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SURVEY ON THE PRODUCTION METHOD AND GEOGRAPHIC ORIGIN OF FISH. –

PART 1 - INFORMATION AT RETAIL SALE, AND

PART 2 – VERIFICATION OF “WILD” FISH.

This survey was conducted as part of the Agency's food authenticity programme, which aims to gather information about the description of food in the UK.

Part 1 Information at retail sale: Summary

- The aim of the first part of this survey was to check the description of fish detailing the fish production method and geographic origin at retail sale, and whether it conformed to legislative requirements.
- Fifteen local authorities participated in this part of the survey, and collected information on 387 retail fish and fish products from wholesalers and retailers.
- Of these, 275 (71%) provided information on production method and geographic origin in accordance with legislative requirements, but 57 (15%) either provided no information or the information was not in accordance with requirements. In addition, 55 (14%) gave consumer information on production method and geographic origin that was partially but not fully in accordance with requirements e.g. Cornish mackerel without mentioning the wider catch area, N.E. Atlantic. Although the results are not representative of all fish on sale, there are indications from this survey that, some sectors are not giving full information as required by fish labelling rules.
- Local authorities, home authorities of companies, and retailers or brand owners responsible for the labelling information were all informed of the results. All local authorities and three of the home authorities have followed up on the results by giving advice on correct description to the appropriate suppliers of the fish. The Agency plans to issue a simple guide on the fish labelling rules aimed at small businesses.

Part 2 Verification of 'wild': Summary

- In the second part of the survey, samples of "wild" sea bass, sea bream and salmon were collected and analysed to verify that they were "wild" and not farmed.
- Collection of 'wild' fish samples took place during two periods from October 05 and January 06, and June 06 and August 06. In the first period, 10 local authorities collected 21 samples of sea bass and 12 sea bream. In the second, 20 local authorities collected 38 samples of sea bass, 23 of sea bream and 34 of salmon.
- The oil of the fish samples was extracted to measure the percentage oil content, the fatty acid profile, the carbon 13/12 isotopic ratio and oxygen 18/16 isotopic ratio, and the nitrogen 15/14 isotopic ratio of the choline fraction. In interpreting the results, these analytes were the best indicators to discriminate between "wild" and farmed fish based on their different diets. The sample data were compared with a multivariate analysis of analyte data from a collection of authentic "wild" and farmed fish to indicate whether they were within the range of possible values for farmed or "wild fish. Samples falling within the 95% confidence limits for farmed fish were likely to be farmed and not "wild".
- Taking the results of both sampling periods together: 6 (10%) of the 59 "wild" sea bass samples were considered farmed, 4 (11%) of 35 "wild" sea bream samples were considered farmed, and 5 (15%) of the 34 "wild" salmon were considered farmed. The percentage 'considered farmed' for each species were not statistically significant from each other.
- The results are not representative of all "wild" fish on sale, but the survey indicates an underlying problem with misdescription of these three types of wild fish.
- Again LAs taking part in the survey, home authorities of companies, and the retailers were informed of the results. Of the 9 LAs who took samples of wild fish with adverse results, all have followed up with further visits to the suppliers, and all of the home authorities have also followed up the results with their respective companies.

Background

1. The Food Authenticity Programme supports the Agency's objectives of promoting consumer choice through honest and informative labelling and reducing food fraud. As part of this work, we undertake surveys in partnership with local authorities to investigate problems of misdescription, fraud, and compliance with food standards legislation.

2. As marine fish stocks diminish, aquaculture production of fish and shellfish has become increasingly important as our source of fish. For example, the world production of Atlantic salmon (*Salmo salar*) has increased from 27,000 tonnes in 1984 to 1.24 million tonnes in 2005⁽¹⁾. However, in the same period, the world catch of wild Atlantic salmon has decreased from 10,600 tonnes to 3,685 tonnes. Many consumers wish to know about the origin of the food they buy. Hence it is now a legislative requirement to state the production method (whether "wild" or "farmed") and geographic origin of fish at the point of retail sale. In addition, there is a large price differential between farmed and wild fish. Correct information on the production method to consumers is important to prevent food fraud.

Objectives of survey

3. The survey to check the production method and geographic origin of fish has been carried out in two parts. The first part focussed on the descriptions assigned to fish at the point of retail sale. Checks have been made as to whether the production method and geographic origin of fish have been declared in accordance with legislative requirements. The second part of this survey verified analytically whether the production method being declared is correct. This involved checking whether fish described as "wild" were "wild". Apart from verifying the description and production method of fish, it is hoped that this survey will also raise awareness of the legal requirements of the *Fish Labelling Regulations 2003* (as amended) and deter food fraud.

Legislation

4. Article 4 of *Council Regulation 104/2000*⁽²⁾ requires that the commercial name of the fish/shellfish, production method and catch area should be displayed at point of retail sale to the final consumer. *Commission Regulation 2065/2001*⁽³⁾ provides more detailed requirements on the labelling or description of both production method and geographic

origin. The *Fish Labelling Regulations 2003* (as amended)^(4, 5) in England, Scotland, Wales and N. Ireland, enable both Regulations (104/2000 and 2065/2001) to be enforced.

5. The required descriptions are for fish products included in Chapter 3 of Customs Code Combined Nomenclature (CN Codes). These include chilled, frozen, fillets, smoked, dried, salted or brined fish, crustaceans and molluscs, although some products fall outside Chapter 3 if other ingredients are added e.g. smoked mackerel with added colours. A full list of products that are included or excluded in Chapter 3 is given in Annexes I (a) and (b) in Guidance Notes on the Fish Labelling Regulations⁽⁶⁾.

6. *Commission Regulation 2065/2001* gives detailed requirements as to how the production method and geographic origin is declared to the consumer. If fish/shellfish is produced by aquaculture, then it should be sold as “farmed” or “cultivated”, and the third country or EU Member State identified. “Wild” fish should be described as “caught in fresh water or “caught” (hence the quotation marks as “wild” is not a required description). If fish/shellfish are caught at sea, then one of the 12 catch areas (e.g. N.E. Atlantic) in the Regulation has to be given (see Annex II in the Guidance Notes on the Fish Labelling Regulations). The word “caught” can be omitted if it is clear from the catch area that the fish is wild e.g. N.E. Atlantic herring. Also it is possible to give more detailed voluntary origin information in addition to the designated catch areas e.g. Cornish mackerel (N.E. Atlantic).

Part 1: Collecting Information on Production Method and Origin

Collection of Information (Methodology)

7. Fifteen local authorities (Annex 1) from across the United Kingdom participated in the first part of the survey. Local authority officers were provided with a written protocol and a one page sample form. They were asked to complete forms giving information on the method of production and origin of a selection of fish from large retail outlets, independent outlets, wholesalers, fishmongers, and fish markets or auctions in each authority. This information was collected between the end of November 2005 and end of January 2006.

8. A total of 387 forms were collected and the information relating to the method of production and origin was checked to see whether it was in accordance with the requirements of Regulation 2065/2001. Seven local authorities also provided photographs of the fish labels or descriptions. The forms were then divided into three groups:

- where the information on the method production and origin was correctly described;
- where either no method of production or geographic origin information was given or it was not described correctly,
- where information on method of production and origin was given, but where it was not fully in accordance with the wording required by Commission Regulation 2065/2001. In all these cases, there was consumer information given on whether the fish was farmed or 'wild' and where it was caught or farmed. However, even if a specific geographic origin has been given, the Regulation requires that for fish caught at sea, one of the twelve catch areas (e.g. N.E. Atlantic) has to be mentioned. In the case of farmed fish, the third country or Member State has to be mentioned, which means that, for example, "farmed in Scotland" needs to be qualified with the additional mention of the UK.

Results

9. Table 1 gives a summary of the results of the examined information. It can be seen that 57 out of 387 (15%) either did not give information on method of production or geographic origin or it was incorrect. Table 2 breaks down the results according to type of retail premise. It can be seen that of the 57 cases, 43 (75%) (or 11% of the total) of these occurred in smaller businesses (fishmongers). In some cases, information on production origin was given verbally to purchasers on request. 275 (71%) of the descriptions were correct, and 55 (14%) were partially correct in having some of the mandatory information

missing. Therefore, 85% of the descriptions can be considered as providing consumers with information on the method of production and origin. Although the results are not representative of all fish on sale, it indicates that in this survey, some sectors are not giving full information as required by fish labelling rules. Annex 5 gives details of all the suppliers of the 387 fish labels or descriptions taken in the survey.

Table 1 Summary of results

Label	Number of samples sheets in survey
Labelling/description correct	275 (71%)
Not correct/not present	57 (15%)
Partially correct	55 (14%)
Total	387

Table 2 Labelling/Description of Method of Production or Origin by Type of Premise

Production Method and Origin Information	Catering Supplier / Wholesaler	Fish Market / Auction	Fishmonger	Independent / Small Chain	Supermarket	Total
Not correct or given	0	10	43	2	2	57
Correct	3	4	18	15	235	275
Partially correct	2	13	13	3	24	55
Total	5	27	74	20	261	387

Follow-up Action

10. The companies responsible for the labels or descriptions of the fish were informed as to which group their labelling or description belonged, and asked if they wished to make any comments. Annex 2 gives a summary of those companies' comments.

11. The results were also sent to the local authorities, who collected the forms, and to the home authorities of companies where the labelling or description did not conform to legislative requirements. All of the fifteen local authorities were contacted to detail what follow-up action had been taken.

12. All 15 local authorities have given advice to suppliers on how to describe the product correctly, where information did not conform to legal requirements. In addition three home authorities have also indicated that they have followed up on the results and discussed labelling or descriptions with the companies involved.

13. In addition to its existing Guidance, the Agency is planning to produce a summary quick reference guide particularly aimed at small and medium-sized businesses to raise awareness of the key requirements of the Fish Labelling Regulations.

Part 2: Verification of “Wild” Fish

Collection of samples

14. In total 128 samples were collected on a national basis by local authority enforcement officers to a detailed sampling protocol developed by the Agency. Survey samples were sourced from around the UK (England, Wales and Northern Ireland), during two sampling periods. In period 1, 10 LAs (Annex 3) collected samples between Oct 2005 - Dec 2006 and in period 2, 20 LAs (Annex 3) collected samples between Jun – Aug 2006. Table 3 shows the breakdown of samples of “wild” salmon, sea bass and sea bream that were collected.

