

# **Are we fishing the seas dry?**

**Research Paper 94/112**

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This paper considers whether overfishing is a worldwide problem threatening an environmental and social disaster.

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## I. Introduction

Fishing dates back thousands of years but fishing methods have been revolutionised since the turn of the century. Technology is today vastly effective at enabling fish to be caught. At the same time, fishing remains a hunting rather than a farming activity, in the sense that fishermen catch a certain amount of a fixed stock of creatures, but do nothing to increase the size of the stock. At a certain level, fishing is a sustainable activity and the current challenge is to keep fishing activity at that level.

Modern fishing has become extremely efficient and the combination of improved technology with increased fishing effort has boosted catch volumes to the point where many fishery stocks are seriously depleted. The effect can be cumulative, with fishermen in depleted fisheries trying to preserve their income by catching a larger number of immature fish, thereby depleting the stock to a greater extent for each tonne of fish caught. Although there are various methods of limiting the size of catches, these face enormous problems as technology improves, even within national waters. For waters outside national control the problems are far more serious, since international agreement is also required.

There is a real possibility, therefore, that worldwide stocks of fish will soon be disastrously depleted. The damage would be enormous. First, the fishermen and those in related industries lose their jobs. Second, the competition for fish may extend overfishing into areas of the Third World where more than 100 million people are dependent on fish for their food and livelihood<sup>1</sup>. Third, there is a danger of destruction of whole species and consequent loss of biodiversity, through the use of enormous drift nets and through knock-on effects; whole marine ecosystems could collapse, with a disastrous loss of seabirds and of other marine creatures who rely upon fish for their food.

There are some signs that the process could already be happening. Even within the EU, there are serious difficulties in regulating the volume of fishing effort, reflected in the controversial "days at sea" restrictions proposed for the British fleet. Another ominous sign is that the extremely rich cod fishery off the coast of Newfoundland has been so overfished that it has now been closed for two years and there are fears that the damage could be irreversible. The Alaska walleye pollack fishery has been so heavily fished that in 1992 its landings made it

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<sup>1</sup>*New Scientist* 20 August 1994 p.45

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the largest single-species fishery in the world. The fishery is now showing signs of exhaustion<sup>2</sup>. Similar examples could be found almost all over the world.

The situation is exacerbated by marine pollution and by further environmental threats. For example, some University of California researchers have shown that excess ultraviolet light which is leaking through the Antarctic "hole" in the ozone layer might be reducing the productivity of photosynthetic plankton, on which krill feed, by as much as 12%. Such a reduction would be very likely to affect krill numbers, and thereby affect the numbers of all organisms, including whales, that feed on krill<sup>3</sup>.

It is always far easier to know about the volume of catches than about the volume of fish that remain in the seas. The UN Food and Agriculture Organisation estimates that global marine catches have steadily increased from the late 1940s to the 1990s. In 1948-52 the global marine catch averaged 19.4 million tonnes (mt), increasing to 30.3 mt for the 1958-62 period. The corresponding figure was 63.8 mt in 1978-82, and 82.1 mt in 1988. The 1989 and 1990 figures show a slight decline (81mt and 79mt respectively)<sup>4</sup>.

The *Financial Times*<sup>5</sup> noted of the more recent period that "although precise figures are hard to establish, there are signs that worldwide catch levels have since dropped by several per cent. That halting of the industry's expansion, many fear, reflects the growing scarcity of many types of fish." Fishing fleets have continued to increase in size and the industry is often heavily subsidised. The FAO study estimates that "the annual operating costs of the global marine fishing fleet in 1989 were on the order of US\$ 22,000 million greater than the total revenues, even without considering capital costs"<sup>6</sup>. Obviously ships that are losing money have more incentive to cheat on quotas.

There are more fishing boats than before and they are much more powerful. In addition, they can locate their positions to within a few dozen metres by using satellite navigation systems, locate weather systems equally accurately and then use sonar systems to locate each shoal of fish. In some areas, fishermen are using the so-called "wall of death" drift nets, up to 50 kilometres long which catch all types of fish and dolphins indiscriminately. Less publicised problems can arise from beam trawling where the beam is dragged along the seabed when it can damage fish spawning grounds.

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<sup>2</sup>*Issues in Science and Technology* Spring 1994 p.39

<sup>3</sup>*The Economist*, 25 September 1993, pp121-127

<sup>4</sup>*Review of the state of world marine fishery resources*, FAO 1994, p.3

<sup>5</sup>*Financial Times* 30 August 1994

<sup>6</sup>*Review of the state of world marine fishery resources*, FAO 1994, p.11

It is sometimes suggested that we should move towards fish farming rather than fish hunting, but that is not really an answer. Current fish farming uses (as foodstuff) a large volume of fishmeal to produce a much smaller volume of fish that consumers want to eat. Although some of the meal comes from the byproducts of the whitefish industry, much comes from "industrial fishing" of species such as Norway Prout, sprat, capelin and sand eel, simply to be made into fishmeal. According to one estimate, it takes 5 tonnes of wild fish to make one tonne of farmed salmon<sup>7</sup>. Fishmeal is also used as food for other intensively farmed animals such as chickens. The consequent industrial fishing can create considerable environmental problems, because it strikes low down in the so-called "food chain" and can remove the food sources of fish higher in the chain or from sea birds or mammals. The precise effects of such activities on marine ecosystems are likely to be complex and difficult to predict. Some people argue that the industrial fishing of sand eels is the cause of the lack of wild salmon in Scottish rivers, although there are also there are other possible causes.

Another idea is that fishing fleets should diversify from the few species which people normally like to eat into a much wider variety, mainly of deep-living fish which seem relatively abundant but which can be caught with modern equipment. Although this policy has been tried a little, it seems full of dangers. Very little is known of the life cycle of many of these fish but they seem typically to be very slow to reproduce and grow (see section III). Therefore if this stock is once depleted, it would be very difficult for it to recover.

A situation has been reached where the fishing fleets of the world could deplete the worldwide fish stocks in a short period. The question is whether forms of control at national and international level will prevent them from doing so. If controls fail, fish catches will fall and the prices rise. Rich countries will have to pay more or change their diet. Poor countries will be the substantial losers, with millions of people potentially losing their livelihood and their source of food. Broader environmental consequences would certainly follow, with the destruction of other marine life.

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<sup>7</sup>Quoted in Library Paper 93/61 p.11

## **II. The EU Common Fisheries Policy**

### **A. How it operates**

The Common Fisheries Policy was only introduced in 1983, after years of negotiation. In a sense, such a policy was not required in the 1960s because coastal limits were small and therefore everybody could fish in a large part of the fishing grounds. There were two main changes in the 1970s. The first was the accession to the EC of the UK, Ireland and Denmark in 1973, with these countries' extensive coastlines. Indeed, Norway was part of the enlargement negotiations, although it finally decided not to join. Clearly fisheries would play an important part in the negotiations and the EC 6 agreed to have a Common Fisheries Policy in June 1970, just when the accession negotiations were opening. In practical terms, however, the policy did not make much difference to anything. The negotiations over entry brought a huge area of sea within EC territorial waters but did little to bring liberalisation to fishing arrangements.

A separate development was equally influential. The move towards large coastal limits was led by Iceland, which unilaterally announced limits of 12 miles, then 50 miles and finally 200 miles over the 1970-1976 period. The British fishing fleet was therefore excluded from Icelandic waters, which had previously been the main fishing grounds for much of the deepwater fleet. The move to 200 mile limits became general, partly because of a perception that conservation was not working beyond national limits and partly because once a few countries accepted larger limits it was in the interests of other countries to follow the protect their own fishing grounds. It was the EC rather than the UK which could claim the large zone.

