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Identification of Genetic Stock of Origin of European Atlantic Salmon Captured at West Greenland for the Years 2002-2012

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This draft final report was prepared in fulfilment of a contract to undertake genetic stock identification of Atlantic salmon captured at West Greenland for the period 2002-2012. The project sponsors were the Agri-Food and Biosciences Institute for Northern Ireland (AFBINI), the International Atlantic Salmon Research Board (IASRB) of the North Atlantic Salmon Conservation Organisation (NASCO) and the Atlantic Salmon Trust (AST).

Contributors to the report were Philip McGinnity (UCC), Paulo Prödohl (QUB), Caroline Bradley (QUB), Tim Sheehan (NOAA), Barb Lubinski (USGS), Tim King (USGS) and Tom Cross (UCC).

Background

Previous physical tagging (Reddin *et al.* 2012) and genetic stock identification studies (Gauthier-Ouellet et al 2009; Sheehan *et al.* 2010) of Atlantic salmon at continental scale suggest that fish from North America and Europe, and European fish from the Northern and Southern Multi-Sea-Winter (MSW) population complexes, contribute to the Atlantic salmon catch off West Greenland. However, little is known of the proportions of fish originating from different European regions and individual rivers within these regions. European Atlantic salmon caught at West Greenland appear to be predominantly, non-maturing one-sea-winter fish. These are fish that mature after two or more winters at sea, and are commonly known as 1SW non-maturing or multi-sea-winter (MSW) maturing fish. Marine survival indices for MSW fish in the North Atlantic have declined and remain low.

Both Northern and Southern complex MSW stocks in the North-East Atlantic Commission (NEAC) area have experienced significant declines in abundance and are below historic stock estimates. In 1960s and 1970s some 40% of the salmon caught along the West Greenland coast were estimated to be of European origin. In recent years, this proportion has dropped to 10-20%. At a country level, based on coastal and river catches and counts, stocks from several jurisdictions are now deemed to be below conservation limit (CL) thresholds (ICES, 2011).

For 2014 and 2015, the forecasts for salmon of pre-fishery abundance (PFA) are pessimistic and suggest that stocks in the Southern MSW complex, in particular, will remain at low abundance levels (ICES, 2013). The difference in terms of survival performance at sea, between the two European MSW stock complexes, and the survival of salmon from specific regions within the complexes, including differences among individual populations within regions, may reflect differential exposure to features of the marine environment, both temporally and spatially, which ultimately affect marine survival. The identification of where salmon are in the ocean, and the factors that affect

them there are important for future predictions of pre-fisheries abundance and the provision of strategies for management of both high seas and home water fisheries.

Advances in microsatellite DNA profiling methodologies and statistical genetics approaches now make it possible to identify, with a high degree of accuracy, salmon caught at sea to their natal region and, in some cases, to their river of origin. With regards to European Atlantic salmon, the SALSEA-Merge project has facilitated the development of a unique molecular assignment protocol – GRAASP: Genetically-based Regional Assignment of Atlantic Salmon Protocol – based on a suite of 14 microsatellite markers. The SALSEA GRAASP population baseline database comprises 26,813 Atlantic salmon individuals from 467 locations, in 284 rivers, encompassing 370,000 pieces of genetic information. This represents ~ 85% of the non-Baltic European salmon production (Gilbey et al. submitted) The GRAASP tool is capable of delivering both broad and medium scale regional assignment. At the broad geographical scale, it currently recognises three major SALSEA regional assignment units (SRAUs), namely, Iceland, Northern Europe and Southern Europe.

Furthermore, at the finest currently supportable scale, the GRAASP tool can reliably distinguish 17 geographically cohesive regional subdivisions or SRAUs (see Figures 1 and 2). Several high resolution microsatellite databases for genetic stock identification are now available in Ireland (the NGSI-Ireland panel), UK (Scotland-FASMOP), UK (N. Ireland, AFBI), UK (England & Wales, ASAP), Norway and France that would allow, in many instances when applied subsequently and in addition to the SALSEA GRAASP, highly accurate river-specific assignments.

Objective

Marine sampling has been ongoing at West Greenland for best part of five decades as part of an International Baseline Sampling Programme. Recently, this programme has been enhanced by the SALSEA West Greenland sampling programme in an endeavour to provide data for investigating hypotheses on the causal mechanisms driving stock-specific performance in the ocean (i.e. marine survival).

Building on this work, a pilot study was carried out, using the SALSEA GRAASP genetic database, to determine the feasibility of undertaking a more extensive study. The objective of the present study was to determine the region (SRAU) of origin of a strategic subset of historical and contemporary samples collected between 2002 and 2012, comprising fish scale and tissue collections from Atlantic salmon captured in both commercial and experimental fisheries at West Greenland.

Materials & Methods

All tissue samples and associated information (e.g. landing location, biological data), received by Queens University Belfast, were provided by the NOAA Fisheries Service and US Geological Service laboratories (Timothy Sheehan and Barb Lubinski respectively). Information on the number samples available and landing location for the

current study; including original data supplied by NOAA is summarized in Table 1. All samples were stored at the 4^{o}C prior to analysis. Preliminary testing for best genomic extraction protocols were carried out using a subset of samples comprising individuals from multiple year/locations. In some instances, to account for different storage buffer (e.g. ethanol, RNAlater) and tissue quality, different extraction procedures were employed for separate batches of samples. Genomic DNA extraction was successfully carried for all samples. Genetic typing of the samples was undertaken by the Beaufort Fish Populations Genetics Group (Ireland), led by Professor Prodöhl (Queen's University Belfast), using an ABI3730XL 96 capillary system. Genotyping was carried out for 2,401 individuals collected between 2002 and 2012 at West Greenland, for which biopsy tissue was available (Table 1), that had been previously identified to continent of origin (i.e. Europe) through genetic stock identification analysis coordinated by Prof. Tim King (USGS laboratory in Virginia, USA). A combination of 20 microsatellite genetic markers covering the SALSEA GRAASP and the Irish NGSI baseline panels as follows: (*Ssa*289, MHC2, *Ssa*D144, *Ssa*197, MHC1, *Ssp*2201, *Ssa*D71, *Ssa*14, *Ssp*3016, *Ssa*D48, *Ssa*43, *Ssp*2210, *Ssa*D170, *Ssa*171, *Ssa*202, *Ssp*2216, *Ssos*l85, *Ssp*1605, *Sp*G7, *Ssa*D157) were deployed. Calibration for allele calling/genotyping was carried out using the SALSEA-MERGE calibration plates/samples (Ellis *et al*. 2011). To ensure genotype consistency and to minimize errors, the following steps were taken: 1) for a random subset of samples representing different sampling years (N=100) DNA extraction, PCR amplification and screening were independently carried on two different occasions; 2) control samples (i.e. samples of known multi-locus genotypes) were included on each plate; and 3) genotyping was independently carried out twice on the same data set. Overall, genotyping error was very low (<1%) and invariably could be identified and resolved from steps 2 and 3.

A West Greenland genotypic database is now complete for the period 2002-2012 for which 87% of the samples were successfully amplified for 14 or more loci. In this pilot study, the GRAASP baseline was used to provide regional assignments to SALSEA LEVEL 1 to LEVEL 4 groupings or Regional Assignment Units (SRAUs) using the GENECLASS 2 individual assignment algorithm based on the approach of Rannala and Mountain (1997). The individual assignments were compared against the SALSEA-MERGE database (latest version provided by John Gilbey in December 2013; and recently submitted for publication by Gilbey *et al*.). Assignment data are presented in respect of location of landing: Nuuk; Qaqortoq; Sisimiut; Maniitsoq; Paamuit; Illulissat; Disko Bay (Figure 3). Assignments are also presented in terms of year and location for the period 2002-2012 (excluding 2003). There were some issues with the quality of the assignments for samples collected in 2003 and unfortunately genotypes are not available presently. Steps are being undertaken to resolve the associated technical difficulties. Finally, the assignments were broken down by country of origin and their proportions are compared against the 10 year average of Pre-Fishery Abundance (PFA) estimates of the numbers of 1SW non maturing salmon (potential MSW fish) for 2002-2011, presented in the Working Group on North Atlantic Salmon report of 2013 (ICES, 2013). This exercise was achieved by using assignments to individual rivers (not reported here) and combining them into groups by country and stock complexes as designated by ICES. The outputs of this exercise are indicative only; as river assignments obtained using the SALSEA baseline have fairly large confidence intervals. It is intended that a second stage analysis

using local baselines such as the Irish National Salmon Genetic Baseline and the Scottish and Norwegian national baselines can be conducted at a later stage and should yield individual river assignments with substantially higher confidence levels. The genotypes of the West Greenland fish obtained in this study will be distributed shortly to the respective international institutions in North America and Europe. No analysis has been carried yet out on relating phenotypic data such as size and age to the regional assignment data. Stock specific biological analyses will be presented in future submissions for peer review and publication based on the genetic data reported here.

Results

Mixed Stock Fishery Analysis

Assignments are reported for a total of 2,178 samples or 90.7% of the samples received (i.e. samples with genotypic data 10+ loci). LEVEL 1 (Figure 1) assignments are presented in Table 2. Over 96% of the fish assign to the 'South' region. The 'South' region consists of rivers in Denmark, Scotland, England, Wales, Ireland, Northern Ireland, France and Spain and aligns approximately with the ICES 'Southern complex' designation (excluding SW Iceland). A small proportion, approximately 4% of the fish assign to the 'North' region, which comprises Norway, Russia and Finland. The results also indicate that four salmon (0.2%) out of the sample of 2,178 of the fish sampled in West Greenland between 2002 and 2012 originate from rivers in Iceland. The proportions of fish being assigned to the three broad regional groups are consistent over time (e.g. fish assigned to the 'South' region ranging from 91.1% to 97.8%, with on average of 96.1% of the fish allocated to the 'South'. The relative proportion of fish assigning to each of the three major regional groups varies very little among years (e.g. SD 2.2% for the 'South' region).

