imposed by the data available, lies with ACFM. Consequently, the assessments are not approved by ICES before they have been scrutinized by ACFM.

Advice on Fishery Management

The next step in the procedure, the development of advice for fish stock management, should not be entirely the responsibility of ACFM. Ideally, managerial authorities would define their objectives for the different stocks or fisheries and ACFM would thereafter evaluate the biological consequences of these management strategies and define the biological constraints for the attainment of these objectives. Without clear objectives at hand from the managerial bodies, ICES has had to develop certain management objectives which are mainly based on purely biological considerations. These are $F_{0.1}$ and F_{max} , which define a certain level of fishing mortality associated with the optimal use of the growth potential of fish for the existing pattern of exploitation (a full description of these reference points is given in ICES Coop.Res.Rep., No. 56, p. 21 ff).

The pattern of exploitation, i.e., the age of fish at which they are first exposed to fishing and the rate of increase in fishing mortality with age is a very important element in fish stock management. In general (with moderate levels of exploitation), if the age of first recruitment to the fishery is high compared to the total lifespan of a species, the number of year classes which make an appreciable contribution to the catch increases, the stock situation stabilizes and is more resistant to fishing pressure. Fluctuations in yields and catch rates, due to fluctuations in year class strengths, are moderate and the probability of recruitment failure due to a low spawning stock size is very low. A side effect of an optimised exploitation pattern is that prediction of yields can be given with more confidence since the predicted catches depend only to a small extent on recruiting year classes, the strength of which is difficult to assess with sufficient reliability at the time when the assessment is made. These remarks

mainly apply to the long-lived species. Short-lived species, such as North Sea sprat and Norway pout, do not react in the same way .

Situations in which an improvement of the exploitation pattern is obviously advisable are indicated in the ACFM report. Such an improvement can be achieved by increases in mesh sizes, and by avoiding the capture of small fish through the closure of nursery areas and by introducing minimum landing sizes. It should be kept in mind that without a suitable combination of measures, an increase in the minimum landing size might simply increase the rate of discarding instead of improving the exploitation pattern.

Since the present level of fishing is far beyond F_{\max} or $F_{0.1}$ in many fish stocks in the NE-Atlantic, it is obvious that the immediate application of F_{\max} or $F_{0.1}$ as management objectives would require a drastic and rapid cutback (i.e., spread over only one year) in yield from these stocks. In these cases, ACFM has, in addition, calculated the consequences of gradual reduction towards a more optimal situation. This stepwise reduction is also recommended because we at present are not able to fully assess the impact on the ecosystems from major changes in the abundance of several of the main fish stocks in the system.

Types of Advice in this Year's Report

In the light of the discussion during the Dialogue Meetings, ACFM has this year adopted the following principles for presentation of its advice in consideration of the repeated requests of managerial authorities to present options within safe biological limits.

In the present report, stocks are grouped into the following categories for the purpose of providing management advice:

1. Stocks which are depleted or suffering from recruitment failure. In these cases, ACFM shall not calculate options but shall recommend a single figure.
2. Stocks which are fished at levels largely in excess of the levels indicated by biological reference points. In these cases, ACFM shall give options inside safe biological limits, and shall recommend one of these options, according to the general principles of aiming at more stable levels.
3. Stocks which are fished at levels not very different from the biological reference points. In these cases, ACFM shall give options inside safe biological limits, but shall not recommend any particular one of these. It shall only indicate a preference, which is in line with the general principles mentioned above.
4. Stocks where at present it is not possible to carry out any analytical assessment with an acceptable reliability. In these cases, ACFM shall indicate precautionary TACs to reduce the danger of excessive effort being exerted on these stocks.
5. In cases where fisheries on a stock are not subject to TAC regulation, there may be a danger of catches taken from stocks of the same species in adjacent areas being misreported as having been taken in areas of unregulated fisheries. To reduce the risk of this happening, ACFM, on occasion at the request of management bodies, has advised the implementation of TACs, and their levels on this basis. As in the majority

of cases, the data on these stocks are inadequate for analytical assessment, they too will generally be recommended as pre-cautionary TACs based on historical catch levels.

The summary tables will be footnoted to indicate which type of TAC has been advised.

Last year, ACFM, responding to the explicit request, added to its Report Figures which showed the effects of various changes in fishing mortality on yield and spawning stock biomass in the year for which the advice is given and for the following year respectively. These figures may serve as additional information if managers want to consider options other than those given in the text of the ACFM Report. However, these graphs should not be considered in isolation, since they provide information for one year only and do not give any information on medium or long-term prospects. Different options have to be evaluated against the historic development of yields, fishing mortalities and spawning stock biomass, as well as in the light of the comments on the options given by ACFM concerning the medium and long-term prospects.

If managers so wish, ACFM would be ready to add to these Figures tables and figures indicating the short, medium and long-term consequences of certain fishing mortality levels. In order not to end up with an endless number of figures, it would be necessary in this case to select a restricted number of mortality levels. Figures showing past trends in fishing mortality, spawning stock sizes and yield (which are at present only in the Working Group reports) can also be included.

The TAC as a Regulatory Instrument

At the Dialogue Meetings, criticism has been expressed of the TAC regulatory instrument. Side effects of this seem to have been misreporting of catch data, and a general deterioration of the data base. Probably every restrictive system will cause the same problems, and as long as the fishing effort (number of vessels) is not adjusted to the biological capacity of the stocks, every managerial approach will have to be restrictive with consequential problems in the short term.

It has to be remembered that a TAC is designed to control the proportion of the stock that is removed, or the fishing mortality rate. A TAC is only one of several indirect methods of controlling the fishing mortality. A more direct and thus a more efficient method is to control the effective fishing effort directly. This is entirely possible for some species/stocks if more extensive data on the harvesting abilities of the fleets are collected and analysed by the Working Groups. ACFM has this year urged the Working Groups to collect data on fishing fleets and effort, and it is hoped that this will have some effect on the next year's round of Working Groups.