British fishermen often complain that the Common Fisheries Policy allows foreign fishing fleets into waters from which they would otherwise be excluded. That is only partly true. When the UK entered the EC the waters were mostly international and other countries could fish there if they wanted. The CFP was only formed hesitantly and it has always offered considerable protection to fishermen of countries which have traditionally fished in the area.

Only in 1983 did the CFP really start to operate. The agreement which had been reached did not allow fishermen from other EC countries to fish where they had not previously done so. Within six miles of the coast fishing is reserved for local fishermen. Between six and twelve miles it is reserved for locals, along with foreigners from countries whose fishermen

traditionally fished in the area. Beyond twelve miles fishing is open to all within the Community, but there are **national quotas** for each type of fish in each area and these - shares of the **total allowable catch** (TAC; see section III) - are based upon the historical record of what each EC country caught in each area. The Common Fisheries Policy preserves this distribution of quotas according to the "principle of relative stability". All one can say is that UK fishermen lost access to the Icelandic waters when 200-mile limits were introduced in the seventies, but were not compensated by being allowed to ban foreigners from their own waters.

The position of the CFP remains, however, very unsatisfactory, particularly in the UK. Because of overfishing in EC waters, two separate policies have been adopted. First, there are national quotas for each type of fish in each area. Second, there are measures of effort limitation.

Quotas are decided annually. The EC's Advisory Committee on Fisheries, composed of scientific advisers, recommends to the European Commission what it thinks should be the total allowable catch for each species in each area, in order to preserve fish stocks (see section III for further details). These recommendations are often changed before the Council of Ministers actually accept total allowable catches for the year to come. The quotas are normally decided at the December Fisheries Council each year. The December 1993 Council increased UK quotas for 14 stocks from the 1993 level. Thirteen were reduced and 19 remain unchanged. The total allowable catches exceeded those recommended by the EC's Advisory Committee for Fisheries Management who said that stocks of cod and haddock were at historically low levels and that total fishing effort should be reduced by 30% to safeguard stocks for the future<sup>8</sup>.

The main problem at the moment relates to effort limitation. In principle, a system of quotas should be enough to control fishing within the limits allowed by the state of the fish stocks. However, everybody agrees that a quota system by itself is insufficient. One major problem is that if, for example, the cod stock is exhausted in one area fishermen may continue to fish for haddock. If they catch cod they may simply dump it over the side, dead. There is also great temptation for fishermen to break the rules if they are fishing in an area where the quota for some of the fish has been exhausted.

The EC therefore introduced rules whereby each EC country would limit its fishing effort in one way or another. The agreement currently in force covers 1993-1996. It envisages cuts of up to 20% in demersal fleets [demersal fish live on or near the sea bed], cuts of up to 15% for beam trawlers and a freeze in the size of pelagic fleets [pelagic fish are mid- or surface

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<sup>8</sup>Scotland on Sunday 19 December 1993



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water dwellers]. 40% to 45% of the necessary cuts can be made by effort reductions. Each country has to report to the Commission to show that its policies are acceptable and that they are on track to bring about the necessary reductions.

The UK chose to combine two main policies. First, there is a limited decommissioning scheme to cost £25 million over three years. Second, there would be a limit on the number of days that fishermen could spend at sea each year. On the whole, the British Government is sceptical about the cost-effectiveness of decommissioning on the grounds that you tend to end up paying a considerable sum to buy out the oldest, least efficient boats, and that decommissioning is most attractive to those fishermen nearing retirement. In September 1993, the Government announced that in the first year of the scheme 142 fishing vessels were decommissioned, reducing the UK fleet capacity by about 2.5%<sup>9</sup>.

However, fishermen dislike the days at sea restrictions, largely because they do not receive compensation for loss of income. Many fishermen look with some envy at farmers who are being paid compensation for the land that they set aside. Extra unpopularity was added through what appears to have been a genuine misunderstanding of the scheme. Since the restrictions were being extended to some vessels not previously covered, these fishermen did not always have records to show how much they had been fishing and therefore what their rights were in the forthcoming scheme. MAFF and the Scottish Office offered such fishermen 180 days fishing, rather as a first bid in order to get them to show their records. These fishermen assumed that they would be tied up for nearly 200 days a year and reacted angrily, despite Ministry assurances that informal records would be accepted.

A major concern is the feeling that the scheme discriminates against British fishermen because they have to remain tied up in port while foreign fishermen are fishing the same waters. The vast majority of EC fishermen are not subject to restrictions of this type. That reflects the different way in which the reduction of fishing effort policy has been applied in the various Member States. In 1993 the days at sea plan was challenged in Court on the grounds that it was discriminatory against British fishermen. On 7 July 1993, the Government announced that the measures would be postponed until 1 January 1994, to give fishermen and their representatives the opportunity to come forward with their own ideas for tackling conservation. On 10 December the High Court referred the action to the European Court of Justice. The Government then announced the suspension of the implementation of the days at sea restrictions.

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<sup>9</sup>Scottish Office Press Release 21 September 1993

The present position is therefore very unclear. The commitment under the Multi-Annual Guidance Plan still remains but it is difficult to see how the UK can conform to it. The judgement in the EC Court of Justice is not expected for another 18 months or so - perhaps not till the end of 1995. An announcement is expected soon as to whether the next round of the decommissioning scheme is to go ahead. The doubt relates to the fact the decommissioning was seen as part of a package of effort control measures rather than an isolated measure. However, if decommissioning is stopped, then it becomes even harder to see how the UK could meet its commitments. The opposite reaction is possible and there might be a sharp increase in decommissioning in order to meet the commitment. The £25 million scheme was aimed at reducing capacity by about 5-6%. That figure suggests that a decommissioning scheme aimed at reducing capacity by the amount of the UK's commitment would cost three to four times as much - perhaps £75 million to £100 million.

Comparisons with other EU countries are difficult because the position of each fishing fleet is so different. More emphasis has been placed on decommissioning on the Continent, but normally the fleets concerned have been much smaller and the sums paid roughly in line with the British scheme.

At the moment, the Commission is apparently being understanding in the sense of not pressing the UK to do more before the result of the Court case. However, that is not the same as releasing the UK from its commitment to meet the target by 1996. It does not seem impossible that after the result of the Court case, the UK might be forced to adopt draconian measures to reduce fishing effort dramatically in order to meet the deadline.

On 15 June the Government announced a resumption of the decommissioning scheme. The Minister Mr Jack announced<sup>10</sup> :

I am pleased to announce that the two further rounds of decommissioning, this year and in 1995/96, are to go ahead as planned. Of the total of £25 million for 1993/94 to 1995/96, £8.9 million will be made available this financial year. This includes an amount corresponding to the balance remaining from last year's scheme...We shall be exploring further with the industry and with the Commission what other measures we might adopt to help us to achieve our MAGP targets. We are looking particularly at technical conservation measures and at possible changes to the licensing system, but these considerations need not delay progress on the decommissioning front.

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<sup>10</sup>HC Deb 15 June 1994 c.573w

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At the same time, the *Fishing Vessels (Decommissioning) Scheme 1994* (SI 1994/1568) was laid before Parliament. Basically this extends the previous scheme. However, the problem remains that the scale of the scheme is not large and it is unlikely to be enough to make the size of the UK's fishing fleet conform to the MAGP.

A ministerial comment on the days at sea problem came in reply to a PQ when the Minister (Mr Jack) commented<sup>11</sup> :

"The European Court is unlikely to respond until 1995. In those circumstances, the Government decided to suspend the days at sea restrictions pending clarification of the legal position. Currently we are moving towards our targets via decommissioning and licence penalties. We are also having discussions with the Commission on the possible contribution to effort reduction from technical conservation measures."

