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Select Committee on Science and Technology.**

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SELECT COMMITTEE ON
SCIENCE AND TECHNOLOGY

**FISH STOCK CONSERVATION AND MANAGEMENT:
GOVERNMENT RESPONSE**

REPORT

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FOURTH REPORT

**SELECT COMMITTEE ON
SCIENCE AND TECHNOLOGY**

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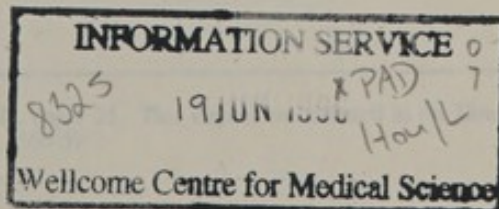
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FOURTH REPORT

9 May 1996

By the Select Committee appointed to consider Science and Technology.

ORDERED TO REPORT

FISH STOCK CONSERVATION AND MANAGEMENT: GOVERNMENT RESPONSE

1. In its second Report of this Session the Committee reported on the scientific aspects of *Fish Stock Conservation and Management*.¹ The central issue arising from the Committee's enquiry into that subject was the failure of fisheries policy and management to be sufficiently influenced by fisheries science. The Report concluded that "a substantial reduction in fishing effort is urgently needed throughout fisheries worldwide", and set out the steps needed to achieve this.
2. The Committee's Report received a significant amount of publicity. In large part, this was due to the problems which it identified having been raised in a BBC *Panorama* programme broadcast shortly before the Report was published. We believe, however, that the interest of the general public and representatives of the media in the Report bears witness to an increasing awareness of the importance of fish stock conservation and management to millions of people worldwide.
3. The Government's response to the Report is printed in Appendix 2. Since the Committee's Report emphasised the need for more communication and better co-operation between scientists, fishermen, managers and politicians we particularly welcome the Government's initiation of a series of regular contacts between the industry and Government scientists, and its proposal for the introduction of regional consultative committees to bring together fishermen and officials from the European Union Member States active in a particular fishery to discuss issues relevant to that fishery (paragraphs 21-22).
4. We also welcome the Government's support of several of the Committee's recommendations, including the participation of European Union Member States in a sampling scheme for discards and by-catches (paragraph 19), the encouragement of technical conservation measures (paragraphs 30-31), the temporary closure of areas where a high proportion of juvenile fish are known to be congregating (paragraph 33) and the setting of precautionary Total Allowable Catches (TACs) for sand eels, which is the species most commonly targeted by industrial fisheries (paragraph 34).
5. While regarding a ban on discards as impracticable, an argument which we do not wholly accept, the Government hope to reduce the extent of discarding by encouraging the use of technical devices like square mesh panels; but they do not accept our recommendation that they should introduce legislation to require their use. This seems a half-hearted way of tackling the problem.
6. It also remains unclear from the Government's response how each of the recommendations referred to in paragraph 4 will be taken forward at a practical level in the United Kingdom. The Government's response thus fails to convey the sense of urgency which the Committee attaches to the problem of over-fishing in that it makes no attempt to state how the need, expressed by the Committee, for a 30 per cent reduction in fishing effort throughout the European Union can be achieved.

¹ 2nd Report 1995-96, HL Paper 25. This Report was debated in the House of Lords on 16th April 1996 (*House of Lords Hansard* cols. 566-597).

7. We called for pressure on the European Union to consider replacing TACs by fishing effort control. We considered that, if fishing effort were reduced by 30 per cent throughout the European Union, the need for TACs would disappear. The Government responded to this call by circulating our Report to all Member States (for which we are most grateful) while pointing out, perfectly correctly, that during the current decommissioning programmes TACs will continue to be required. They seem to think, however, that such a combination of TACs and effort control can provide an adequate control. We strongly doubt this because the policing of TACs will continue to be very difficult, especially since the ban on discards has been rejected as impracticable. We see a much more radical programme of decommissioning as the only way of safeguarding fish stocks. We are well aware of the difficulties of getting international agreement to such a programme, but we had hoped that the Government would accept that, difficult as it was, an urgent attempt should be made to achieve it.