For some species, their behaviour (such as, for example, schooling on specific spawning locations) allows a reduced amount of fishing effort to maintain high fishing mortality. In addition, in some fisheries there are many different vessels of various sizes and efficiencies, and this may make it impossible in the near future to calculate meaningful conversion factors for the fleet components. In these situations, the control of fishing effort is thus not appropriate for controlling fishing mortality.

Other Points at the Dialogue Meetings

The point has been made at the Dialogue Meetings that the ACFM Report is written in a very technical language, making it difficult for non-scientists to pick out the main points of interest to management. However, ACFM feels that it would be very difficult to avoid ambiguities in the description of the rather complex assessments without using the proper scientific language.

Other Points of Clarification

Finally, to clarify a point which seems to have caused confusion in some cases, it should be noted that the TACs calculated by ACFM do not discriminate between gears and types of fishing. Every tonne removed from the stock irrespective of area, gear, or if it is taken in a directed or undirected fishery, has to be counted against the TAC.

It should also be noted that with the new timetable of ICES with one ACFM meeting in July and the other in November, three Working Groups do not meet until later in the year. These are: North Sea Flatfish Working Group; Arctic Fisheries Working Group; Atlanto-Scandian Herring and Capelin Working Group, dealing with the capelin stocks.

Advice for the stocks covered by these Working Groups will be provided in November 1981.

ANNEX 3

REVIEW OF DATA BASE FOR STOCK ASSESSMENTS

by

K. Hoydal
Chairman of ACFM

Introduction

At the last Dialogue Meeting it was suggested that ACFM should clearly state data deficiencies, which hampered the assessment work, in a form making it possible for managing bodies to act on this and possibly improve the situation.

A request for information on this made to the Working Groups, which with their detailed knowledge are the pertinent bodies to analyze this, did not have much success this year, but the Working Groups will be urged to deliver this information in their next report.

In the absence of information from the Working Groups this year, ACFM at its July 1981 meeting asked its Chairman to prepare a preliminary review.

General Problem

Data coverage can be evaluated by some pre-set, in most cases arbitrary, standard, e.g., in some areas sampling intensity has been correlated with total landings. These kind of reviews, however useful they may be, do not necessarily tell the true story of the problem of accuracy in stock assessments.

To perform accurate stock assessments, and on the basis of these forecasts, the effects of short-term managerial steps like enforced TACs, some key parameters have to go into the models. The accuracy of the estimates of these key parameters is determining the accuracy of the outcome. These parameters are:

- a) Total catch from the stock in question, split into numbers by age by sampling. This should include estimates of discards.
- b) Data allowing an estimate of the fishing pressure (mortality) on the stock in the most recent year. These can be data from the fisheries, like effort data for some stocks. For other stocks, especially pelagic species and short-lived species, fishery-independent survey data giving estimates of stock size are the only possibility.
- c) Recruitment - This is especially critical in short-lived species and in stocks, where the recruiting age groups make up a significant proportion of the fishery.
- d) In the present application of single species models, other causes of mortality than from fishery are assumed to be constant.

These requirements apply only in the cases where assessments are undertaken without considering species interaction and where fishing mortality is aggregated for all fisheries.

If managers request species interaction or interaction between fisheries to be taken into consideration, this will add very significantly to the amount of data demanded by the models used.

A Review of Data Available to ICES Assessment Working Groups, Performing Single Species Assessments

The degree of availability of data on the single stock units for the Assessment Working Groups cover the whole range from almost no data at all to the full array mentioned before.

As an example of a detailed description of data on catches in numbers available, Tables 1, 2 and 3 of the report of the Working Group on North Sea Roundfish are given. These could be compared to the nominal catch tables for the same species taken from the report of the Working Group, Tables 4, 5 and 6.

Generally speaking, there has been improvement in the percentage of catches covered by age compositions, although it is very difficult to assess the accuracy of the data. This does not apply to the part of catches discarded. On the other hand, there has definitely been a deterioration of catch data in general, as regards reporting of total catches and how they are referred to area.

This can be spotted in the Working Group reports by the growing number of cases, where there is an extra line added to the catches broken down by nations, labelled unreported or unallocated catches; but an appreciable effort seems to have been made in getting correct catch figures into the assessments this year, and I think it is worth underlining that if these correct estimates are not made available to the Working Groups, there is no hope of carrying the assessments through to any degree of accuracy.

The general picture for most species assessed will appear from the summary Table 7, which, however, only indicates the data available, and if they could be put to use in the assessments, without saying anything about the accuracy. In some cases, data are indicated as available, but have not been used. Generally, these cases cover too short data series, where any year with new data will add datapoints and hopefully improve the situation. The reason for lack of discard data in some fisheries is that no discarding is known to take place.

Conclusions

Table 7 shows that the main problem in the assessment of the short-term effects of fishery management, e.g., the calculations of TACs, is the lack of data which allow the Working Groups to assess with greater certainty the current fishing pressure on the exploited stocks.

At present, work is going on to utilize as much as possible effort data, which in many cases have already been sampled, but the main answer to this is to get fishery-independent data. This inevitably calls for increased effort to be put into surveys by research vessels, and manpower and funds to be made available to this type of research, if the accuracy of the assessments is to be improved in the future.

TABLE 1. COD. NORTH SEA. KEY TO BASIC DATA

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
<u>HUMAN CONSUMPTION LANDINGS</u>																				
BELGIUM																				
1. LENGTH COMPOSITION																				
2. ALK																				
3. WEIGHT AT AGE																				
DENMARK																				
1. LENGTH COMPOSITION																				
2. ALK																				
3. WEIGHT AT AGE																				
ENGLAND																				
1. LENGTH COMPOSITION																				
2. ALK																				
3. WEIGHT AT AGE																				
FRANCE																				
1. LENGTH COMPOSITION																				
2. ALK																				
3. WEIGHT AT AGE																				
NETHERLANDS																				
1. LENGTH COMPOSITION																				
2. ALK																				
3. WEIGHT AT AGE																				
SCOTLAND																				
1. LENGTH COMPOSITION																				
2. ALK																				
3. WEIGHT AT AGE																				
<u>DISCARDS</u>																				
NETHERLANDS																				
1. LENGTH COMPOSITION																				
2. ALK																				
3. WEIGHT AT AGE																				
SCOTLAND																				
1. LENGTH COMPOSITION																				
2. ALK																				
3. WEIGHT AT AGE																				
<u>INDUSTRIAL / SMALL MESH FISHERIES</u>																				
DENMARK																				
1. LENGTH COMPOSITION																				
2. ALK																				
3. WEIGHT AT AGE																				
GERMANY FED.REP.																				
1. LENGTH COMPOSITION																				
2. ALK																				
3. WEIGHT AT AGE																				
NORWAY																				
1. LENGTH COMPOSITION																				
2. ALK																				
3. WEIGHT AT AGE																				

