Sea Fish Industry Authority
Industrial Development Unit

WASH DEVELOPMENT GROUP
Progress Report
December 1985 - December 1986

Internal Report No. 1299

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1. BACKGROUND

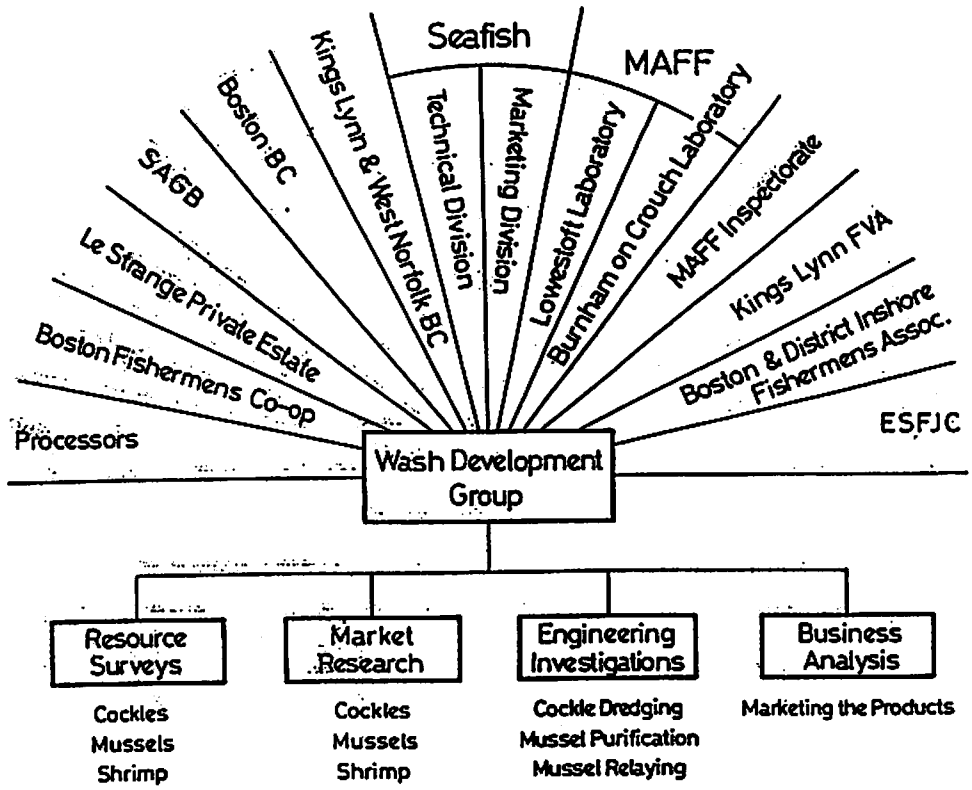
The Wash shellfish fishery is currently worth about £1.8m at first sale. The three main species are mussels, brown shrimp and cockles. It has been often said that the fishery has enormous potential, but little has been done to exploit this. At a trade dinner hosted by Seafish in June 1985 at Norwich, the industry representatives present asked the Authority to carry out a study into what could be done to help the fishery become more profitable.

In November 1985, an open meeting was held at Holbeach during which it became clear that the industry was sharply divided between those who sought expansion and those who feared it, between those who wanted to preserve the traditional fishery and those who wanted to see new ideas, and finally between the long standing rivalry of King's Lynn and Boston.

From the difficult meeting at Holbeach, however, there emerged the initiative to form the Wash Development Group. The majority at the meeting recognised that unless some action was taken, then the fishery would gradually become insignificant in relation to the Dutch shellfisheries and income, jobs and opportunities would be lost. Seafish agreed to chair this and the first meeting was held at Sutton Bridge on 17th December 1985.

The Wash Development Group has attempted to be wholly representative of the parties with an interest in the Wash. These range from those anxious to develop the resource to its full potential and

those concerned that development should be controlled to protect the resource and the people employed. The WDG also has sound scientific and technical advice from Seafish, MAFF Laboratories at Lowestoft and Burnham and the Shellfish Association of Great Britain. The working of the WDG may be shown diagramatically.



The WDG at its first meeting set the following objectives:

1.1 To set targets for production of the main species of shellfish from the Wash for the 1990's.

1.2 To decide on the most effective policy for harvesting, processing and marketing stocks and the trials' work needed to support this policy.