Table 3 Total Number of “Wild” Salmon, Sea Bass and Sea Bream Collected

Salmon	Sea Bass	Sea Bream
34 samples <i>(Period 2, 15 Pacific salmon 18 Atlantic 1 unknown origin)</i>	59 samples <i>(Period 1, 21 samples Period 2, 38 samples)</i>	35 samples <i>(Period 1, 12 samples including 2 black and 1 red bream Part 2, 23 samples including 2 pink, 1 NZ, 1 red, and 2 black bream)</i>

Analytical methods

15. The background to methods used to verify “wild” fish, and how the results are interpreted are detailed in Annex 4. Oil was extracted from the fish flesh according to the method described in Standard NF V03-030 using hexane/isopropanol (3/2 v/v) and an Ultraturrax device. 1g of the extracted oil was dried and used directly for isotopic analysis ($\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ measurements by IRMS – Isotope Ratio Mass Spectrometry). The gas chromatographic (GC) analysis of the fatty acid methyl esters was also carried out on the oil to measure 13 long chain fatty acids. 5g were used to extract and concentrate the choline (extracted with glycerol after saponification with KOH / methanol); the $\delta^{15}\text{N}$ content of the glycerol / choline fraction was then determined by IRMS.

16. Each sample was given a unique identifying code and sent directly to the laboratory by the relevant collection officer. Appropriate controls were included in the analyses (both GC and IRMS). An authentic fish oil from the database was periodically measured by both GC and IRMS in order to check the accuracy of the analysis. Following this, control charts were drawn up in order to ensure the absence of any deviation.

Results

Sea Bass

17. Figure 1a shows the results for the first sampling period of sea bass. There are four samples within the farmed database ellipse and considered farmed within the 95% confidence limit of the available database of farmed sea bass.

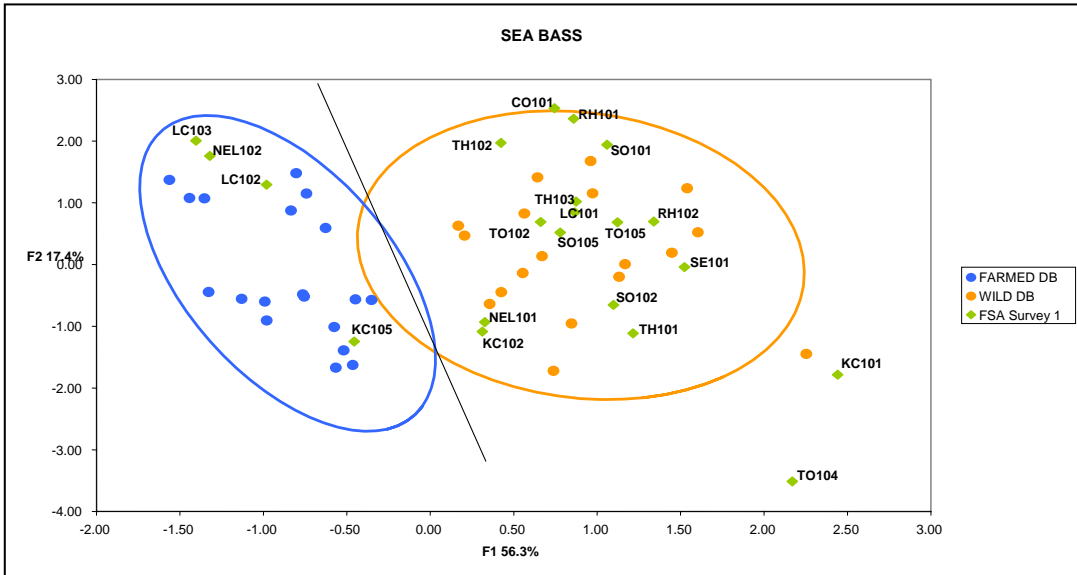


Figure 1a Period 1 sea bass sampling results

18. Figure 1b shows the results of the second sampling period where because of the

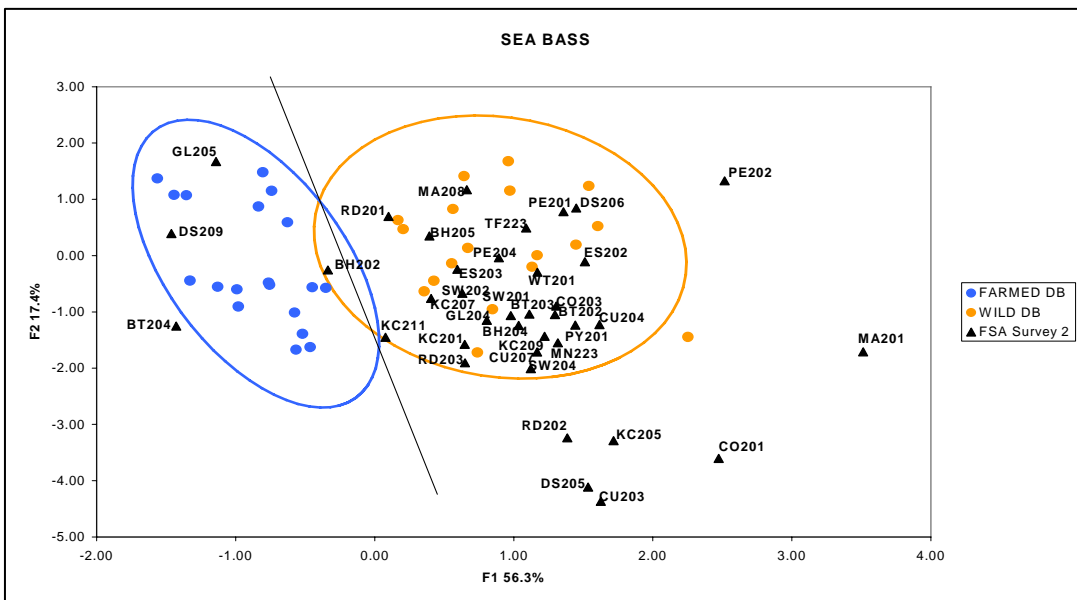


Figure 1b Period 2 sea bass sampling results

slight overlap of the two databases only two samples are classed as farmed. A third sample although having a high linoleic acid content (17g/100g oil) is classed as 'not consistent with wild' as it is just outside the 95% confidence ellipse.

Sea Bream

19. There are several species of sea bream marketed in the UK. The most common is the gilthead or royal sea bream, which is caught in Atlantic waters, but has a large farmed production in the Mediterranean. The database is made up of analyses of gilthead sea bream. Less common is black sea bream, which is not farmed but caught in waters around the south coast and further south. Other sea bream species such as threadfin and pink bream come from further afield in Africa or S.E Asia. Five of the samples collected in both periods were described as black bream, and four as red, pink or NZ bream, and the remainder were assumed to be gilthead bream.

20. Results from sampling periods 1 and 2 are given in Figures 2a and 2b. In Figure 2a five samples lie outside the database values and are considered “not consistent with wild”, even though two had high linoleic acid contents. In the second period (Figure 2b.), four samples are classed as farmed, and a further four “not consistent with wild” because they are outside the available database values.

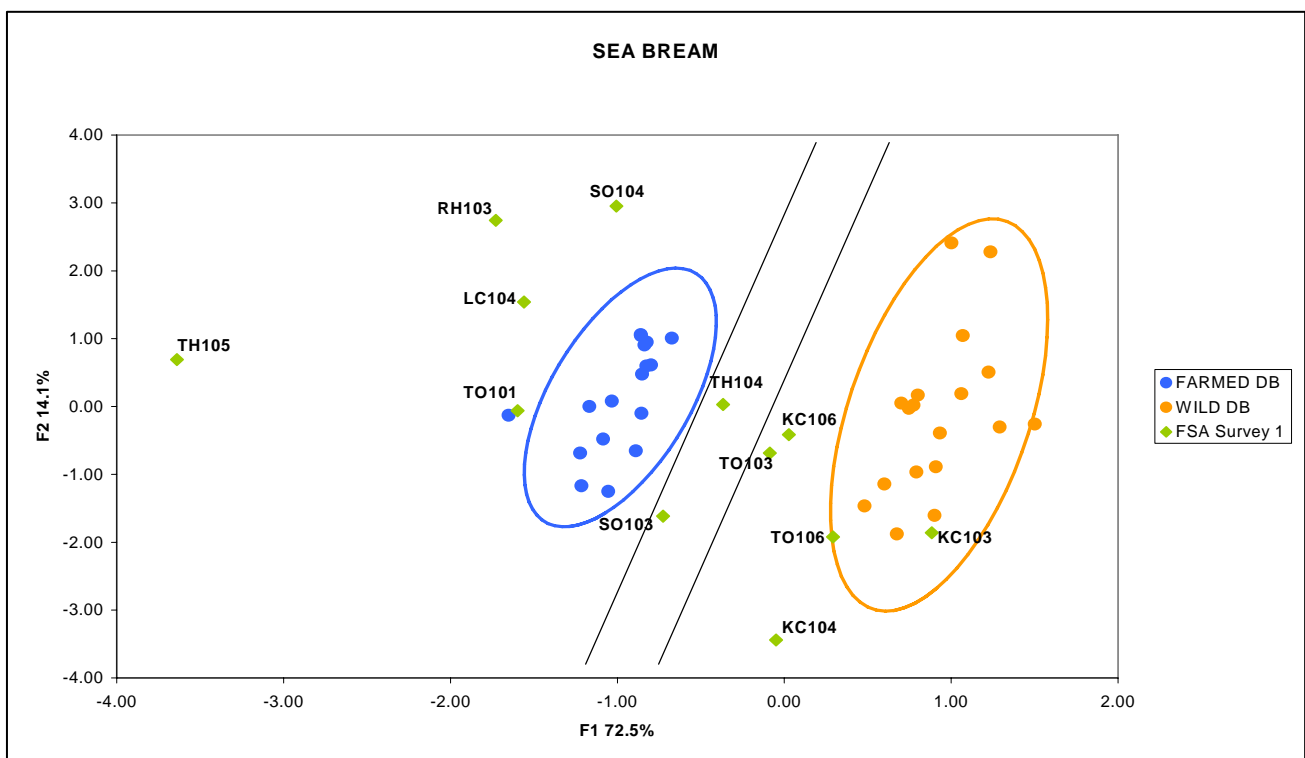
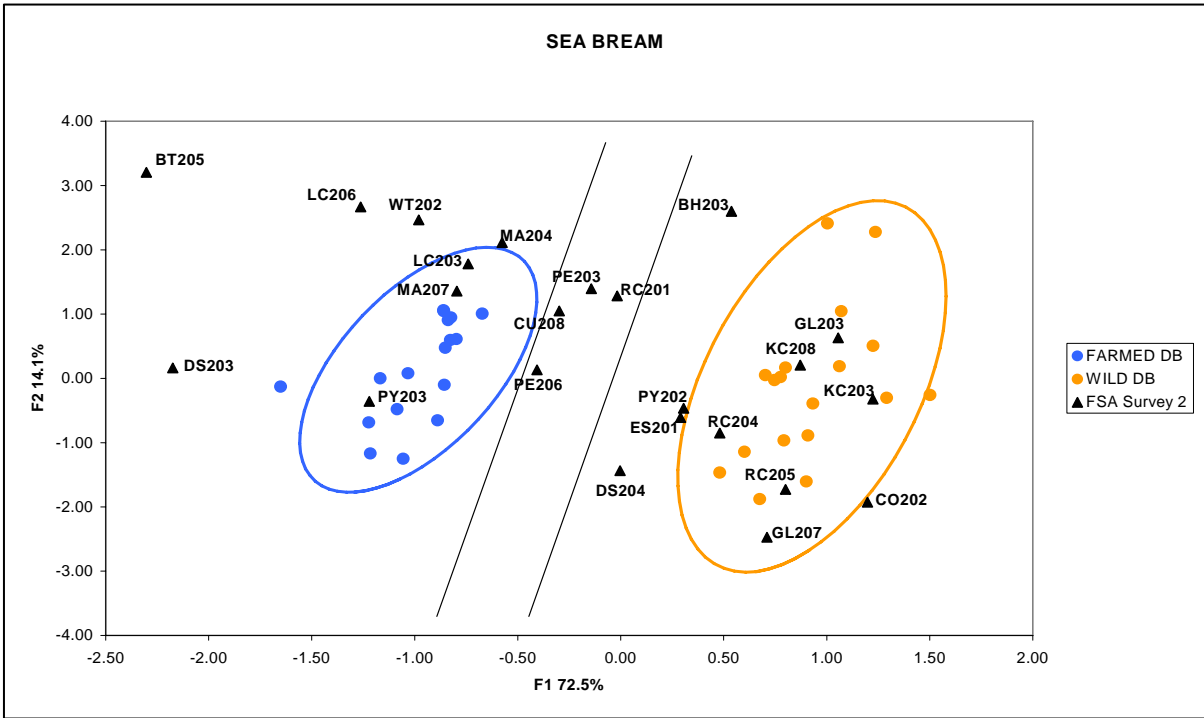