TABLE 2. Haddock. NORTH SEA. KEY TO BASIC DATA

		1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
<u>HUMAN CONSUMPTION LANDINGS</u>																					
BELGIUM	1. LENGTH COMPOSITION																				← BELGIAN DATA →
	2. ALK																				← BELGIAN ALK →
	3. WEIGHT AT AGE																				← ENGLISH DATA →
ENGLAND	1. LENGTH COMPOSITION	← ENGLISH DATA TRAWL AND "OTHER" GEARS SEPARATELY →															← ENGLISH DATA ALL GEARS →				
	2. ALK	← SCOTTISH ALK →															← ENGLISH ALK →				
	3. WEIGHT AT AGE	← 1 * * 3 * 0.00000962 →																			
FRANCE	1. LENGTH COMPOSITION																				← FRENCH DATA →
	2. ALK																				← FRENCH ALK →
	3. WEIGHT AT AGE																				← 1979 DATA →
NETHERLANDS	1. LENGTH COMPOSITION	← SCOTTISH ALKS →										← NETHERLANDS DATA →									
	2. ALK																				
	3. WEIGHT AT AGE																				
POLAND	1. LENGTH COMPOSITION																				← POLISH DATA →
	2. ALK																				← POLISH DATA →
	3. WEIGHT AT AGE																				← SCOTTISH DATA →
SCOTLAND	1. LENGTH COMPOSITION											← SCOTTISH DATA →									
	2. ALK											← SCOTTISH ALKS →									
	3. WEIGHT AT AGE																				
<u>DISCARDS</u>																					
NETHERLANDS	1. LENGTH COMPOSITION	← SCOTTISH ALKS →										← NETHERLANDS DATA →									
	2. ALK																				
	3. WEIGHT AT AGE																				
SCOTLAND	1. LENGTH COMPOSITION																				← SCOTTISH DATA →
	2. ALK																				← SCOTTISH ALKS →
	3. WEIGHT AT AGE																				
<u>INDUSTRIAL BY- CATCH</u>																					
DENMARK	1. LENGTH COMPOSITION																				← DANISH DATA →
	2. ALK																				← DANISH ALKS →
	3. WEIGHT AT AGE																				← DANISH DATA →
NORWAY	1. LENGTH COMPOSITION																				← NORWEGIAN DATA →
	2. ALK																				← SCOTTISH RV ALKS →
	3. WEIGHT AT AGE																				← 1 * * 3 * 0.00000962 →

TABLE 3. WHITING. NORTH SEA. KEY TO BASIC DATA.

		1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
<u>HUMAN CONSUMPTION LANDINGS</u>																					
BELGIUM	1. LENGTH COMPOSITION																				
	2. ALK																				
	3. WEIGHT AT AGE																				
ENGLAND	1. LENGTH COMPOSITION																				
	2. ALK																				
	3. WEIGHT AT AGE																				
FRANCE	1. LENGTH COMPOSITION																				
	2. ALK																				
	3. WEIGHT AT AGE																				
NETHERLANDS	1. LENGTH COMPOSITION																				
	2. ALK																				
	3. WEIGHT AT AGE																				
SCOTLAND	1. LENGTH COMPOSITION																				
	2. ALK																				
	3. WEIGHT AT AGE																				
USSR	1. LENGTH COMPOSITION																				
	2. ALK																				
	3. WEIGHT AT AGE																				
<u>DISCARDS</u>																					
NETHERLANDS	1. LENGTH COMPOSITION																				
	2. ALK																				
	3. WEIGHT AT AGE																				
SCOTLAND	1. LENGTH COMPOSITION																				
	2. ALK																				
	3. WEIGHT AT AGE																				
<u>INDUSTRIAL/SMALL MESH FISHERIES</u>																					
DENMARK	1. LENGTH COMPOSITION																				
	2. ALK																				
	3. WEIGHT AT AGE																				
GERMANY	1. LENGTH COMPOSITION																				
	2. ALK																				
	3. WEIGHT AT AGE																				
NORWAY	1. LENGTH COMPOSITION																				
	2. ALK																				
	3. WEIGHT AT AGE																				

Table 4. Nominal catch (in tonnes) of COD in Sub-area IV, 1971-80 (data for 1971-79 as officially reported to ICES).

Country	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980 ^{x)}
Belgium	19 334	21 133	11 741	10 253	7 566	7 483	10 346	17 473	12 576	6 224
Denmark	68 179	72 520	47 950	54 207	46 344	53 277	42 582	41 858	48 509	53 848
Faroe Islands	123	284	803	416	732	448	260	56	113	-
France	24 769	24 038	13 247	7 275	8 667	8 079	7 511	11 944	12 559	10 713
German Dem.Rep. ^{a)}	18	122	343	132	223	69	21	75	84	63
Germany, Fed. Rep.	46 647	49 431	21 410	17 089	16 457	24 445	22 663	37 040	20 411	26 173
Iceland	1	-	-	+	-	-	-	-	-	-
Ireland	-	-	-	-	-	98	136	174	1	-
Netherlands	46 614	47 634	25 758	24 029	23 263	21 835	29 903	48 817	34 752	42 662
Norway ^{b)}	7 732	4 377	3 692	1 360	1 528	1 877	1 449	2 747	3 575	4 279
Poland	178	189	1 551	4 750	2 991	2 961	381	115	142	28
Spain	-	91	90	80	63	14	-	-	-	-
Sweden	3 060	2 887	2 534	2 071	900	597	36	... ^{d)}	298	293
UK(Engl.&Wales)	55 525	62 503	47 327	39 857	33 615	46 475	35 424	59 127	54 923	49 948
UK(Scotland)	37 229	55 190	48 844	39 887	37 308	39 597	34 406	41 984	42 811	44 713
USSR	5 153	774	2 497	2 667	6 796	6 187	-	17	17	-
Total IV	314 562	341 173	227 787	204 073	186 453	213 442	185 118	261 427	230 771	238 944
Total IVa	61 368	74 768	62 878	65 188	58 343	68 352	55 623	43 357	41 118	
Total IVb	184 957	215 160	134 953	114 087	107 227	126 218	100 191	164 388	147 313	
Total IVc	68 237	51 245	29 956	24 798	20 883	18 872	29 304	53 682	42 340	
WG Total catch ^{c)}	327 918	349 882	235 983	203 219	191 019	211 964	197 694	288 764	299 097	296 755