1.3 To decide on a management policy for the stocks to protect the future of the resources.

1.4 To ensure the proposed changes do not adversely effect employment in the area. On the contrary, efforts should be made to seek to develop resource opportunities by improved fishery and culture techniques as well as increase employment prospects. All proposals should be seen to be cost effective.

To date the WDG has met on 7 occasions. It has been the practice to produce a regular bulletin which is sent out to 140 addressees. This is a vital part of keeping the fishery informed of the work of the Group and allaying any fears that Seafish are too closely identified with one sector or another.

2. OPPORTUNITIES

The work so far has identified the following opportunities and trends. Much of this has been done by Seafish and MAFF staff.

2.1 The UK market for all shellfish is growing at 26% per annum.

2.2 Processors in the Wash area report that 65% of the raw material they use comes from abroad. This indicates considerable opportunity for the local fishery.

2.3 The selling price for unpurified mussels is presently £70-100/ tonne. Purified mussels could realise between £180 and £220/ tonne and the wholesale value of purified cleaned and packed mussels is about £500/tonne.

2.4 A market opportunity of 3 x 18 tonne lots per week of purified mussels in 15 or 20kg bags has been identified in Paris. Price and quality need to be negotiated, but the target figure of £500/tonne is possible.

2.5 The Wash fishery currently lands about 3000 tonnes of mussels valued at £270,000. The WDG have agreed that it should be possible to relay a further 5000 tonnes each year (i.e.

transferred from inter-tidal beds to deeper water). Should the producers undertake purification, cleaning, packaging and transport, the value of the mussel fishery could increase at least to £1.6 million and as much as £4.0 million (£2.9 million nett of additional costs). The mussel fishery represents the best opportunity for development in the Wash.

2.6 The cockle fishery currently lands about 6,600 tonnes valued at £340,000. Two IQF plants are now available in the Wash area and this, together with the increased demand for cockles, has increased the 1985 average price from £41/tonne to £50-60 in 1986 and early 1987. There is a good settlement of cockle spat this year and increased landings can be expected in 1988. However, the adult cockle stock is presently at a low level and it is important to initiate some voluntary management measures in 1987 if the fishery is to be conserved.

2.7 The shrimp fishery has the highest value and at present this £400,000 for about 530 tonnes. There is a poor market for brown shrimp in the UK but opportunities have been identified in the Low Countries. Direct marketing by the Wash producers could yield £1.2 million for the same landings, but there is a very tight cartel operated by the Dutch and Belgian importers which would limit opportunites, especially as the quantities are small. The peeled product has a particular high value but until such time as satisfactory peeling machinery is available, the fishery will be confined to the marketing of whole brown shrimp, but even here the quality will have to be improved if new markets are to be developed.

2.8 There is an overall opportunity for the Wash Fishery to raise its income from a level of about £1.8 million to about £3.14 million with modest technical innovation, but a key factor will be quality and much greater involvement in marketing of the produce.

3. PROGRESS OF THE WDG - 1986

3.1 General

Expenditure to date on the project has been about £63,000 under several different projects.

	Staff Costs £	External Costs £	Total £
Wash Development Group Cockle Survey	20,400	13,500	33,900
Visits to Holland Seafish/MAFF Mussel Purification Studies	20,200	8,500	28,700

The project has been funded partly from Seafish Industry Development Programme and partly from MAFF R&D Commission.

3.2 Cockle Survey

A joint survey was made by MAFF and Seafish on the public fishery. The trials used the continuous suction dredge, See 3.4. This showed the level of adult stock to be about 9000 tonnes of cockles between 2 and 7 years old, although the bulk of the observed stock were 5 to 7 years old. The maximum recorded level was 53,800 tonnes in 1967 and thus it may be concluded that the stock in late 1986 was at a relatively low level.

There is a natural mortality for cockles estimated at 30-40% per year. Thus if the present stock is left unfished, it will have reduced to about 3000 tonnes by 1988, which time juvenile cockles spawned in 1986 will be ready for harvesting. There is a good but unquantified spat settlement, but the critical time for the fishery is late 1986 and 1987.

The survey did not examine sub-littoral beds. There is no evidence of a biological nature supporting the existence of such a stock and the tidal scour would be too severe for the cockles to survive. Nevertheless, sublittoral cockles have been fished regularly in the Thames where different conditions prevail. The survey area is shown in Fig. 1.