At the SALSEA-Merge LEVEL 2 (Table 3) regional assignment scale, results indicate that the 'North' assignments are not evenly distributed over the region and are principally allocated to rivers in the mid and Southern part of Norway. Results also indicate that rivers in Russia and Northern Norway make very little contribution to the West Greenland fishery at just over half a percent (0.6%). Within the 'South Region' SRAU, results show that Danish rivers make only a small contribution (0.2%) to the composition of assignments to this regional group. At this assignment level some 96% of the samples collected in the fishery over the period 2002 to 2012 assign to the regional grouping comprising of Britain, Ireland, France & Spain.

At the SALSEA-Merge LEVEL 3 (Table 4) it is evident that within an area equivalent to the NEAC Southern complex, British and Irish rivers are the major contributors to the West Greenland fishery. However, it should be noted, that fish from North and West France, though small relative to Britain and Ireland, at just under 2%, are present consistently in the West Greenland fishery. The contributions of the mid and south Norway region in LEVEL 3 is fairly evenly distributed among rivers located in east Norway and Sweden, mid Norway and south Norway. There is some evidence to suggest

the presence of a small number Russian salmon (11 fish) originating from rivers in the Kola Peninsula turning up fairly regularly in the fishery.

At SALSEA-Merge LEVEL 4 (Table 5) regional assignment units, the highest level of assignment resolution provided in this report, the south and east Scotland SRAU region, which includes some of the rivers located on the east coast of England, is the largest contributor to the West Greenland fishery, producing almost 40% of the European fish caught. Substantial numbers of fish were also assigned to rivers flowing into the Irish Sea (26.6%), which are principally fish originating in English (west coast), Welsh and Scottish (Solway) rivers and the large rivers of Ireland's east and south coast. The rivers in the region delineated on the basis of the west and north coasts of Ireland and Scotland represents an additional 25.2% of the total. A sizeable and regular proportion of fish are also assigned to the region denoted as Bann (N. Ireland)/Leven (southwest Scotland) region at 2% of the total.

The allocation (Table 6) of salmon sampled in the West Greenland fishery according to ICES NEAC administrative areas (IAAs, i.e. country groupings) suggests that over 63% of the fish caught between 2002 and 2012 originated in Scottish rivers. It is worth noting that these country groupings are based on combining individual river assignment (see methods section above) and are only indicative. The mixed stock fishery analysis indicates that English/Welsh and Irish rivers are also major contributors to the West Greenland fishery at 16.2% and 12.9% of the fish assigned respectively. Norwegian fish make up approximately 3% of the total (Table 15). Based on ICES WGNAS pre-fishery abundance (PFA) estimates of 1SW non-maturing (potential MSW salmon), and assuming that fish from the NEAC area are evenly distributed over the North Atlantic, it would be predicted that Norwegian fish would constitute 33% of the fish sampled off the West Greenland coast (Table 15). In contrast, a high level of agreement was found between the proportions of fish assigned to individual countries in the Sothern NEAC stock complex(Table 16) and expectations based on pre-fishery abundance estimates of potential MSW returns determined by WGNAS (ICES, 2013).

Spatial analysis

The assignments of European salmon captured in the West Greenland fishery by landing location (NAFO divisions – Figure 3) at the Level 4 SRAU and at the IAAs are summarized in Table 6 and Table 13 respectively. Further tabulations (Tables 9, 10, 11 and 12 are based on the Level 4 SRAUs and Tables 14, 17, 18, 19, 20, 21 and 22 based on IAA allocations) present spatial data in respect of the different fishing areas within West Greenland; namely, Maniitsoq, Nuuk, Qaqortoq, Paamiut, Illulissat and Sisimiut respectively. Genetic assignments of Irish (Table 23), Scottish (Table 24) and English and Welsh (Table 25) fish are also tabulated by year and by fishing district in respect of the primary contributing Southern Complex countries. Comparisons by year of the proportion of Irish, Scottish, English & Welsh salmon, sampled in the West Greenland fishery, which were captured in the Maniitsoq fishery (Table 26), the Nuuk fishery (Table 17) and the Qaqortoq fishery are also provided.

A visual inspection of the tabulated data overall, suggests considerable stability in spatial and inter-annual distributions of fish in respect of the proportions of fish originating from the three main regional groups in West Greenland catches. Over the period 2002 to 2010 it would appear that among the principal West Greenland fisheries approximately 32% of the Irish fish assign to the Maniitsoq fishery, which is the most northerly fishery, 42% to the Nuuk fishery and 25% to the Qaqortoq fishery, the most southerly of the fisheries. Scottish fish on average over the years 2002 to 2012 are very similarly divided among the same three primary fisheries from north to south at 30%, 39% and 30% respectively; as are the English and Welsh fish, which occur on average in proportions of 28%, 40% and 32% approximately. The relative proportions of fish sampled in the three major fisheries from the different countries can vary considerably among years. For example in 2005 Maniitsoq represented a very small proportion of the Irish fish caught that year, 5.6% compared to ten times (56%) that proportion two years later in 2007. Similarly, for example for Scottish fish, only 10% of the Scottish fish caught at West Greenland were landed at Nuuk, while Nuuk represented 81% of the Scottish fish landed in 2006. This likely reflects the uneven nature of the fishery rather than the spatial distribution of the fish. However as can be seen in Tables 26 to 28, with a few exceptions, over the years 2002-2010, the relative proportions of Irish, Scottish, English & Welsh salmon to each other, when sampled at the Maniistoq, Nuuk and Qaqortoq fisheries are remarkably consistent. In respect of the exceptions, it would appear that in 2010 less Irish fish and in 2002 less English and Welsh fish than might be expected, were present among the fish landed at Maniitsoq, the most northerly of the main landing ports. In Nuuk less Irish fish than would have been expected were sampled in 2006 and more Irish fish were found among the samples in 2010 than anticipated (probably explaining the reduced numbers at Maniitsoq).

Summary

The genetic analysis undertaken in this project would suggest that the European element of the West Greenland fishery between 2002 and 2012 consisted predominantly (96%) of fish originating from the NEAC 'Southern Europe' group of rivers. Of these British and Irish fish were the largest group and within the Southern Europe Complex, Scotland is the largest individual country to contribute, providing 66% of the salmon sampled over the period. Norwegian fish that were sampled in the fishery originated mainly from mid and southern Norway. French and Spanish salmon occur in the fishery at close to the proportions that might be expected based on their freshwater production and observed returns of adult fish to French and Spanish rivers. Icelandic and Northern European (Norway and Russia) salmon were notable by their absence from the fishery in the numbers that might be expected based on observed adult returns to rivers in those areas and would suggest that potential multi-sea-winter salmon originating from these regions are feeding in separate areas of the North Atlantic and thus would appear to have a separate and distinct ocean distribution from fish from the Southern complex area. Alternately, non-maturing 1SW fish may not have entered the waters off West Greenland or had left on their return migration before the sampling period. The apparent differential use of the ocean might goes some way to explaining the reported differences in the trajectories of declines in both North and South MSW stock complexes; the South MSW

stock complex being the more severely affected of the two. Friedland et al. (2014) recently reported significant correlations in survival between North American non-maturing 1SW salmon (potential MSW salmon) and Southern European non-maturing 1SW salmon, and presented evidence that climate forcing related to the Atlantic Multi-decadal Oscillation (AMO) had shaped the recruitment pattern for both North American and Southern European stock complexes of Atlantic salmon. They found no correlation between Northern and Southern European non-maturing MSW components. There was a remarkable correspondence between the ICES WGNAS pre-fishery abundance estimates for Southern complex stocks over the last ten years and the relative proportions of fish genetically assigned, providing further support for the proposition that West Greenland represents the principal feeding area for MSW salmon from Britain and Ireland. There was a high level of consistency, temporally, in the proportions of North and South complex fish observed at West Greenland over the period of the study. There was no evidence from the examination of spatial data, based on the port landings, for a differential geographical distribution of Scottish, Irish, English and Welsh fish along the West Greenland coast. However, the relative proportions of fish sampled in the three major fisheries from the different countries were shown to vary considerably among years. This might be more a reflection of variations in regional fishing effort rather than spatial variation in the true distribution of the fish. The distribution of genetic samples depends on the distribution of the fishing effort, which is unknown for the Greenland fishery. Nevertheless, it would appear that these stocks, including their French, Spanish and southern Norwegian con-specifics, were well mixed and equally liable to exploited by the Greenlandic fisheries and that southern stocks, not northern stocks, will be much more affected by changes in the oceanic environment off western Greenland, because of the predominance of the former. It might also be speculated, on the basis of their common distribution, that MSW salmon originating within British, Irish, French and Spanish rivers and possibly those from Mid- and Southern parts of Norway share a common phylogeographic heritage. The occurrence of relatively small numbers of Russian and Northern Norwegian fish among the samples collected at West Greenland might be explained by the presence of farmed escapes in the catches. A similar phenomenon was observed for smolts captured as part of the SALSEA surveys in 2008 and 2009. This needs to be investigated further. (A detailed account of the West Greenland study will be submitted for publication in the peer reviewed literature shortly.)

Research recommendations

1. As a large number of tissue samples are available from the West Greenland fishery, which reach back to the 1960s, it would be a valuable exercise to undertake a genetic analysis of these to ascertain if there have been temporal fluctuations in the composition of the fishery from a European perspective similar to the observed contemporary changes in the ratio of North American and European salmon.

2. Several high resolution microsatellite databases for genetic stock identification are now available in Ireland (the NGSI-Ireland panel), UK (Scotland-FASMOP), UK

(N. Ireland, AFBI), UK (England & Wales, ASAP), Norway and France and could be applied to enable river specific assignments and potentially assignments to specific tributaries.