x) Provisional figures.

a) 1971-72 incl. IIIa.

b) Figures from Norway do not include cod caught in Rec. 2 fisheries.

c) Include discards.

d) Included in IIIa.

Table 5 Nominal catch (in tonnes) of HADDOCK in Sub-area IV, 1981-80.
(Data for 1971-79 as officially reported to ICES)

Country	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980 ^{x)}
Belgium	971	1 601	2 385	1 137	2 209	2 166	2 293	1 295	732	70
Denmark	31 043	34 858	13 118	44 342	32 930	46 899	20 069	8 093	8 248	12 250
Faroe Islands	-	5	1 198	435	267	183	385	12	7	-
France	8 738	7 814	4 695	4 020	4 646	5 500	6 914	5 122	7 208	6 758
German Dem.Rep. ^{a)}	3	90	22	8	44	20	8	37	12	36
Germany, Fed. Rep. of	3 045	4 020	4 587	3 478	2 396	3 433	3 744	2 589	2 549	2 387
Iceland	1	-	-	-	-	-	-	-	-	-
Ireland	-	-	-	-	-	31	53	101	-	-
Netherlands	6 914	5 188	3 185	3 035	1 901	1 728	1 598	857	955	1 508
Norway ^{b)}	1 063	1 146	454	324	331	367	374	609	968	1 103
Poland	-	38	2 553	3 001	1 485	1 155	485	62	106	59
Spain	-	-	101	210	-	-	-	-	-	-
Sweden ^{c)}	5 857	5 305	4 550	3 098	2 083	2 455	113	-	907	1 165
UK(England+Wales)	16 648	20 827	16 586	10 798	11 499	17 238	17 167	12 200	10 774	12 195
UK(Scotland)	121 539	96 197	88 132	71 679	64 686	80 576	89 465	58 406	54 119	63 727
USSR	62 398	36 467	49 356	42 234	49 686	42 852	8 010	54	18	-
Total IV	258 220	213 556	190 922	187 799	174 163	204 603	150 678	89 599	86 603	101 258
Total IVa	197 306	135 095	126 662	122 977	110 848	138 591	116 577	57 886	51 741	
Total IVb	58 270	75 325	62 288	63 695	62 761	65 594	34 030	31 457	34 361	
Total IVc	2 644	3 136	1 972	1 127	554	418	71	94	501	
WG total catch ^{d)}	419 425	462 694	287 099	307 689	401 053	334 888	219 953	170 804	140 635	198 094

x) Provisional

a) 1971-72 includes IIIa

b) Figures from Norway do not include haddock caught in Rec.2 fisheries

c) 1971-74 includes IIIa

d) Includes discards

Table 6 Nominal catch (in tonnes) of WHITING in Sub-area IV, 1971-80.
(Data for 1971-79 as officially reported to ICES)

Country	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980 ^{x)}
Belgium	2 108	2 745	3 387	3 156	3 279	2 640	3 275	3 304	3 941	3 062
Denmark	55 618	50 109	73 928	109 654	61 941	116 973	46 479	15 741	41 965	17 457
Faroe Islands	-	-	1 453	1 126	764	1 262	472	42	581	-
France	16 668	19 822	20 353	19 825	20 079	19 557	17 592	22 525	27 590	17 753
German Dem.Rep.	-	-	5	-	3	18	-	22	5	-
Germany Fed.Rep.	233	264	403	454	446	302	461	348	1 280	1 266
Iceland	-	-	-	-	-	4	9	38	-	-
Netherlands	6 322	7 613	8 811	12 057	14 078	12 274	9 406	11 030	13 417	12 182
Norway ^{a)}	25	28	39	58	55	71	33	64	49	32
Poland	-	-	7	1 002	888	509	445	8	3	1
Spain	-	107	119	110	65	18	-	-	-	-
Sweden ^{b)}	616	596	2 328	2 440	255	153	341	...	31	16
UK(Engl.& Wales)	4 158	3 789	4 592	5 519	5 246	5 112	6 185	7 542	7 581	6 778
UK(Scotland)	26 755	23 846	20 756	25 274	27 969	26 167	33 017	42 779	44 841	42 029
USSR	541	613	3 522	2 978	5 098	5 612	2 413	-	-	-
Total Sub-area IV	113 044	109 532	139 703	183 653	140 166	190 672	120 128	103 443	141 284	100 576
Total Div. IVa	23 451	32 932	29 616	76 761	75 444	100 001	61 499	42 837	48 554	
Total Div. IVb	70 728	66 789	96 678	87 842	41 930	69 908	42 911	40 943	68 775	
Total Div. IVc	18 865	9 811	13 409	19 050	22 792	20 763	15 718	19 663	23 955	
WG total catch ^{c)}	233 407	291 394	364 740	351 266	290 589	345 951	294 635	178 773	234 947	188 706

x) Provisional figures.

a) Figures from Norway do not include whiting caught in Rec. 2 fisheries.

b) 1971-74 includes Div. IIIa, 1978 included in Div. IIIa.

c) Includes discards.