Fishery issues were important in several ways in the recent enlargement negotiations, particularly for Norway which has traditionally controlled its fishing very strictly. Not only are foreign boats kept out of large areas, but the fishing is reserved for those living in isolated northern settlements. It is generally accepted that Norway has a better record in protecting its fish stock than the EC. Agreement was reached, leaving Norway considerable freedom in organising its fishing policy in northern waters.

The problem of Spanish demands for accession to Norwegian waters was solved by buying some of the Russian quota. British fishermen have not lost any of their quota or access rights in Norwegian waters. They might, however, feel that Norwegian fishermen have got a better deal than they have, because of the right to continue managing the fishery north of the 62nd parallel and, perhaps more important, of the joint declarations on the 12 mile limit and the ownership of fishing vessels. The specific derogation allowing Norway to continue to manage its northern fisheries lasts only until 1 July 1998, but the more general declarations establish principles to be taken into account in the negotiations for later arrangements. These acknowledge, amongst other things, the importance to Norway of maintaining viable fishing communities and of relating the ownership of fishing vessels to the local community.

In addition, the deal precipitated an acceptance of Spanish and Portuguese full entry into the CFP in 1996. The matter is slightly more complicated because the *Factortame* judgement by the European Court of Justice ruled that it is not permissible for the UK to restrict UK registration of fishing vessels to those with predominantly UK crews. Therefore there are

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<sup>11</sup>HC Deb 7 July 1994 c. 280w

some Spanish vessels with Spanish crews which are registered as UK vessels and whose catches form part of the UK quota.

However, Spain and Portugal entered the EC after the CFP started. They were not given greater access to fishing grounds under the transitional arrangements following their entry. It has now been agreed that they should become full members of the CFP in 1996. They would naturally like to be given access to EC waters, but that would greatly upset other states which are trying hard to reduce over-fishing. The final arrangements are currently being sorted out, but the principle of "relative stability" is being interpreted to mean that the entry of two new countries should not change their rights to national fishing quotas. The Fisheries Council of 12 April addressed this issue, which has caused considerable disagreement and remains unresolved. The Minister (Mr Jack) announced what was agreed<sup>12</sup>:

The regulation ensures that no changes can be made to the current rules governing Spanish and Portuguese fishing until the replacement arrangements have been set out and agreed by the Council. All the changes will have to conform to the key principles of relative stability and no increase in fishing effort. In formulating the changes the Commission will also have to provide specifically for sensitive zones, in particular to take account of the need to balance resources and the fishing effort deployed. The area of the Irish Box is noted as such a zone where fishing effort will need to be closely monitored and any necessary measures taken.

Another issue of particular concern to UK fishermen is the position regarding areas in which Spain and Portugal are currently not allowed to fish, such as the North Sea. There is no obligation on the Commission to make any proposals for access to these areas. But if it does, access can only be given to stocks not currently subject to TACs, and would have to be on the basis of track records in a recent and representative period. Spain and Portugal have had no track record in the North Sea since the date of their accession.

This is a satisfactory outcome which fully protects the interests of the British fishing industry and provides a sound basis for the detailed negotiations over the coming months.

Considerable problems remain in reaching an agreement whereby Spain and Portugal gain greater access to EU fishing waters without either depriving other fishing nations of their share or further depleting the fish stocks.

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<sup>12</sup>MAFF News Release 13 April 1994

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One way in which the introduction of Spain and Portugal to full access to EU waters is meant to work, without operating against the principle of "relative stability" is by the working of the permit system. The June Council of Fisheries Ministers agreed further details of this scheme. According to *Eurofish*<sup>13</sup>:

Framework arrangements for the fishing permit scheme stipulate four aspects to be covered by the permits - zones, species, fishing gear and "others". Now that a broad framework has been finalised - under which member states will award permits to vessels flying their flag - the type of permits to be awarded for specific fisheries will be decided on a case by case basis...Arrangements are also included for permits for third country vessels operating in EU waters. Meanwhile, Council has pledged to give a ruling on the permit scheme relating to EU vessels in third country waters under a specific accord with that third country by the end of this year. Vessels of under ten metres operating within their own territorial waters are to be excluded from the scheme.

The permit scheme is expected to add to bureaucracy but is generally considered necessary if future fishing effort is to be kept in line with the stock situation. Yet the framework scheme does not, in itself, square the circle and any attempt to lay down the criteria for issue of permits is likely to run into problems.

A plan from the European Commission would have regulated fisheries west of Great Britain by "standard vessel days" so as to allow for increased fishing by Spain and Portugal without depleting the fish stocks. This is, of course, the same as "days at sea" but would not be open to the objection of discrimination against British fishermen and therefore could not face the same objection as the purely British scheme. However, the plan was rejected by the Council of Fisheries Ministers in late September 1994, and the Commission must now find a new one. Spain has reiterated its threat not to ratify Norwegian accession unless a firm agreement is reached by the end of 1994. Member states were invited to put forward proposals for a management regime and the UK has offered a plan<sup>14</sup> based on the following key objectives:

- No change to relative stability. No increase in fishing effort.
- Access to Western Waters to be limited to vessels with established rights in the areas concerned.

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<sup>13</sup>*Eurofish* 23 June 1994

<sup>14</sup>*MAFF Press Release* 13 October 199

- The UK to have an effective role in monitoring the access arrangements for vessels of all nations in its Western Waters.
- Special treatment for highly sensitive zones. The Irish Box must be one of these.
- To assist enforcement, larger vessels to be required to report when they enter or depart from areas covered by the regulations and to report catches.
- Strengthening of technical conservation measures.

These proposals show the difficulty of arranging a plan to satisfy all the interests. The British plan, for example, does not seem to offer anything to Spain or Portugal.

## **B. Is the CFP conserving the fish stock ?**

There is a widespread view that the CFP has allowed overfishing, despite the imposition of many unpopular rules on fishermen. It is argued that the European Commission tries to balance the needs of conservation with the economic needs of the fishing communities and therefore allows larger quotas than would be allowed for purely conservation reasons. The setting of TACs and quotas is discussed in more detail in section III.

The House of Lords Select Committee on the European Communities reported in 1992 and was pessimistic<sup>15</sup>:

Compliance with TACs and quotas has been very limited. Scientific working groups have made estimates of the reality of catch reports, independently of the official figures, as they have been doing for several decades. They show significant disparities of up to 60% between the reported catches and the "real" ones. The problem is not confined to certain stocks or even to a region....

In practice the rules on technical conservation have proved impossible to provide adequate protection of stocks. It has been impossible to make them sufficiently stringent from the outset, particularly as regards mesh size. The complexity of certain rules makes monitoring extremely difficult...

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<sup>15</sup>*Review of the Common Fisheries Policy, 1992/93 HL 9 p.59*

At decision-making level the scientific proposals are systematically revised upwards. In fact, the decision-making procedure always leads to overfishing. In addition, the catch estimates from sources other than the Member States show that when a stock proves economically attractive catches are very often, and sometimes very greatly, over the quotas. The fact that discards are not deducted from the quotas creates a disparity between what should be booked (the catches) and what is actually booked (the landings). Systematic overruns of TACs are gravely prejudicial to the operational usefulness of the very cumbersome scientific, administrative and political machinery.

The House of Commons Agriculture Committee was almost equally critical<sup>16</sup> :

**148.** TACs and quotas have failed to conserve stocks, principally because they have generally been set at levels which have not required reductions in the rate of fishing. Scientific stock assessments must remain the bedrock of the TAC/quota system. We recommend that the Government press within the Council of Ministers for the adoption of TAC levels corresponding to a much lower rate of fishing.