3. A combined biological and genetic analysis of North American and European salmon should be undertaken. Such an analysis of phenotypic and genetic assignment data could be undertaken to facilitate identification of important stock/population specific biological differences at continent of origin, region of origin and individual river levels.

4. It would also be a valuable undertaking to combine the biological and genetic assignment data from West Greenland with assignments from a number of ongoing studies including the Faroe Island fishery, the Irish commercial fisheries, which closed in 2007, the Kol-Arctic fisheries and various coastal fisheries to provide a species wide assessment of the distribution of regional stock groups in the North Atlantic. In this regard, fruitful discussions on potential for a combined analysis were had at an Institute of Marine Research sponsored workshop held recently in Geilo, Norway. The EU Horizon 2020 programme might be lobbied by the sponsors of this project, in this regard.

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Table 1. Samples made available from West Greenland for genetic assignment for the years 2002-2012. In each case, numbers (including totals) and percentages (%) are provided per landing location both for North America (NA) and European (Eur) samples (continental assignment of samples, based on genetic stock identification, was previously carried by NOAA under coordination of Prof Tim King). "QUB" refers to the number of European samples available for regional European assignment at Queen's University of Belfast.

Location/year		Nuuk	%	Qaqortoq	%	Sisimiut	%	Maniitsoq	%	Paamuit	%	Illulissat	%	Disko Bay	%	Total	%
2002	NA	180	(89)	55	(37)	102	(70)	-	-	-	-	-	-	-	-	337	(68)
	Eur	23	(11)	95	(63)	44	(30)	-	-	-	-	-	-	-	-	162	(32)
	QUB	21	-	94	-	44	-	-	-	-	-	-	-	-	-	159	-
2003	NA	611	(82)	367	(50)	234	(80)	-	-	-	-	-	-	-	-	1212	(68)
	Eur	135	(18)	373	(50)	59	(20)	-	-	-	-	-	-	-	-	567	(32)
	QUB	80	-	325	-	59	-	-	-	-	-	-	-	-	-	464	-
2004	NA	758	(75)	118	(53)	-	-	320	(79)	-	-	-	-	-	-	1196	(73)
	Eur	255	(25)	105	(47)	-	-	85	(21)	-	-	-	-	-	-	445	(27)
	QUB	255	-	105		-	-	85	-	-	-	-	-	-	-	445	-
2005	NA	354	(78)	100	(67)	-	-	130	(81)	-	-	-	-	-	-	584	(76)
	Eur	101	(22)	50	(33)	-	-	31	(19)	-	-	-	-	-	-	182	(24)
	QUB	99	-	49	-	-	-	31	-	-	-	-	-	-	-	179	-
2006	NA	621	(74)	98	(77)	-	-	80	(63)	25	(61)	33	(56)	-	-	857	(72)
	Eur	219	(26)	29	(23)	-	-	46	(37)	16	(39)	26	(44)	-	-	336	(28)
	QUB	219	-	29	-	-	-	46	-	16	-	26	-	-	-	336	-
2007	NA	462	(88)	210	(88)	-	-	128	(71)	112	(65)	-	-	5	(50)	917	(82)
	Eur	61	(12)	28	(12)	-	-	53	(29)	59	(35)	-	-	5	(50)	206	(18)
	QUB	59	-	27	-	-	-	53	-	55	-	-	-	5	-	199	-
2008	NA	663	(87)	451	(85)	-	-	483	(85)	-	-	-	-	-	-	1597	(86)
	Eur	97	(13)	79	(15)	-	-	84	(15)	-	-	-	-	-	-	260	(14)
	QUB	97	-	77	-	-	-	81	-	-	-	-	-	-	-	255	-
2009	NA	666	(94)	248	(82)	-	-	601	(93)	-	-	-	-	-	-	1515	(92)
	Eur	40	(6)	55	(18)	-	-	44	(7)	-	-	-	-	-	-	139	(8)
	QUB	34	-	49	-	-	-	44	-	-	-	-	-	-	-	127	-
2010	NA	186	(82)	264	(70)	541	(85)	-	-	-	-	-	-	-	-	991	(80)
	Eur	41	(18)	112	(30)	96	(15)	-	-	-	-	-	-	-	-	249	(20)
	QUB	41	-	112	-	96		-	-	-	-	-	-	-	-	249	-
2011	NA	365	(95)	217	(86)	257	(95)	-	-	-	-	53	(96)	-	-	892	(93)
	Eur	21	(5)	36	(14)	13	(5)	-	-	-	-	2	(4)	-	-	72	(7)
	QUB	20	-	23	-	13	-	-	-	-	-	2	-	-	-	58	-
2012	NA	-	-	248	(77)	442	(95)	431	(74)	-	-	-	-	-	-	1121	(82)
	Eur	-	-	76	(23)	22	(5)	154	(26)	-	-	-	-	-	-	252	(18)
	QUB	-	-	76	-	22	-	154	-	-	-	-	-	-	-	252	-
Totals	NA	3849	(83)	1825	(67)	1576	(87)	2173	(81)	137	(65)	86	(75)	5	-	9651	(79)
	Eur	795	(17)	909	(33)	234	(13)	497	(19)	75	(35)	28	(25)	5	-	2543	(21)
	QUB	729		840		234		494		71		28		5	-	2401	-

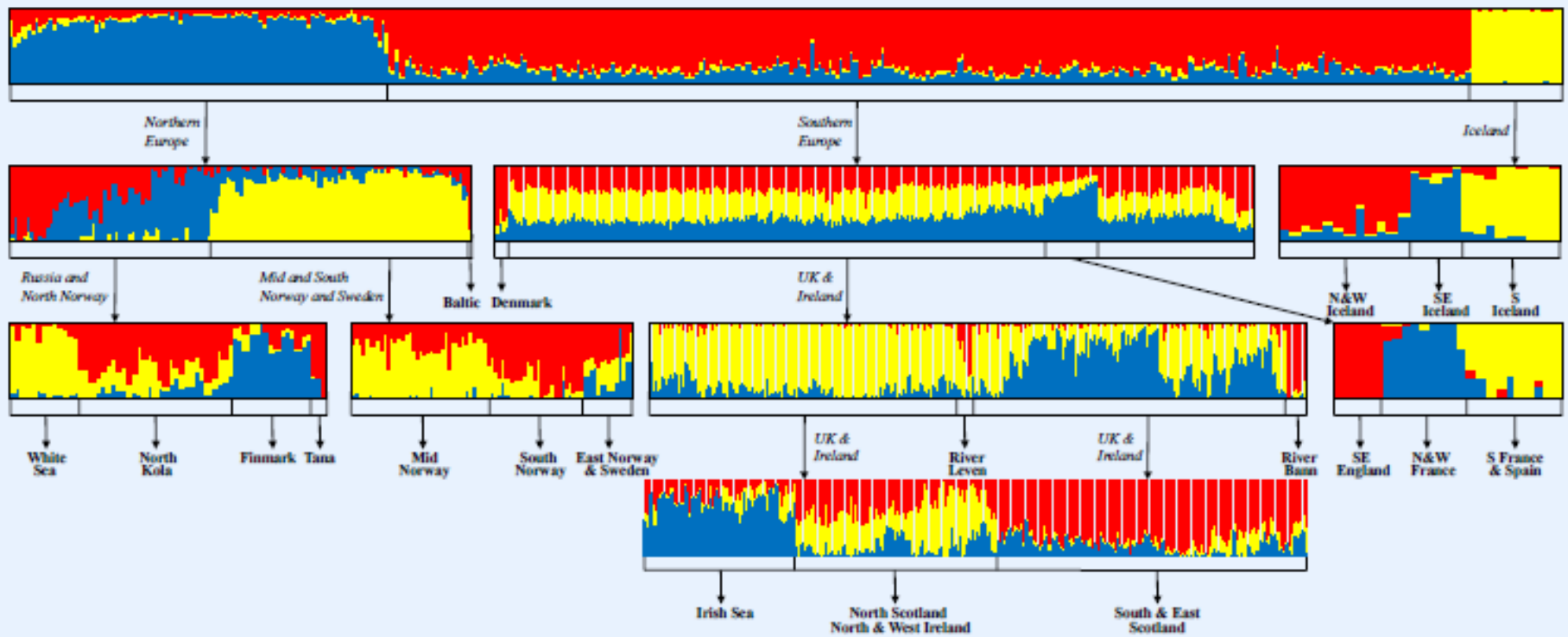

Figure 1. Hierarchical organisation of the 17 SALSEA Regional Assignment Units (SRAUs).