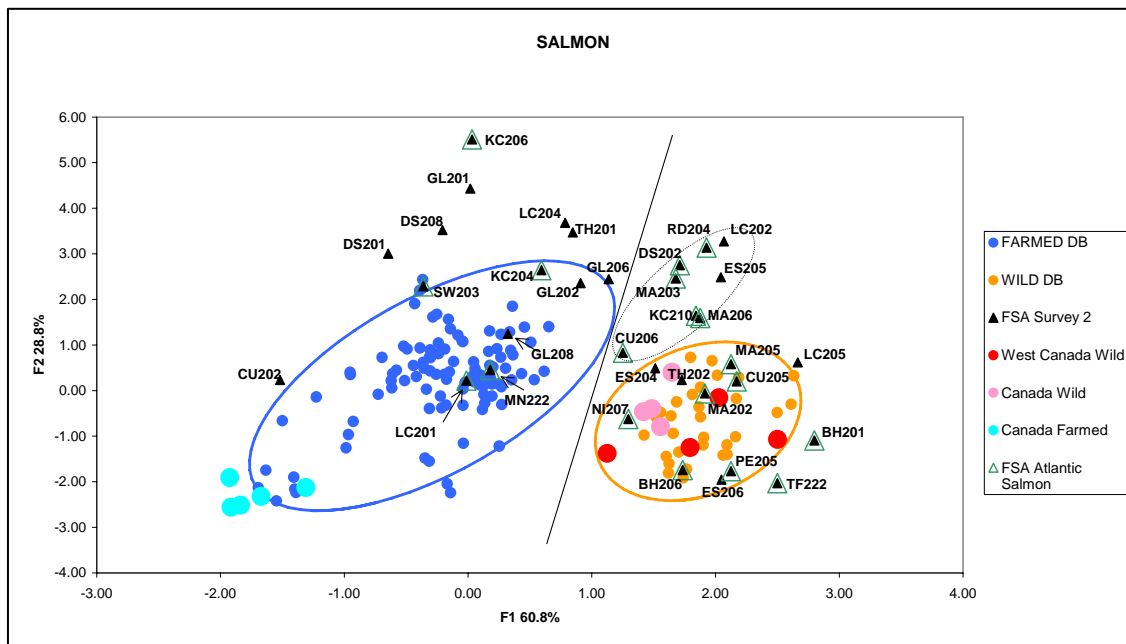
Figure 2a Period 1 Sea bream samples



Salmon

21. Of the 34 samples of wild salmon collected, 15 were declared as Pacific salmon (Alaskan, Sockeye, Chum, Red, Pink), and 18 indicated that they were Atlantic salmon, and one sample gave no origin but was assumed to be Atlantic salmon. The database is made up of analyses of farmed and wild Atlantic salmon from Europe, and also includes samples of farmed (4) and wild Atlantic salmon (4) from Canada, and samples of wild Pacific salmon (4) from the west coast of Canada. As the PCA results of wild Pacific salmon from Canada appeared to fit into the wild Atlantic salmon database, it was thought that feeding regimes of the two wild types of fish could be similar. However given the number of Atlantic samples outside the database values, it was clear that some of the wild Atlantic salmon samples analysed had grown up using different feeding regimes than the authentic samples in the database.

Figure 3 Salmon sampling



22. None of the salmon samples had significant high levels of linoleic acid, and their production method was characterised principally by the oxygen and nitrogen isotopic values. Four of the Atlantic salmon samples were classed as farmed within the 95% confidence limits, and one Pacific salmon sample was considered farmed. The remaining samples on the farmed side of the dividing line were considered as “not consistent with wild” and outside of the available database. As wild Pacific (Alaskan) salmon has a low representation in the wild salmon database, hence the samples of Pacific salmon “not consistent with wild” were considered as simply outside database values.

Conclusions and Follow Up

23. Full details of the samples and results are given in Annex 6. Table 4 summarises the results of the survey, which show a similar level (10-15%) of misdescription in all three types of fish.

Table 4 Results of Periods 1& 2 Sampling.

Fish (Total no. of “wild” samples)	Farmed (% of total)	‘Not consistent with wild’ *	Overall % classed as farmed
Sea bass (21)- Period 1	4 (19%)	0	10%
Sea bass (38) - Period 2	2 (5%)	1	
Sea Bream (12) – Period 1	0 (0%)	5	11%
Sea Bream (23) – Period 2	4 (17%)	4	
Salmon (34)	5 (15%)	1	15%

* Samples outside the 95% confidence limits but associated with the ellipse of the farmed population, were classed as “not consistent with wild”, and indicated that they were outside the available database values but not classified as farmed.

24. The results are not representative of all “wild” fish on sale, but the survey indicates an underlying problem with misdescription of these three types of wild fish.

25. The results of the analyses have been sent to the suppliers of the samples as well as their home authorities and the local authorities who collected the samples. Follow up forms were also sent to the LAs which had adverse results. Of the 9 LAs who took samples of wild fish with adverse results, all have followed up with further visits to the suppliers. In addition, 4 home authorities have also followed up the results with their respective

companies. In most cases, companies have been asked to provide traceability information of the fish they sell. In some cases suppliers of the fish admitted that the wrong information may have been given at the time of sale.

References

- (1) FAO Fisheries Statistics 2007 – FAO Rome
- (2) Council Regulation (EC) 104/2000 Marketing of Fish and Aquaculture Products. OJ L17, 21/1/2000, 22-51
- (3) Commission Regulation (EC) No 2065/2001, Informing Consumers on Fishery Products. OJ L278, 23/10/2001, 6-8
- (4) The Fish Labelling (England) Regulations 2003 (SI 2003 No.461), ISBN: 0-11-045039-6; The Fish Labelling (Scotland) Regulations 2003 (SSI 2003 No.145) ISBN: 0-11062229-4; The Fish Labelling (Wales) Regulations 2003 (Welsh SI 2003 No. 1635 (W.177), ISBN: 0-11090747-7; Fish Labelling Regulations (Northern Ireland) 2003 (Statutory Rule 2003 No.160), ISBN: 0-33795008-3.
- (5) The Fish Labelling (Amendment) (England) Regulations 2006 (SI 2006 No. 506), ISBN 0-11-074121-8; The Fish Labelling (Scotland) Amendment Regulations 2006 (SSI 2006 105), ISBN 0-11-069996-3; The Fish Labelling (Amendment) Regulations (Northern Ireland) 2006 (Statutory Rule 2006 No.116), ISBN 0-337-96421-1; The Fish Labelling (Wales) (Amendment) Regulations 2006 (Welsh SI 2006 No.1339 (W.131)) ISBN: 0-11091342-6 (All available at: www.opsi.gov.uk/legislation/index.htm).
- (6) Fish Labelling Regulations 2003 Guidance Notes for England, Scotland, Wales and N. Ireland. March 2003 Agency website link:
http://www.food.gov.uk/multimedia/pdfs/fish_lab_reg2003gn.pdf

Further information

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LOCAL AUTHORITIES THAT PARTICIPATED IN THE SURVEY COLLECTION OF LABELLING INFORMATION

ANNEX 1

Birmingham City Council
Cornwall County Council
Cumbria County Council
East Sussex County Council
Lancashire County Council
London Borough of Tower Hamlets
North East Lincs Council
Northern Ireland Regional Group Consortium
Rhondda Borough Council
Royal Borough of Kensington and Chelsea
Somerset County Council
Southend Borough Council
Suffolk County Council
Torbay District Council
West Lothian Council

COMMENTS FROM COMPANIES

ANNEX 2

Name of business	Comments
Aldi Stores Ltd	Wording of the origin of the fish has been changed and is now compliant with the Fish Labelling Regulations.
Icepack	The non-compliant product label is no longer sold on the market.
Ross/Young's Bluecrest Ltd	The packaging with the non-compliant labelling has been changed, and the new packaging is compliant with the Fish Labelling Regulations.
Tesco	Partially correct labels will be reviewed and corrected
Gresham Fisheries	The labelling of the non-compliant products has been changed, and the new labels are compliant with the Fish Labelling Regulations.

**LOCAL AUTHORITIES THAT PARTICIPATED IN THE SURVEY
COLLECTION OF WILD FISH SAMPLES**

ANNEX 3

LA period 1 Sampling	LA period 2 Sampling
Cornwall County Council	Barnet London Borough
Kensington & Chelsea Royal Borough	Birmingham Metropolitan Borough
Lancashire County Council	Bournemouth (Dorset) Council
North East Lincs County Council	Carmarthenshire Council
Rhondda Council	Cornwall County Council
Somerset County Council	Cumbria County Council
Southend Council	Eastbourne Council
Suffolk County Council	Gloucestershire County Council
Torbay Council	Kensington & Chelsea Royal Borough
Tower Hamlets London Borough	Lancashire County Council
	Manchester Metropolitan Borough
	Northern Ireland Regional Group Consortium
	Plymouth Council
	Poole Council
	Redcar Council
	Richmond London Borough
	Southwark (London)
	Torfaen County Borough Council
	Tower Hamlets London Borough
	Worcestershire County Council

ANALYTICAL METHODS, LABORATORY QUALITY ASSURANCE AND INTERPRETATION OF DATA

1. The Agency co-funded Eurofins in the EU-funded project COFAWS (Confirmation of the Origin of Farmed and wild Salmon - Contract N°: G6RD-CT-2001-00512) to investigate analytical methods which are able to distinguish between wild and farmed salmon. An extension of these methods to sea bass was also investigated as a part of the same FSA project (Q01031). The conclusion from the projects was that a combination of isotopic and compositional analyses can successfully discriminate between fish of wild and farmed origin based on the differences in diets of the two types of fish. The markers found useful to distinguish the production method in wild and farmed salmon and sea bass were the total fat content, the distribution of the higher chain fatty acids, the $\delta^{13}\text{C}$ carbon (carbon 13/12 isotopic ratio) and $\delta^{18}\text{O}$ oxygen (oxygen 18/16 isotopic ratio) measurements of the extracted oil fraction, and $\delta^{15}\text{N}$ nitrogen (nitrogen 15/14 isotopic ratio) measurement of choline fraction of the extracted oil.