The upward revision of the TACs is a public process. Thus, late in 1993, the International Council for the Exploration of the Seas' Advisory Committee on Fishery Management reported to the North East Atlantic Fisheries Commission that heavy fishing had resulted in stocks being entirely dependent on the irregular occurrence of abundant year classes. Ideally, the ACFM claimed, there should be a moratorium on North Sea Cod fishing to allow stocks to recover. They stressed that "cod stocks are in an extremely critical state", suggesting that the ideal scenario would be to reduce fishing to zero to increase stock levels towards their lowest desirable level, which would be three times higher than their present level<sup>17</sup>.

In the event, the Commission recommended a marginal increase in the North Sea cod TAC to 102,000 tonnes and that was accepted by the Council of Ministers. The Commission claimed that increases were justifiable where "they do not endanger resources or taking account of socio-economic problems faced by fishermen"<sup>18</sup>.

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<sup>16</sup>*The Effects of Conservation Measures on the UK Fishing Industry*, 1992/93 HC 620

<sup>17</sup>*Eurofish* 2 December 1993

<sup>18</sup>*Eurofish* 22 December 1993

### III. How scientists estimate the size of fish stocks

#### A. Fish Lifecycles

Commercial fish species such as cod, herring and plaice can commonly live for 10-30 years. This is a relatively long life span for such small animals. Unexploited herring in the North Sea probably live for 10-15 years. Sprats live for 3-4 years; some whitebait for less than one year. On the whole of course, exploited stocks will contain younger fish than unexploited stocks<sup>19</sup>.

The rate of growth of fish will depend on various factors and particularly on sea temperature; in warmer water, fish grow faster. As a general rule, fish in cooler higher latitudes grow more slowly to greater sizes and live longer, compared to their counterparts in warmer lower latitudes.

Fish eggs are typically about 1mm in size and each female fish can produce  $10^3$ - $10^7$  eggs. In marine fishes the eggs' yolk lasts from 48 hours to 3 weeks, depending on temperature. In temperate waters, spawning grounds tend to be fixed geographically and spawning will also take place at the same time each year. For instance, Southern North Sea plaice spawn between the Thames and the Rhine, and the peak spawning date occurs on the 19 January each year - this peak date only ever varies by less than a week, although the spawning period lasts for two to three months in all<sup>20</sup>.

The fish larvae drift away from the spawning ground to the nursery ground; this is a passive migration called the **larval drift**. On the nursery grounds the larvae put on weight for a year or so. As they mature they migrate towards the feeding ground, and here they **recruit** to the adult stock. In time the adults will migrate to the spawning ground to breed, and this completes the migration cycle.

In the Southern North Sea plaice, the larvae drift from their spawning ground between the Thames and the Rhine to their nursery grounds inside the western islands of the Waddensee. During their 2nd, 3rd and 4th years the juveniles spread towards deeper and deeper water away from the Dutch coast. Another general rule of fisheries is thus that older, larger fish

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<sup>19</sup>*Fisheries Resources of the Sea and their Management*. David Cushing 1975 p.11

<sup>20</sup>ibid, pp.13-17



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of any species are found in deeper waters. The maturing plaice finally join the adult stock in deeper water near the Dogger Bank. In late autumn adults migrate south again to the spawning grounds.

The brood spawned in any given year is called the **yearclass**. The size of subsequent yearclasses gets determined largely during the period of larval drift between the spawning ground and nursery, by rates of growth and death during this time. A **stock** is a large distinct population of fish. For example, there are 3 or 4 plaice spawning grounds in the North Sea and fish tagged all return to the same place to spawn each year and do not stray to other stocks (some mixing of stocks may occur during larval drift, however).

As well as plaice, there are a number of different cod stocks in the North Sea. Stock separation is maintained, at least in part, by the structure of the currents that move the larvae and which carry both juvenile and adult fish; fish can board and disembark from a given current structure at given times, but stray from migration routes and homing is insignificant and so stocks tend not to mix.

Clearly, fish population biology is a complex science and stock behaviour and regeneration is a dynamic process. Fisheries biologists need to understand the migration circuit, the recruitment of juveniles to the adult stock, death and growth rates during larval drift and subsequent stages, and the structures of different adult age classes before they can predict the response of a given fish population to fishing.

### **B. Fish Population Dynamics**

In unexploited fish stocks, birth rates and death rates are approximately equal. Fisheries biologists determined two general principles at the turn of the century. To catch fish sustainably, losses from catches need to be balanced by a relative increase in birth rate, or by increased recruitment to the adult stock. This is termed **conservation of recruitment**; recruitment overfishing can result in the stock reducing so far that recruitment to the adult stock declines completely.

Because fish grow so much during their adult life, it was realised that fishermen would lose money by catching fish that were too small. This is called **conservation of growth**. Little fish should be left to put on weight and so increase in value.

Later, it was realised that fishing effort and stock density were inversely related. A decrease in fishing effort will increase stock density, and hence stock, and hence catches. This was expressed mathematically in an early form of what is known as the **catch equation**. Using more sophisticated descriptive models, later biologists were able to calculate optimum catches. 'Optimum catch' was later redefined as **maximum sustainable yield**. This was based on the principle that as population density decreases (through catching in this case) net production increases; reproductive capacity, speed of maturation, individual growth and survival all increase in compensation.

Early descriptive models were derived by fitting theoretical equations ever more closely to observed data, year after year, for perhaps a decade. Obviously, such an approach would not be fast enough if rapid or immediate fisheries management decisions were needed. However, such a descriptive model was used to persuade the IWC that conservation was needed urgently for the Arctic blue whale in 1964<sup>21</sup>.

Later analytical models used slightly more sophisticated growth equations to determine rates of growth and fecundity of populations. Over the years, the relations between stock size, recruitment and fishing effort, and many other factors such as growth rate, temperature, population density and natural mortality, have been continually explored and modelled. The science of population dynamics of fisheries has developed greatly, and today a mixture of modelling methods are used.

As a starting point, fish stocks are measured through landed catch sizes, but in addition, fishing stock sizes can now be estimated through using acoustic (sonic) surveys.

### C. Conserving Stocks

Early conservation measures included transplanting fish from nursery grounds to areas where they had been depleted through overfishing (this was done for plaice in the North Sea) and by setting minimum net mesh sizes to let little fish escape.

By the early 1960s most demersal [on or near bottom-dwelling] stocks were controlled through minimum landed sizes in ports and minimum mesh sizes at sea.

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<sup>21</sup>*Fisheries Resources of the Sea and their Management*. David Cushing 1975 pp22-37

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In 1967, cohort analysis was introduced, which gave annual estimates of stock by size, and also gave estimates of recruitment. 'Almost as a consequence' of the structure and size of year classes being better understood, **catch quotas** were introduced for certain North Atlantic stocks in 1970<sup>22</sup>.

**Total Allowable Catches** (TACS) or yearly catch quotas are set by fisheries biologists, based on the maximum sustainable yield.

The International Council for the Exploration of the Seas (ICES) annually provides the EU and other fisheries managers with a range of harvest rates, by consensus of scientists from about 20 countries. Very few fisheries are managed through constant catch rates. Most use constant harvesting rate through which the amount removed varies as fish population size fluctuates<sup>23</sup>. Quotas have been cut drastically over the years. For example, EC fishermen were allowed to take more than 500,000 tons of cod in 1983, but in ten years that quota had fallen to under 200,000 tons<sup>24</sup>.