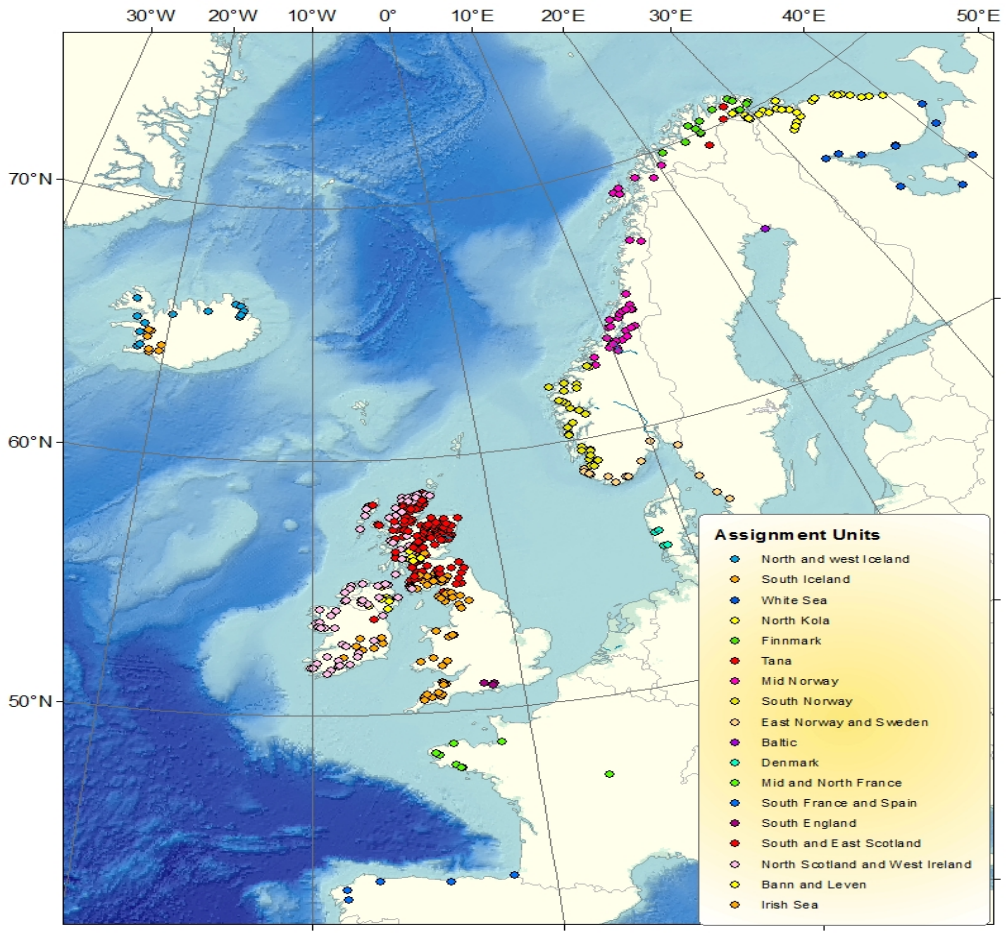

Figure 2. Map showing the sampling location for the genetic baseline. Each sample location is colour coded with respect to one of the 17 SALSEA Regional Assignment Units (SRAUs).

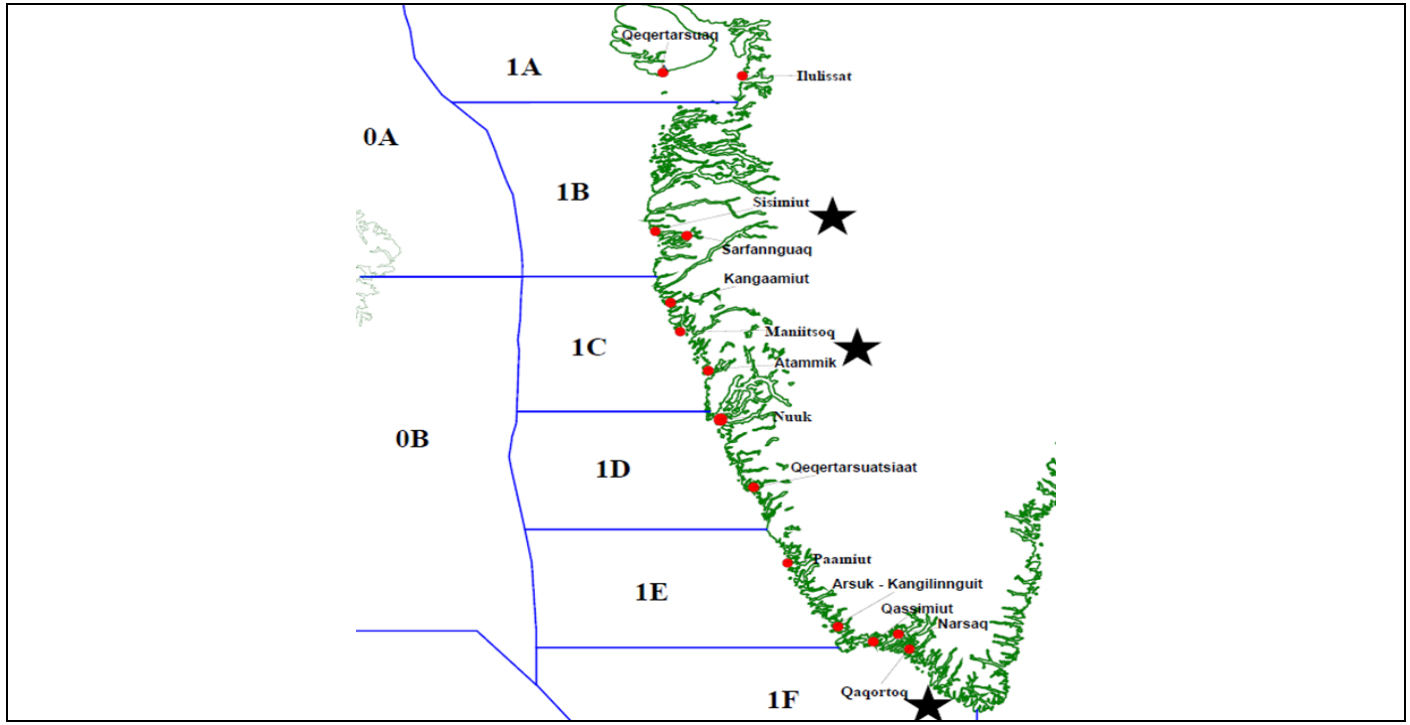

Figure 3. Location of NAFO divisions along the coast of West Greenland. Stars represent communities were biological sampling is carried out (Sisimiut, Maniitsoq, Qaqortoq).

Table 2. Stock numbers and proportions by Level 1 SALSEA Regional Assignment Units (SRAUs) for combined samples collected in the West Greenland fishery between 2002 and 2012.

LEVEL 1 SRAU Grouping	Iceland	North	South	Total
2002	0	4 (2.7%)	146 (97.3%)	150
2004	0	9 (2.2%)	399 (97.8%)	408
2005	0	7 (4.6%)	146 (95.4%)	153
2006	0	12 (3.5%)	318 (96.4%)	330
2007	1 (0.5%)	13 (6.3%)	191 (93.2%)	205
2008	0	6 (2.3%)	251 (97.7%)	257
2009	0	3 (2.4%)	124 (97.6%)	127
2010	0	11 (4.5%)	234 (95.5%)	245
2011	2 (3.6%)	3 (5.4%)	51 (91.1%)	56
2012	1 (0.4%)	13 (5.3%)	233 (94.3%)	247
Total (2002-2012)	**4 (0.2%)**	**81 (3.7%)**	**2093 (96.1%)**	**2178**
Mean	**0.4 (0.5%)**	**8.1 (3.6%)**	**209.3 (95.6%)**	**217.8**
s.d.	**0.7 (1.1%)**	**4.0 (1.6%)**	**100.8 (2.2%)**	**102.9**

Table 3. Stock numbers and proportions by Level 2 SALSEA Regional Assignment Units (SRAUs) for combined samples collected in the West Greenland fishery between 2002 and 2012.

LEVEL 2 SRAU Grouping	Iceland NW	Russia/ N. Norway	Mid & . Norway & Sweden	Denmark	Britain Ireland France & Spain	Total
2002	0	1 (0.7%)	3 (2%)	0	146 (97.3%)	150
2004	0	1 (0.2%)	8 (2%)	0	399 (97.8%)	408
2005	0	0	7 (4.6%)	1 (0.7%)	145 (94.8%)	153
2006	0	1 (0.3%)	11 (3.3%)	1 (0.3%)	317 (96.1%)	330
2007	1 (0.5%)	1 (0.5%)	12 (5.9%)	0	191 (93.2%	205
2008	0	4 (1.6%)	2 (0.8%)	3 (1.2%)	248 (96.5%)	257
2009	0	0	3 (2.4%)	0	124 (97.6%)	127
2010	0	3 (1.2%)	8 (3.3%)	0	234 (95.5%)	245
2011	2 (3.6%)	0	3 (5.4%)	0	51 (91.1%)	56
2012	1 (0.4%)	1 (0.4%)	12 (4.9%)	0	233 (94.3%)	247
Total (2002-2012)	**4 (0.2%)**	**12 (0.6%)**	**69 (3.2%)**	**5 (0.2%)**	**2088 (95.5%)**	**2178**
Mean	**0.4 (0.5%)**	**1.2 (0.5%)**	**6.9 (3.5%)**	**0.5 (0.2%)**	**208.8 (95.4%)**	**217.8**
s.d.	**0.7 (1.1%)**	**1.3 (0.5%)**	**4 (0.5%)**	**1 (0.4%)**	**100.6 (2.1%)**	**102.9**

Table 4. Stock numbers and proportions by Level 3 SALSEA Regional Assignment Units (SRAUs) for combined samples collected in the West Greenland fishery between 2002 and 2012.