8. As is stated in the introduction to the Government's Response, it comments on the Select Committee's conclusions in the order in which they appear, reprinting and commenting on each of the Committee's recommendations in turn. The Government's Response neither reprints, nor replies to, the overall conclusion with which our Report ends. We therefore repeat our conclusion below:

"Our evidence has shown that all over the world stocks of most species of fish are being severely depleted by over-fishing. Almost every variety of fisheries policy and management has proved inadequate to prevent over-fishing. The conservation and management of fish stocks is a matter of life or death to millions of people, and should thus be a vital concern worldwide. Immediate steps must be taken by all developed nations to reduce their commercial fishing effort very significantly.

In the United Kingdom and throughout the European Union regular supplies of fish are taken for granted, despite clear evidence of over-fishing. Only slowly is public opinion waking up to the fact that other parts of the world have been shaken, too late, from a similar complacency. Too little was done too late to preserve stocks of wholesome fish in the American Georges Bank, and in the Black Sea, and off the Canadian Grand Banks. Year after year, all over the world, the long-term sustainability of fish stocks is being sacrificed in favour of the short-term protection of employment in the fishing industry. But the lesson to be learned from the collapse of the Grand Banks fishery is that ignoring the warning signs year after year can end in the loss of thousands rather than hundreds of jobs. In their heart of hearts, scientists, fishermen, managers and politicians must all know that action must be taken now to prevent a repeat of the Grand Banks fiasco nearer to home. The question is, will they take it?"

APPENDIX 1

Membership of the Select Committee (1995-96 Session)

Lord Craig of Radley
Lord Dainton
Lord Dixon-Smith
Lord Flowers
Lord Gregson
Lord Haskel
Baroness Hogg+
Lord Nathan
Lord Perry of Walton
Lord Phillips of Ellesmere
Lord Porter of Luddenham
Lord Redesdale
Earl of Selborne (Chairman)
Lord Soulsby of Swaffham Prior
Lord Walton of Detchant

+ Baroness Hogg was not present at the meeting at which this Report was discussed, and took no part in its preparation.

APPENDIX 2

*Government Reply to the Second Report from the House of Lords
Select Committee on Science and Technology : Session 1995-96
Fish Stock Conservation and Management*

INTRODUCTION

1. The Government is grateful to the Select Committee on Science and Technology for their wide ranging report which makes a valuable contribution to the current debate on fisheries management and the Common Fisheries Policy. This reply comments on the Select Committee's conclusions in the order in which they appear.

The Scientific Basis

Select Committee's conclusion:

- **We recommend the establishment of separate funding lines in the United Kingdom to safeguard the collection of long time series data sets in these areas, although we recognise that this cannot resolve the current critical situation in time and it may still be difficult to obtain accurate short-term predictions of recruitment. (paragraph 3.2)**

2. The Government recognises that long time series data sets are very valuable in supporting effective stock assessment work. The Fisheries Departments will, where practical, ensure that funds continue to be available within research programmes to maintain current data sets. As the Committee appreciates, this cannot resolve current deficiencies in data supplied from the commercial fleet. However, fisheries scientists are well aware of this and when preparing management advice take account of the deficiencies as much as possible.

Select Committee's conclusion:

- **We recommend that the Government bring pressure to bear upon the European Union to require all Member States to submit fishing effort data to the International Council for the Exploration of the Sea and to require the Commission to ensure that its new fishing effort data base is not only accurate but is accessible both to national administrations and to anyone with an interest in fisheries both within the European Union and outside. (paragraph 3.4)**

3. The Government accepts the ideas behind this recommendation. It has already provided the European Commission with copies of the Committee's report and will follow the issue up as appropriate.

A Precautionary Approach to Fishery Management

Select Committee's conclusion:

- **We recommend that the Government should encourage the United Nations Food and Agriculture Organization to press all its Member States to adopt a precautionary approach to fishery management. (paragraph 3.6)**

4. The United Nations Agreement on Straddling and Highly Migratory Fish Stocks and the FAO Code of Conduct for Responsible Fisheries, both adopted in 1995, urge states, regional and sub-regional fisheries management organisations to apply the precautionary approach to conservation, management and exploitation of fish stocks both within their coastal zones and in international waters. The United Nations Agreement contains an Annex setting out Guidelines for Application of Precautionary Reference Points in Conservation of Straddling Fish Stocks and Highly Migratory Fish Stocks. This Agreement was opened for signature on 4 December 1995. To date 29 states including the United Kingdom (on behalf of the dependent territories) have signed. Within the EU

a number of considerations relating to competence are in the process of resolution and the Government is working for EU (including United Kingdom) signature as soon as possible.