Table 7 Data available to Fish Stock Assessment Working Groups' Meetings, March-May 1981

Region Stock	Yield Data		Catch at Age Data		Discard Data		Fishery-indepen- dent Stock Estimate		Fishery indepen- dent Recruit Estimate		Effort Data		Comments
		Unrep. catches	Avail- able	Used	Avail- able	Used	Avail- able	Used	Avail- able	Used	Avail- able	Used	
<u>NE Arctic</u>													
Saithe	x		x	x									Data on migration not used
Greenland Halibut	x		x	x							x	x	
Golden Redfish	x		x	x					x				Catches split by species on an area basis
Beaked Redfish	x		x	x					x		x	x	
<u>East Greenland</u>													
Prawn	x										x		Catch/effort data only covering part of the year
Cod	x	x	x	x			x	x	x				Migration data on age needed to improve assessment
<u>East Greenland, Iceland, Faroes</u>													
Greenland Halibut	x		x	x									Catch at age series short
Golden Redfish	x		x	x					x				Catch at age data based on age/length keys for only part of the fishery
Beaked Redfish	x		x	x					x				
<u>Iceland</u>													
Saithe	x		x	x									
<u>Faroes</u>													
Cod, Plateau	x		x	x					x		x	x	Effort series short because of large-scale changes in fisheries
Haddock	x		x	x					x		x	x	
Saithe	x		x	x							x	x	
<u>Skagerrak Kattegat</u>													
Herring	x	x	x	x	x	x	x	x	x	x			Separation of autumn and spring spawning components and interchange with adjacent areas cause problems in this assessment. No TAC calculated due to discrepancies between data sets
Sprat	x		x				x	x	x	x			No TAC estimate for 1982 yet possible as the year class 1981, which is the main component of the fishery is not yet born

Skagerrak/Kattegat continued...

Table 7 (ctd)

Region Stock	Yield Data		Catch at Age Data		Discard Data		Fishery-independent Stock Estimate		Fishery-independent Recruit Estimate		Effort Data		Comments
		Unrep. catches	Avail- able	Used	Avail- able	Used	Avail- able	Used	Avail- able	Used	Avail- able	Used	
Skagerrak Kattegat(ctd)													
Cod	x		x						x				Precautionary TAC
Haddock	x												Precautionary TAC
Whiting	x								x				Precautionary TAC
Plaice	x		x										Catch data not complete. TAC for Skagerrak on a precautionary basis
North Sea													
Herring	x	x					x	x	x	x			Fishery-independent stock estimates from larval survey used. Acoustic survey not used. No TAC for 1982
Sprat	x	x	x	x			x	x					Assessment for 1981 and 1982 only possible with shorter time lag between assessment and management. Acoustic surveys not used
Mackerel	x	x	x	x			x	x	x				Problems in stock delineation between the two components. This applies also to Western stock
Cod	x		x	x	x				x	x	x	x	
Haddock	x		x	x	x	x			x	x	x	x	
Whiting	x		x	x	x	x			x	x	x	x	
Saithe	x		x	x							x		Effort data for one country 1979-80, data on migration not used
West of Scotland													
Cod	x		x	x	x				x	x	x	x	
Haddock	x		x	x					x	x	x	x	
Whiting	x		x	x									
Saithe	x		x								x		Precautionary TAC, due to problems with data base

continued

Table 7 (ctd)

Region Stock	Yield Data		Catch at Age Data		Discard Data		Fishery-independent Stock Estimate		Fishery-independent Recruit Estimate		Effort Data		Comments
		Unrep. catches	Avail- able	Used	Avail- able	Used	Avail- able	Used	Avail- able	Used	Avail- able	Used	
<u>West of Scotland(ctd)</u>													
Herring	x	x	x	x			x	x	x	x			
Clyde Herring	x		x	x									Interchange with adjacent areas not quantifiable. No analytical assessment
<u>Sub-area VII (excl.Div.VIIa)</u>													
Cod	x												No assessment
Haddock	x												
Whiting	x												
<u>Irish Sea</u>													
Herring	x	x	x	x			x						Composed by two different spawning units Manx and Mourne stocks
Cod	x		x	x							x	x	
Whiting	x		x	x					x		x	x	
Plaice	x		x	x					x	x	x	x	
Sole	x		x	x							x	x	
<u>West of Ireland</u>													
Herring (Div.VIIb,c)	x	x	x	x									No analytical assessment due to problems with data base
Herring (Div.VIIj)	x		x	x									No analytical assessment possible
<u>Celtic Sea</u>													
Plaice	x		x	x							x	x	Low percentage of catches covered by age samples
Sole	x		x	x							x	x	
Cod	x		x	x							x	x	Low percentage of catches covered by age samples
Herring	x	x	x	x			x						
Northern Hake	x	x	x		x				x		x	x	Data bases have been very incomplete but are improving. Precautionary TACs
Southern Hake	x	x	x		x				x				
Northern Blue Whiting	x		x	x			x	x			x	x	None of the data sets can at present support an absolute stock estimate. Precautionary TAC
Southern Blue Whiting	x		x										

Table 7 (ctd)

Region Stock	Yield Data		Catch at Age Data		Discard Data		Fishery-independent Stock Estimate		Fishery-independent Recruit Estimate		Effort Data		Comments
		Unrep. catches	Avail- able	Used	Avail- able	Used	Avail- able	Used	Avail- able	Used	Avail- able	Used	
<u>HERRING</u>													By-catch and discard data very in- complete
22-24	x	x	x	x					x	x			Migration data necessary
25,26,27	x		x	x			x	x					
28, 29S	x		x	x									
Gulf of Riga	x		x	x									
29N, 30,31	x		x	x					x	x	x	x	Only Eastern stock assessed. Data series too short on Western side
32	x		x	x							x	x	
<u>SPRAT</u>													
22,24,25	x		x	x			x	x					
26, 28	x		x	x									
27,29-32	x		x	x									
<u>COD</u>													
22	x	x	x	x	x	x							Discard data limited. Migration data necessary
24	x	x	x	x	x				x	x			Low percentage of catch covered by age samples. Migration data necessary
25-32	x	x	x	x	x				x	x			
<u>SALMON</u>	x								x	x	x		

ANNEX 4

STATEMENT BY THE NORWEGIAN DELEGATION

Norwegian management authorities have held the view that much could be gained from expanding the scope and improving the nature of the dialogue between the scientific community on the one hand and the representatives of the user side, both from administration and industry, on the other. We are therefore grateful to ICES for having taken the initiative to establish a forum for discussion between all the parties concerned with the pertinent issues of managing the living resources of the seas.