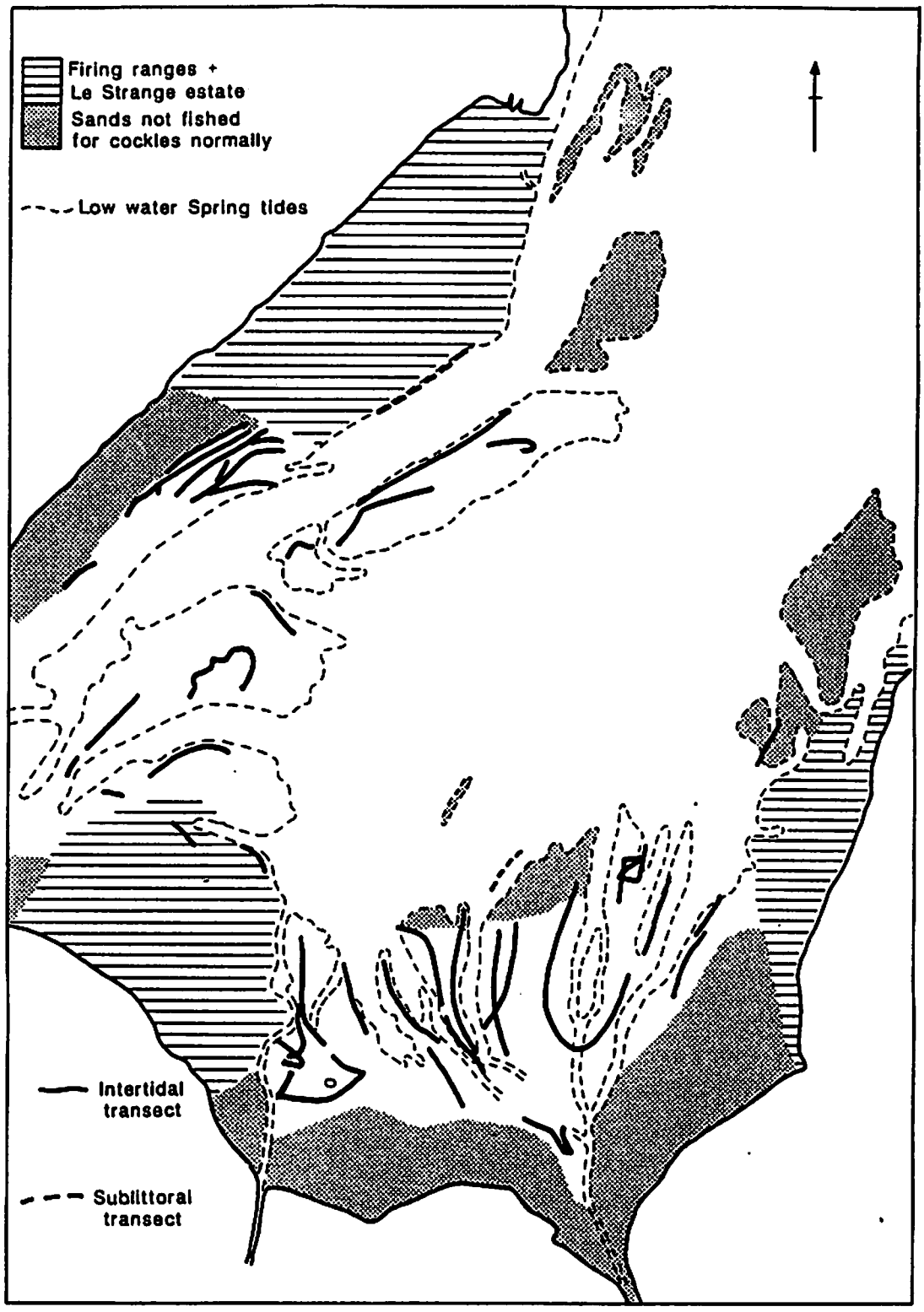


Fig. 1. Intertidal flats of The Wash, showing the dredge survey transects, sands (unshaded) normally fished for cockles in the Public fishery, and sands (shaded) not normally fished.

