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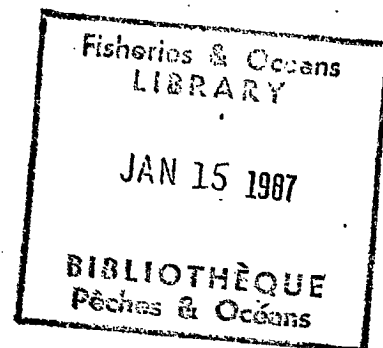
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Lars Terje Gotteberg :

REPORT ON DOGFISH IN THE BRITISH MARKET

The Export Committee for Fresh Fish,
Aalesund

Foreword

by fisheries councillor S. Remoy, London.

Mr. Lars Terje Gotteberg was attached to the Embassy in London in June 1971 as a fisheries scholarship recipient with a scholarship from the Committee for Marketing Grants, to acquaint himself with the British marketing conditions and demands in the fisheries sector, particularly in Billingsgate Market, London. Mr. Gotteberg was also to carry out a special study on dogfish, with special emphasis on what could be done by Norway to strengthen and promote future use of this fish species in the British market in view of the general development in marketing and market preferences for fish and fish products in parallel with other food products.

The following aspects were pointed out in this connection :

- 1) Consumption of fresh and frozen round fish in the UK indicates a general

decline in favor of ready-to-cook products (frozen fillet, fish fingers, and portions in consumer packages) which ^{meet the requirements of,} the structural changes in retail marketing and the purchasing and eating habits of the consumer.

2) Norwegian producers and exporters of dogfish have made great efforts with regard to organisation of dogfish fishery as well as reception and manufacture, with significant capital investments in plants for freezing and storage of dogfish.

3) These efforts have stabilized ^{the} production and marketing of both fresh and round frozen dogfish on a level that could not have been maintained without the efforts.

4) The most important sales channel of dogfish in the British market are the fish-and-chips vendors, where the fish is offered to the consumer as a ready food to be eaten on the spot or taken home.

5) Fried-fish stores have always been and will continue to be a popular part of the British eating tradition, and their future seems to have been consolidated by the general anti - ready food consumer trend.

6) Therefore, Norwegian dogfish exports to the UK should be guaranteed in the longer term, as dogfish is a popular item on the "menu" of the fried-fish stores.

7) However, dogfish consumption in the UK can not be trusted to increase as long as the consumption is tied to the fried-fish stores only, even if the latter would undergo some increase in numbers in the future.

8) Also, dogfish constitutes only a modest share of the total sales of the fried-fish stores, who offer cod, haddock, ray/skate fins and other fish species as well, and increasingly also chicken and meat pies, etc.

9) This again results in that dogfish export is often characterised by a relatively high unstableness in view of both price and volume, depending on fluctuations in the supply and the prices of the dominating species cod and haddock.

10) Therefore, an essential future increase in dogfish exports to the UK (within the boundaries of population and catch potential) seems to depend on whether this fish species is suited for manufacture of ready-prepared products like the ones resulting from the development of species like cod and haddock which paved the way for frozen fillets, fish sticks and portions packed in consumer and catering packages for supermarkets and self-service stores, the catering market, and the rapidly growing home-freezer market.

11) Manufacture of ready-cooked frozen portions of dogfish resembling in form, appearance, taste, and consistency a product of the fried-fish stores launched under the name "Rock Salmon (or "Rock Eel) Steaks" or "Portions", seems to be a near-lying target.

Due to Mr. Gotteberg's transfer to another position before the expiry of his scholarship term, he did not have enough time to carry out detailed field studies.

However, it is quite obvious that the dogfish industry will benefit economically and practically from an expansion of the product assortment and the marketing frame, to supplement the present export to the UK of fresh and frozen skinned round dogfish.

Therefore, I recommend that aid be granted from "the funds for promotion of marketing of fish and fish products" to a company (or a group of companies) in the dogfish industry, interested in, and having the necessary qualifications for, developing frozen ready products of dogfish for marketing in consumer and catering packages.

Such aid should include production of a suitable sample lot for testing and introduction to the market.