2. The Agency contracted the University of Stirling (SUERC) to enlarge the database measurements for further authentic samples of wild and farmed sea bass and sea bream. Standard operating procedures (SOP) for these methods were developed and approved by the Agency. Eurofins was contracted to analyse the fish samples collected in both period 1 and 2 of this survey and interpret the data using the database of salmon from COFAWS, and the enlarged databases from their's and SUERC's projects.

Quality Assurance

3. Eurofins Laboratories Ltd is accredited in France. As the combined method was only recently developed through Agency research, there is no accreditation scheme for the method as a whole. However, Eurofins does participate in the French proficiency scheme for the determination of fatty acids by GC in certain food matrices. In addition, testing of the method during the final stages of development included a four-laboratory ring trial, which showed satisfactory GC results. All IRMS results ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$, $\delta^{18}\text{O}$) are always quoted in relation to international standards for the relevant stable isotope. Eurofins participates in FIT (Food Analysis using Isotopic Analysis) proficiency testing scheme for $\delta^{15}\text{N}$, although there is no current testing scheme for $\delta^{18}\text{O}$ analysis by pyrolysis IRMS.

Interpretation of Results

4. In order to decide whether the fish conforms to the data associated with wild fish three sets of analytes are examined namely, the percentage oil content, the percentage of certain fatty acids, and the carbon, oxygen, and nitrogen isotopic ratios.

5. The total % of oil is used as an indicator of production method for sea bass and sea bream. Normally wild sea bass have less than 6% fat and wild sea bream less than 8% fat. However for salmon, the oil content is dependent on the age of the salmon and season, and hence cannot be used as a reliable indicator of production method.

6. There are 13 main fatty acids of fish oil : C14:0 ; C16:0 ; C16:1 ; C18:0 ; C18:1n-9 ; C18:1n-7 ; C18:2n-6 ; C20:1n-9 ; C20:4n-6 ; C22:1n-11 ; C22:1n-9 ; C22:5n-3 ; C22:6n-3, which represent more than 95% of the total fatty acids. From the databases assembled on authentic fish from wild and farmed origin, it has been concluded that for all species, linoleic acid (C18:2n-6) is present in very low proportions in the oil extracted from wild fish. The level of linoleic acid increases markedly in farmed fish, especially where vegetable oil has been used in the feed. On the other hand, arachidonic acid (C20:4n-6) is in fairly high quantities in wild sea bass and wild sea bream, whilst it is visibly lower in farmed sea bass and bream. Hence these two fatty acids give a preliminary indication of samples that are not consistent with wild fish data. In wild salmon, docosahexaenoic acid (C22:6n-3 – omega 3) is more important, and hence this can be used as a preliminary indicator (see Table A) for wild Atlantic salmon. However, there appears to be more variability of fatty acid profiles for salmon, and as such these parameters may not be as useful.

Table A Typical Fatty Acid Composition in Wild Fish

Fatty Acid	Salmon	Sea bream	Sea bass
C18:2n-6 (linoleic)	Less than 2%	Less than 2%	Less than 1%
C20:4n-6 (arachidonic)	Less than 1%	1-6%	1-5%
C22:6n-3 (omega 3)	10-30%	15-35%	15-40%

7. The third set of data is the δ^{13} carbon and δ^{18} oxygen measurements by IRMS of the oil fraction, and δ^{15} nitrogen measurement of the choline fraction. For salmon, the most consistent factors to discriminate between wild versus farmed were δ^{18} oxygen

measurements of the oil fraction, and δ^{15} nitrogen of the choline fraction. Whereas for both the sea bream and sea bass both δ^{13} carbon and δ^{18} oxygen measurements of the oil fraction are used, as well as the δ^{15} nitrogen measurement of the choline fraction.

8. Verification of “wild” fish is then based on a multivariate analysis on the variables, but different parameters were found better to discriminate between farmed and wild sea bass, sea bream and salmon. Thus for sea bass and sea bream, the variables used were % oil, C18:2n-6, C20:4n-6, δ^{15} N choline, δ^{13} C fat and δ^{18} O fat. For salmon only C18:2n-6, δ^{15} N choline, and δ^{18} O fat were used as variables. The variables were combined in a principal component (PCA) multivariate analysis using dedicated Statistica software, and 95% confidence limits were drawn around of the database values of authentic “wild” and farmed salmon, sea bass and sea bream.

9. A decision on whether the claim that the survey samples were “wild” was based on the position of the samples in the PCA analysis, and hence a comparison with the range of possible values of the variables for farmed or “wild fish. Those samples lying within the 95% confidence limits of the farmed fish database were classed as “farmed”. Samples outside the 95% confidence limits but associated with ellipse of the farmed population, were classed as “not consistent with wild”, and indicated that they were outside the available database values but not classified as farmed. However, in the case of Pacific salmon classed as “not consistent with wild”, these were considered as simply “outside the database” because of the low representation of Pacific salmon in wild salmon database.

SUPPLIERS AND FISH ON WHICH INFORMATION COLLECTED

ANNEX 5

FSA code	Supplier	Place of purchase	Product name	Labelling
BH001	Wm Morrison Supermarkets PLC	Birmingham	2 Boned Scottish Salmon Fillets	C
BH002	Wm Morrison Supermarkets PLC	Birmingham	Fresh Smoked Cod Fillet	C
BH003	Young's Bluecrest Seafood Ltd	Birmingham	Haddock Fillets, Skinless & Boneless	C
BH004	G & J Jack Ltd	Birmingham	King Scallops (Pecten Maximus)	C
BH005	Birmingham Fish Market	Birmingham	Sea Bass (Dicentrarchus labrax)	PC
BH006	J Vickerstaffs, Birmingham	Birmingham	Espadon Longes AP Albin Reunion Maaeg	PC
BH007	J Vickerstaffs, Birmingham	Birmingham	Fresh Tuna Fillet	PC
BH008	ARDC Import Export Ltd	Birmingham	Whole Round Red Mullet (Parupeneus meptacanthus)	PC
BH009	Ken Bell Int Ltd	Birmingham	Loitya	C
BH010	Caterfish, Birmingham	Birmingham	Gutted Farmed Salmon	C
BH011	Tom Fields, Birmingham	Birmingham	Headless Reds	NC
BH012	Tom Fields, Birmingham	Birmingham	Silver Pomfret	NC
BH013	Tom Fields, Birmingham	Birmingham	Sardines (Sardina pilchardus)	C
BH014	Terry Larden, Birmingham	Birmingham	Sea Bass	NC
BH015	RMR Blackwell, Birmingham	Birmingham	Mackerel	NC
BH016	Sea Katch. Icepak Int Ltd	Birmingham	White Bait	NC
BH017	State Fish Co. Inc	Birmingham	Calamari	C
BH018	C & KE Banks, Birmingham	Birmingham	Parrot Fish	NC
BH019	LOBO Seafood Stores, Birmingham	Birmingham	Grey Mullet	C
CO001	Tesco Stores Ltd	Camborne	Cod Fillets	C
CO002	Tesco Stores Ltd	Camborne	Haddock Fillets	C
CO003	Tesco Stores Ltd	Camborne	Cod Fillets	C
CO004	Tesco Stores Ltd	Camborne	Haddock Loin Fillets	PC
CO005	Asda Stores Ltd	Penryn	Plaice Fillet	C
CO006	Asda Stores Ltd	Penryn	English Whole Trout	C
CO007	Asda Stores Ltd	Penryn	Tuna Steaks	C
CO008	Asda Stores Ltd	Penryn	Whole Fish Fillets in a Protective Ice Glaze	C
CO009	Marks & Spencer Plc	Falmouth	Wild Pacific Salmon Fillets	C
CO010	Marks & Spencer Plc	Falmouth	Cod Fillets	C
CO011	Marks & Spencer Plc	Falmouth	Cod Fillets	C
CO012	Iceland Food Plc	Redruth	Skinless Boneless Cod Fillet	C
CO013	Iceland Food Plc	Redruth	Boneless Plaice Fillet	C

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SUPPLIERS AND FISH ON WHICH INFORMATION COLLECTED

ANNEX 5

CO014	Sainsbury's Supermarkets Ltd	Truro	Trout	C
CO015	Sainsbury's Supermarkets Ltd	Truro	Sainsburys Organic Scottish Salmon Fillets	C
CO016	Sainsbury's Supermarkets Ltd	Truro	Sainsburys Whole 2 Rainbow Trout	C
CO017	Sainsbury's Supermarkets Ltd	Truro	White Fish Fillets	C
CO018	Wm Morrison Supermarkets PLC	Redruth	Sea Bass	C
CO019	Wm Morrison Supermarkets PLC	Redruth	Farmed Sea Bass with Parsley	C
CO020	Wm Morrison Supermarkets PLC	Redruth	Rainbow Trout with Parsley	C
CO021	Ross	Redruth	Fish Fillets, Skinless and Boneless	PC
CU001	Select Fisheries Ltd, Cumbria	Cumbria	Cod	NC
CU002	Select Fisheries Ltd, Cumbria	Cumbria	Haddock	NC
CU003	Young's Bluecrest Seafood Ltd	Cumbria	Youngs Frozen Wild Pink Salmon Fillets	C
CU004	Wm Morrison Supermarkets PLC	Cumbria	Rainbow Trout	C
CU005	Wm Morrison Supermarkets PLC	Cumbria	Cod Fillet	C
CU006	Wm Morrison Supermarkets PLC	Cumbria	Fresh Gilthead Sea Bream	C
CU007	Wm Morrison Supermarkets PLC	Cumbria	Freshly Prepared Farmed Sea Bass	C
CU008	Wm Morrison Supermarkets PLC	Cumbria	Freshly Prepared Dab	C
CU009	Wm Morrison Supermarkets PLC	Cumbria	Black Halibut Steaks	C
CU010	Wm Morrison Supermarkets PLC	Cumbria	Fresh Tuna Loin	C
CU011	Wm Morrison Supermarkets PLC	Cumbria	Skinless Coley Fillets	C
CU012	Tesco Stores Ltd	Barrow in Furness	Tuna steaks (Selected from line caught yellow fin)	C
CU013	Tesco Stores Ltd	Barrow in Furness	Skinless Boneless haddock Fillets	C
CU014	Asda Stores Ltd	Barrow in Furness	English Whole Trout	C
CU015	Asda Stores Ltd	Barrow in Furness	4 Cod Portions	C
CU016	EH Booth & Co	Cumbria	Silver Hake Fillets	C
CU017	Strathard Salmon Ltd	Cumbria	Fresh organic Farmed Salmon Portions	C
CU018	EH Booth & Co	Cumbria	Plaice Fillets	C
CU019	Puddleduck	Ulverston	Plaice	C
CU020	Puddleduck	Ulverston	Haddock Fillets	C
CU021	R J Easter	Ulverston	Fresh Cod Fillets	C
CU022	R J Easter	Ulverston	Fresh Monk Fish	C
ES001	Asda Stores Ltd	Eastbourne	Cod Fillet	C
ES002	Asda Stores Ltd	Eastbourne	Tuna Steaks	C