Select Committee's conclusion:

- **We recommend that the Government define specific management objectives for fisheries (paragraph 3.5); and that they press the European Union and the International Council for the Exploration of the Sea to require all their members to follow suit so that Total Allowable Catches can be set each year defining an upper limit which cannot safely be exceeded. (paragraph 3.6)**

5. The International Council for the Exploration of the Sea (ICES) currently recommends Total Allowable Catches (TACs) for commercially significant species. It also identifies stocks which are below the Minimum Biologically Acceptable Level and makes recommendations for TACs or reductions in fishing mortality intended to rectify the situation. A European Commission proposal for medium term objectives in terms of spawning stock biomass or levels of fishing mortality is being discussed within the Community. In these discussions the Government's intention is to create a workable system of objectives and strategies for the main fish stocks.

Select Committee's conclusion:

- **The Committee considers, however, the modification of Total Allowable Catches as the main control measure of the Common Fisheries Policy by the use of Individual Transferable Quotas should be considered. A sense of ownership in relation to fish stocks is known to enhance stock conservation. Individual Transferable Quotas would give this sense of ownership to individuals and the Committee recommends that a feasibility study to this end should be put in train to see if this type of allocation is both possible and desirable as a step towards comprehensive decommissioning. (paragraph 3.7)**

6. The case for Individual Transferable Quotas (ITQs) was carefully considered by United Kingdom Fisheries Departments in 1989-90. Fisheries Departments concluded that the conservation benefits of ITQs were unclear, particularly in mixed-species fisheries of the type found in Community waters. They also felt that such a system could give rise to practical difficulties, eg by requiring additional effort on enforcement. The industry indicated that it did not wish to move in the direction of ITQs at that time.

7. However our present quota management arrangements do provide for considerable stability by allocating quota to groups of fishermen in proportion to the catches made - track record - over the three previous years. It is also possible to accumulate track record through the acquisition of fishery vessel licences to which track record is assigned. These arrangements give fishermen much the same interest in the conservation of stocks as would ITQs. Nonetheless, in the light of some industry groups advocating changes to the United Kingdom's quota management arrangements, the Government has invited industry bodies to submit proposals for alternative arrangements, and has made it clear that it will consider any proposals which are both practicable and command wide support within the industry. These proposals are currently awaited. Once they have been received, Fisheries Departments will assess their feasibility and will consult widely before any changes are introduced. Meanwhile, the industry has supported the continuance of the current arrangements for 1996.

Select Committee's conclusion:

- **The replacement of Total Allowable Catches by effort control needs to be fully examined before it can be implemented, in association with other measures, to achieve the necessary 30 per cent reduction in fishing effort throughout the European Union. (paragraph 3.8)**

8. A system of TACs and quotas is needed to allow for the allocation of fishing opportunities between Member States on the basis of traditional fishing patterns. Systems of this kind are widely used in fisheries management around the world. Any alternative would need to provide similar guarantees to fishermen that they can continue their accustomed fishing patterns, subject to the need for conservation of the stocks.

9. Unlike quota management measures, measures to control fishing effort are not targeted on individual stocks. That is why conservation policy requires a combination of measures to limit exploitation rates, including output limitations in the form of TACs and technical conservation measures and input limitations such as the reduction of fleet size through Multi-Annual Guidance Programmes (MAGP). Decisions on TACs beyond 1996 will be taken by the Council of Ministers in the normal way. Decisions on the next series of MAGPs, covering the period 1997-99, are due to be taken this year. The United Kingdom will play a full and constructive role in all these discussions.

Select Committee's conclusion:

- **We recommend that the Government calls on the European Union to examine the possible replacement of Total Allowable Catches by effort control as a matter of urgency. We further recommend that the Government should provide adequate funding for the limited decommissioning programme already agreed for United Kingdom fishing vessels. (paragraph 3.9)**

10. As explained in response to the Committee's preceding conclusion, it would not be appropriate for Total Allowable Catches to be replaced completely by effort control. The question of funding for decommissioning fishing vessels has been addressed in the context of the United Kingdom's multi-annual guidance programme. The Government is making £53 million available for this in the financial years 1993/94 to 1997/98. These measures are kept under review.