London, June 1972

S. Remoy (sign.)
Fisheries councillor

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In my capacity as recipient of a fisheries scholarship from the Norway Export Council, I was requested by fisheries councillor S. Remoy from The Royal Norwegian Embassy in London, and by Freskfisk, Aalesund, to carry out a market investigation concerning dogfish in the British market. It proved difficult to find sufficient statistical information and tables issued by British fisheries authorities on dogfish catches, prices, etc. This is because dogfish, only sold in South England, was included under other fish species. However, I managed to compile some tables by using publications of i.a. W.F.A. and M.A.F.F.

Introduction of dogfish

Dogfish (*Acanthias vulgaris*) belongs to the family Spinachidae. It has a grey back and small light-colored spots along the sides. The belly is white. The front edge of each of the two dorsal fins has a sharp poisonous barb. Wounds caused by the barb become easily infected. Dogfish may grow to a length of 120 cm. Frequently it is found in shoals, commonly along the entire Norwegian coast, but also in great quantities in the fishing grounds around Shetland, Scotland, and the Hebrides. It mostly lives in the bottom, down to a depth of 300 m. It gives birth to live young, usually in hatches of 5 - 6, but can produce as many as 12 young at a time.

Dogfish meat contains carbamide which releases ammonia at decomposition. For the receiver of fish and the producer, this is the foremost and biggest problem with older fish. The high content of carbamide keeps the body fluid in osmotic equilibrium.

There are 150 species of sharks, out of which 16 live in Norwegian waters, representing 8 different families.

Market development

Dogfish markets are distributed in the UK geographically so that the fish is consumed only south of a line 100 km south of Grimsby.

Landing places in the UK

Table 1 Dogfish landings by British boats in England/Wales, Scotland and Northern Ireland (Source : Ministry of Agriculture, Fisheries and Food)

Landing place	tonnes				
	1966	1967	1968	1969	1970
England/Wales	4.826	5.029	4.775	5.080	5.537
Scotland	5.026	6.452	6.756	5.334	5.232
Nor th Ireland	152	51	51	102	51
Landings by foreign vessels	153	203	102	102	153
	10.160	11.735	11.684	10.618	10.973

The table shows that the quantity landed has kept practically constant from 1966 to 1970, being 10 000 to 11 000 tonnes annually for the entire UK. According to newer sources, dogfish landings increased essentially in 1971, that is, with 25 %, to 13 700 tonnes.

The biggest dogfish ports

Grimsby, Fleetwood, Aberdeen and Ullapool are the biggest receiving ports for dogfish, with Grimsby and Aberdeen in leading positions. See Table 2. The table shows that there are small changes in quantities landed each year in the different ports. This probably depends on :

The methods and tools for dogfish fishery in the UK

According to information from the White Fish Authority, vessels over 80 ft are responsible for more than half of the catches landed in the UK. This is valid for all types of fish.

Dogfish is mainly fished with vessels 20 - 30 m long. These boats do not fish for dogfish alone, like they do in Norway, but take dogfish as a secondary catch in connection with cod, haddock, flounder, and other fishery. However, from fall 1971, 5 to 6 vessels have been fishing for dogfish alone, because the prices were attractive. Only trawls were used. Big catches of 80 - 120 t per boat by line, as we know them in Norway, do not exist. Small quantities of coastal dogfish are landed. However, the biggest UK dogfish ports may see daily total catches as big as 100 - 200 tonnes.

Table 2 Dogfish landings in different ports in England/Wales and Scotland (source : M.A.F.F.)

Landing port	tonnes		
	1968	1969	1970
Grimsby	2.377	2.683	2.560
Fleetwood	1.393	1.176	1.081
Lowestoft	279	404	858
North Shields	200	237	408
Bridlington	91	124	164
Hartlepool	77	66	37
Whitby	21	53	36
Scarborough	21	58	86
Hull	61	15	22
Brixham	6	12	17
Newly	38	75	70
Milford Haven	121	73	67
Whitehaven	2	x	x
Alle andre havner All other ports	123	91	129
Aberdeen	2.525	1.551	1.266
Ullepool	1.693	1.642	1.890
Fraserburgh	651	697	425
Leith	727	384	417
Buckie	128	93	116
All other districts	1.024	988	1.157

x) below 1 t

Should this happen on 2-3 days successively, the markets would explode and the prices fall considerably. A single boat rarely lands more than 10-15 t per trip.

The biggest receiving ports for dogfish have a receiving and refining capacity far below those seen in Norway.