3.3 Visit to Dutch Shellfisheries

Two technical and scientific visits have been made to Holland during the year to study the hydraulic dredging techniques to see how far these can be applied to the Wash fishery and to study the Dutch stock management procedures. These procedures are of considerable relevance to any future management policy for the Wash.

a. The entire Dutch coastal and esturine fisheries were closed in 1974 on the grounds of conservation of stocks. Traditional fisheries were then allowed to reopen provided the level of participation (i.e. number of boats) was frozen at the 1974 level. In other words, people with a traditional right to fish in these waters were allowed to do so under licence from the Ministry.

b. Each year the production levels for cockles and mussels are worked out between the Ministry, the fishermen and the Conservancy Council with due regard to the requirements of the processors. This has allowed production of these species to increase but with the same number of participants. In the shrimp fishery, 16 vessels are licensed to operate in the Waddensee and 140 vessels on the coast. There is no limit to the amount of shrimp taken but there is no reason to believe that the stock is under threat.

c. Blowing for cockles is banned on conservation grounds. The maximum permissible damage rate for smashed cockles is 15%, but the actual measured damage rate is 4% to 8% of smashed cockles.

d. Only 15%-20% of the total available cockle beds are harvested each year and the exploitation is monitored by observation of the dredged tracks by a Ministry aerial survey.

f. Shrimp trawlers are allowed to use two 9m beams and there is an upper limit of 300 hp engine power and a mesh limit of 20mm.

e. The fishermen and processors impose their own limits on the seasonal dates for the mussel fishery. Seed mussel is fished and relayed in the closed season and the optimum relaying density is 15-20 tonnes/acre.

g. Licences can be revoked by the government for severe infringement of the regulations.

h. The main purpose of the technical visit was to study the design and equipment on a Dutch cockle dredger based at Stellendam (IR 1304 gives full details). It was noted, as on previous visits, that the entire cockle fishery in Holland is prosecuted by suction dredgers. The harvesting is selective and after a bed has been worked, it is left to recover for 2 years. The Dutch prefer the use of a solids handling pump rather than a jet pump and Seafish are to examine this for the smaller boat in the Wash during 1987.

3.4 Continuous Hydraulic Suction Dredging in the Wash

The introduction of the dredge to the Wash fishery is a controversial issue. It is seen by some as destructive of the resource and by others as likely to concentrate the fishery in a way which will benefit a few people. On the other hand, as stated in 3.3, it is the only acceptable method in use in Holland where ploughing out or blowing is banned.

During the summer of 1986, Seafish caried out a combined survey and demonstration of suction dredging on both the public fishery and the private Le Strange fishery. (However, it is evident that the cockle stocks are almost exhausted in this area.) Commercial fishing with the dredge is continuing on the latter fishery, but is banned on the public fishery for the present.

The work was carried out on the two commerical vessels LANGSTONE STAR and NEMARAUD. During these trials the dredge has been progressively modified to give the better results in terms of minimal

damage. Overall the percentage of wholly smashed cockles arriving on deck had been reduced from 20% to 15%. The percentage can be as low as 10% when working in an ideal depth of 3m with good bottom conditions and a moderate density of cockles per square metre.

Inspections showed that the large majority of dredge tracks were of clean sand without undue signs of smashed or damaged cockles either in the tracks or alongside.

The equipment on the NEMARAUD is still capable of further refinement to reduce damage rates and to this end the visit was made to Holland on 10-12th September to investigate the latest Dutch dredge equipment. It is recommended that trials with a pump are carried out in line with current Dutch practices.

The recommendations of the WDG to the ESFJC for the introduction of hydraulic dredging are as follows:

i. Only vessels already engaged in the fishery shall be permitted to exploit the stocks and each vessel shall be licensed accordingly.

ii. A annual quota per man per days fishing and a total allowable catch shall be agreed by the ESFJC in close consultation with the MAFF Scientific staff at Lowestoft.

iii. The dredge width shall be limited to 24in. blade width and one dredge allowed per vessel.

iv. The dredge should conform to a standard specification prepared by the Seafish and be subjected to survey. Changes to the specification could be referred to the ESFJC for their approval. Seafish will be pleased to provide a short instructional course in the use of the hydraulic dredge.

At the time of writing, a bye-law has been recommended by the ESFJC and has been published in order that public opinion can be taken into account.

3.5 Market Surveys

3.5.1 Mussels

The trends in volume and value of European mussel markets have been studied. The European market as a whole is about 400,000 tonnes per year and the UK market is about 12,000 tonnes. Italy, France and Belgium appear to be potential markets for Wash mussels, but event the UK market is under-supplied by domestic producers. The UK market is 12,000 tonnes and domestic production is about 8,000 tonnes. The UK's main competition comes from the Netherlands and Ireland for live mussels, and the Netherlands and Denmark for processed mussels.