Select Committee's conclusion:

- **We agree wholeheartedly with Scottish Office Ministers that there is scope for increasing the level of scientific effort devoted to understanding broader environmental and economic considerations, and recommend that the Ministers concerned should do all that is within their power to achieve this. We further recommend that the Government should take the lead in sponsoring multi-disciplinary research into the effects of pollution and other environmental factors on fish stocks. This research should include a study of the effects of beam trawlers on the sea bed and its biota. The Scottish Office Agriculture and Fisheries Department's suggestion of a multi-disciplinary educational institute in fishery science, serving either the United Kingdom or Europe as a whole, deserves detailed consideration. (paragraph 3.10)**

11. The Government welcomes the Committee's recognition of the importance of bringing economic as well as environmental considerations to bear on fisheries science. That is why management decisions on the exploitation of fish stocks take a range of factors into account, including socio-economic implications.

12. There is a variety of possible means of broadening the training of fisheries scientists and the Government welcomes the close relations which Fisheries Department laboratories enjoy with academic institutions. The Government believes that the United Kingdom education system is well capable of responding to employers' demands.

13. As regards marine pollution, the input of contaminants to the sea is carefully monitored throughout all United Kingdom inshore and coastal waters to ensure that there are no resultant unacceptable effects on the marine environment. The Ministry of Agriculture, Fisheries and Food carries out this work around the coasts of England and Wales. The Scottish Office Agriculture, Environment and Fisheries Department undertakes a similar task for their waters as do the Departments of Agriculture and Environment for Northern Ireland. These programmes are co-ordinated by the Marine Pollution Monitoring Management Group (MPMMG), which has developed a United Kingdom-wide National Monitoring Programme, involving all agencies with marine responsibilities.

14. There therefore already exists a comprehensive programme of multi-disciplinary scientific investigations into the possible effects of contaminant inputs on the marine environment which might lead to harm to fish stocks. This work helps underpin additional more direct controls on hygiene and quality of fish and their products on sale to the public. The monitoring involves close

collaboration between the various United Kingdom departments responsible to ensure the resources made available for this work are utilised in the most effective manner.

15. This programme includes the measurement of various contaminants in fish, seawater and sediments. In addition, increasing use is being made of a range of recently-developed 'biological effects techniques' which can indicate if the marine ecosystem is being adversely affected in particular areas. These techniques are likely to prove very valuable in looking at possible effects of more recently recognised pollution candidates, such as oestrogen-mimicking substances/endocrine disrupters. A number of biological effects techniques are already included in the National Monitoring Programme and their wider use is being encouraged in international monitoring programmes, such as those developed for the Oslo and Paris Commissions (OSPAR). There is also a programme of research conducted by the Ministry into whether there is a link between the levels of contaminants and disease in fish.

16. The Committee specifically referred to research on beam trawling. Currently, the Directorate of Fisheries Research has an experimental programme studying the effects of beam trawling on benthic communities in the Irish Sea. This work is part of a wider EU co-ordinated programme looking at the effects of trawling in the North Sea and elsewhere. Results to date indicate that in habitats with stable sediments that are not subject to frequent natural disturbance, beam trawling has detectable short-term effects on animal communities. It seems that recovery occurs within 6 months, but this is in an area subject to low levels of fishing activity. In shallower waters, where the seabed is subject to large-scale and frequent disturbance by wave action, the effects of trawling may be outweighed by natural perturbations. Predatory and scavenging animals such as starfishes and crabs, that are rarely killed by trawling, may benefit from the extra food provided by dead and damaged animals left on the seabed or discarded from the catch.

Select Committee's conclusion:

- **We therefore recommend, as a matter of priority, closer liaison between the Department of the Environment and the Fisheries Departments. (paragraph 3.11)**

17. Close co-operation already exists between the Fisheries Departments and DOE. An example is the preparation of the Quality Status Report for the North Sea. Similar reports are being prepared for all OSPAR waters. Fisheries Departments and DOE are also collaborating closely on the preparatory work for the intermediate meeting of North Sea Fisheries and Environment Ministers, now set for March 1997. MAFF and DOE Senior Officials act as Joint Heads of the United Kingdom Delegation. Close liaison between the Environment and Fisheries Departments will continue in this area as in others.