In what season is most dogfish landed in the UK

Table 3 shows that no essential quantities of dogfish are landed in England and Wales in January, February and March. April and May indicate an upswing, while there is a decrease in June and partly July. From August to the end of the year, the quantities seem to grow again.

Table 3 Dogfish landings in England and Wales (source : W.F.A.)

Month	'000 cwt			
	1968	1969	1970	1971
January	5,1	5,8	3,8	6,3
February	2,3	3,1	2,9	5,0
March	4,9	2,0	1,2	2,8
April	10,9	9,8	4,9	11,7
Mai	19,1	15,3	9,3	14,8
June	2,7	5,9	6,5	6,9
July	3,3	8,1	16,5	7,3
August	4,8	6,8	11,1	11,3
September	8,1	11,5		
October	11,4	13,8		
November	8,3	10,3		
December	13,7	6,6		
Sum	94,6	99,9		

Table 4 Dogfish landings in Scotland

Month	'000 cwt		
	1969	1970	1971
January	11,6	10,9	14,6
February	2,2	2,7	7,0
March	0,9	0,5	5,5
April	1,8	2,0	8,6
Mai	7,4	8,6	12,1
June	2,2	4,7	4,9
July	2,0	1,7	3,1
August	1,6	2,0	3,4
September	6,0	2,8	
October	20,2	16,7	
November	22,9	20,4	
December	25,7	30,2	
Sum	104,5	103,2	

Scotland has relatively good landings in January, with a rapid decline in February, March and April. May shows some increase, while June, July and August have a drop. The biggest deliveries seem to take place in the 3-4 last months of the year in Scotland.

Total UK landings in comparison with Norway

Table 5 First-hand total quantities of dogfish in Norway and the UK
(source : Statistical tables/Sea Fisheries Statistical Tables)

Year	Norway quantity	UK quantity x)
1966	16.265 tonnes	10.160 tonnes
1967	15.681 "	11.735 "
1968	20.997 "	11.684 "
1969	23.114 "	10.618 "
1970	21.623 "	10.973 "
1971	18.217 "	13.695 "
Total 1966/71	115.897 tonnes	68.865 tonnes

x) The UK figures represent total landings in England, Wales, Scotland, Northern Ireland, and total landings by foreign vessels in the UK.

In 1966/1970, landings in Sogn and Fjordane alone were bigger than the total landings for England, Wales, Scotland, and Northern Ireland. In 1971, the UK landed a bigger quantity than Sogn and Fjordane (13 061 t).

Norwegian exports of dogfish in 1955 - 1970

Table 6 Norwegian exports of dogfish, distributed by importing country
(source : Statistical Yearbook)

Importing country	1955	1960	1965	1966	1967	1968	1969	1970
Denmark	1	19	267	309	204	309	348	376
Sweden	-	1	5	16	17	8	14	3
Belgium/Lux.	305	285	333	151	120	163	316	289
France	483	865	488	438	602	989	1.583	1.461
Italy	237	517	242	200	128	385	563	578
Netherlands	66	296	110	109	143	283	294	278
Great Britain	3.463	4.584	2.434	2.092	1.454	1.527	1.606	1.109
West Germany	23	161	152	153	48	228	389	408
Other	1	2	7	-	-	-	2	1
Totals	4.579	6.729	4.041	3.465	2.715	3.892	5.114	4.503

The table shows that Great Britain was the major and dominating market for our fresh dogfish export up to 1968. However, exports to the UK have been declining since 1960. Today France is our chief customer, while the UK is second, and Italy third.

Table 7 Norwegian export of fresh dogfish; value

Importing country	'000 Nkr, rounded							
	1955	1960	1965	1966	1967	1968	1969	1970
Denmark	1	28	757	1.007	625	881	962	1.341
Sweden	-	2	12	49	53	22	35	9
Belgium/Lux.	462	481	878	474	361	450	836	955
France	730	1.277	1.321	1.346	1.840	2.686	4.180	4.735
Italy	389	943	689	660	429	1.121	1.514	2.187
Netherlands	92	448	280	340	416	781	818	954
Great Britain	5.076	6.677	6.185	6.400	4.328	3.863	3.781	2.838
West Germany	33	257	372	477	142	627	1.012	1.310
Total '000	6.783	10.114	10.524	10.749	8.194	10.430	13.143	14.330

If tables 6 and 7 are combined, the reason for France's becoming the first fresh dogfish market is obvious. Tables 6 and 7 show a roughly calculated export price of Nkr 1.48 per kg for the UK in 1955, and an average price of Nkr 2.56 per kg in 1970. The corresponding figures for France are Nkr 1.51 in 1955 and Nkr 3.24 in 1970. For the UK, this means an increase of Nkr 1.08 or about 73 % from 1955 to 1970.