The markets are growing and this year there have been shortages which will probably continue. Apart from this, there is no intrinsic reason why the Wash should not produce mussels of a suitable quality to compete. If quality and consistent supply can be achieved, then there are ready markets for about 3,000 tonnes of live purified mussels per year at present prices of £400-500 per tonne. This market could grow steadily.

The UK is currently importing all processed mussels that are sold in this country and with increased effort, a quality suitable for processing could be achieved from the Wash. The market for these products should be assured as various sectors of the industry have expressed their desire to replace imports with home processed product when suitable raw material is available.

The key to access to these market opportunties is the development of systematic relaying programme. To achieve this, technical assistance on the moving of seed mussels and support in defining new growing areas, are the most fundamental requirements. Subsequent to this, work will be required to assist in the provision of efficient purification, cleaning, packaging and processing facilities.

There are opportunities, too, for the development of ready-to-eat meals using quality mussels. Innovative new products in the US, for example, have transformed the mussel into a gourmet item. Mussels in the half shell, Mussels Creole, Smoked Mussels and various heat and serve recipe dishes are now widely available. It is argued by US processors that consumers did not know what to do with whole mussels in the shell and the introduction of new products has allowed the industry to develop rapidly.

3.5.2 Cockles

Both in 1985 and 1986 there has been a shortfall in the Dutch production for cockles and, as the UK is more price-sensitive than Continental markets for cockles, there have been less imports arriving in this country. The shortfall has been made more acute because of the growing demand in countries like Italy and Spain. This has created great opportunities for UK processors and the situation appears to be likely to continue because, even though the Dutch harvest looks reasonable this year, the market demand will still outstrip supply for the foreseeable future. All production from the Wash is likely to be bought by the home market for a variety of uses.

As virtually all cockles are sold in some form of preservation (frozen, tinned, in brine or vinegar), then the situation is more of a commodity market than it is with a fresh product. To be able to compete, UK cockles must compare favourably in quality and price with their competitiors. To achieve this end, and to support costly processing facilities, regular supplies which are reasonably priced, must be available to processors. A new market is developing for cockles from food companies engaged in the manufacture of pizzas. During the course of the Wash Development Programme, a new IQF plant for cockle meat was established at King's Lynn by John Lake and Frank Castleton.

3.5.3 Shrimps

The market for whole brown shrimp is limited. The UK market has been in decline and is likely to continue this trend in the future. The markets in Belgium, Holland, Germany and France are developing slowly. Supply is very variable and price on the market fluctuates significantly. At times of high landings, the price can fall dramatically, indicating fixed market size.

The advantage the Wash Fishery has over the Continental fisheries is that shrimp are available for most of the year. In the Netherlands, when the catch levels drop, then the larger more expensive beam trawlers revert to fishing for sole. A market for a further 750 tonnes of whole shrimp, at a price of £1150/tonne, has been readily identified in Belgium. One difficulty is the cartel operated by Dutch and Belgian buyers who are unwilling to allow other suppliers into the market except on their terms and also they must meet stringent quality standards.

The market for peeled brown shrimp is very much under-supplied on the Continent and it is likely that the UK market could be developed substantially, if the product were available. Hand peelers in Belgium receive £1.79/kg for peeling shrimp but in the UK the labour rate is £2.23/kg and it is impossible to find enough people to produce the product at this price.

If an efficient peeling machine were available then the market opportunities would be very good. One of the most important things to do in this area, therefore, is to make sure that we are aware of the situation, worldwide, regarding peeling machines so we can advise the local industry as soon as possible. Much work has been done recently in E. Europe into meat extracting equipment for krill which may be relevant to the problem.

3.6 Mussel Purification

The Seafish work on mussel purification has been limited to laboratory trials in which the mussel trays are stacked up to 5 high (i.e. 3 x 3in layers). These results are promising and MAFF Burnham are aware of the results. Any decisions on stacking, however, must be considered carefully, but Seafish would recommend any new tanks should be built with a stacking depth of up to six trays in mind. A minimum depth of 3ft (0.9m) is suggested. This experimental work on stacking is to be continued on a commercial scale at Shoreham and the results closely monitored by Seafish and MAFF Burnham.