Select Committee's conclusion:

- **We recommend that in addition to the basic data currently being recorded routinely, fishermen should be encouraged to record and report relevant supplementary data that could be of assistance in stock assessment and in the interpretation of data from research cruises. (paragraph 3.12)**

18. Fishermen do already provide material to fisheries scientists beyond what is required by law. Examples include the bass, tuna and crustacea fisheries. Nonetheless it is important that such data is in a common form and supplied by all who fish a particular stock. This implies an EU wide rule. To this end, in July 1995, the European Commission proposed a significant extension in the number of species for which mandatory reporting would be required. Unfortunately this increase from 21 species to 194, would place a severe regulatory burden on the industry and would be likely to antagonise fishermen. Securing compliance could be difficult and the consequence could well be an overall deterioration in the quality of data now available from the commercial fleet. In discussions in the EU the Government will seek to secure a fair balance between the essential needs of information for research purposes and effective fisheries management and the practical problems commercial fishermen have at sea in completing statistical returns.

Select Committee's conclusion:

- **We recommend that the Government should call for all European Union Member States to participate in a sampling scheme for discards and by-catches. (paragraph 3.13)**

19. The Government supports this conclusion. The European Commission is keen that discard sampling schemes should be established and, in its call for research projects for 1996, has indicated that it would give a high priority to providing funds for this type of work.

The need for improved communication between scientists, fishermen, managers and politicians

Select Committee's conclusion:

- **We recommend three simple steps which would greatly improve communication between scientists, fishermen, managers and politicians in the United Kingdom and the European Union. First, as we indicated in paragraph 3.6, scientific advice must be presented clearly and concisely. Where the scientific evidence makes it necessary to offer a range of options, decision-takers should be left in no doubt as to which option accords with the precautionary principle. Scientists will always want to draw attention to any degree of uncertainty in their assessments. But scientific professionalism is currently providing an excuse for political compromise. (paragraph 3.17)**

20. This recommendation (and, indeed, the Committee's report) is being brought to the attention of United Kingdom and other scientists who participate in ICES.

- **Second, we recommend the establishment of fisheries management panels aimed at reaching consensus on management advice for identified fisheries. Ideally, the panels should involve representatives of all parties with an interest in the fisheries, both in the United Kingdom and other European Union countries, but initially the should involve interested parties in the United Kingdom. These should meet on a regular basis to discuss key stock assessments, technical conservation measures and recommendations for quotas. The panel meetings should be arranged so that they precede the relevant International Council for the Exploration of the Sea and European Union meetings. If this initiative is successful, further panels should be set up at a regional (multinational) level. (paragraph 3.18)**

21. The Government has initiated a series of regular contacts between the industry and Government scientists in order to increase fishermen's understanding of the work done by the scientists and to give the industry the opportunity to question the scientists and contribute their own expertise. These contacts will enable the industry and the scientists to discuss our input into the international scientific advice on the state of the stocks which will come to the Council of Ministers towards the end of year.

22. In order further to develop the involvement of fishermen in the Common Fisheries Policy, the Government has also proposed the introduction of regional consultative committees to bring together fishermen and officials from the Member States active in a particular fishery to discuss issues relevant to that fishery. These committees would cover areas such as the North Sea and English Channel and could consider any issue of regional relevance, such as the most suitable technical conservation measures and the state of fish stocks.

Select Committee's conclusion:

- **Third, we recommend the establishment of an Inter-Governmental Panel on the Oceans, as suggested in the First Report of the United Kingdom Government Panel for Sustainable Development, to help push issues of global concern up the political agenda by drawing together expertise from many fields. Such an Inter-Governmental Panel could be of particular value in addressing ecosystem and environmental issues. Major progress has recently been made with the United Nations Agreement on Straddling Stocks signed in August 1995. This has addressed an important issue where the same stock is fished both inside 200 mile zones and on the High Seas. There is currently no recognised overall mechanism**

for international control of fishing for stocks which lie only in international waters. This could be an important area for the Panel to examine.

23. Following this recommendation in the first report of the Government Panel on Sustainable Development, the United Kingdom obtained Commission on Sustainable Development agreement to United Kingdom inter-sessional work on the possible need for an Inter-Governmental Panel on the Oceans, including an international workshop, to consider the subject further and to look particularly at the way that decisions on the oceans made use of sound environmental science.

24. The London Oceans Workshop was held from 30 November to 2 December 1995. It was attended by delegates representing a balance of interests in ocean management issues from over thirty countries as well as international agencies and non-governmental organisations. There was general agreement among workshop delegates that there was no need to create an Inter-Governmental Panel on the Oceans because it was felt that the basic framework for taking global decisions about ocean management issues already existed. Delegates agreed, however, that three main steps were needed to improve world oceans governance:

- (i) to improve co-ordination among UN Agencies and other international organisations active in the marine environment;
- (ii) to find a means within the existing international institutions to express the consensus of national governments on priorities for global action on the marine environment;
- (iii) to improve the effectiveness of the means for providing the necessary scientific advice.