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SUPPLIERS AND FISH ON WHICH INFORMATION COLLECTED

ANNEX 5

ES003	Asda Stores Ltd	Eastbourne	Skinless and Boneless Salmon Fillets	C
ES004	Asda Stores Ltd	Eastbourne	English Whole Trout	C
ES005	Tesco Stores Ltd	Eastbourne	Plaice Fillet	C
ES006	Tesco Stores Ltd	Eastbourne	Plaice Fillets	C
ES007	Tesco Stores Ltd	Eastbourne	Cod Fillets	C
ES008	Tesco Stores Ltd	Eastbourne	Tuna Steaks	C
ES009	Sainsbury's Supermarkets Ltd	Eastbourne	Fresh Cod Fillet	C
ES010	Sainsbury's Supermarkets Ltd	Eastbourne	Extra Trimmed Cod Fillet	C
ES011	Sainsbury's Supermarkets Ltd	Eastbourne	Skinless Boneless Tuna Steaks	C
ES012	Wm Morrison Supermarkets PLC	Eastbourne	Fresh tuna Loin	C
ES013	Wm Morrison Supermarkets PLC	Eastbourne	Fresh Plaice Fillet	C
ES014	Iceland Foods Plc	Eastbourne	Skinless Boneless Cod Fillet	C
ES015	Somerfield Stores Plc	Eastbourne	Plaice Fillets	C
ES016	Somerfield Stores Plc	Eastbourne	4 Cod Portions	C
ES017	Admirals Plaice	Eastbourne	Plaice Fillets	NC
ES018	Admirals Plaice	Eastbourne	Cod Fillets	NC
ES019	Taylor's Fishmongers	Eastbourne	Haddock Fillets	NC
ES020	Taylor's Fishmongers	Eastbourne	Cod Fillets	NC
ES021	Paul's Plaice	Seaford	Local Dover Sole	NC
ES022	Paul's Plaice	Seaford	Local Cod Fillet	NC
KC001	Tesco Stores Ltd	Kensington	Whole Dover Sole	C
KC002	Tesco Stores Ltd	Kensington	Sardines	C
KC003	Tesco Stores Ltd	Kensington	2Cod Fillets	C
KC004	Tesco Stores Ltd	Kensington	2 Skinless & Boneless Tuna Steaks	C
KC005	Chalmers & Gray	Notting Hill	John Dory	PC
KC006	Chalmers & Gray	Notting Hill	Cod Fillet	PC
KC007	Golborne Fisheries	Kensington	Red Mullet	NC
KC008	Golborne Fisheries	Kensington	Mackerel	NC
KC009	Sainsbury's Supermarkets Ltd	Kensington	Haddock Loins	C
KC010	Sainsbury's Supermarkets Ltd	Kensington	Whole 2 Rainbow Trout	C
KC011	Sainsbury's Supermarkets Ltd	Kensington	Boneless 2 Salmon Fillets	C
KC012	Sainsbury's Supermarkets Ltd	Kensington	Cod Steaks (skinless & boneless)	C
KC013	Waitrose Ltd	Kensington	Fresh New Zealand Red Sea Bream	C
KC014	Waitrose Ltd	Kensington	Prime Tuna Steak	C
KC015	Somerfield Stores Plc	Kensington	Whole Sardines	C

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SUPPLIERS AND FISH ON WHICH INFORMATION COLLECTED

ANNEX 5

KC016	Somerfield Stores Plc	Kensington	Plaice Fillets	C
KC017	Somerfield Stores Plc	Kensington	Cod Fillets	C
KC018	Marks & Spencer Plc	Kensington	Swordfish Steaks	C
KC019	Marks & Spencer Plc	Kensington	Haddock Fillets	C
KC020	Fish Shop	Kensington	Turbot	NC
KC021	Fish Shop	Kensington	Brill	NC
KC022	Tesco Stores Ltd	Kensington	4 Chunky Haddock Loin Fillets	C
LC001	Aldi Stores Ltd	Skelmersdale	Smoked Mackerel Fillet	C
LC002	C Randals	Skelmersdale	Fresh Coley	C
LC003	C Randals	Skelmersdale	Fresh Whole Quality Salmon	NC
LC004	Iceland Foods Plc	Skelmersdale	Cod Fillets, Skinless Boneless	C
LC005	Asda Stores Ltd	Skelmersdale	Cod Loin, Skinless Boneless	C
LC006	Young's Bluecrest Seafood Ltd	Skelmersdale	Headless Mackerel	C
LC007	Young's Bluecrest Seafood Ltd	Skelmersdale	Plaice Fillets	C
LC008	Asda Stores Ltd	Skelmersdale	2 Tuna Steaks. Thunnus Albacares.	C
LC009	Tesco Stores Ltd	Burscough	Whole Dover Sole	C
LC010	Tesco Stores Ltd	Burscough	Smoked Kipper	C
LC011	Tesco Stores Ltd	Burscough	2 Salmon Fillets	C
LC012	Tesco Stores Ltd	Burscough	Skinless & Boneless Cod Fillets	C
LC013	Wm Morrison Supermarkets PLC	Preston	Golden trout	C
LC014	Wm Morrison Supermarkets PLC	Preston	Fresh Tuna Loin	C
LC015	Wm Morrison Supermarkets PLC	Preston	Fresh Scottish Salmon Fillet	PC
LC016	Wm Morrison Supermarkets PLC	Preston	Skinless Coley Fillets	C
LC017	Interfish Ltd	Preston	Fresh Mackerel	NC
LC018	Sainsbury's Supermarkets Ltd	Preston	Trout Fillets	C
LC019	C & G Neve Ltd	Poulton Le Flyde	Silver Hake Fillets	C
LC020	C & G Neve Ltd	Fleetwood	Plaice	PC
LC021	C & G Neve Ltd	Fleetwood	Hake	PC
LC022	Whitesides	Fleetwood	Monk Fish	NC
LC023	Whitesides	Fleetwood	Manx Kipper	C
LC024	High Seas Sea Food	Carnfarm	Salmon Supremes	NC
LC025	High Seas Sea Food	Carnfarm	Sea Bream Fillets	NC
LC026	C & G Neve Ltd	Fleetwood	Cod (whole)	PC
LC027	C & G Neve Ltd	Fleetwood	Whiting	PC
LC028	C & G Neve Ltd	Fleetwood	Haddock	PC

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SUPPLIERS AND FISH ON WHICH INFORMATION COLLECTED

ANNEX 5

LC029	C & G Neve Ltd	Fleetwood	Lemon Sole	PC
NEL001	Wm Morrison Supermarkets PLC	Grimsby	Sea Bass	C
NEL002	Wm Morrison Supermarkets PLC	Grimsby	Fresh Cod Fillet with parsley	C
NEL003	Wm Morrison Supermarkets PLC	Grimsby	3 Fresh Scottish Salmon Fillets with parsley	PC
NEL004	Ross	Grimsby	Fish Fillets, Skinless and Boneless	PC
NEL005	Sainsbury's Supermarkets Ltd	Grimsby	2 whole rainbow trout	C
NEL006	Sainsbury's Supermarkets Ltd	Grimsby	White Fish Fillets	C
NEL007	Tesco Stores Ltd	Grimsby	Whole Plaice	C
NEL008	Tesco Stores Ltd	Grimsby	2 Boneless Tuna Steaks	C
NEL009	Tesco Stores Ltd	Grimsby	6 Skinless and Boneless Coley Portions	C
NEL010	Royal Greenland GmbH	Grimsby	Alaska Pollock Fillets	C
NEL011	Somerfield Stores Plc	Grimsby	Haddock Fillet	C
NEL012	Tesco Stores Ltd	Cleethorpes	Headed and gutted, bone in skin on Sardines	C
NEL013	Excel Seafoods	Grimsby	Farmed Gilt Head Bream	PC
NEL014	Excel Seafoods	Grimsby	Farmed Sea Bass	PC
NEL015	Aldi Stores Ltd	Grimsby	Whole Salmon	C
NEL016	Asda Stores Ltd	Grimsby	Whole Sea Bass	C
NEL017	Asda Stores Ltd	Grimsby	Cod Loin	C
NEL018	Young's Bluecrest Seafood Ltd	Cleethorpes	Prime Boneless Salmon Fillets	C
NEL019	Freds Fisheries Ltd	Grimsby	Fresh Whole Grey Mullet	NC
NEL020	Freds Fisheries Ltd	Grimsby	Fresh Gurnards	NC
NEL021	Gresham Fisheries Ltd	Cleethorpes	Salmon Fillets	NC
NEL022	Gresham Fisheries Ltd	Cleethorpes	Skate Wings	NC
NEL023	Grimsby Fish Market	Grimsby	A number of products from the market were purchased (6 products)	NC
NI001	Sainsbury's Supermarkets Ltd	Ballymena	Scottish Thinly Sliced Smoked Salmon	C
NI002	Tesco Stores Ltd	Ballymena	Skinless 2 Cod Fillets	C
NI003	Asda Stores Ltd	Coleraine	Scottish Smoked Salmon	C
NI004	Sainsbury's Supermarkets Ltd	Coleraine	Smoked Scottish Salmon (organic)	C
NI005	Tesco Stores Ltd	Ballymena	Skinless 2 Whiting Fillets	C
NI006	Sainsbury's Supermarkets Ltd	Ballymena	Ready Prepared Mackerel Fillets	C
NI007	Sainsbury's Supermarkets Ltd	Ballymena	6 Cod Steaks	C
NI008	Asda Stores Ltd	Coleraine	King Prawn Kebab	C
NI009	Sainsbury's Supermarkets Ltd	Ballymena	Extra Trimmed Haddock Fillets	C
NI010	Tesco Stores Ltd	Ballymena	2 Trout Fillets	C