For France, this increase is Nkr 1.73, or about 115 %. I think this is one of the main reasons for why the UK has declined as a buyer country for fresh dogfish from Norway. Besides, the less expensive dogfish produced by the UK plays a role in it as well.

Table 8 Norwegian export of frozen dogfish; quantities
(source : Statistical Yearbook)

Importing country	1960	1965	1966	1967	1968	1969	1970
Denmark	7	20	25	51	7	27	7
Sweden	-	2	1	-	-	-	1
Belgium/Lux.	-	62	63	47	78	130	137
France	8	1	6	19	1	82	62
Italy	9	14	-	-	3	10	2
Netherlands	27	2	3	15	14	16	29
Great Britain	352	1.873	1.291	1.405	1.866	1.987	1.849
West Germany x)	2.449	1.573	1.462	1.324	1.649	1.586	1.853
Austria	67	36	36	39	24	51	15
Other countries	171	97	-	-	6	10	8
Totals	3.090	3.680	2.887	2.900	3.648	3.899	3.963

← x) Figures for West Germany corrected on the basis of information from the Export Commission for Fresh Fish

The tables show that after 1960 Great Britain and West Germany have been The biggest buyers of Norwegian dogfish. (The figures for West Germany include full nape fillets.) Third comes Belgium/Lux., increasing from 63 t in 1966 to 137 t in 1970.

Table 9 Norwegian exports of frozen dogfish; value (source : Statistical Yearbook)

Importing country	'000 Nkr , rounded							
	1955	1960	1965	1966	1967	1968	1969	1970
Great Britain	195	485	4.250	3.853	4.326	4.502	4.646	4.977
West Germany	-	4.681	3.474	4.163	4.256	5.305	4.904	6.764
Belgium/Lux.	3	-	139	187	134	200	317	382
Other	1.359	482	322	238	435	154	537	356
Total value	1.557	5.648	8.185	8.441	9.151	10.161	10.404	12.479

Tables 8 and 9 show an average price for frozen dogfish in 1960 for Great Britain and West Germany of Nkr 1,37 and Nkr 1.95 respectively.

In the same manner, it is possible to attain an average price for 1970 of Nkr 2.69 for Great Britain and Nkr 3.85 for West Germany. (However, for West Germany a major part of the quantity consists of frozen full nape fillet, which is essentially more expensive than dogfish.) This means a price increase of about 96-97 % for both countries in the last decade.

The 1960 kilo price for West Germany was about 58 ore higher than that for England, while in 1970 it was 116 ore higher.

Tables 10 and 11 show fresh and frozen dogfish exports in percentages. The figures are rounded to the nearest integer.

In practical terms, only Great Britain and West Germany have been buying the Norwegian frozen dogfish.

Skinning and use of dogfish in the UK

After my visit to Grimsby and North Fields in fall 1971, I had an opportunity to observe "primitive" skinning of dogfish. The dogfish was placed on a board, the belly ripped open in the middle, and entrails and liver removed. The fins and the tail were removed, and a cut was made around the neck before the fish was thrown to the next worker who fastened it by the head in a hook in the door frame. The fish was then skinned, and the head, skin, liver, entrails, and belly flaps all disappeared into the same vat.

Do not think that they can not do it the way it is done in Norway. In Grimsby I saw how the belly flaps were taken care of and how the liver and the waste were separated each in their own vats. It is obvious that also the UK is beginning to exploit the dogfish more fully and use it more economically than before. The first export of dogfish and belly flaps from the UK to Continental Europe took place long ago.

According to information from Mr. Cormack, White Fish Authority, there were 5-6 boats in fall 1971 fishing only dogfish. These boats used trawls, because of good dogfish prices in fall 1971.

It is to be noted in Norway that the UK is making efforts to enter the Continental markets, at prices much lower than the Norwegian ones. Norwegian exporters have already experienced some competition by the UK. This changes the dogfish industry's situation in Norway.