25. These recommendations are being submitted formally to the UN Secretariat by the delegations of Brazil and the United Kingdom (the Workshop co-hosts) for consideration in April by the 1996 session of the Commission on Sustainable Development as part of its review of progress on strategies under Chapter 17 of Agenda 21 (Oceans and All Seas).

26. The United Nations Agreement on Straddling and Highly Migratory Fish Stocks contains detailed provisions for the management of straddling and highly migratory stocks both within areas of national jurisdiction and on the high seas. The main emphasis is put on management through regional fisheries organisations or other like bodies which already have responsibilities for the management of those fish stocks which are only found in the international waters managed by the organisation.

Select Committee's conclusion:

- **We recommend that this decommissioning scheme should be supported wholeheartedly by Member State Governments, including that of the United Kingdom, where take-up of the scheme is behind schedule. As a result of on-going efficiency improvements in the remaining fleet, however, there has been no significant drop in fishing effort. More radical decommissioning targets are needed, and in order to have any effect these must be coupled with transitional financial aid to fishermen who decide to retire from the industry, possibly with funding from a special category of the European Regional Development Fund. (paragraph 3.20)**

27. The European Union's multi-annual guidance programme (MAGP) involves the setting of separate fleet targets for each maritime Member State in order to bring catching capacity into better balance with what stocks will bear. These are expressed in terms of vessel tonnage and engine power. Decommissioning is one of the principal means of reducing capacity, but it is up to individual Member States to determine the measures they use. The United Kingdom has operated annual decommissioning schemes since 1993 and further schemes are planned in 1996 and 1997. The question of efficiency improvements in the remaining fleet is not directly addressed in the current MAGP (which expires at the end of 1996), though Member States are required to monitor overall fishing effort. Returns for 1993 and 1994 show that there was a fall in the kilowatt days of the United Kingdom fleet greater than the percentage reduction of capacity through decommissioning. Data for 1995 are not yet available.

28. The Government has made £53 million available for United Kingdom decommissioning in the financial years 1993/94 to 1997/98. It remains anxious to secure the maximum value for money from this expenditure and is currently consulting widely on possible changes to the detailed arrangements for the 1996 scheme with this in mind. The question of future decommissioning policy and any necessary accompanying measures will also be considered in the context of decisions on the next series of MAGP targets for the period 1997/99, which are due to be taken by the Council of Minister later this year.

Select Committee's conclusion:

- **We recommend the establishment of internationally-agreed guidelines for the disposal of these vessels in order to protect developing countries from the export of surplus fishing effort. This is particularly important where traditional subsistence fisheries are in significant need of protection from commercial fisheries. (paragraph 3.21)**

29. Council Regulation (EEC) No 3699/93, which governs decommissioning, does allow the permanent transfer of vessels to a third country provided they do not ever again fish in EU waters. This is not, however, currently permitted under the United Kingdom scheme, which requires vessels to be made permanently unseaworthy in order to avoid problems over return. The protection of developing countries' fisheries from over exploitation is primarily a matter of fisheries management rather than the availability of vessels, which is more properly an issue of trade and development policy. It is for the Governments of these countries to decide whether this is something they favour.

Select Committee's conclusion:

- **We recommend the urgent consideration of the introduction of legislation to require the use of square mesh escape panels in round fish fisheries, and of diamond mesh panels for flat fish fisheries. These panels can be used in conjunction with a range of adaptations which encourage fish to approach the mesh of these escape panels, for example, the use of black canvas tubing in the cod end of nets, and the use of nets of contrasting shades of twine according to water depth. We further recommend the conducting of trials of rigid sorting grids, as used in Norwegian fisheries, in a range of United Kingdom fisheries. (paragraph 3.23)**

30. The Fisheries Conservation Group, established by United Kingdom Fisheries Ministers, have considered the Committee's recommendations as part of their current review of technical conservation matters. They have concluded that demersal towed gear should incorporate escape panels. For otter trawls these should be in the form of square mesh panels while in beam trawls the mesh used in the top sheet of the trawl should not be less than 180mm. The Group also considered the questions of coloured netting and tubing. It recommended that the optimum was a white square mesh panel with the netting to the rear of that panel black. (In commercial circumstances, use of black netting is more practical than the use of black canvas tubing and has the same effect ie to provide the necessary stimulus to drive fish up to the top of the net where they are best positioned to escape through the square mesh.)