Our support for the ICES sponsored dialogue has been reaffirmed by the nature and quality of the two previous Dialogue Meetings, and we join with the current ACFM report in stating that clearer ideas have now emerged as to how the advice on fish stock management should be given in order to improve the usefulness of this advice to the management bodies.

When we assess the latest report of the ACFM, we note that ICES already has followed up the ideas that were discussed in the previous Dialogue Meetings. In particular, ICES has responded well to our principal request, that management advice be presented in the form of options within safe biological limits. This represents great progress.

Nevertheless, we have one reservation to make and that concerns the somewhat inaccessible form in which the biological advice from ICES sometimes is presented. This indeed is a point made repeatedly already and it is a problem of which ICES itself is fully aware. Yet we take this occasion to repeat our plea for ICES to make extra effort to facilitate the layman's reading of future scientific advice from ICES. After all, the administrator's grasp of the many scientific points of interest to management represents the basis for our ability to make rational, and biologically responsible decisions on management. Perhaps definitions of main biological terms used could be given regularly in an annex.

The problem of form is perhaps particularly apparent in the presentation of the management options in the current ACFM report. The average fishery administrator will probably find little to help him in this report to assess the likely impact that the different management options are likely to have on the fishery and the fish stocks particularly in the longer term. We are therefore glad that ACFM in its report has offered to provide more comprehensive tables and figures to illustrate the consequences of different rates of exploitation on the fishery in a short, medium and long-term perspective. This really is precisely what is required.

In this connection we would like to refer to the report of the ACFM from October of last year. In that report, and in particular in respect of the Arctic cod stock, ICES already went a long way to provide a comprehensive and illustrative analysis of the relationship between management options of the present and the development of stock size and fishing possibilities in the longer term. That very report has done much to clarify the real issues at stake and has brought about a better understanding of the socio-economic implications inherent in the management decisions we have taken.

It is our hope that the management side will benefit from ICES adopting a similar approach in respect of other stocks as well.

Let me before I finish revert to the problem of the general inadequacy of available data from the fisheries. We have noted what the scientists have said about this: that no advice can be better than the available data will allow. In a statement to the Dialogue meeting in October last year, the Norwegian delegation made the proposal that ICES should specify some minimum requirements both as regards the reporting of catch statistics as well as sampling of catches. We further proposed that the requirements should annually be compared with the actual situation in the various fisheries and countries, and that the results of this comparison should be presented in the ACFM report itself.

In this way, we will set a way of assessing the performance of the different countries. Credit and criticism could then be distributed accordingly. Such an arrangement would provide an impetus for fishery administrations to improve an adverse performance and would in turn provide ICES with more reliable data to work on.

ANNEX 5

STATEMENT BY THE COMMISSION OF THE EUROPEAN COMMUNITIES (CEC)

The CEC welcomes ICES dedicating this meeting to the subject of management objectives. For reasons which are explained in this paper, no attempt is made in it to develop an overall management policy for the fish stocks in whose management the CEC is involved. Instead, the paper sets the biological advice and the management objectives on which it is based in the political arena in which the CEC has to try to achieve agreement and shows why the manner in which that advice is given may hinder rather than help the implementation of effective fisheries management.

The CEC is fully aware of the need for an effective, overall fisheries management policy. As it stated in its paper to the first Dialogue Meeting of 20-21 May 1980 "The essential first step (to obtain a proper dialogue between ICES and the managers) is for the managers to decide what the management policy is and to inform ICES of it". Since then, however, such a decision has not been taken. This is not very surprising considering the economic situation of the fisheries. The fisheries of the Northeast Atlantic are open-access; as such, they were almost certainly being exploited at the start of the 1970s at the level where the marginal return was zero, although in the absence of a full economic analysis it is impossible to be categorical about this. The increase in fuel prices, coupled with decreasing fish prices in real monetary terms, made fleets which were just able to break-even, unprofitable. Instead of leading to the development of an effective management policy, this has led to increasing pressures for bigger and bigger catches, regardless of the fact that these can provide only short-term relief and, in the long term, will make the economic situation of the fisheries worse, because the fisheries remain open-access; that is, there is no restriction on the total number of boats and fishermen participating in the fishery. 'Solutions' were made and still are sought in operational and market subsidies, even though economic analysis shows that such subsidies do not provide a solution but lead to increased exploitation of the fish stocks.

The CEC does not expect that this meeting will agree on an overall fisheries management plan; to do that would require a meeting with the participation of all nations which fished the stocks with representation from all sides of the fishing industry. The outline agenda for such a meeting has been described in the FAO paper "ACMRR Working Party on the Scientific Basis of Determining Management Measures", presented at the Dialogue Meeting of 20-21 May 1980. All that the CEC expects can be achieved at this meeting is to increase the understanding between ICES and the managers so that the advice given by ACMR is more likely to lead to a solution to the present problems of fisheries management.

In the absence of an agreed, overall management plan for the fish stocks for which the CEC is either sole or joint manager, the CEC agrees with ACMR that the long-term management objective should be to reduce the fishing mortality rate on heavily over-fished stocks to a level which is closer to that at which the long-term average maximum sustainable yield should be obtained. It also agrees with ACMR that the strategy in achieving this objective should be to reduce the fishing mortality rate by small steps. It also agrees that, for stocks which have been fished to the level at which recruitment failure is likely, the fisheries on such stocks should be stopped. The biological consequences of this policy are all described by ACMR in its reports for 1981. As stated in its communications to the EEC Council of Ministers, the reason why the CEC agrees with these objectives is that, if they were achieved, there would be considerable economic benefits. These are:

1. higher catch per unit effort, i.e., higher earnings per boat with lower fuel costs, leading to higher profitability;
2. greater stability in catches from year to year, leading to more efficient marketing;
3. improved ability to make medium-term forecasts of catches, which would lead to improved planning in the industry;
4. elimination of recruitment failures with their associated economic misfortunes.