Unfortunately, after fisheries biologists have recommended quotas, based on maximum sustainable yields, these have often been disregarded for political reasons. This has had, for instance, 'disastrous' results for the North Sea herring stocks<sup>25</sup> and for haddock on Georges Bank, off New England<sup>26</sup>. This has also led to the bluefin tuna, the largest bony fish on Earth, being in danger of crashing to extinction<sup>27</sup>.

Perhaps inevitably, scientists take the long term view, but fishermen and policy makers appear too often to adopt a short term stance<sup>28</sup>.

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<sup>22</sup>ibid

<sup>23</sup>"Achieving Sustainable Use of Renewable Resources" Rosenberg *et al*, *Science* 5 November 1993 p. 828

<sup>24</sup>"The Net Effects of Over-Fishing", *OECD Observer* October/November 1993 p.9

<sup>25</sup> *The International Politics of the Environment*, Eds.Hurrell & Kingsbury, p.76

<sup>26</sup>"Achieving Sustainable Use of Renewable Resources" Rosenberg *et al*, *Science* 5 November 1993 p. 828

<sup>27</sup>"A Fishy Tale" *New Scientist*, 20 November 1993 p.3

<sup>28</sup>"The Net Effects of Over-Fishing", *OECD Observer* October/November 1993 p.9

## IV. The Collapse of the Canadian Cod Fishery

One of the most dramatic examples of depletion of fish stocks has been the spectacular decline in the Canadian Atlantic cod fishery, often considered to be the richest fishing ground in the world. Basically this is a story of depletion of stocks in international waters before the extension of national limits to 200 miles in 1978. After Canada took control of the fishery, tight conservation measures were imposed and much improvement was noted. However, in the past five years stocks have again declined sharply and the fishery is now almost entirely closed.

Evidence to the House of Lords Select Committee on the European Communities from the Canadian High Commission<sup>29</sup> presented the story in an optimistic way, as an example of how fisheries management can succeed.

The phrase "Grand Banks of Newfoundland" resonates in European and Canadian ears alike. The nourishing seas of this great underwater plain have provided a livelihood and a way of life for communities on both sides of the Atlantic for hundreds of years. The fishery pervades their way of life, maintains their social ties, and is the foundation of their economies, their histories and the traditions. But the application of modern fishing technology and the massive scale of exploitation by international fleets in the 1960s and early 1970s led to a resource crisis and the severe depletion of these fisheries resources...

International fleets overfished areas and stocks, one after the other. While catches increased, catch rates declined; the fishery became less economically viable year after year. Fishing pressure by then had well exceeded the capacity of stocks to reproduce themselves; the catches consisted of small quantities of small fish. Fish weren't living long enough to mature and spawn. These symptoms of overfishing are well known in Europe today.

It was only after the extension of Canadian fisheries jurisdiction to 200 miles on January 1 1977, when strict conservation measures could be put in place and enforced, that the stocks started to rebuild.

Not only have fish stocks recovered but so too have groundfish catch rates. As you know another measure of the health of a fish stock is the catch per unit effort...The average catch per day for Canadian trawlers in 1961 was about 13

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<sup>29</sup>1992/93 HL 9 pp. 179-194

tonnes. This dropped to 8 tonnes in 1975 after the extensive overfishing of distant water fleets. However, in just seven years of Canadian management catch rates were more than 18 tonnes a day.

While Canadian managed cod stocks improved, and are returning to a sustainable level, those in the Northeast Atlantic are in fact at lower levels than they were before European nations extended their fisheries jurisdictions to 200 miles in 1977. This, despite the fact that biological recovery should be more difficult in the harsher Atlantic environment than in the North Sea.

Although Canada controls the fisheries up to 200 miles from its coasts, the fish straddle this limit and the fisheries beyond have to be controlled multilaterally. It is clear that Canada sees this as its major problem.

Despite the Canadian control over the 200 mile zone, however, cod stocks fell sharply in the 1990s. In 1992 the formerly rich Newfoundland fishery was closed for a two-year moratorium. *Eurofish* reported that the devastating decline in the northern cod stock in the last two years had reduced the biomass by half and the spawning biomass by three quarters, but noted optimistically, "A break until spring 1994 should allow the spawning stock biomass to recover quickly to its long-term average, according to Canadian scientists"<sup>30</sup>.

In the event, the decline has continued, despite the fishing moratorium. Far from there being any question of removing the moratorium, it has been extended to virtually all Canadian Atlantic waters. The human cost of the ban has been considerable, particularly in Newfoundland where there is little alternative employment and 40,000 people depended on the fishing industry. The *Independent on Sunday*<sup>31</sup> noted :

The single resource that drew Cabot and subsequent English and Irish settlers here - huge swarms of silvery cod - has, with dramatic suddenness all but disappeared. Where once the waters were so alive with fish that, according to fable, it was hard to force a ship's prow through them, now there is empty ocean - and looming social disaster...A Newfoundland deprived of cod would once have seemed unthinkable - like taking the sun from Florida or the mountains from Switzerland. But that is what has happened...Where in the late 1980s the spawning population in these waters was estimated at more than one million tonnes, the figure today is thought to be no more than 15,000 tonnes.

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<sup>30</sup>*Eurofish Report* 16 July 1992

<sup>31</sup>*Independent on Sunday* 1 May 1994

A major problem is the presence of boats just outside the 200 mile limit. There are difficulties between the EU and Canada over the acceptable level of quotas in these areas and the Canadians are always pressing for tighter quotas, but these difficulties are manageable. Much of the problem comes from fishing vessels without nationality or flying flags of convenience - which in this context means registered in countries not affiliated to the North Atlantic Fisheries Organisation. Such countries, which have not historically fished in the North Atlantic, are not liable to the quotas agreed by the members of the organisation. One complaint is that some of these vessels may employ European crews and may be selling into the European market, but the EU is not preventing their activities.

In May 1994, the Canadian government introduced laws to enable Canada to take action to protect fish stocks in the sea beyond the 200-mile limit. The Canadian government, under this law, can make regulations to list the stock to be protected, establish conservation and management measures, and list the classes of foreign vessels to which these measures will apply. This unilateral measure has displeased some other countries and the EU has been concerned that the measures would undermine multilateral effort to halt illegal fishing in these areas. However, there are some signs that the number of fishing vessels from outside the NAFO in these contentious areas has declined.

Another approach to this issue has come from the UN. The *Third UN Conference on Straddling Stocks and Highly Migratory Species* met in August 1994, but failed to reach consensus on a revised draft treaty on conservation and management measures. However, progress made during the conference meant that, for the first time, the text on the table was in the form of a draft treaty which would be binding upon its signatories. However, some fishing nations - notably Japan, Korea and Poland - continue to oppose a binding accord, preferring the option of a voluntary arrangement.

## **V. The "wall of death" drift nets**

Nylon nets have changed fishing in several ways. They can be made very strong and light so that enormous nets - sometimes as long as 50km - can be conveniently towed and hauled in. They are also very difficult for fish or mammals to detect.

Dolphins are particularly at risk. They cannot easily avoid nets since their echolocation (sonar) system is not sensitive enough to pick up such extremely thin strands, nor can they easily break loose if tangled in a net. Instead, they simply drown, since they are of course mammals and they have to breathe air at the surface. Dolphins are targeted by tuna fishermen since the tuna shoals go with dolphins. Therefore the fishermen look for dolphins and throw out their drift nets for the catch. Literally millions of dolphins are believed to have been killed in this way. Environmental damage continues after the nets are discarded, since they do not rot but present a continuing hazard for fish and mammals for decades to come. One fear is that whole marine ecosystems will be completely disrupted through the removal of a whole range of wildlife, even though a large proportion of what is caught will simply be discarded dead.