31. On rigid sorting grids as used in Norwegian fisheries, the Group took the view that this equipment was too large at present to be handled safely on the relatively small deck space that is common to most United Kingdom vessels. If, however, this gear becomes more manageable at sea as a result of design improvements and so capable of use on the vessels which predominate in the United Kingdom fleet, then its use will be reconsidered. Already, in the more specialised context of shrimp fisheries, work is being done under contract to MAFF on the use of simple, small, cheap grids to separate shrimps from immature whitefish. Once the results of this work are available, the Group will be asked to consider the practical use of such grids in the commercial fishery.

Select Committee's conclusion:

- **We recommend that the Government should provide incentives and training for fishermen to participate in wide-ranging trials of new gear and conservation practices, in which the fishermen would collect data and present their findings to**

scientists, who would in turn report back both to the fishermen and to the Government. (paragraph 3.24)

32. The Sea Fish Industry Authority (SFIA) carries out trials of new gear aimed at improving selectivity. Some of this work is funded through the SFIA levy, while some is commissioned as research by the Fisheries Departments. Usually work at sea is carried out on commercial vessels with the help of the skipper and crew. SFIA also organises training courses in fishing gear technology.

Select Committee's conclusion:

- **In addition to the existing protected areas, there is a strong case for the temporary closure of areas where a high proportion of juvenile fish are congregating. We recommend that consideration be given to the establishment under the Common Fisheries policy of a system similar to that operated in Norwegian waters, requiring fishermen to report to the authorities if there is a high proportion of juvenile fish in their catch. Following receipt of such a report the area should be surveyed by the appropriate national authority and, providing that the report is verified, the area should be closed until the juvenile fish have dispersed.** (paragraph 3.25)

33. The Fisheries Conservation Group considered the temporary closure of areas where a high proportion of juvenile fish were known to be congregating. The industry members of the Group were receptive to this idea. Detailed analysis of the issue and its possible application in United Kingdom waters is now being undertaken by Fisheries Department scientists.

Select Committee's conclusion:

- **We recommend that precautionary Total Allowable Catches, which do not currently exist for the species most commonly targeted by industrial fisheries, should be set for sand eels.** (paragraph 3.26)

34. As fisheries scientists are now satisfied that it is a practicable proposition to set a Total Allowable Catch for sandeels on a precautionary basis, the Government will propose that ICES should prepare the necessary information and that the Commission should include an appropriate proposal for the fishing year commencing 1 January 1997.

Select Committee's conclusion:

- **Until adequate scientific information is available, we recommend an interim ban on drift net fishing, in accordance with the precautionary principle.** (paragraph 3.29)

35. EU fisheries legislation imposes a maximum length of 2.5km on drift nets in line with the precautionary approach and Resolutions adopted by the United Nations General Assembly. The Government is funding scientific research to increase knowledge of the effect of the high seas drift nets considered by the Committee on non-target species, with a view to reducing by-catches while taking account of the effect on fishermen's livelihoods.

Select Committee's conclusion:

- **We recommend that the European Commission should fund research to ascertain whether or not nets lost in European waters are involved in "ghost fishing". If, as in Norwegian waters, this is found to be the case, a comprehensive programme for the recovery of lost nets should be set up and repeated at regular intervals. A requirement under the Common Fisheries Policy for fishermen to record in their log books when and where they lose nets at sea should also be considered.** (paragraph 3.30)

36. The European Commission has commissioned a study of abandoned bottom set nets to run from March 1995 to November 1996. This project is being co-ordinated by the Sea Fish Industry Authority and includes contribution from the Directorate of Fisheries Research, the Countryside

Council for Wales and English Nature. Spain and Portugal are also participating. Earlier, in February 1995, the European Commission's Scientific Technical and Economic Committee for Fisheries (STECF) examined work done by the French institute IFREMER on ghost netting effects of drift nets. STECF endorsed IFREMER's conclusion that abandoned drift nets in the North East Atlantic quickly lost their buoyancy, became rolled up by wave action, sank to the seabed in depths of between 1000 and 4000 metres of water and ceased to fish after a relatively short period.