The CEC recognizes that achieving the economic benefits of this policy would also depend upon implementing associated structural and marketing policies; otherwise they could be easily dissipated.

Where the CEC disagrees with ACFM is in the tactics of implementing this strategy. As stated by the former Chairman of ACFM in his address to the Dialogue Meeting of 20-21 May 1980, the tactic of ACFM is to reduce the fishing mortality rate by about 10% a year, although there are many cases in which the TACs recommended by ACFM have been based on much larger reductions than 10%; for example, the TAC recommended for North Sea whiting for 1982 is based on a fishing mortality rate of 55% less than that expected for 1981. The CEC considers that, unless a stock is suffering from recruitment failure, there is no over-riding reason why the fishing mortality rate should be reduced by any pre-determined amount in any year or reduced at all. The CEC agrees that it should not be allowed to increase. There is little point in ACFM recommending TACs which are based on continuing reductions in the fishing mortality rate if the TAC based on the initial reduction proves unacceptable to the managers. This will lead to a situation in which agreement becomes more and more difficult to achieve and in which ACFM becomes more and more disenchanted that its advice is not accepted. This is the situation which exists at present.

It is for this reason that the CEC has requested ACFM to produce graphs showing curves of yield and spawning stock biomass against fishing mortality rate; it needs to be able to determine quickly and easily the consequences of adopting TACs different from those recommended by ACFM. If the adoption of TACs higher than those recommended by ACFM results in agreement on effective management, the CEC considers that it is better to have an agreement based on them, on the principle that it is preferable to achieve agreement at something less than the most desirable objective rather than to have no agreement at all.

As the CEC, as well as other managers, have their scientists to advise them, it is fully aware that the graphs show the situation for one year only, but as management is being attempted only on a year-to-year basis at present, these graphs represent an effective management tool. As ACFM constantly reiterates that the managers do not state what they want, the CEC is very surprised at the reluctance expressed by ACFM in its 1980 report at giving these graphs. In commenting on these graphs in its reports for 1981, the CEC is also surprised that ACFM should offer even medium-term predictions when the difficulties of making these have been previously described by the scientists themselves (paragraph 20, page 5, of the summary of the Dialogue Meeting, 20-21 May 1980, Cooperative Research Report No.106). While the CEC knows the reasons why some TACs have been revised very considerably between one meeting of ACFM and the next, it does seem premature to talk of even medium-term forecasting while this situation exists.

This is not to say that medium and long-term forecasts are not of use but much depends upon the manner in which ACFM sees them being used. Having made a forecast, would ACFM still expect to recommend modifications from year-to-year or would it adhere to the annual catches forecast even if the assumptions, for example on recruitment, on which they were based proved incorrect? If ACFM adopted the former attitude, it is unlikely that the forecasts would be of use in management because they would not provide a basis for planning. The CEC requests ACFM to clarify its position on this topic.

The CEC would now like to consider the very difficult question of the management of stocks which are suffering from recruitment failure or are recovering from one.

As already stated, the CEC recognizes the right of ACFM to make a specific TAC recommendation for a stock which is suffering from a recruitment failure. What has surprised the CEC, in view of ACFM's stand on North Sea herring, is its equivocal recommendation on the eastern stock of mackerel for 1981 and, even more so, its continued recognition of the Clyde stock of herring in view of the fact that there is strong evidence that part of this "stock" consists of Manx herring, about which ACFM expresses serious concern.

Understandably, ACFM in its capacity as 'representative of the fish' is likely to take a very conservative stand in recommending the re-opening of a fishery which has been closed. This can be clearly seen in its assessment of the North Sea and west of Scotland herring stocks, for which the most conservative (pessimistic) interpretations have always been placed on the available scientific data. The consequences of this zero risk strategy have been strikingly shown by the sequence of events in the west of Scotland herring fishery. The originally recommended zero TAC for 1981 was revised to 65 000 tonnes in the middle of the year to which it applied. In practical terms, this involved the CEC in having to negotiate with third countries and to prepare a set of quota proposals in a week. Economically, the results appear to have been disastrous with, as widely predicted, much of the catch going to fishmeal, since the fishing industry had no time to prepare for these additional catch possibilities. If ACFM adheres to the advice that it has laid down for the re-opening of closed fisheries, that there should be firm evidence of recovery, then the re-opening of other fisheries is likely to have as disastrous consequences as re-opening them on the basis of expectations. In the opinion of the CEC, much of this problem arises because of the constraint which ACFM imposes on itself giving unanimous advice instead of presenting various options. More than one conclusion can often be drawn from the same set of fisheries data and it is well known that scientists have disagreed on the best strategy for re-opening the North Sea herring fisheries.

The members of ACFM should be aware that the managers may well be trying to have adopted a course of action which is different from that recommended by ACFM, because their advisory scientists interpret the data differently to ACFM. It would be far more useful to the CEC, in these circumstances, to have an evaluation of the possible interpretations that could be placed on the data, the possible courses of action and the risks associated with these courses. It would also be more in accord with scientific philosophy. Fisheries management cannot be risk-free and, as has been shown by very recent experience, there are different types of risks associated with different strategies. If the dialogue between ICES and the managers is going to be meaningful, it cannot be conducted on the basis of ACFM deciding what information and advice it will entrust to the managers. Fisheries science does not exist in a closed world and the managers will turn elsewhere for advice if ACFM adopts this attitude.

To this, ACFM will doubtless respond that its recommendations are not mandatory upon the managers and that they are free to choose those options which suit them best. While this is true in theory, it is not always true in practice,

because although Norway has asked in its statements to ICES at these Dialogue Meetings for options in the same way as the CEC, the CEC has found in its negotiations that Norway considers that the recommendations of ACFM are non-negotiable.