How much was paid for UK dogfish

Table 12 shows first-hand prices for UK dogfish. It covers landings by British boats.

Table 12 (source M.A.F.F.) Average first-hand prices for dogfish in the UK (landings by British boats)

Landing place	(pence pr. kg)								
	1938	1948	1951	1960	1966	1967	1968	1969	1970
England/Wales	1	2½	3½	4	6	6	5	5½	7
Scotland	-	-	-	2	3½	3	3	3	4
Great Britain	-	-	-	3	5	4½	3½	4	5½

It can be seen that the prices have multiplied sevenfold from 1938 to 1970 in England and Wales, that is, from 1p per kg (corresponding to Nkr 0.17 per kg) in 1938 to 7p per kg (Nkr 1.20 per kg) in 1970.

Rate : 17.20.

Packing of dogfish in the UK

After observing Billingsgate Market and the dogfish landing ports Grimsby, North Shields and Hull, I learned that dogfish is very predominantly packed in boxes weighing 1-2 and 3 stones. It is very rarely that dogfish is packed in units bigger than 3 stones. Earlier, dogfish that could not be sold fresh was ground or used for dog and cat food. Now, the surplus is frozen and, i. a., exported to Continental Europe.

Who consumes dogfish in the UK and how

About 97 % of all dogfish sold in the UK is sold through fish-and-chips-vendors; the rest goes to restaurants, especially to Chinese restaurants.

As mentioned above, dogfish can be found in fish-and-chips and fish-friers facilities only in the ^{beginning at} area 100 miles (Norwegian mile = 10 km. Tr. note) south of Grimsby. Generally, Great Britain can be divided as follows :

- South - Dogfish, cod, skate and roe
- North - Small haddock, cod, skate and roe
- Wales - Frozen hake fillet (Japanese and South African), cod, skate

Other fish merchandise is found as well, but the ones above are the most popular.

Fish dealers operating fish-and-chips or fish-friers facilities offer the dogfish to clients under a completely different name. In England, dogfish is called dogfish all the way to the last sales link, the fish-and-chips vendor. When it enters the menu, it is called Rock Eel or Rock Salmon. The use of these two names varies from district to district but Rock Eel is the most common.

Before Rock Eel (Rock Salmon) is sold, it must be washed, fried, etc. This is done in the following manner :

Dogfish is placed in running cold water to drain the blood etc. After 5-10 minutes it is removed from the water, and the spine is cleaned of blood and washed. The dogfish is then cut along the backbone, but the bone is not removed and the fish is not fully cut (compare with split fish where bone is not removed). The fish is then cut across in suitable portion pieces about 10 cm long depending on the size. The pieces are *wiped* dry and rolled in flour mixture (kind of rice flour) and then dipped in a "butter batter", which looks like a thick pancake batter as far as its color and consistency are concerned. The pieces are fried in 360° F oil . It is important to keep the temperature constant so that the fish is fried, not boiled. After a frying time of 3-4 minutes, Rock Eel is served steaming hot and delicious, with chips.

The reason for not removing the backbone from the dogfish is that it helps to make it distinguishable from cod and haddock.

Discussions with persons practising the industry and those in WFA indicate that dogfish is sold/consumed more in the summer half-year, which makes sense, since we know that fish sales generally increase somewhat in the fish-and-chips facilities in the summer half-year.

Table 13 Quantities and percentages of total landings of fresh and frozen fish brought to land by British and foreign vessels (source : Sea Fisheries Statistical Tables issued by M.A.F.F.)

	'000 tonn					
	1968 quantity	% av total	1969 quantity	% av total	1970 quantity	% av total
Total landings	780	100	771	100	775	100
Cod	399	51	405	53	367	47
Haddock	139	18	148	19	180	23
Skate	11	1,4	10	1,3	9	1,2
Dogfish	12	1,5	11	1,4	11	1,4
Other	-	28,1	-	25,3	-	27,4

Table 13 shows that cod dominates the landings in the UK. Haddock comes second, with a share of about 20 % in 1968-1970.

The most interesting detail is the relationship of dogfish and skate. It is seen that in 1968-1970, approximately equal amounts of these two species were landed. The dogfish landings are only 1 - 2 000 t bigger than those of skate. To these figures must be added the imported quantities of skate and dogfish.