LEVEL 3 Grouping	Iceland NW	N. Kola	Finnmark	E. Norway & Sweden	Mid Norway	S. Norway	Denmark	Britain & Ireland	South England	N & W France	S. France & Spain	Total
2002	0	1 (0.7%)	0	1 (0.7%)	2 (1.3%)	0	0	142 (94.7%)	0	4 (2.7%)	0	150
2004	0	0	1 (0.2%)	2 (0.5%)	3 (0.7%%)	3 (0.7%)	0	392 (96.1%)	0	6 (1.5%)	1 (0.2%)	408
2005	0	0	0	2 (1.3%)	4 (2.6%)	1 (0.7%)	1 (0.7%)	141 (92.2%)	1 (0.7%)	3 (2.0%)	0	153
2006	0	1 (0.3%)	0	1 (0.3%)	8 (2.4%)	2 (0.6%)	1 (0.3%)	313 (94.8%)	0	4 (1.2)%	0	330
2007	1 (0.5%)	1 (0.5%)	0	2 (1.0%)	6 (2.9%)	4 (2.0%)	0	188 (91.7%)	1 (0.5%)	2 (1.0%)	0	205
2008	0	4 (1.6%)	0	0	2 (0.8%)	0	3 (1.2%)	240 (93.4%)	0	8 (3.1%)	0	257
2009	0	0	0	1 (0.8%)	1 (0.8%)	1 (0.8%)	0	117 (92.1%)	0	7 (5.5%)	0	127
2010	0	0	0	4 (1.6%)	1 (0.4%)	3 (1.2%)	0	230 (93.9%)	0	2 (0.8%)	2 (0.8%)	245
2011	2 (3.6%)	3 (1.2%)	0	1 (1.8%)	2 (3.6%)	0	0	50 (89.3%)	0	1 (1.8%)	0	56
2012	1 (0.4%)	1 (0.4%)	0	3 (1.2%)	4 (1.6%)	5 (2.0%)	0	230 (93.1%)	0	3 (1.2%)	0	247
Total (2002-2012)	**4 (0.2%)**	**11 (0.5%)**	**1(0%)**	**17 (0.8%)**	**33 (1.5%%)**	**19 (0.9%)**	**5 (0.2%)**	**2043 (93.8%)**	**2 (0.1%)**	**40 (1.8%)**	**3 (0.1%)**	**2178**
Mean	**0.4 (0.5%)**	**1.1 (0.5)**	**0.1 (0.02)**	**1.7 (0.92%)**	**3.3 (1.7%)**	**1.9 (0.8)**	**0.5 (0.2%)**	**204.8 (93.1%)**	**0.2 (0.1%)**	**4 (2.1%)**	**0.3 (0.1%)**	**217.8**
s.d.	**0.7 (1.1%)**	**1.4 (0.6)**	**0.3 (0.06)**	**1.2 (0.57%)**	**2.3 (1.1%)**	**1.8 (0.8)**	**1 (0.4%)**	**95.6 (1.9%)**	**0.4 (0.3%)**	**2.3 (1.4%)**	**0.7 (0.3%)**	**102.9**

Table 5. Stock numbers and proportions by Level 4 SALSEA Regional Assignment Units (SRAUs) for combined samples collected in the West Greenland fishery between 2002 and 2012.

LEVEL 4 Grouping	Iceland NW	N. Kola	Finnmark	E. Norway & Sweden	Mid Norway	S. Norway	Denmark	N Scotland NW Ireland	Bann/ Leven	Irish Sea	S&E Scotland	Britain & Ireland	South England	N & W France	S. France & Spain	Total
2002	0	1 (0.7%)	0	1 (0.7%)	2 (1.3%)	0	0	40	2	43	57	142 (94.7%)	0	4 (2.7%)	0	150
2004	0	0	1 (0.2%)	2 (0.5%)	3 (0.7%%)	3 (0.7%)	0	96	12	123	161	392 (96.1%)	0	6 (1.5%)	1 (0.2%)	408
2005	0	0	0	2 (1.3%)	4 (2.6%)	1 (0.7%)	1 (0.7%)	34	3	49	55	141 (92.2%)	1 (0.7%)	3 (2.0%)	0	153
2006	0	1 (0.3%)	0	1 (0.3%)	8 (2.4%)	2 (0.6%)	1 (0.3%)	95	9	80	129	313 (94.8%)	0	4 (1.2)%	0	330
2007	1 (0.5%)	1 (0.5%)	0	2 (1.0%)	6 (2.9%)	4 (2.0%)	0	49	8	56	75	188 (91.7%)	1 (0.5%)	2 (1.0%)	0	205
2008	0	4 (1.6%)	0	0	2 (0.8%)	0	3 (1.2%)	63	2	62	113	240 (93.4%)	0	8 (3.1%)	0	257
2009	0	0	0	1 (0.8%)	1 (0.8%)	1 (0.8%)	0	42	1	31	43	117 (92.1%)	0	7 (5.5%)	0	127
2010	0	0	0	4 (1.6%)	1 (0.4%)	3 (1.2%)	0	43	3	68	116	230 (93.9%)	0	2 (0.8%)	2 (0.8%)	245
2011	2 (3.6%)	3 (1.2%)	0	1 (1.8%)	2 (3.6%)	0	0	11	1	13	25	50 (89.3%)	0	1 (1.8%)	0	56
2012	1 (0.4%)	1 (0.4%)	0	3 (1.2%)	4 (1.6%)	5 (2.0%)	0	76	6	54	94	230 (93.1%)	0	3 (1.2%)	0	247
Total (2002-2012)	**4 (0.2%)**	**11 (0.5%)**	**1(0%)**	**17 (0.8%)**	**33 (1.5%%)**	**19 (0.9%)**	**5 (0.2%)**	**549**	**47**	**579**	**863**	**2043 (93.8%)**	**2 (0.1%)**	**40 (1.8%)**	**3 (0.1%)**	**2178**
Mean	**0.4 (0.5%)**	**1.1 (0.5)**	**0.1 (0.02)**	**1.7 (0.92%)**	**3.3 (1.7%)**	**1.9 (0.8)**	**0.5 (0.2%)**	**54.9 (25.1%)**	**4.7 (2.0%)**	**57.9 (27.2%)**	**86.8 (39.7%)**	**204.8 (93.1%)**	**0.2 (0.1%)**	**4 (2.1%)**	**0.3 (0.1%)**	**217.8**
s.d.	**0.7 (1.1%)**	**1.4 (0.6)**	**0.3 (0.06)**	**1.2 (0.57%)**	**2.3 (1.1%)**	**1.8 (0.8)**	**1 (0.4%)**	**27.4 (4.9%)**	**3.8 (1.0%)**	**29.6 (3.7%)**	**43.2 (4.3%)**	**95.6 (1.9%)**	**0.4 (0.3%)**	**2.3 (1.4%)**	**0.7 (0.3%)**	**102.9**

Table 6. Stock numbers and proportions by SALSEA Level 4 Regional assignment Units for combined samples collected in the West Greenland fishery between 2002 and 2012.

NAFO Regions	1A (n)	1B (n)	1C (n)	1D (n)	1E (n)	1F (n)	All Regions (n)
Iceland	1	0	1	1	0	1	**4**
N. Kola	0	0	5	1	1	4	**11**
Finmark	0	0	1	0	0	0	**1**
E. Norway & Sweden	0	0	7	4	1	5	**17**
Mid. Norway	1	0	5	15	3	9	**33**
S. Norway	0	0	1	9	0	4	**14**
Denmark	0	0	1	1	0	3	**5**
N. Scotland & NW Ireland	8	8	152	204	17	156	**545**
Bann Leven	1	4	14	15	5	12	**51**
Irish Sea	11	10	158	216	13	167	**575**
S&E Scotland	8	10	261	321	22	244	**866**
South England	0	0	5	1	6	1	**13**
N&W France	0	0	9	16	1	14	**40**
S. France & Spain	0	0	0	0	0	3	**3**
Total	**30**	**32**	**620**	**804**	**69**	**623**	**2178**

NAFO Regions	1A %	1B %	1C %	1D %	1E %	1F %	All Regions %
Iceland	3.3	0.0	0.2	0.1	0.0	0.2	**0.2**
N. Kola	0.0	0.0	0.8	0.1	1.4	0.6	**0.5**
Finmark	0.0	0.0	0.2	0.0	0.0	0.0	**0.0**
E. Norway & Sweden	0.0	0.0	1.1	0.5	1.4	0.8	**0.8**
Mid. Norway	3.3	0.0	0.8	1.9	4.3	1.4	**1.5**
S. Norway	0.0	0.0	0.2	1.1	0.0	0.6	**0.6**
Denmark	0.0	0.0	0.2	0.1	0.0	0.5	**0.2**
N. Scotland & NW Ireland	26.7	25.0	24.5	25.4	24.6	25.0	**25.0**
Bann Leven	3.3	12.5	2.3	1.9	7.2	1.9	**2.3**
Irish Sea	36.7	31.3	25.5	26.9	18.8	26.8	**26.4**
S&E Scotland	26.7	31.3	42.1	39.9	31.9	39.2	**39.8**
South England	0.0	0.0	0.8	0.1	8.7	0.2	**0.6**
N&W France	0.0	0.0	1.5	2.0	1.4	2.2	**1.8**
S. France & Spain	0.0	0.0	0.0	0.0	0.0	0.5	**0.1**

Table 7. Stock numbers and proportions by SALSEA Level 4 Regional assignment Units for combined samples collected at Illulissat NAFO Region 1A between 2002 and 2012.