37. The Government has noted the Committee's conclusion that, if ghost fishing is established to be a problem in our waters, then a comprehensive programme for the recovery of such nets should be set up and repeated at regular intervals. The Government has no reason to believe that a requirement on fishermen to record in their logbooks when and where they lose nets at sea could be enforced or would have much practical value but this will be considered again should a net retrieval scheme appear to be desirable in the light of the research work referred to.

Select Committee's conclusion:

- **We recognise, however, that before its widespread introduction, the implications of a ban on discards need to be carefully examined, and recommend that such an investigation should be initiated by the British Government. This should be a priority in Government spending on fisheries management. If it proves successful, the British Government should urge the introduction of a more widespread ban on discarding by European Union countries. (paragraph 3.22)**

38. The Government attaches high priority to reducing discards and is working to do so by reducing fishing effort, by making fishing gear more selective and by other technical conservation measures such as temporary closures of areas of sea to protect juvenile fish. The Fisheries Conservation Group considered a ban on discards of pelagic species but concluded that it would be extremely difficult to enforce (and the practice thus likely to persist) without employing significant new resources on enforcement. The Government remains of the view that in the circumstances of the mixed fisheries in which the United Kingdom fleet works a simple discard ban is not practicable.

Select Committee's conclusion:

- **We recommend that the Government should support research into the possibility of devising a diet for culture fish that does not depend upon fish meal. (paragraph 3.39)**

39. For most species of fish that are farmed in the United Kingdom protein requirements are mainly supplied from fish meal. Only around 8% of world fish meal production is used in aquaculture; most goes to animal (mainly pig and poultry) feed. With the continuing increase in demand for fish meal it is likely that industrial fishing will be unable to meet future needs. It is this prospect, along with the wish to improve the consistency of price, supply and quality, that has led to a wide variety of alternative feedstuffs being evaluated in recent years including various plant and animal products together with novel materials such as yeast, algae, bacteria, worms and insect pupae.

40. A MAFF-funded study in the 1980's showed that limited substitution of fish meal with plant proteins can be achieved without detriment to performance or quality but that at levels above about 20% growth rates significantly decline. Obviously there is a trade off between fast growth and expensive diets versus slower growth and cheaper diets. It is for the industry to decide on the basis of knowledge of growth rates and costs, and within the legal constraints governing the use of some animal proteinaceous material (for example, mammalian meat and bonemeal) in feed, whether substitute proteins make economic sense in the context of fish farming. Up until now the industry has sought to maximise growth rates.

41. There is currently considerable interest in extending the work on feedstuffs, both among industry and the research community, and most major feed companies have on-going programmes for the utilisation of alternative protein sources. This is clearly a vital area for continued research in order to develop effective and nutritionally sound alternatives to fish meal before the supply begins to limit aquaculture development both in the United Kingdom and worldwide. In recent years this research has been pursued, in the main, by industry, but there is scope for collaborative

research with Government under the Aquaculture LINK Programme and also under the EU Fourth Framework Programme (FAIR).

Select Committee's conclusion:

- **We recommend a cautious approach to the development of fisheries on deep-water fish stocks and, in particular, consider that gear capable of damaging the deep-water environment should be avoided. A promising alternative gear, the longline, should only be used where appropriate methods have been adopted to prevent the incidental mortality of seabirds. (paragraph 3.40)**

Select Committee's conclusion:

- **We accordingly recommend that research should be carried out as a matter of urgency into the likely sustainable catch levels, technical measures to minimise damage to non-target and juvenile deep-water fish and the importance of deep-water fish in the food chains to other marine organisms. International collaboration should be sought on research (which is highly expensive in deep-water fisheries), suitable management strategies, including the possibility of licensing schemes, and enforcement. (paragraph 3.42)**

42. The United Nations Agreement on Straddling and Highly Migratory Fish Stocks provides detailed guidelines for the collection of research data, multilaterally agreed management strategies and enforcement of such measures. The United Kingdom fleet has a relatively limited involvement in deep water fishing which is not therefore a high priority for the allocation of research funds to supplement the extensive work done on this subject by the Directorate of Fisheries Research and others in the 1970s. Nevertheless, the United Kingdom participates in the ICES Study Group on Biology and Assessment of Deep Sea Fisheries Resources and in an EU funded project targeted towards better knowledge of deep sea ecosystems.

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