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SUPPLIERS AND FISH ON WHICH INFORMATION COLLECTED

ANNEX 5

NI011	Sainsbury's Supermarkets Ltd	Ballymena	Tuna Steak	C
NI013	Marks & Spencer Plc	Ballymena	Irish Oak Smoked Salmon Strips	C
NI014	John West Foods Ltd	Ballymena	John West Mild Oaked Smoked Salmon	C
NI015	Sainsbury's Supermarkets Ltd	Ballymena	Skinless Cod Fillet	C
NI016	Kilkeel Auction Market	Kilkeel	Thornback Ray	NC
NI017	Lidl UK GmbH	Craigavon	Norwegian Salmon Fresh Smoked	C
NI018	Dunnes Stores	Portadown	Salmon Steaks Fresh	C
NI019	Iceland Food Plc	Portadown	Skinless Boneless Cod Fillet	C
NI020	Fish Direct Ltd	Portadown	Whole Salmon	C
NI021	Young's Bluecrest Seafood Ltd	Five Mile Town	Youngs Prime Boneless Salmon Fillets	C
NI022	Tesco Stores Ltd	Dungannon	Skinless and Boneless Cod Fillets	C
NI023	Lidl UK GmbH	Dungannon	OceanSea Norwegian Salmon Fresh Smoked	C
NI024	Curleys	Dungannon	Rainbow trout	C
NI025	Elmore Fish Ltd	Armagh	Plaice	NC
NI026	Elmore Fish Ltd	Armagh	Salmon	NC
NI027	N J Nolan (Dublin) Ltd	Armagh	Oak Smoked Salmon	PC
NI031	Tesco Stores Ltd	Belfast	Tesco Value Skinless and Boneless Fish Fillets	C
NI032	Tesco Stores Ltd	Belfast	Farmed Sea Brass	C
NI033	Tesco Stores Ltd	Belfast	Skinless 2 Cod Fillets	C
NI034	Tesco Stores Ltd	Belfast	Sardines	C
NI035	Marko	Co Down	Swordfish Steaks	C
NI036	Marko	Co Down	Catfish Fillets	C
NI037	Marko	Co Down	Bream	C
NI038	Sainsbury's Supermarkets Ltd	Castlereagh	Whole 2 Rainbow trout	C
NI039	Sainsbury's Supermarkets Ltd	Castlereagh	Sea Trout Fillets	C
NI040	Sainsbury's Supermarkets Ltd	Castlereagh	Sea Bream	C
NI041	Marks & Spencer Plc	Castlereagh	Fresh Scottish whole Rainbow trout	C
NI042	Marks & Spencer Plc	Castlereagh	2 Fresh Halibut Fillets	C
NI043	Sean McKeown	Bangor	Plaice Fillets	PC
NI044	Sean McKeown	Bangor	Monk-fish tails	NC
NI044	Sean McKeown	Bangor	Monk fish tails	NC
NI045	Atlantic Harvest Ltd	Carryduff	Whiting Fillet	C
NI046	Asda Stores Ltd	Enniskillen	Tuna Steaks	C
NI047	Atlantic Harvest Ltd	Enniskillen	Trout Fillet, (Rainbow)	C
NI048	Burren Smokehouse Ltd	Co Fermanagh	The Burren SmokehouseSmoked Irish Salmon	PC

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SUPPLIERS AND FISH ON WHICH INFORMATION COLLECTED

ANNEX 5

NI049	Iceland Food Plc	Omagh	2 skinless boneless Tuna Steaks	C
NI050	Iceland Food Plc	Omagh	2 Salmon Fillets, skinless boneless	C
NI051	Royal Greenland GmbH	Omagh	Royal Greenland Scottish Smoked Salmon sliced	PC
NI052	Glenrossan Fish Products	Strabane	Cod Fillet	NC
NI053	Asda Stores Ltd	Co Tyrone	Skinless and Boneless Salmon Fillets	C
NI054	Iceland Food Plc	Strabane	Skinless boneless Haddock Fillet	C
NI055	Sainsbury's Supermarkets Ltd	Derry	Skinless Whiting Fillets	C
NI056	Sainsbury's Supermarkets Ltd	Derry	Large Loch trout Fillets	C
NI057	Sainsbury's Supermarkets Ltd	Derry	Wild Alaskan Salmon Fillets	C
NI058	Tesco Stores Ltd	Limavady	Skinless 2 Cod Fillets	C
NI059	Royal Greenland GmbH	Limavady	Ocean Trader Tuna Steaks	C
NI060	William Carr & Sons Ltd	Limavady	Sea Star traditional sliced Smoked Salmon	C
NI061	Elmore Fish	Belfast	Haddock Fillets	C
NI062	Dunnes Stores	Belfast	Cod Fillet	C
NI063	Atlantic Harvest Ltd	Belfast	Swordfish Steaks	C
NI064	Dunnes Stores	Belfast	Salmon	C
NI065	Asda Stores Ltd	Belfast	Tuna Steaks	C
NI066	Fish Direct	Belfast	Mackerel Fillet	PC
NI067	Marks & Spencer Plc	Belfast	Cod Fillets	C
NI068	Marks & Spencer Plc	Belfast	Fresh Scottish Loch trout Fillets	C
NI069	Ewing Seafoods	Belfast	Fresh Sea Bass Fillets	NC
NI070	Ewing Seafoods	Belfast	Fresh Lemon Sole	NC
NI071	Owen McMahon	Belfast	Lemon Sole	NC
NI072	Owen McMahon	Belfast	Plaice	NC
NI073	Tesco Stores Ltd	Belfast	Trout Fillets	C
NI074	Tesco Stores Ltd	Belfast	Salmon Fillets	C
NI075	S & P Milligan	Belfast	Fresh Smoked Salmon	NC
NI076	S & P Milligan	Belfast	Fresh Trout Fillet	NC
NI077	George S Cully & sons	Belfast	Haddock	PC
NI078	George S Cully & sons	Belfast	Cod	PC
NI079	George S Cully & sons	Belfast	Haddock Fillet	PC
NI080	Alan Coffey	Belfast	no labelling	NC
RH001	Somerfield Stores Plc	Tonypandy	Rainbow trout fillets	C
RH002	Somerfield Stores Plc	Tonypandy	Cod fillets	C
RH003	Asda Stores Ltd	Aberdare	Asda extra special line caught undyed smoked haddock	C

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SUPPLIERS AND FISH ON WHICH INFORMATION COLLECTED

ANNEX 5

RH004	Asda Stores Ltd	Aberdare	Asda English whole trout	C
RH005	Young's Bluecrest Seafood Ltd	Treorchy	Salmon Fillets	C
RH006	Young's Bluecrest Seafood Ltd	Treorchy	Cod Fillets	C
RH007	Tesco Stores Ltd	Aberdare	Boneless white fish fillets	C
RH008	Tesco Stores Ltd	Aberdare	Cod Fillets	C
RH009	Tesco Stores Ltd	Aberdare	Lemon Sole Fillets	C
RH010	Tesco Stores Ltd	Aberdare	Whole Mackerel	C
RH011	E Webber & Sons, Aberdare	Aberdare	Lemon Sole	NC
RH012	Superior Seafoods, Grimsby	Aberdare	Herring	NC
RH013	Marks & Spencer Plc	Pontypridd	Haddock Fillets	C
RH014	Marks & Spencer Plc	Pontypridd	Wafer thin Scottish Smoked Salmon	PC
RH015	Marks & Spencer Plc	Pontypridd	Scottish Oak Smoked Salmon	PC
RH016	Iceland Food Plc	Pontypridd	Skinless Coley Fillets	C
RH017	Tesco Stores Ltd	Pontypridd	Hake fillets	C
RH018	Tesco Stores Ltd	Pontypridd	Halibut fillet	C
RH019	Fishmongers, Pontypridd	Pontypridd	Whole Hake	NC
RH020	Fishmongers, Pontypridd	Pontypridd	Rainbow Trout	PC
SE001	Butlers, London Rd	Westcliff on Sea	Tilapia	NC
SE002	Butlers, London Rd	Westcliff on Sea	Medium Plaice	NC
SE003	V Mattacks, Elm Rd	Leigh on Sea	Cod Fillet	NC
SE004	V Mattacks, Elm Rd	Leigh on Sea	Whole Plaice	NC
SE005	Leigh Fishermans Co-Op	Leigh on Sea	Cod Fillet	NC
SE006	Leigh Fishermans Co-Op	Leigh on Sea	Haddock Fillets	NC
SE007	Sainsbury's Supermarkets Ltd	Southend on Sea	Coley Steaks skinless & boneless	C
SE008	Sainsbury's Supermarkets Ltd	Southend on Sea	Whole 2 Rainbow Trout	C
SE009	Sainsbury's Supermarkets Ltd	Southend on Sea	Extra Trimmed Cod Fillet	C
SE010	Sainsbury's Supermarkets Ltd	Southend on Sea	Fresh Skate Wings	C
SE011	Young's Bluecrest Seafood Ltd	Westcliff on Sea	Salmon Fillets	C
SE012	Somerfield Stores Plc	Leigh on Sea	Cod Fillets	C
SE013	Asda Stores Ltd	Shoeburyness	4 Cod Portions	C
SE014	Asda Stores Ltd	Shoeburyness	English Whole trout	C
SE015	Asda Stores Ltd	Shoeburyness	Small Whole trout	C