The CEC can understand the reasoning of Norway, but the North Sea stocks shared with Norway provide the most important share of the fish available to the EEC. If the recommended TACs for these stocks are based on reductions in the fishing mortality rate of 20%, 30% or even higher from one year to the next, it is almost inevitable that there will be no agreement on management within the EEC.

To summarize, it is the opinion of the CEC that the prospects for reaching an overall management policy for fisheries are being hindered by ACFM adhering rigidly to TAC recommendations based on annual decreases in the fishing mortality rate from one year to the next, irrespective of what has happened in the previous year, and that this situation is made worse when the recommendations are based on reductions which exceed 10% a year. It would be an achievement to obtain agreement on stabilizing the fisheries at their present level of exploitation. Once this had been achieved, steps could then be taken slowly to reduce the fishing mortality rates on the stocks.

ANNEX 6

STATEMENT BY THE DUTCH DELEGATION

First of all we like to express our appreciation for the work done by the ACFM and its Working Groups in order to produce the 1981 report. We highly value the fact that some of the suggestions made at the previous Dialogue Meetings, in particular the different options for the TACs, are now adopted in the advice of ACFM. However, there are also some points of criticism.

During this year we have been confronted with a number of revisions of TACs, e.g., the roundfish TACs in the North Sea. We have also noted that a considerable number of the proposed TACs differ substantially from those given in previous years.

Such large revisions and changes raise the question if it is possible at the moment to make any assessment of fish stocks with a reasonable amount of precision.

This lack of precision is probably due to the fact that the quality of the input parameters, e.g., catch data, recruitment estimates, mortality data, used in the different mathematical models in quite a number of cases is inadequate. In view of this lack of precision, small changes and revisions of TACs, which also have occurred, seem not realistic.

In our opinion, it would be better to give rough recommendations and options which could be kept constant for a number of years rather than to give precise TACs on the base of very sophisticated but inaccurate calculations which keep changing as a consequence of inadequate data and sometimes also changing insights.

Stable catch possibilities are a prerequisite for a sound fishing industry. In the present ACFM report, in most cases options are given that would require very large reductions in fishing effort. Such options are not realistic and for the fishing industry very difficult to accept.

In order to further a policy gradually leading to the ultimate optimal situation, more realistic options are needed. Even options, for instance in years of bad recruitment, which would mean that a stock temporarily declines, should be included in the advice. For all options, not only the short-term predictions of the size of the stock should be given, but also long-term predictions in terms of the years required to reach the optimal situation at the chosen level on fishing mortality, and of course the TAC in the optimal situation.

All these data are needed to create for the management the flexibility which is necessary for managing our fisheries which are in essence mixed (multi-species fisheries) in character.

In view of the multi-species aspect of our fishery, perhaps the method suggested in the report for the Irish Sea, namely the setting of an overall TAC for demersal species, could be extended to other areas, for instance, the North Sea.

It is our opinion that such a total TAC for demersal species, provided it is a long-term one, could be an excellent guideline for a fishery policy. Of course, such a TAC should be set in deliberation with the management, and should have some connection with a total TAC of demersal species in the optimal situation.

Finally, we would like to ask a more specific question. According to this report, cod in the North Sea is subjected to an unsatisfactory exploitation pattern, which probably is the reason why the recommended TAC for 1982 is considerably lower than the revised one for 1981. However, there now is a hypothesis that especially the high fishing effort, in combination with the current mesh size, causes the absence of older, larger cod which can predate on young cod, resulting in very high recruitment.

Does ACFM know the quantitative effect of this cannibalism on the cod stocks?

In case this decreased cannibalism has an important effect on the cod stocks, does ACFM share the opinion that higher TACs can be set than those resulting from the actual mathematical model, which does not reckon with a decreased cannibalism?

CATCH REC. TACs											
1976		1977		1978		1979		1980		1981	1982
C	TAC	C	TAC	C	TAC	C	TAC	C	TAC	TAC	TAC
26	40	30	36	28	27	26	23	20	22	14 (18)	20
MANAGEMENT STRATEGY											
To reduce to and keep effort in the cod fishery at a level corresponding to F_{max}											
EFFECTIVE MANAGEMENT											
135 mesh in trawl gears is strictly enforced. Total allowable catches for Faroese boat groups are not enforced. Foreign vessels are regulated by quotas. A system of "boxes", and a trawl ban inside a 12 mile limit affects the exploitation.											
QUALITY OF DATA BASE											
CATCH DATA		AGE-LENGTH DATA		EFFORT DATA				FISHERY INDEPENDENT			
Adequate		Adequate		Adequate, but usefulness at present restricted by the short series				0-group surveys have been conducted since 1974. Still of restricted use in assessment			
DATA NECESSARY TO IMPROVE ASSESSMENTS											
Fishery independent estimates of stock abundance to give a safer calibration of stock estimates derived from catch based data (landings, age-length sampling and effort).											
THE 1981 ASSESSMENT											
Abundant year classes in 1972 and 1973 increased stock abundance and led to a large increase in effort put into the fishery in this stock. The abundant year classes thus were rapidly reduced, and this combined with a lower recruitment from 1974 and onwards has reduced catch rates and total landings in recent years. At the same time effort has been somewhat reduced again. There has in the same period been a change in the mean weight in the catches, but this does not affect the assessment to any significant degree.											
The 1978 year class seems from catch data to be an abundant one. This year class was in last year's assessment assumed to be of average size. The recruitment of the 1978 year class affects the catches in 1981. Last year the TAC in 1981 was calculated on the basis that effort was reduced to a level corresponding to F_{max} . With the assumption of the 1978 year class as average this gave a TAC of 14 000 tonnes. With the new assumption of the 1978 year class strength, the TAC corresponding to F_{max} for 1981 will be 18 000 tonnes.											
MANAGEMENTAL ADVICE											
In order to bring this stock to a higher level of abundance, which will mean increased catch rates, ACFM recommends that effort is brought to a level corresponding to F_{max} .											
This will mean a revised TAC for 1981 of 18 000 tonnes and a TAC in 1982 of 20 000 tonnes. This will give a spawning stock above average historic level. It is essential that the fishery does not concentrate on the incoming 1978 year class.											