NAFO Region 1A Illulissat	2002 (n)	2004 (n)	2005 (n)	2006 (n)	2007 (n)	2008 (n)	2009 (n)	2010 (n)	2011 (n)	2012 (n)	Total (n)
Iceland	ns	ns	ns	0	0	ns	ns	ns	1	ns	**1**
N. Kola	ns	ns	ns	0	0	ns	ns	ns	0	ns	**0**
Finmark	ns	ns	ns	0	0	ns	ns	ns	0	ns	**0**
E. Norway & Sweden	ns	ns	ns	0	0	ns	ns	ns	0	ns	**0**
Mid. Norway	ns	ns	ns	1	0	ns	ns	ns	0	ns	**1**
S. Norway	ns	ns	ns	0	0	ns	ns	ns	0	ns	**0**
Denmark	ns	ns	ns	0	0	ns	ns	ns	0	ns	**0**
N. Scotland & NW Ireland	ns	ns	ns	7	1	ns	ns	ns	0	ns	**8**
Bann Leven	ns	ns	ns	1	0	ns	ns	ns	0	ns	**1**
Irish Sea	ns	ns	ns	8	3	ns	ns	ns	0	ns	**11**
S&E Scotland	ns	ns	ns	6	1	ns	ns	ns	1	ns	**8**
South England	ns	ns	ns	0	0	ns	ns	ns	0	ns	**0**
N&W France	ns	ns	ns	0	0	ns	ns	ns	0	ns	**0**
S. France & Spain	ns	ns	ns	0	0	ns	ns	ns	0	ns	**0**
Total				**23**	**5**				**2**		**30**

NAFO Region 1A Illulissat	2002 %	2004 %	2005 %	2006 %	2007 %	2008 %	2009 %	2010 %	2011 %	2012 %	2002-2012 %
Iceland	ns	ns	ns	0.0	ns	ns	ns	ns	50.0	ns	**3.3**
N. Kola	ns	ns	ns	0.0	ns	ns	ns	ns	0.0	ns	**0.0**
Finmark	ns	ns	ns	0.0	ns	ns	ns	ns	0.0	ns	**0.0**
E. Norway & Sweden	ns	ns	ns	0.0	ns	ns	ns	ns	0.0	ns	**0.0**
Mid. Norway	ns	ns	ns	4.3	ns	ns	ns	ns	0.0	ns	**3.3**
S. Norway	ns	ns	ns	0.0	ns	ns	ns	ns	0.0	ns	**0.0**
Denmark	ns	ns	ns	0.0	ns	ns	ns	ns	0.0	ns	**0.0**
N. Scotland & NW Ireland	ns	ns	ns	30.4	ns	ns	ns	ns	0.0	ns	**26.7**
Bann Leven	ns	ns	ns	4.3	ns	ns	ns	ns	0.0	ns	**3.3**
Irish Sea	ns	ns	ns	34.8	ns	ns	ns	ns	0.0	ns	**36.7**
S&E Scotland	ns	ns	ns	26.1	ns	ns	ns	ns	50.0	ns	**26.7**
South England	ns	ns	ns	0.0	ns	ns	ns	ns	0.0	ns	**0.0**
N&W France	ns	ns	ns	0.0	ns	ns	ns	ns	0.0	ns	**0.0**
S. France & Spain	ns	ns	ns	0.0	ns	ns	ns	ns	0.0	ns	**0.0**

Table 8. Stock numbers and proportions by SALSEA Level 4 Regional assignment Units for combined samples collected at Sisimiut NAFO Region 1B between 2002 and 2012.

NAFO Region 1B Sisimiut	2002 (n)	2004 (n)	2005 (n)	2006 (n)	2007 (n)	2008 (n)	2009 (n)	2010 (n)	2011 (n)	2012 (n)	Total (n)
Iceland	ns	ns	ns	ns	ns	ns	ns	ns	0	0	**0**
N. Kola	ns	ns	ns	ns	ns	ns	ns	ns	0	0	**0**
Finmark	ns	ns	ns	ns	ns	ns	ns	ns	0	0	**0**
E. Norway & Sweden	ns	ns	ns	ns	ns	ns	ns	ns	0	0	**0**
Mid. Norway	ns	ns	ns	ns	ns	ns	ns	ns	0	0	**0**
S. Norway	ns	ns	ns	ns	ns	ns	ns	ns	0	0	**0**
Denmark	ns	ns	ns	ns	ns	ns	ns	ns	0	0	**0**
N. Scotland & NW Ireland	ns	ns	ns	ns	ns	ns	ns	ns	3	5	**8**
Bann Leven	ns	ns	ns	ns	ns	ns	ns	ns	1	3	**4**
Irish Sea	ns	ns	ns	ns	ns	ns	ns	ns	5	5	**10**
S&E Scotland	ns	ns	ns	ns	ns	ns	ns	ns	4	6	**10**
South England	ns	ns	ns	ns	ns	ns	ns	ns	0	0	**0**
N&W France	ns	ns	ns	ns	ns	ns	ns	ns	0	0	**0**
S. France & Spain	ns	ns	ns	ns	ns	ns	ns	ns	0	0	**0**
Total									**13**	**19**	**32**

NAFO Region 1B Sisimiut	2002 %	2004 %	2005 %	2006 %	2007 %	2008 %	2009 %	2010 %	2011 %	2012 %	2002-2012 %
Iceland	ns	ns	ns	ns	ns	ns	ns	ns	0.0	0.0	**0.0**
N. Kola	ns	ns	ns	ns	ns	ns	ns	ns	0.0	0.0	**0.0**
Finmark	ns	ns	ns	ns	ns	ns	ns	ns	0.0	0.0	**0.0**
E. Norway & Sweden	ns	ns	ns	ns	ns	ns	ns	ns	0.0	0.0	**0.0**
Mid. Norway	ns	ns	ns	ns	ns	ns	ns	ns	0.0	0.0	**0.0**
S. Norway	ns	ns	ns	ns	ns	ns	ns	ns	0.0	0.0	**0.0**
Denmark	ns	ns	ns	ns	ns	ns	ns	ns	0.0	0.0	**0.0**
N. Scotland & NW Ireland	ns	ns	ns	ns	ns	ns	ns	ns	23.1	26.3	**25.0**
Bann Leven	ns	ns	ns	ns	ns	ns	ns	ns	7.7	15.8	**12.5**
Irish Sea	ns	ns	ns	ns	ns	ns	ns	ns	38.5	26.3	**31.3**
S&E Scotland	ns	ns	ns	ns	ns	ns	ns	ns	30.8	31.6	**31.3**
South England	ns	ns	ns	ns	ns	ns	ns	ns	0.0	0.0	**0.0**
N&W France	ns	ns	ns	ns	ns	ns	ns	ns	0.0	0.0	**0.0**
S. France & Spain	ns	ns	ns	ns	ns	ns	ns	ns	0.0	0.0	**0.0**

Table 9. Stock numbers and proportions by SALSEA Level 4 Regional assignment Units for combined samples collected at Maniitsoq NAFO Region 1C between 2002 and 2012.

NAFO Region 1C Maniitsoq	2002 (n)	2004 (n)	2005 (n)	2006 (n)	2007 (n)	2008 (n)	2009 (n)	2010 (n)	2011 (n)	2012 (n)	Total (n)
Iceland	0	0	0	0	0	0	0	0	ns	1	**1**
N. Kola	1	0	0	0	0	3	0	0	ns	1	**5**
Finmark	0	1	0	0	0	0	0	0	ns	0	**1**
E. Norway & Sweden	0	2	0	0	1	0	1	1	ns	2	**7**
Mid. Norway	0	0	0	1	0	2	0	0	ns	2	**5**
S. Norway	0	0	0	0	0	0	0	1	ns	0	**1**
Denmark	0	0	0	0	0	1	0	0	ns	0	**1**
N. Scotland & NW Ireland	10	22	2	12	13	20	14	13	ns	46	**152**
Bann Leven	1	1	0	2	5	2	0	1	ns	2	**14**
Irish Sea	12	28	2	7	20	13	12	32	ns	32	**158**
S&E Scotland	17	30	4	20	22	46	14	47	ns	61	**261**
South England	0	0	0	0	1	0	0	0	ns	4	**5**
N&W France	0	0	0	1	0	3	3	1	ns	1	**9**
S. France & Spain	0	0	0	0	0	0	0	0	ns	0	**0**
Total	**41**	**84**	**8**	**43**	**62**	**90**	**44**	**96**		**152**	**620**

NAFO Region 1C Maniitsoq	2002 %	2004 %	2005 %	2006 %	2007 %	2008 %	2009 %	2010 %	2011 %	2012 %	2002-2012 %
Iceland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ns	0.7	0.2
N. Kola	2.4	0.0	0.0	0.0	0.0	3.3	0.0	0.0	ns	0.7	0.8
Finmark	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	ns	0.0	0.2
E. Norway & Sweden	0.0	2.4	0.0	0.0	1.6	0.0	2.3	1.0	ns	1.3	1.1
Mid. Norway	0.0	0.0	0.0	2.3	0.0	2.2	0.0	0.0	ns	1.3	0.8
S. Norway	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	ns	0.0	0.2
Denmark	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	ns	0.0	0.2
N. Scotland & NW Ireland	24.4	26.2	25.0	27.9	21.0	22.2	31.8	13.5	ns	30.3	24.5
Bann Leven	2.4	1.2	0.0	4.7	8.1	2.2	0.0	1.0	ns	1.3	2.3
Irish Sea	29.3	33.3	25.0	16.3	32.3	14.4	27.3	33.3	ns	21.1	25.5
S&E Scotland	41.5	35.7	50.0	46.5	35.5	51.1	31.8	49.0	ns	40.1	42.1
South England	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	ns	2.6	0.8
N&W France	0.0	0.0	0.0	2.3	0.0	3.3	6.8	1.0	ns	0.7	1.5
S. France & Spain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ns	0.0	0.0

Table 10. Stock numbers and proportions by SALSEA Level 4 Regional assignment Units for combined samples collected at Nuuk NAFO Region 1A between 2002 and 2012.