Since much of this fishing is outside territorial waters, this is an area where the UN has taken an interest. Several Resolutions on the subject have been adopted by the General Assembly<sup>32</sup>. These Resolutions did not specify a maximum length of drift net that should be used, but Resolution 44/225 took note of the Wellington Convention of 14 November 1989 which had set out 2.5 km as the maximum acceptable length for drift nets.

The major countries involved in the large drift netting, such as Japan and Taiwan, have now stopped the practice, but there is a continual struggle with ships flying flags of convenience or small countries registering ships which break the international agreements. Enforcement is extremely difficult on the high seas, although satellites may make it easier to spot fishing boats. It should be relatively easy to prevent - or at least sharply reduce - the number of dolphins tangled in the nets by fitting them with reflectors which are detectable by the dolphins' sonar and which will therefore warn them of the nets. Such reflectors have now been developed, although they are not yet generally in use. The more general problem of widespread unintentional catches within the nets of a wide range of marine life is not soluble in this way.

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<sup>32</sup>44/225, 1989; 45/197 1990; 46/215 1991; 48/445 1993

The huge drift nets were not used by European fishermen but the length limit recommended by the UN was below the length of drift nets widely in use in Europe in tuna fishing. The EU has therefore been trying to phase out the use of drift nets longer than 2.5 km. In 1992 it passed a Council Regulation (345/92) amending Regulation (EEC) 3094/86 laying down certain technical measures for the conservation of fishery resources:

**Article 9a**

1. No vessel may keep on board, or use for fishing, one or more drift nets whose individual or total length is more than 2.5 kilometres.
  
2. A derogation shall be granted until 31 December 1993 to vessels that have fished for long finned albacore tuna with drift nets in the north-east Atlantic during at least the two years immediately preceding the entry into force of this Regulation. These vessels shall be entered in a Community register and may use driftnets whose length may attain 2.5 kilometres, but whose total resulting length may not exceed 5 kilometres. The headline shall be submerged at a minimum depth of two metres. This derogation shall expire on the above-mentioned date, unless the Council acting by a qualified majority on a proposal from the Commission, decides to extend it in the light of scientific evidence showing the absence of any ecological risk linked thereto...

In principle this Regulation should have ended drift net fishing by now unless there was a positive decision to continue it, but the present position is confused. The French fleet contains boats using drift nets of more than 5 km, but only at the very end of 1993 did they apply for an extension of their right to continue using the nets during 1994.

The European Commission recommended the reintroduction of a derogation to allow French fishermen who had benefited from the previous derogation to use drift nets longer than 2.5 km but with an upper limit of 5 km, for 1994 only. However, the Commission went on to recommend the banning of all drift netting in the Community - even for nets less than 2.5 km in length, by 1997.

These proposals required an opinion from the European Parliament, which delayed giving it, thereby preventing the Council from agreeing on a derogation for the French drift netters for 1994. After initial reluctance, the French accepted the ban on longer nets. Italy has also been reluctant to comply. Its fisheries minister told Italian harbourmasters not to prosecute fishermen for using the illegal drift nets. In June Italy asked the European Commission for permission to use drift nets up to 9 kilometres in length until the year 2004.



Some idea of the incidental catch from drift netting comes from the report commissioned by the French government and used to support their claim for a derogation. It estimated that in the 1993 season nearly one million albacore tuna were caught by their fleet, along with 890 other tuna, 3,260 swordfish, 85,320 flying gurnards, 11,690 wreckfish, 82,910 blue sharks and around 1,500 dolphins<sup>33</sup>. The French justification of its long nets was that the dolphin mortality rate was probably less than the natural increase in the stock.

Drift nets are an emotive issue within Europe, and not simply for environmentalists. In July and August 1994, there were repeated clashes between Spanish fishermen and drift netters from France, the UK or Ireland. The Spanish fish the traditional way, with rod and line. Some consider this old-fashioned while others consider it environmentally-friendly and an appropriate technique in an area with very high unemployment. The Spanish fishermen resent modern, efficient, boats from elsewhere in the EU taking what they see as their fish. Part of the resentment relates to the fact that Spain has not yet gained access to EU waters as a whole, but they also complain that fishermen in other countries have been breaking EU rules by using excessively long nets. Since enforcement is undertaken by member countries rather than the EU there are many accusations that inspectors turn a blind eye to infringements from their own nationals. British fishermen have been amongst those accused. They deny that their nets are too long, arguing that their nets contain windows through which dolphins can escape so that the nets appear to be longer than they actually are.

One reason why the Commission favours the phasing out of all drift netting is the difficulty of enforcing restrictions based on the length of nets. However, the proposal would be a dramatic increase in the extent of fishing control in the EU, and there have been serious criticisms of the scientific basis for the proposals.

The House of Lords Select Committee on the European Communities reported in July<sup>34</sup>, concluding that the proposed ban was unnecessary on the basis of current knowledge. The Committee was also unhappy that a derogation had been offered to the French for their drift netting with long nets in the Atlantic yet none had been offered to the Italians in the Mediterranean. The main conclusion was more general.

**44.** In the Committee's view the evidence offered by the Commission for the harmful effects of drift netting is inadequate to justify the banning of all drift net fishing within four years across all Community and national fisheries. The Commission's report provides no evidence in regard to fish stocks to allow for any opinion to be formed as to whether or not the albacore tuna in the North

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<sup>33</sup>*Eurofish* 18 November 1993

<sup>34</sup>*Regulations on Drift Net Fishing* 1993/94 HL 77

East Atlantic are being over-fished, let alone whether drift netting is the principal cause of this over-fishing. Some information on by-catches is provided but no evidence as to their effect on the populations of fish, reptiles and mammals and there is little evidence that any species so caught (with the possible exception of the striped dolphin) is thereby endangered.

45. Nevertheless, the Committee is of the opinion that the Commission's report and the evidence received during this enquiry, while insufficient to justify a ban on drift netting as proposed, gives rise to doubt and disquiet, both as to the effect of drift netting on target fish populations and on those of other species that are victims of the by-catches. This may justify the adoption of precautionary measures for the conservation of those populations but for the present we do not think these need go beyond the restriction on net length to 2.5 km. Research leading to a thorough environmental impact assessment is urgently required alongside an assessment of the costs and benefits to the human populations involved.

The view of the UK Government was recently stated by Earl Howe<sup>35</sup>:

"My Lords, the Government are opposed to the European Union Commission's proposal to phase out drift net fishing for most species, including tuna and salmon, over four years."

Lord Mackie of Benshie asked:

"In the face of the relentless efficiency of modern catching methods, does the Minister really believe that the tuna can remain an unthreatened species?"

The Council of Fisheries Ministers will consider the proposal on 23 November and EU scientists will meet in December 1994 to consider the scientific justification of the proposed ban.

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<sup>35</sup>HL Deb 11 October 1994 c.815

## VI. Whaling - public support for conservation

This section seeks to illustrate how public - and political - will has furthered the conservation cause in the development of international whaling policy in a way which has not been evident for fishing. (During the next session the Library will produce a research paper considering the issues surrounding whaling in greater detail.)

High seas resources, including whales, belong to no-one and are "free for all"<sup>36</sup>. In 1946 the *International Convention for the Regulation of Whaling* was produced, under which the International Whaling Commission (IWC) today still operates. The IWC was initially weighted towards pro-whaling nations and its whale conservation regulations were correspondingly "lax" during the 1940s and 60s<sup>37</sup>. However, more and more non-whaling nations have been joining the IWC, and today non-whaling nations have such a large majority that the whaling nations appear to have been left in a powerless minority.