Assistance has been given to John Williamson of King's Lynn to calculate the feasibility of a mussel purification plant adjacent to the Fisher Fleet. Help for this has been given by David Coulson of the Boston Fishermans' Co-op and from Jim Partridge of Monteum Ltd. at Shoreham.

The major problem at King's Lynn is obtaining clean salt water. Various alternatives have been considered with the help of the Anglian Water Authority, but the most practical and reliable solution is likely to be the use of artifical sea water provided by cost of this can be kept within reasonable limits. The Anglian Water Authority have proved most co-operative in this work.

Once the design features have been finalised and the business plan for the plant completed, an application will be made for FEOGA funds. The aim is to set a high standard of purification for costs of less than £40/tonne.

A small project has been initiated with Humberside College of Higher Education in Grimsby, to investigate the problems of meat recovery from some of the mussels taken from the Wash. There are a number of problems caused by the adhesion of the meat to the shell which results in some damage in processing.

3.7 Mussel Survey

MAFF carried out a limited survey of some of the Wash mussel beds in the summer of 1986; it showed that stocks had declined to 57% of the 1985 assessment. The combined stock estimate of the two beds examined indicated that there was approximately 8,800 tonnes available. However, in some areas the beds were patchy and would be difficult to dredge and on other beds access would be difficult due to their high shore level.

Since this survey was carried out in the summer, there has been a significant spat settlement in all areas. This is currently being mapped and monitored by both ESFJC and MAFF scientists. It is hoped that if the spatfall survives the winter, there will be significant quantities to relay next year, but the prospects for the mussel fishery could be quite good if it is managed properly.

4. BARRIERS TO DEVELOPMENT OF THE WASH FISHERY

It is obvious to all who have worked on the Wash project that there are considerable opportunities for its future. There are many people engaged in the fishery who would like to see it develop, but equally there are a number opposed to change. The Wash Development Group has, nevertheless, achieved some success in breaking down the resistance to change. At the outset, the WDG was given a life of one year which has now expired and there is a majority view that the work of the Group should be carried on in some form or other. Encouraging change in a fishery of this type with strong traditions is difficult, it is also the most important molluscan shellfishery in the UK and for the Authority to withdraw at this time would be premature.

In the next section, the Authority sets out a revised timetable and action plan to progress the project which includes a greater degree of industry involvement. Before that, however, it is worth examining some of the major barriers to development of the fishery.

4.1 Bye-laws

The fishery is regulated by a number of bye-laws and regulating orders, which by their nature are designed to prevent indiscriminate fishing. At the same time, almost all the bye-laws run contrary to a development plan.

The bye-laws are drafted by the Bye-Law Sub-Committee of the Eastern Sea Fisheries Joint Committee and these are then approved by MAFF who have due regard to European Community law and any public objections. It can take several years to get a bye-law into place and several years to dismantle it. Initiative to change the bye-laws or introduce a new one comes from the fishermen directly to members of the ESFJC.

There is no bye-law at present permitting either hydraulic suction dredging or ploughing out. Ploughing out, however, is allowed under an experimental clause and this has been the case for some 15 years. Following the successful hydraulic dredge demonstration in the summer of 1986, the WDG recommended that a bye-law be drafted permitting the use of the suction dredge on the public fishery. To safeguard the fishery, the fishermen also requested that there be a quota of 2 tonnes per man per day with a maximum of 4 men per vessel. MAFF argued that such a restrictive bye-law could not be introduced unless it was limited in some way to a Total Allowable Catch and, on the basis of the cockle survey, recommended that this be 1000 tonnes for the next year. The ESFJC then received a large number of objections from the traditional sector of the fishery and those who wanted development wanted the bye-law drafted in such a way that there was no upper restriction in the form of a TAC. Faced with this conflicting evidence, the ESFJC had little choice but to defer the issue until there had been more debate on the matter which has now taken place. The bye-law has now been approved and published awaiting public debate which is the next stage.

The realities are that in technical terms it would be impossible to show that the hydraulic suction dredge was any more or less destructive of the resource than ploughing out. Thus a change of method is unlikely to influence the resource one way or another. The issue is, therefore, a political one with safeguards being sought by the fishermen and with the ESFJC unable to act in the circumstances.

The continued trials on the Le Strange fishery during 1987, will provide an opportunity to measure the re-settlement on beds which have been heavily fished with the hydraulic dredge. If there is a reasonable settlement in 1987, then this would confirm the experience of the Leigh-on-Sea fishermen as well as that of the Dutch, that hydraulic dredging is not detrimental to the resource and, on the contrary, is likely to benefit it.