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SUPPLIERS AND FISH ON WHICH INFORMATION COLLECTED

ANNEX 5

SE016	Tesco Stores Ltd	Westcliff on Sea	Whole Herring	C
SE017	Tesco Stores Ltd	Westcliff on Sea	Trout Fillet	PC
SE018	Tesco Stores Ltd	Westcliff on Sea	2 Whole Rainbow Trout	PC
SE019	Tesco Stores Ltd	Westcliff on Sea	Skinless & Boneless Cod Fillets	C
SE020	Waitrose Ltd	Southend on Sea	Fresh Lemon Sole Fillets	C
SE021	Waitrose Ltd	Southend on Sea	Fresh Scottish Salmon Fillets	C
SK001	Young's Bluecrest Seafood Ltd	Ipswich	Coley Fillets Skinless and Boneless	PC
SK002	Sainsbury's Supermarkets Ltd	Ipswich	Whole Salmon	C
SK003	Sainsbury's Supermarkets Ltd	Ipswich	Wild Alaskan Salmon Fillets	C
SK004	Sainsbury's Supermarkets Ltd	Ipswich	Whole 2 Rainbow Trout	C
SK005	Tesco Stores Ltd	Ipswich	Whole Wild Sea Bass	C
SK006	Tesco Stores Ltd	Ipswich	2 (minimum) Plaice Fillets	PC
SK007	Tesco Stores Ltd	Ipswich	Whole Mackerel	PC
SK008	Tesco Stores Ltd	Ipswich	Skinless and Boneless White Fish Fillets	C
SK009	Wm Morrison Supermarkets PLC	Ipswich	Freshly Prepared Farmed Sea Bass with Parsley	C
SK010	Wm Morrison Supermarkets PLC	Ipswich	Fresh Herring Fillets	C
SK011	Wm Morrison Supermarkets PLC	Ipswich	Sprats	C
SK012	Ross	Ipswich	Fish Fillets, Skinless and Boneless	PC
SK013	Asda Stores Ltd	Ipswich	Tuna Loin	C
SK014	Asda Stores Ltd	Ipswich	Haddock Fillet	C
SK015	Asda Stores Ltd	Ipswich	Trout Fillets	C
SK016	Asda Stores Ltd	Ipswich	Pink Salmon Portions	C
SK017	Royal Greenland GmbH	Lowestoft	Premium Quality Salmon Fillets	C
SK018	Seacream Ltd	Lowestoft	Hot smoked Mackerel fillet	C
SK019	World of Fish, Lowestoft	Lowestoft	Sea Bream	C
SK020	Anglia Pre Packs	Southend	Haddock Fillets	PC
SK021	Somerfield Stores Plc	Southwold	Salmon Fillets	C
SK022	Johns Fish Shop, Southwold	Southwold	Fresh Sea Bass	NC
SO001	Tesco Stores Ltd	Taunton	Tesco 2 Rainbow trout fillets	PC
SO002	Tesco Stores Ltd	Taunton	Tesco 2 Skinless Boneless Tuna Steaks	C
SO003	Tesco Stores Ltd	Taunton	Whole Salmon	C
SO004	Tesco Stores Ltd	Taunton	2 Plaice Fillets	C
SO005	Asda Stores Ltd	Taunton	Asda Tuna Steaks	C

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SUPPLIERS AND FISH ON WHICH INFORMATION COLLECTED

ANNEX 5

SO006	Asda Stores Ltd	Taunton	English Whole Trout	C
SO007	Young's Bluecrest Seafood Ltd	Taunton	Salmon Fillets Skinless and Boneless	C
SO008	Asda Stores Ltd	Taunton	Salmon Fillets	C
SO009	Wm Morrison Supermarkets PLC	Yeovil	Freshly prepared Farmed Sea Bass with parsley	C
SO010	Wm Morrison Supermarkets PLC	Yeovil	Fresh Gilthead Sea Bream	C
SO011	Marks & Spencer Plc	Yeovil	Haddock Fillets	C
SO012	Aldi Stores Ltd	Bridgwater	Premium Smoked Salmon	PC
SO013	Young's Bluecrest Seafood Ltd	Taunton	Ocean Frozen Haddock Fillets, Boneless	C
SO014	Sainsbury's Supermarkets Ltd	Taunton	Extra Trimmed Lemon Sole Fillets	C
SO015	Interfish Ltd	Plymouth	John Dory	C
SO016	Young's Bluecrest Seafood Ltd	Somerset	Cod Fillets	C
SO017	Ocean Catch, Minehead Somerset	Somerset	Dog Fish	C
SO018	Ocean Catch, Minehead Somerset	Somerset	Swordfish Steaks	C
SO019	Don Jones Fresh Fish, Cornhill Wellington	Cornhill Wellington	Rainbow trout	C
SO020	Don Jones Fresh Fish, Cornhill Wellington	Cornhill Wellington	Fresh Mackerel	C
SO021	Don Jones Fresh Fish, Cornhill Wellington	Cornhill Wellington	Brixham Dabs	C
SO022	Seafoods, Burnham on Sea Somerset	Burnham on Sea	Cornish Pollock Fillets	C
TH001	Asda Stores Ltd	East London	Small Whole Trout	C
TH002	Asda Stores Ltd	East London	Salmon Steak	C
TH003	Asda Stores Ltd	East London	2 Tuna Steaks	C
TH004	Waitrose Ltd	East London	Traditionally Smoked Haddock fillet - Undyed	C
TH005	Waitrose Ltd	East London	Madagascan Tiger Prawns	C
TH006	Waitrose Ltd	East London	Fresh Organic Scottish Salmon Fillet	C
TH007	Waitrose Ltd	East London	Fresh New England Scallops	C
TH008	Waitrose Ltd	East London	Fresh Scottish Salmon Fillets	C
TH009	Waitrose Ltd	East London	Traditionally Smoked Icelandic Haddock Fillets	C
TH010	Seabay Ltd.	East London	Skinless Boneless Cod Fillets	C
TH011	Royal Greenland GmbH	East London	Ocean Trader Tuna Steaks	C
TH012	Royal Greenland GmbH	East London	Alaska Pollock Fillets	C
TH013	Young's Bluecrest Seafood Ltd	London	Young's Salmon Steaks	C

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SUPPLIERS AND FISH ON WHICH INFORMATION COLLECTED

ANNEX 5

TH014	Iceland Foods Plc	Stepney	2 Salmon Fillets	PC
TH015	Royal Greenland GmbH	Stepney	Scottish Smoked Salmon	PC
TH016	Iceland Food Plc	Stepney	Skinless Coley Fillet	C
TH017	L A Wickers & Co Ltd, Billingsgate	Billingsgate	Red Mullet	NC
TH018	L A Wickers & Co Ltd, Billingsgate	Billingsgate	Seabass	NC
TH019	Lobos Fisheries, Billingsgate	Billingsgate	Clean Tilapia	NC
TH020	Lobos Fisheries, Billingsgate	Billingsgate	Tuna	NC
TH021	Lobos Fisheries, Billingsgate	Billingsgate	Grey Mullet	C
TO001	Iceland Food Plc	Paignton	2 Salmon Fillets, skinless boneless	C
TO002	Iceland Food Plc	Paignton	Cod Fillet	C
TO003	Iceland Food Plc	Paignton	Haddock Fillet	C
TO004	Iceland Food Plc	Paignton	Plaice Fillet	C
TO005	Iceland Food Plc	Paignton	Coley Fillets	C
TO006	Somerfield Stores Plc	Paignton	Cod Fillets	C
TO007	Royal Greenland GmbH	Paignton	Alaska Pollock Fillets	C
TO008	Tesco Stores Ltd	Torquay	Salmon Fillets	C
TO009	Browse Sea Foods, Brixham	Brixham	Herring	PC
TO010	Browse Sea Foods, Brixham	Brixham	Whiting	PC
TO011	Browse Sea Foods, Brixham	Brixham	Salmon	PC
TO012	Browse Sea Foods, Brixham	Brixham	Dabs	PC
TO013	Browse Sea Foods, Brixham	Brixham	Lemon Sole	PC
TO014	Wm Morrison Supermarkets PLC	Paignton	Whole Scottish Salmon	PC
TO015	Wm Morrison Supermarkets PLC	Paignton	Cod Steak	C
TO016	Wm Morrison Supermarkets PLC	Paignton	Scottish Salmon Fillet	PC
TO017	Wm Morrison Supermarkets PLC	Paignton	Scottish Salmon Steaks	PC
TO018	Wm Morrison Supermarkets PLC	Paignton	Fresh Cornish Lemon Sole Fillet with Parsley	C
TO019	Wm Morrison Supermarkets PLC	Paignton	Fresh Herring Fillet with Parsley	C
TO020	Sainsbury's Supermarkets Ltd	Paignton	2 Salmon Fillets	C
TO021	Sainsbury's Supermarkets Ltd	Paignton	Scottish Salmon Fillets (organic)	C
TO022	Sainsbury's Supermarkets Ltd	Paignton	2 Trout Fillets	C
TO023	Sainsbury's Supermarkets Ltd	Paignton	Extra Trimmed Cod Fillet	C
TO024	Roberts Fisheries, Paignton	Paignton	Whole Plaice	C
TO025	Roberts Fisheries, Paignton	Paignton	Monk Fish	C

NC = Not Correct, PC = Partially Correct, C = Correct

SUPPLIERS AND FISH ON WHICH INFORMATION COLLECTED

ANNEX 5

WL001	Green Isle Foods Ltd	West Lothian	Natural Haddock	C
WL002	Tesco Stores Ltd	Bathgate	Tesco Value Skinless and Boneless White Fish Fillets	C
WL003	Tesco Stores Ltd	Bathgate	Tesco Whole Rainbow Trout	PC
WL004	Tesco Stores Ltd	Bathgate	Tesco Healthy Living Cod Fillets	C
WL005	Aldi Stores Ltd	Livingstone	Premium Smoked Salmon	PC
WL006	Wm Morrison Supermarkets PLC	Livingstone	Haddock Fillet	C
WL007	Wm Morrison Supermarkets PLC	Livingstone	Freshly Prepared Farm Sea Bass	C
WL008	Tesco Stores Ltd	Bathgate	Salmon Steaks	C
WL009	Wm Morrison Supermarkets PLC	Livingstone	Fresh Tuna Loin	C
WL010	Wm Morrison Supermarkets PLC	Livingstone	Skinless Coley Fillets	C
WL011	B & B Strang, Bathgate	Bathgate	Whiting	PC
WL012	B & B Strang, Bathgate	Bathgate	Salmon Fillets	PC
WL013	Young's Bluecrest Seafood Ltd	Uphall	Scottish Smoked Salmon	C
WL014	TK Graham, Broxburn	Broxburn	Lemon Sole Fillet	NC
WL015	TK Graham, Broxburn	Broxburn	Trout Fillet	NC
WL016	Sainsbury's Supermarkets Ltd	West Lothian	Fresh Scottish Haddock Block	C
WL017	Sainsbury's Supermarkets Ltd	West Lothian	Sainsburys Taste Difference 2 Tuna Steaks, Skinless + Boneless	C
WL018	Sainsbury's Supermarkets Ltd	West Lothian	Sainsburys 6 Coley Steaks	C
WL019	Asda Stores Ltd	Livingstone	Salmon Fillets	C
WL020	Asda Stores Ltd	Livingstone	Asda Headless Mackerel	C
WL021	A Syme, Bathgate	Bathgate	Lemon Sole	PC
WL022	A Syme, Bathgate	A Syme, Bathgate	Scottish Farmed at Sea Salmon	PC