The move toward conservation resulted in a commercial whaling moratorium being imposed from 1985-86. This was done on the grounds that there were insufficient data on the size of whale populations and reproduction rates to know whether whaling could be sustained. It aimed to allow whale stock to return to "sustainable levels". The moratorium was adopted along with an obligation for the IWC to initiate, by 1990, a "comprehensive assessment" of whale stocks, to undertake the establishment of new catch limits<sup>38</sup>.

The IWC has been developing a Revised Management Procedure (RMP) for commercial whaling. This estimates population levels using models produced and refined over the past few years, to calculate sustainable catches. Japan and Norway want in particular to be allowed to catch one of the more common whales, the minke whale. IWC scientists estimate that there are 760,000 Antarctic minkes, above the number required to resume whaling. Hence the RMP might allow resumed commercial whaling for this relatively abundant species<sup>39</sup>.

Norway has said there are also easily enough minkes in the NE Atlantic to sustain harvests of a few hundred whales<sup>40</sup>. Norway's Foreign Minister has called Minke whales "rats of the

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<sup>36</sup>"The evolution of international whaling law" Gregory Rose and Sandra Crane in *Greening International Law* Ed. Philippe Sands 1993 p.162

<sup>37</sup>ibid p.166

<sup>38</sup>ibid p.170

<sup>39</sup>"Japan optimistic on moves to resume commercial whaling" *Nature* 19 May 1994 p.172

<sup>40</sup>"Norway's whaling and Agenda 21" *The Network, Special Edition* April 1993

sea" which "take fish from fishermen... and from threatened whale species." However, a group of zoologists have said that the "spurious debate about competition between whales themselves is nonsense"<sup>41</sup> and the WWF has attacked Norway's claims regarding numbers<sup>42</sup>.

Citing the IWC, World Conservation Monitoring Centre, IFAW and WWF as sources, the WWF has produced the following figures for whale numbers<sup>43</sup>:

<b>Estimated whale numbers</b>		
Southern hemisphere		
	<i>1900</i>	<i>1993</i>
Blue whale	250,000	500
Fin whale	500,000	24,000
Southern right whale	30,000	1,700
Sei whale	200,000	40,000
Humpback whale	120,000	12,000
Minke whale (NE Atlantic only)	200,000	86,000

At the IWC's most recent meeting in Mexico in May 1994, Japan was still optimistic that commercial whaling might be resumed. At the meeting the IWC's scientific committee recommended its completed RMP for adoption, and a resolution was passed accepting that, essentially, the scientific work on the RMP was complete<sup>44</sup>. However, doubts were raised concerning the feasibility of putting the RMP into practice. This is largely because of difficulties in obtaining accurate estimates of present population sizes, using current methods of sight surveys, and because of the need for foolproof monitoring. It is thought that the RMP will not now be adopted in the "near future", and Norway is reported to have accepted that the IWC is unlikely to implement the RMP "in the next few years"<sup>45</sup>.

As well as negotiations over the RMP, there was also always the possibility that an Antarctic whale sanctuary might be established at the Mexico meeting, so that even if the RMP was adopted and the commercial moratorium lifted, Japan would not be able to resume whaling

<sup>41</sup>letter to the *Independent* 15 May 1993

<sup>42</sup>"Norway declares war on the minke whale" *New Scientist*, 13 February 1993 p.9

<sup>43</sup>"Whales: are they still safe?" *WWF News* Summer 1993 p.16

<sup>44</sup>HC Deb 15 June 1994 c575-7w

<sup>45</sup>"Whales win Southern sanctuary" *New Scientist* 4 June 1994 p.7

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in the Antarctic, and a large proportion of the globe's whales would be protected in a "safe haven"<sup>46</sup>. The French were the first to propose a whale sanctuary in the Antarctic.

Just before the Mexico meeting, the concept of a sanctuary was unexpectedly given support by Chile, who agreed to ban whaling in its territorial waters if such a sanctuary was established. Chile's opposition to a sanctuary in its waters, along with objections from Argentina, Mexico, Japan and Norway, and with the further support of three Caribbean states, had threatened to block the adoption of a sanctuary which, it has been claimed, would protect up to 80% of the world's whales<sup>47</sup>. Grenada, St Lucia, Dominica and the Grenadines, all of whom have voted with Japan against whale protection measures on more than one occasion, have allegedly all received large-scale Japanese aid<sup>48</sup>.

The IWC voting system requires a three-quarters majority of the 30 or so members to pass a motion. In Mexico, the US and France led a "final push" and France agreed to redraw the boundaries of the sanctuary to skirt Chile's waters. Eventually, 23 countries supported the establishment of a sanctuary in the Southern Ocean. The compromise plan forms a sanctuary covering all waters up to 40 degrees S, except for Chile's sovereign waters. A British biologist who helped draft the plan, Sidney Holt, said that the new haven would be "a bigger victory than the 1986 moratorium on commercial whaling"<sup>49</sup>.

As soon as the sanctuary was agreed the UK Fisheries Minister Mr Michael Jack issued a press release congratulating the UK's whaling commissioner in Mexico on the part played by the UK in devising the proposal. Mr Jack said that the scheme would be contiguous with the already agreed sanctuary in the Indian Ocean, providing a safe haven of nearly 11 million square miles within which commercial whaling would be prohibited, even if the current moratorium were lifted<sup>50</sup>. The UK has stated its intention to "remain at the forefront of international efforts to protect whales and cetaceans"<sup>51</sup>.

With such political and public anti-whaling support, it might seem that the conservation cause has prevailed for whaling in a way that it has not done in the development of international fisheries policy.

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<sup>46</sup>"Japan optimistic on moves to resume commercial whaling" *Nature* 19 May 1994 p.172

<sup>47</sup>"Chile's surprise offer lifts hopes of deal on Antarctic whale sanctuary" *Guardian* 26 May 1994 p.2

<sup>48</sup>"French proposal for 'whale sanctuary' in Antarctic wins growing support" *Guardian*, 28 February 1994 p.7

<sup>49</sup>"Antarctic whale sanctuary redrawn" *Independent*, 27 May 1994 p.14

<sup>50</sup>"Fisheries Minister sends congratulations to the UK's Whaling Commissioner" *MAFF News Release* 205/94, 27 May 1994

<sup>51</sup>"Government aims to protect all whales, large and small" *MAFF News Release* 167/94 4 May 1994

This is a slightly simplistic view, since it is important to accept that ever since the 1986 Moratorium, Japan and Norway have been carrying out legal "scientific whaling" programmes, although they sell or use for food some of the meat obtained in this way<sup>52</sup>. Norway has also carried out a commercial hunt, acting within its rights on the grounds of its objection to the moratorium decision. Japan has sought to hunt minke scientifically in the North Pacific and commercially in the Antarctic, and has also, allegedly, been partly ignoring the moratorium.

US scientists have reported findings from DNA analyses of whale meat on sale in Japan. They claim that meat from protected species such as the North Pacific humpback, North Atlantic fin whale, northern minke whale and several unidentified species were on sale in Japanese supermarkets and restaurants<sup>53</sup>.

At the 1994 Mexico meeting a resolution was passed noting the unreliability of past whaling data<sup>54</sup>. The former Soviet Union had for some years been under-reporting catches of a number of species, including the blue whale<sup>55</sup>. Of four Soviet whaling vessels in the Antarctic in the 1960s, one alone killed 717 right whales, 7207 humpbacks and 1433 blue whales, in a period when the Soviets reported to the IWC total catches of 152 humpbacks and 156 blues<sup>56</sup>.