NAFO Region 1D
Nuuk

	2002 (n)	2004 (n)	2005 (n)	2006 (n)	2007 (n)	2008 (n)	2009 (n)	2010 (n)	2011 (n)	2012 (n)	Total (n)
Iceland	0	0	0	0	0	0	0	0	1	ns	**1**
N. Kola	0	0	0	1	0	0	0	0	0	ns	**1**
Finmark	0	0	0	0	0	0	0	0	0	ns	
E. Norway & Sweden	1	0	2	0	1	0	0	0	0	ns	**4**
Mid. Norway	0	3	4	4	4	0	0	0	0	ns	**15**
S. Norway	0	2	1	2	2	0	0	2	0	ns	**9**
Denmark	0	0	0	1	0	0	0	0	0	ns	**1**
N. Scotland & NW Ireland	6	51	22	66	10	24	11	9	5	ns	**204**
Bann Levan	0	9	2	4	0	0	0	0	0	ns	**15**
Irish Sea	4	68	30	50	14	24	9	14	3	ns	**216**
S&E Scotland	7	85	33	91	26	40	13	15	11	ns	**321**
South England	0	0	0	0	1	0	0	0	0	ns	**1**
N&W France	2	4	2	3	1	3	1	0	0	ns	**16**
S. France & Spain											
Total	**20**	**222**	**96**	**222**	**59**	**91**	**34**	**40**	**20**		**804**

NAFO Region 1D
Nuuk

	2002 %	2004 %	2005 %	2006 %	2007 %	2008 %	2009 %	2010 %	2011 %	2012 %	2002-2012 %
Iceland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	ns	0.1
N. Kola	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	ns	0.1
Finmark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ns	0.0
E. Norway & Sweden	5.0	0.0	2.1	0.0	1.7	0.0	0.0	0.0	0.0	ns	0.5
Mid. Norway	0.0	1.4	4.2	1.8	6.8	0.0	0.0	0.0	0.0	ns	1.9
S. Norway	0.0	0.9	1.0	0.9	3.4	0.0	0.0	5.0	0.0	ns	1.1
Denmark	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	ns	0.1
N. Scotland & NW Ireland	30.0	23.0	22.9	29.7	16.9	26.4	32.4	22.5	25.0	ns	25.4
Bann Levan	0.0	4.1	2.1	1.8	0.0	0.0	0.0	0.0	0.0	ns	1.9
Irish Sea	20.0	30.6	31.3	22.5	23.7	26.4	26.5	35.0	15.0	ns	26.9
S&E Scotland	35.0	38.3	34.4	41.0	44.1	44.0	38.2	37.5	55.0	ns	39.9
South England	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	ns	0.1
N&W France	10.0	1.8	2.1	1.4	1.7	3.3	2.9	0.0	0.0	ns	2.0
S. France & Spain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ns	0.0

Table 11. Stock numbers and proportions by SALSEA Level 4 Regional assignment Units for combined samples collected at Paamiut NAFO Region 1E between 2002 and 2012.

NAFO Region 1E Paamiut	2002 (n)	2004 (n)	2005 (n)	2006 (n)	2007 (n)	2008 (n)	2009 (n)	2010 (n)	2011 (n)	2012 (n)	Total (n)
Iceland	ns	ns	ns	0	0	ns	ns	ns	ns	ns	
N. Kola	ns	ns	ns	0	1	ns	ns	ns	ns	ns	1
Finmark	ns	ns	ns	0	0	ns	ns	ns	ns	ns	
E. Norway & Sweden	ns	ns	ns	1	0	ns	ns	ns	ns	ns	1
Mid. Norway	ns	ns	ns	1	2	ns	ns	ns	ns	ns	3
S. Norway	ns	ns	ns	0	0	ns	ns	ns	ns	ns	
Denmark	ns	ns	ns	0	0	ns	ns	ns	ns	ns	
N. Scotland & NW Ireland	ns	ns	ns	0	17	ns	ns	ns	ns	ns	17
Bann Leven	ns	ns	ns	4	1	ns	ns	ns	ns	ns	5
Irish Sea	ns	ns	ns	0	13	ns	ns	ns	ns	ns	13
S&E Scotland	ns	ns	ns	4	18	ns	ns	ns	ns	ns	22
South England	ns	ns	ns	6	0	ns	ns	ns	ns	ns	6
N&W France	ns	ns	ns	0	1	ns	ns	ns	ns	ns	1
S, France & Spain	ns	ns	ns	0	0	ns	ns	ns	ns	ns	0
Total				16	53						69

NAFO Region 1E Paamiut	2002 %	2004 %	2005 %	2006 %	2007 %	2008 %	2009 %	2010 %	2011 %	2012 %	2002-2012 %
Iceland	ns	ns	ns	0.0	0.0	ns	ns	ns	ns	ns	0.0
N. Kola	ns	ns	ns	0.0	1.9	ns	ns	ns	ns	ns	1.4
Finmark	ns	ns	ns	0.0	0.0	ns	ns	ns	ns	ns	0.0
E. Norway & Sweden	ns	ns	ns	6.3	0.0	ns	ns	ns	ns	ns	1.4
Mid. Norway	ns	ns	ns	6.3	3.8	ns	ns	ns	ns	ns	4.3
S. Norway	ns	ns	ns	0.0	0.0	ns	ns	ns	ns	ns	0.0
Denmark	ns	ns	ns	0.0	0.0	ns	ns	ns	ns	ns	0.0
N. Scotland & NW Ireland	ns	ns	ns	0.0	32.1	ns	ns	ns	ns	ns	24.6
Bann Leven	ns	ns	ns	25.0	1.9	ns	ns	ns	ns	ns	7.2
Irish Sea	ns	ns	ns	0.0	24.5	ns	ns	ns	ns	ns	18.8
S&E Scotland	ns	ns	ns	25.0	34.0	ns	ns	ns	ns	ns	31.9
South England	ns	ns	ns	37.5	0.0	ns	ns	ns	ns	ns	8.7
N&W France	ns	ns	ns	0.0	1.9	ns	ns	ns	ns	ns	1.4
S, France & Spain	ns	ns	ns	0.0	0.0	ns	ns	ns	ns	ns	0.0

Table 12. Stock numbers and proportions by SALSEA Level 4 Regional assignment Units for combined samples collected at Qaqortoq NAFO Region 1F between 2002 and 2012.

NAFO Region 1F Quqortoq	2002 (n)	2004 (n)	2005 (n)	2006 (n)	2007 (n)	2008 (n)	2009 (n)	2010 (n)	2011 (n)	2012 (n)	Total (n)
Iceland	0	0	0	0	1	0	0	0	0	0	**1**
N. Kola	0	0	0	0	0	1	0	3	0	0	**4**
Finmark	0	0	0	0	0	0	0	0	0	0	**0**
E. Norway & Sweden	0	0	0	0	0	0	0	3	1	1	**5**
Mid. Norway	2	0	0	1	0	0	1	1	2	2	**9**
S. Norway	0	1	0	0	1	0	1	0	0	1	**4**
Denmark	0	0	1	0	0	2	0	0	0	0	**3**
N. Scotland & NW Ireland	24	23	10	6	8	19	17	21	3	25	**156**
Bann Leven	1	2	1	2	2	0	1	2	0	1	**12**
Irish Sea	27	27	17	11	6	25	10	22	5	17	**167**
S&E Scotland	33	46	18	6	8	27	16	54	9	27	**244**
South England	0	0	1	0	0	0	0	0	0	0	**1**
N&W France	2	2	1	0	0	2	3	1	1	2	**14**
S, France & Spain	0	1	0	0	0	0	0	2	0	0	**3**
Total	**89**	**102**	**49**	**26**	**26**	**76**	**49**	**109**	**21**	**76**	**623**

NAFO Region 1F Quqortoq	2002 %	2004 %	2005 %	2006 %	2007 %	2008 %	2009 %	2010 %	2011 %	2012 %	2002-2012 %
Iceland	0.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	**0.2**
N. Kola	0.0	0.0	0.0	0.0	0.0	1.3	0.0	2.8	0.0	0.0	**0.6**
Finmark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
E. Norway & Sweden	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	4.8	1.3	**0.8**
Mid. Norway	2.2	0.0	0.0	3.8	0.0	0.0	2.0	0.9	9.5	2.6	**1.4**
S. Norway	0.0	1.0	0.0	0.0	3.8	0.0	2.0	0.0	0.0	1.3	**0.6**
Denmark	0.0	0.0	2.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0	**0.5**
N. Scotland & NW Ireland	27.0	22.5	20.4	23.1	30.8	25.0	34.7	19.3	14.3	32.9	**25.0**
Bann Leven	1.1	2.0	2.0	7.7	7.7	0.0	2.0	1.8	0.0	1.3	**1.9**
Irish Sea	30.3	26.5	34.7	42.3	23.1	32.9	20.4	20.2	23.8	22.4	**26.8**
S&E Scotland	37.1	45.1	36.7	23.1	30.8	35.5	32.7	49.5	42.9	35.5	**39.2**
South England	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.2**
N&W France	2.2	2.0	2.0	0.0	0.0	2.6	6.1	0.9	4.8	2.6	**2.2**
S, France & Spain	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	**0.5**

Table 13. Stock numbers and proportions by ICES Administrative areas (IAAs) for combined samples collected in the West Greenland fishery between 2002 and 2012 .

IAAs	Iceland (n)	Russia (n)	Norway (n)	Sweden (n)	Denmark (n)	UK Scotland (n)	Ireland (n)	UK N. Ireland (n)	UK England & Wales (n)	France (n)	Spain (n)	Total (n)
2002	0	0	4	0	0	96	22	3	21	4	0	150
2004	0	0	9	0	0	269	46	5	72	7	0	408
2005	0	0	7	0	1	88	18	3	33	3	0	153
2006	0	0	12	0	1	202	51	8	52	4	0	330
2007	1	1	9	1	0	128	24	5	32	2	0	203
2008	0	2	4	0	3	163	34	5	37	8	0	256
2009	0	0	2	1	0	73	20	0	22	7	0	125
2010	0	3	8	0	0	168	25	2	41	1	2	250
2011	2		3			37	4	1	8	1		56
2012	1	1	12	0	0	154	37	4	35	3	0	247
Total	**4**	**7**	**70**	**2**	**5**	**1378**	**281**	**36**	**353**	**40**	**2**	**2178**