NC = Not Correct, PC = Partially Correct, C = Correct

SEA BASS PERIOD 1

FSA Code	Name of Outlet	Place of purchase	Product Name	Wild (W) Farmed (F) 'Not consistent with wild' (NCW)
CO101	Arwenack Fisheries,	Fleetwood	Wild Sea Bass	W
KC101	Tesco, Kensington	Knightsbridge	Whole Wild Sea Bass	W
KC102	Harrods, Knightsbridge	Knightsbridge	Wild Sea Bass	W
KC105	Chalmers & Gray	London	Sea Bass	F
LC101	Wyre Fish Dock Management Ltd	Fleetwood	Wild Sea Bass	W
LC102	Whiteside's Fisheries, Fleetwood	Fleetwood	Wild Sea Bass	F
LC103	High Seas Sea Foods, Lancashire	Carnferm	Whole Sea Bass	F
NEL101	Tesco Extra, Hewitts Circus, Grimsby	Grimsby	Wild Sea Bass	W
NEL102	Gresham Fisheries Ltd, Cleethorpes	Cleethorpes	Wild Sea Bass	F
RH102	Tesco, Pontypridd	Pontypridd	Whole wild sea bass	W
SE101	Butlers	Essex	Wild Bass	W
SO101	Tesco Extra, Huish, Yeovil	Yeovil	Whole Wild Sea Bass	W
SO102	Seafoods, Burnham on Sea	Somerset	Wild Sea Bass	W
SO105	Savills, South Petherton	Somerset	Wild Sea Bass	W
TH101	L G Wicker & Co. Ltd	London	Sea Bass	W
TH102	Barton & Hart Ltd	London	Sea Bass	W
TH103	Fawsitt Ltd	London	Sea Bass	W
TO102	Fish 4 All, Torquay	Torquay	Wild Sea Bass	W
TO104	D Walker & Son	Devon	Whole Sea Bass	W
TO105	D Walker & Son	Devon	Wild Sea Bass	W

PART 2 LIST OF OUTLETS, FISH SPECIES AND ANALYTICAL RESULTS

ANNEX 6

SEA BASS PERIOD 2

FSA code	Name of Outlet	Place of purchase	Product Name	Wild (W) Farmed (F) 'Not consistent with wild (NCW)
BH202	J Vickerstaff and Co Ltd	Birmingham	Wild Sea Bass	W
BH204	Caterfish Ltd	Birmingham	Wild Sea Bass	W
BH205	H. Satchwell	Birmingham	Wild Sea Bass	W
BT202	Atariya Foods	Colindale	Wild Sea Bass	W
BT203	B&J Fishers	London	Wild Sea Bass	W
BT204	Big Ben Fisheries	London	Wild Sea Bass	NCW
CO201	Sou West Seafoods	Falmouth	Wild Sea Bass	W
CO203	Scales	Truro	Wild Sea Bass	W
CU203	Furness Fish, Poultry & Game	Cumbria	Wild Sea Bass Fresh	W
CU204	Bell's Fishmonger Ltd	Carlisle	Fresh Wild Sea Bass	W
CU207	The Fish Cellar Ltd	Cumbria	Wild Sea Bass	W
DS205	Billy the Fish	Dorchester	Wild Sea Bass	W
DS206	Saunders and Wilson	Portland	Wild Sea Bass	W
DS209	Samway C.T. & Sons	Dorset	Sea Bass	F
ES202	Southern Head Fishing Company	Eastbourne	Sea Bass	W
ES203	Southern Head Fishing Company	Eastbourne	Sea Bass	W
GL204	New Wave Seafoods	Fairford	Fresh Wild Sea bass	W
GL205	Asda Stores Ltd	Gloucester	Sea Bass	F
KC201	Harrods Ltd	London	Wild Sea Bass	W
KC205	The Fish Shop at Kensington Place	London	Sea Bass	W
KC207	The Chelsea Fishmonger	London	Wild Sea Bass	W
KC209	Harvey Nichols Ltd	London	Wild Sea Bass	W
KC211	La Maree	London	Wild Sea Bass	W
MA201	J & B Wilde & Sons	Manchester	Wild Sea Bass	W
MA208	Evans of Didsbury	Manchester	Wild Sea Bass	W
MN223	Raymond Rees & Sons	Carmarthen	Wild Local Sea Bass	W
PE201	Parkstone Fisheries	Dorset	Fresh Local Sea Bass	W
PE202	F. Greenslade	Poole	Bass	W
PE204	Seafresh Seafoods Ltd	Poole	Bass	W

PART 2 LIST OF OUTLETS, FISH SPECIES AND ANALYTICAL RESULTS

ANNEX 6

PY201	Anne and Lloyd Down	Plymouth	Wild Sea Bass	W
RD201	Fishworks PLC	Richmond	Wild Sea Bass	W
RD202	Shepperds	Whilton	Wild Sea Bass	W
RD203	Sandys Fishmarkets Ltd	Twickenham	Wild Sea Bass	W
SW201	Furness Fish Poultry & Game Suppliers	London	Wild Sea Bass	W
SW202	Direct Seafoods London	London	Wild Sea Bass	W
SW204	Applebee's Fish	London	Wild Sea Bass	W
TF223	Vin Sullivan Foods Ltd	Gwent	Wild Sea Bass	W
WT201	Darren Hutchinson	Evesham	Wild Sea Bass	W

SEA BREAM PERIOD 1

FSA Code	Name of Outlet	Place of purchase	Product Name	Wild (W) Farmed (F) 'Not consistent with wild' (NCW)
KC103	Harrods, Knightsbridge	Knightsbridge	Sea Bream	W
KC104	Golborne Fisheries, Golborne Rd	London	Sea Bream	W
KC106	The Fish Shop	199A Kensington Church Street	Sea Bream	W
LC104	High Seas Sea Foods, Lancashire	Carnferm	Sea Bream Fillets	NCW
RH103	Fishmongers, Pontypridd	Pontypridd Market	Sea Bream	NCW
SO103	Seafoods, Burnham on Sea	Somerset	Black Bream	W
SO104	Barrett Bros Fishmonger	Somerset	Red Bream Fillets	NCW
TH104	Fawsitt Ltd	London	Wild Black Bream	W
TH105	S Hosny Ltd	Whitechapel Market	Sea Bream	NCW
TO101	The Fish Plaice, Paignton	Paignton	Fresh Black Bream	NCW
TO103	Fish 4 All, Torquay	Torquay	Wild Sea Bream	W
TO106	Len Harvey, Brixham	Devon	Black Bream Wild Sea Bream	W

SEA BREAM PERIOD 2

FSA code	Name of Outlet	Place of purchase	Product Name	Wild (W) Farmed (F) 'Not consistent with wild (NCW)
BH203	J Vickerstaff and Co Ltd	Birmingham	Wild Sea Bream	W
BT205	Big Ben Fisheries	London	Wild Sea Bream	NCW
CO202	Sou West Seafoods	Falmouth	Wild Sea Bream	W
CU208	High Seas Food	Cumbria	Sea Bream Fillets	W
DS203	Davy's Locker	Dorset	Wild Bream	NCW
DS204	Billy the Fish	Dorchester	Wild Sea Bream	W
ES201	Southern Head Fishing Company	Eastbourne	Black Bream	W
GL203	New Wave Seafoods	Fairford	Pink Seabream	W
GL207	Waitrose Ltd	Stroud	Wild New Zealand Sea Bream	W
KC203	Harrods Ltd	London	Sea Bream	W
KC208	Harvey Nichols Ltd	London	Pink Sea Bream	W
LC203	David Noblett	Lacanshire	Red Fish (Sea Bream)	F
LC206	High Seas Seafoods	Lacanshire	Sea Bream Fillets	NCW
MA204	J & B Wilde & Sons	Manchester	Wild Sea Bream (red)	F
MA207	Evans of Didsbury	Manchester	Wild Sea Bream	F
PE203	F. Greenslade	Poole	Bream	W
PE206	Cove Shellfish Ltd	Poole	Bream	W
PY202	Anne and Lloyd Down	Plymouth	Wild Bream	W
PY203	South West Seafoods	Plymouth	Black Bream	F
RC201	WM Morrison Supermarkets PLC	Redcar	Wild Sea Bream	W
RC204	WM Morrison Supermarkets PLC	Redcar	Wild Sea Bream	W
RC205	WM Morrison Supermarkets PLC	Redcar	Wild Sea Bream	W
WT202	M&S Fisheries	Hull	Sea Bream	NCW

SALMON PERIOD 2

FSA code	Name of Outlet	Place of purchase	Product Name	Wild (W) Farmed (F) 'Not consistent with wild (NCW)
BH201	J Vickerstaff and Co Ltd	Birmingham	Wild Salmon	W
BH206	H. Satchwell	Birmingham	Wild Salmon	W
CU202	WM Morrison Supermarkets PLC	Cumbria	Wild Alaskan Salmon Fillets	outside database
CU205	Bell's Fishmonger Ltd	Carlisle	Wild Salmon Portion	W
CU206	The Fish Cellar Ltd	Cumbria	Wild Salmon Steaks	W
DS201	Waitrose Ltd	Gillingham	Fresh Wild Salmon Alaskan	outside database
DS202	Davy's Locker	Dorset	Wild Salmon	W
DS208	Samway C.T. & Sons	Dorset	Wild Salmon	NCW
ES204	Sainsbury's Supermarkets Ltd	Eastbourne	Wild Alaskan Salmon Fillet	W
ES205	Asda Stores Ltd	Eastbourne	Pink Salmon	W
ES206	Tesco Stores Ltd	East Sussex	Wild Alaskan Sockeye Salmon Fillet	W
GL201	M R Smith	Gloucester	Fresh Wild Alaskan Silver Salmon	outside database
GL202	Tesco Stores Ltd	Gloucester	Wild Alaskan Sockeye Salmon Fillets	outside database
GL206	Waitrose Ltd	Stroud	Wild Pacific Salmon	outside database
GL208	Sainsbury's Supermarkets Ltd	Stroud	Wild Alaskan Salmon Fillet	F
KC204	Harrods Ltd	London	Wild Salmon	F
KC206	The Fish Shop at Kensington Place	London	Wild Salmon	NCW
KC210	La Maree	London	Wild Salmon	W
LC201	The Fish Plaice	Lancashire	Salmon Fillet	F
LC202	Dockside Ltd	Lacanshire	Wild Sockeye Salmon	W
LC204	Tesco Stores Ltd	Lacanshire	Wild Alaskan Salmon Fillet	outside database
LC205	Martin Brown Seafoods Ltd	Preston	Chum Salmon Portions	W

PART 2 LIST OF OUTLETS, FISH SPECIES AND ANALYTICAL RESULTS

ANNEX 6

MA202	J & B Wilde & Sons	Manchester	Wild Salmon-Scotland	W
MA203	J Skykes & Sons Ltd	Manchester	Wild Salmon	W
MA205	Smith Sagar Ltd	Manchester	Wild Salmon	W
MA206	Evans of Didsbury	Manchester	Wild Salmon	W
MN222	Raymond Rees & Sons	Carmarthen	Fresh Wild Salmon	F
NI207	S & P Milligan	Northern Ireland	Wild Salmon	W
PE205	Seafresh Seafoods Ltd	Poole	Salmon	W
RD204	Sandys Fishmongers Ltd	Twickenham	Wild Salmon	W
SW203	Applebee's Fish	London	Wild Salmon	F
TF222	Vin Sullivan Foods Ltd	Gwent	Wild Salmon	W
TH201	Sainsbury's Supermarkets Ltd	London	Taste the difference wild alaskan salmon fillets	outside database
TH202	Asda Stores Ltd	London	Asda 4 pacific salmon fillets	W