The International Fund for Animal Welfare (IFAW) has alleged that Iceland concealed for some time a decline in the numbers of fin whale off its west coast by pooling data to obscure locations of catches<sup>57</sup>. In any case, Iceland left the IWC in 1992 in protest at the moratorium, and this provides a worrying reminder of the fragility of the IWC.

The ICRW is attempting to balance two interests and this leads to tensions. The whaling nations are concerned with increasing whale stocks so that more whales may be harvested to support whaling industries, but the non-whaling nations are aiming to conserve whales simply for their own sake. The public in many such countries want whaling banned altogether, and often perceive the IWC as a body concerned purely with conserving whales, rather than one which is aiming to increase stocks for sustainable exploitation. In reality, if the IWC attempted to simply ban whaling outright it would probably collapse.

If Norway were to accede to the EU it would have to conform to anti-whaling measures because of *Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna* ("the Habitats Directive") which lists "all cetaceans" in Annex IV (species requiring strict protection) and also provides habitat protection for them as migratory species. In

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<sup>52</sup>"Norway declares war on the minke whale" *New Scientist*, 13 February 1993 p.9

<sup>53</sup>"DNA test traps whale traders" *New Scientist*, 28 May 1994 p.4

<sup>54</sup>*Chairman's Report of the 46th Annual Meeting* 23-27 May 1994 International Whaling Commission, October 1994

<sup>55</sup>HC Deb 29 March 1994 c668w

<sup>56</sup>"Whalers change tack on southern sanctuary" *New Scientist* 5 March 1994 p.4

<sup>57</sup>*The Management of Whaling* International Fund for Animal Welfare (IFAW) 1992

addition, the 1973 *Convention on International Trade in Endangered Species* (CITES) also bans all trade in whale products throughout the EU<sup>58</sup>. It has been recently confirmed that Norway does not have a derogation from the above legislation<sup>59</sup>.

However, there is less forcing Japan to abstain from whaling or even to stay within the IWC. In Mexico when the Southern Ocean sanctuary was adopted, the Japanese said;

"We deeply regret the proposal passed in spite of our scientific studies and evidence. There is no need for such a sanctuary. These decisions should not be made on emotions"<sup>60</sup>

The fragility of the IWC is probably why major conservation groups (WWF, Greenpeace and IFAW) did not oppose a move by President Clinton to have the RMP adopted in Mexico. This has led to allegations from the Environmental Investigation Agency (EIA) that Greenpeace, in particular, is "going soft" on the issue of whaling, and is risking alienating its members and supporters, since in the EIA's view the only acceptable position on whaling is "no compromise"<sup>61</sup>. The EIA claims that the RMP is unacceptable since it takes no account of other threats to whales and dolphins; it says that pollution and other environmental problems such as ozone depletion could reduce whale populations by 50% in the next few years<sup>62</sup>. However, the issue is not as cut and dry as it might appear, and because of the stances adopted by Iceland, Japan and others, although it is very easy to demand "no compromise", this may not be practical, or even in the whales' best interests.

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<sup>58</sup>HCD 2 April 1993, c805-812

<sup>59</sup>HC Deb 17 October 1994 c139w

<sup>60</sup>"Sanctuary dooms Japanese whaling" *Guardian* 28 May 94 p.6

<sup>61</sup>"To the death" *Guardian*, 27.5.94 p.14

<sup>62</sup>"Report highlights global threat to marine mammals" *Scotsman*, 17 May 1994 p.7

## VII. Lessons for the Future

The crisis in fishing is intimately related to technology. It was inevitable that technological progress would bring the fishing industry to the point where it could quickly deplete the world's stocks. Yet it is also technology - such as satellite observation - which might enable infringements of fishing controls to be detected. One cannot go back to a world without the electronics of the fishing vessels and any effective system of control therefore has to impose massive restrictions on what the vessels are allowed to catch.

Whaling offers some guidance but there are important differences. The International Whaling Commission appears to have made considerable progress at this late stage to limit the depletion of this once enormous stock of mammals. Yet the position remains fragile because the imposition of tight restrictions may simply persuade the whaling nations to leave the IWC. Since whaling is undertaken by only a very few countries, the role of the non-whaling nations in the Commission is considerable. Fishing is a much more widespread activity, with almost all countries participating and agreement correspondingly more difficult.

Another difficulty is the sheer complexity of control of fisheries because there are so many different types of fish in endless numbers of different locations. The EC Common Fisheries Policy, for example, sets different TACs for huge numbers of different fishes in different areas. Worldwide that problem would multiply. The IWC, by contrast, is dealing with a smaller number of species and individuals, in less heterogeneous circumstances. Most whaling takes place outside EEZs, and this may mean that, with the exceptions of the few nations that have traditionally performed aboriginal "subsistence" whaling, whaling is less of a partisan issue.

Yet evasion has proved only too easy for whaling ships and the Russian admission of the extent to which they violated the agreements shows the scale of the problem. They were able with impunity for years to catch large numbers of species which should have been completely protected, along with huge catches of other species where only very small catches should have been allowed. If that is possible for huge whaling ships and huge whales, it would plainly be much easier for the large numbers of small fishing boats which may be fishing legally in an area but simply exceeding their quota or catching the wrong sort of fish.

The enormous public support for the anti-whaling cause in non-whaling countries is another major difference between fishing and whaling. Probably a majority of people in such countries believe that whales should be protected because they are such wonderful creatures



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and that their numbers should be allowed to grow back towards the figures they reached in the past. Calculations of maximum sustainable harvest of whales are often considered to be in very bad taste. Attitudes towards fish, on the other hand, are much less emotional and more practical (in the sense of seeing the aim of policy being to produce the maximum sustainable catch).

How much difference this actually makes in organising a conservation policy it is hard to say. The ruthless exploitation of whales continued for a long time and it is unclear whether it is yet adequately controlled. Public backing and emotional sympathy can have practical importance in persuading rich countries to push for the adoption of conservation measures or to use trade sanctions against other countries which fail to comply with international agreements. It is striking that the USA has refused to import Mexican tuna because the Mexican fishing fleet was catching so many dolphins. It is hard to imagine such a reaction against a country which was simply overfishing.

In some ways, the fact that some communities are dependent on fishing for their living makes conservation more difficult because governments tend to balance conservation needs against the economic needs of the fishing communities. The EU operates in the same way. In European countries, the actual numbers of fishermen are very small, but their concentration means that a decline in fishing threatens some communities. Another way of describing the trade off is between the short-term interests of the fishing community and their long-term interests, however. The Canadian example has shown how a conservation policy may involve closing fisheries for many years and accepting the burden of paying unemployment pay to the fishermen.

The future for fishing, as for whaling, must inevitably depend upon international agreements. Political and public will is clearly essential, as is the use of technology for detection of illegal fishing to balance the use of technology in catching the fish.

## Selected Reading

*Review of the state of world marine fishery resources* (FAO 1994)

House of Commons Agriculture Select Committee, *The Effects of Conservation Measures on the UK Sea Fishing Industry* (1992/93 HC 620)

House of Lords Select Committee on the European Communities, *Review of the Common Fisheries Policy*, (1992/93 HL 9)

The House of Lords Select Committee on the European Communities, *Regulations on Drift Net Fishing* (1993/94 HL 77)

"The evolution of international whaling law" Gregory Rose and Sandra Crane in *Greening International Law* Ed. Philippe Sands, Earthscan 1993 pp.159-181

"The net effects of over-fishing" *OECD Observer* No.184 October/November 1993 pp.9-12

*Chairman's Report of the 46th Annual Meeting 23-27 May 1994 International Whaling Commission*, October 1994