4.2 Collaboration

The second major problem to be overcome is that of collaboration between all persons with an interest in the Wash. There is no doubt that the WDG has made considerable progress along this road. The Group now has representatives from all sectors of the industry, both from King's Lynn and Boston, meeting and discussing in a rational way the common problems and possible solutions. A most significant step forward was the co-operation given by the Boston Fishermen's Co-operative to J. J. Williamson of King's Lynn in the design and costing of a mussel purification plant. Another feature of this co-operative spirit was the cockle survey and hydraulic suction dredge trials. There was a free exchange of information from these trials and all agreed they had more to gain from co-operation than from competition.

Unfortunately this spirit of co-operation is not necessarily carried to all those participating in the Wash fishery. This may be a problem of communication or the strong resistance to change which we have noted on many occasions during the project. In the past several attempts to get the industry to collaborate, e.g. the setting up of a PO

as part of the Yorkshire and Anglia Producers' Organisation have not been successful. Any new initiative in this direction, therefore, must be carefully planned and a proper management structure designed and all involved will clearly be able to see the benefits of joining such an association. The Seafish proposals as to how this might be achieved are set out in section 5 of this report.

4.3 Quality Control

Although quality is improving of products from the Wash, there is still a long way to go. During 1987 it is hoped that all mussels from the Wash fishery will be purified to a certain standard, but in order to capitalise on this, there must be the supporting publicity, packaging and confidence built up in the wholesalers that the Wash product is as good as any other product from elsewhere in the UK or Europe. The introduction of two IQF plants in the Wash area and if this can be associated with continuous suction dredging, will no doubt increase the quality and the value of the cockle fishery.

As a result of the work of the WDG, the AWA have been made acutely aware of their responsibilities in matters relating to pollution. Many pollution problems cannot be solved overnight, but on one key issue, that of the sewage outfall at Hunstanton, the AWA have already stated that they have plans to close this outfall and make alternative arrangements. The WDG or its successors will have to maintain the pressure on the AWA to continue exercising their responsibilities.

As far as the shrimp fishery is concerned, there are a number of problems of quality control, including handling and cooking onboard and peeling onshore. Where shrimps are hand peeled, there is always a risk of contamination, and even if there were a mechanical shrimp peeler, some of this risk would still remain. Nevertheless, with machine peeling it would far easier to impose stringent hygiene regulations relating to the use of the machinery, but the difficulties still remains that there is as yet no suitable machinery for this purpose.

5. PROPOSALS FOR A BUSINESS PLAN FOR THE WASH FISHERY

Proposals have now been finalised for a limited liability marketing company to permit the development of the Wash Fishery along managed lines.

In the analysis, it has been concluded that systematic development of the mussel fishery represents the best opportunity. The introduction of the IQF plants has created a new set of opportunities for cockles and, although the shrimp fishery is a high value one, until there is shrimp peeling machinery available, it will be a difficult market to develop.

The objectives of the marketing company will be to increase the profitability of the Wash Fishery by improving the quality of production, managing the exploitation of raw material and marketing more effectively the end product. This to be achieved by means of:

- Improving standards of handling, purification and cleaning to a minimum common level in order to build consumer confidence in Wash mussels.

- Developing a systematic relaying programme to achieve consistency of quality, availability and ultimately much increased output from the Fishery.

- Raising standards of presentation, packaging and distribution as a means of penetrating new market areas and earning optimum realised prices.

Successful achievement of this objective would raise the value of mussel output from £270,000 to £1,600,000 approximately at the factory gate level; this at a current annual output of 3000 tonnes.

The proposals allow for all fishermen and processors in the Wash to participate. The details will be presented at a meeting of the WDG in April 1987.

6. CONCLUSIONS

6.1. There are opportunities to develop the Wash Fishery and possibly increase its value from the current level of £1.8m per annum to about £3.14m, but the essential requirements are quality improvement and consistent standards and a unified approach to marketing the products.

6.2 The main opportunities lie with mussels. Recent developments in IQF processing already will help the cockle fishery. The shrimp fishery will be difficult to develop until the advent of peeling machinery.

6.3 Seafish recommend a limited liability marketing company be set up to manage the development of the mussel fishery. In this all fishermen and processors would be invited to participate.