Most probably more dogfish is imported than skate, and dogfish constitutes about 15-16 % of land-based sales by fish-friers, while cod and haddock have shares of 86 % and 67% respectively. And yet, dogfish constitutes only about 1.5 % of the total UK landings.

Is dogfish popular in the UK

The answer is yes and no. It can be claimed to be popular in Southern England. Towards the north, its popularity sinks to zero. I have tried to find out why. However, it must be a matter of taste and custom.

As the quantities of dogfish landed each year are about the same, and as the Norwegian exports of dogfish have declined in recent years, there is reason to believe that dogfish sales have declined somewhat recently. This is again attributed more to high prices than declining popularity.

What kind of dogfish is preferred

Briefly, big and fresh. This is clearly preferred to smaller and frozen dogfish, even though the latter is sold as well. If the buyer can choose, he chooses the big dogfish. The biggest "inland" dogfish market, that is, the importers and the wholesalers in Billingsgate Market, substantiate this claim. When Billingsgate Market suffers a shortage of dogfish, the fish-and-chips stores buy some more cod, haddock and flounder. This was verified by visits to and interviews with fish-and-chips stores in London. A client usually buying Rock Eel most often asks for cod if no dogfish is available that day, not for skate.

It seems that both dogfish and skate have their regular clients. However, many people buy Rock Eel or Rock Salmon because the name is unfamiliar and exciting and therefore attractive.

How much was paid for dogfish in Billingsgate Market

The Embassy receives daily "Daily Return of Prices of Fish", issued by the superintendent of Billingsgate Market. The prices are hardly instructive, and they vary from minimum prices to maximum prices for the same merchandise daily.

Table 14 shows some average sales prices for English dogfish.

Table 14 Average sales prices of English dogfish in Billingsgate Market

	Small dogfish	£ per stone English merchandise	Big dogfish	
	1970	1971	1970	1971
January	-	1,04	-	1,76
February	-	1,80	-	2,18
March	-	1,70	-	2,08
April	-	-	-	-
Mai	-	1,31	-	1,76
June	-	1,70	-	2,51
July	1,60	1,96	1,90	2,42
August	1,65	2,18	1,83	2,74
September	1,64	1,63	2,02	2,14
October	1,03	1,21	1,40	1,61
November	1,18	1,25	1,49	1,73
December	1,03	1,22	1,50	1,65

Dogfish prices were the highest in August 1971 when the prices rose to 3.20 pounds per kg. If the years 1970 and 1971 are compared, it is seen that dogfish underwent a fairly noticeable price increase. (The latest figures from M.A.F.F. show an average price increase for fresh fish in 1971 of 43 %).

Summary, conclusion

Norway has lost ground and continues doing so, as far as the British dogfish markets are concerned, particularly for fresh merchandise. The decline in the Norwegian fresh dogfish exports to the UK is attributed primarily to better prices from France and to competition with less expensive dogfish domestically produced.

The present intensification of dogfish fishery and production in the UK must be carefully noted. I refer especially to the fact that in fall 1971 there were 5-6 boats that were fishing for dogfish alone. Also, utilization of belly flaps, entrails, heads, etc. has been improved to get more out of dogfish. The first dogfish and belly flap exports to Continental Europe have already taken place.

It is known that manual labor is very expensive in the fisheries industry in the UK, which is one of the main reasons for making most fish species more read-to-cook. This strain will be noticed by fish-and-chips stores as well. I believe that if we are to stop the declining of the dogfish exportation to the UK, we have to act now, and we can possibly reverse the situation. I am here referring to increased refining of dogfish in Norway, instead of exporting only half-finished products.

It would be worthwhile to think, for example, of economic aid from the Marketing Commission. I am of the opinion that dogfish should be made fully or partially ready for the fish-and-chips facilities. We could for example wash and cut the dogfish into ready portions and pack it in handy small boxes. If successful, this could lead to attempts to place dogfish in the British supermarkets in a ready-to-cook form for homes.

I am aware of the problems connected with dogfish and its high carbamide content which leads to a production of ammonia. However, without efforts such as the ones described for further processing of dogfish,

our exports to the UK will decline and perhaps not recover again. It seems that the UK has become aware of dogfish and the possibilities it offers. I think that it is only a question of time for dogfish to become a ready-to-cook product.

Final thanks to all those who helped with advice and information, particularly to councillor S. Remoy, London.