IAAs	Iceland %	Russia %	Norway %	Sweden %	Denmark %	UK Scotland %	Ireland %	UK N. Ireland %	UK England & Wales %	France %	Spain %
2002	0.0	0.0	2.7	0.0	0.0	64.0	14.7	2.0	14.0	2.7	0.0
2004	0.0	0.0	2.2	0.0	0.0	65.9	11.3	1.2	17.6	1.7	0.0
2005	0.0	0.0	4.6	0.0	0.7	57.5	11.8	2.0	21.6	2.0	0.0
2006	0.0	0.0	3.6	0.0	0.3	61.2	15.5	2.4	15.8	1.2	0.0
2007	0.5	0.5	4.4	0.5	0.0	63.1	11.8	2.5	15.8	1.0	0.0
2008	0.0	0.8	1.6	0.0	1.2	63.4	13.2	1.9	14.4	3.1	0.0
2009	0.0	0.0	1.6	0.8	0.0	58.4	16.0	0.0	17.6	5.6	0.0
2010	0.0	1.2	3.2	0.0	0.0	66.9	10.0	0.8	16.3	0.4	0.8
2011	3.6	0.0	5.4	0.0	0.0	66.1	7.1	1.8	14.3	1.8	0.0
2012	0.4	0.4	4.9	0.0	0.0	62.3	15.0	1.6	14.2	1.2	0.0
Total	**0.2**	**0.3**	**3.2**	**0.1**	**0.2**	**63.2**	**12.9**	**1.7**	**16.2**	**1.8**	**0.1**

Table 14. Stock numbers and proportions by ICES Administrative areas (IAAs) for the Southern Stock Complex only (excluding SW Iceland) using combined samples collected in the West Greenland fishery between 2002 and 2012

IAAs	UK Scotland (n)	Ireland (n)	UK N. Ireland (n)	UK England & Wales (n)	France (n)	Spain (n)	Total (n)
2002	96	22	3	21	4	0	146
2004	269	46	5	72	7	0	399
2005	88	18	3	33	3	0	145
2006	202	51	8	52	4	0	317
2007	128	24	5	32	2	0	191
2008	164	34	5	37	8	0	248
2009	73	20	0	22	7	0	122
2010	169	25	2	41	1	2	240
2011	37	4	1	8	1		51
2012	154	37	4	35	3	0	233
Total	**1380**	**281**	**36**	**353**	**40**	**2**	**2092**

IAAs	UK Scotland %	Ireland %	UK N. Ireland %	UK England & Wales %	France %	Spain %	
2002	65.8	15.1	2.1	14.4	2.7	0.0	
2004	67.4	11.5	1.3	18.0	1.8	0.0	
2005	60.7	12.4	2.1	22.8	2.1	0.0	
2006	63.7	16.1	2.5	16.4	1.3	0.0	
2007	67.0	12.6	2.6	16.8	1.0	0.0	
2008	66.1	13.7	2.0	14.9	3.2	0.0	
2009	59.8	16.4	0.0	18.0	5.7	0.0	
2010	70.4	10.4	0.8	17.1	0.4	0.8	
2011	72.5	7.8	2.0	15.7	2.0	0.0	
2012	66.1	15.9	1.7	15.0	1.3	0.0	
Total	**66.0**	**13.4**	**1.7**	**16.9**	**1.9**	**0.1**	**100.0**

Table 15. Stock numbers and proportions as per IAAs sampled in the West Greenland fishery by year 2002-2012;

IAAs	Finland	Iceland NE	Norway	Russia	Sweden	Iceland SW	UK Scotland	Ireland	UK N. Ireland	UK England & Wales	France & Spain
	%	%	%	%	%	%	%	%	%	%	%
Genetic assignment 2002-2012	Not reported 1.	Not reported 2.	3.2	0.3	0.1	0.2	63.3	12.9	1.7	16.2	1.9
ICES Predicted Proportions 1SW non maturing 2002-2011	3.7	0.8	33	13.1	1.2	0.8	33.4	4.2	0.9	7.9	1

Table 16. Stock proportions relative to ICES estimates of non-maturing 1SW fish

IAAs	UK Scotland %	Ireland %	UK N. Ireland %	UK England & Wales %	France & Spain %	Total %
Genetic assignment 2002-2012	66.0	13.4	1.7	16.9	2.0	100
ICES Predicted Proportions 1SW non maturing 2002-2011	70.1	9.1	1.9	16.8	2.1	100

Table 17. Stock numbers and proportions as per IAAs sampled in the Maniitsoq fishery by year 2002-2012;

Maniitsoq	Iceland (n)	Russia (n)	Norway (n)	Sweden (n)	Denmark (n)	UK Scotland (n)	Ireland (n)	UK N. Ireland (n)	UK England & Wales (n)	France (n)	Spain (n)	Total (n)
2002	0	0	1	0	0	28	8	1	3	0	0	41
2004	0	0	3	0	0	56	11	0	14	0	0	84
2005	0	0	0	0	0	6	1	0	1	0	0	8
2006	0	0	1	0	0	23	7	2	9	1	0	43
2007	0	0	2	0	0	40	9	2	9	0	0	62
2008	0	1	4	0	1	57	13	2	9	3	0	90
2009	0	0	0	1	0	25	8	0	7	3	0	44
2010	0	0	2	0	0	68	5	1	19	0	0	95
2011	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	
2012	1	1	8	0	0	94	24	2	21	1	0	152
Total	**1**	**2**	**21**	**1**	**1**	**397**	**86**	**10**	**92**	**8**	**0**	**619**

Maniitsoq	Iceland %	Russia %	Norway %	Sweden %	Denmark %	UK Scotland %	Ireland %	UK N. Ireland %	UK England & Wales %	France %	Spain %
2002	0	0	2.4	0	0	68.3	19.5	2.4	7.3	0	0
2004	0	0	3.6	0	0	66.7	13.1	0	16.7	0	0
2005	0	0	0	0	0	75.0	12.5	0	12.5	0	0
2006	0	0	2.3	0	0	53.5	16.3	4.7	20.9	2.3	0
2007	0	0	3.2	0	0	64.5	14.5	3.2	14.5	0	0
2008	0	1.1	4.4	0	1.1	63.3	14.4	2.2	10.0	3.3	0
2009	0	0	0	2.3	0	56.8	18.2	0	15.9	6.8	0
2010	0	0	2.1	0	0	71.6	5.3	1.1	20.0	0	0
2011	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2012	0.7	0.7	5.3	0	0	61.8	15.8	1.3	13.8	0.7	0
Total	**0.2**	**0.3**	**3.4**	**0.2**	**0.2**	**64.1**	**13.9**	**1.6**	**14.9**	**1.3**	**0**

Table 18. Stock numbers and proportions as per IAAs sampled in the Nuuk fishery by year 2002-2012;

Nuuk	Iceland (n)	Russia (n)	Norway (n)	Sweden (n)	Denmark (n)	UK Scotland (n)	Ireland (n)	UK N. Ireland (n)	UK England & Wales (n)	France (n)	Spain (n)	Total (n)
2002	0	0	1	0	0	10	3	0	4	2	0	20
2004	0	0	5	0	0	144	26	4	39	4	0	222
2005	0	0	7	0	0	53	14	1	19	2	0	96
2006	0	0	7	0	1	145	33	4	29	3	0	222
2007	0	0	6	1	0	39	3	0	9	1	0	59
2008	0	0	0	0	0	61	12	1	14	3	0	91
2009	0	0	0	0	0	17	7	0	7	1	0	32
2010	0	0	2	0	0	24	12	0	9	0	0	47
2011	1	0	0	0	0	17	2	0	0	0	0	20
2012	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Total	**1**		**28**	**1**	**1**	**510**	**112**	**10**	**130**	**16**		**809**

Nuuk	Iceland %	Russia %	Norway %	Sweden %	Denmark %	UK Scotland %	Ireland %	UK N. Ireland %	UK England & Wales %	France %	Spain %
2002	0	0	5.0	0	0	50.0	15.0	0	20.0	10.0	0
2004	0	0	2.3	0	0	64.9	11.7	1.8	17.6	1.8	0
2005	0	0	7.3	0	0	55.2	14.6	1.0	19.8	2.1	0
2006	0	0	3.2	0	0.5	65.3	14.9	1.8	13.1	1.4	0
2007	0	0	10.2	1.7	0	66.1	5.1	0	15.3	1.7	0
2008	0	0	0	0	0	67.0	13.2	1.1	15.4	3.3	0
2009	0	0	0	0	0	53.1	21.9	0	21.9	3.1	0
2010	0	0	4.3	0	0	51.1	25.5	0	19.1	0	0
2011	5.0	0	0	0	0	85.0	10.0	0	0	0	0
2012											
Total	**0.1**	**0**	**3.5**	**0.1**	**0.1**	**63.0**	**13.8**	**1.2**	**16.1**	**2.0**	**0**

Table 19. Stock numbers and proportions as per IAAs sampled in the Qaqortaq fishery by year 2002-2012;

Qaqortoq	Iceland (n)	Russia (n)	Norway (n)	Sweden (n)	Denmark (n)	UK Scotland (n)	Ireland (n)	UK N. Ireland (n)	UK England & Wales (n)	France (n)	Spain (n)	Total (n)
2002	0	0	2	0	0	58	11	2	14	2	0	89
2004	0	0	1	0	0	69	9	1	19	3	0	102
2005	0	0	0	0	1	29	3	2	13	1	0	49
2006	0	0	1	0	0	11	5	2	7	0	0	26
2007	1	0	1	0	0	15	4	1	4	0	0	26
2008	0	1	0	0	2	46	9	2	14	2	0	76
2009	0	0	2	0	0	31	5	0	8	3	0	49
2010	0	3	4	0	0	77	8	1	13	1	2	109
2011	0	0	3	0	0	12	1	0	4	1	0	21
2012	0	0	4	0	0	47	12	1	10	2	0	76
Total	**1**	**4**	**18**		**3**	**395**	**67**	**12**	**106**	**15**	**2**	**623**

Qaqortoq	Iceland %	Russia %	Norway %	Sweden %	Denmark %	UK Scotland %	Ireland %	UK N. Ireland %	UK England & Wales %	France %	Spain %
2002	0	0	2.2	0	0	65.2	12.4	2.2	15.7	2.2	0
2004	0	0	1.0	0	0	67.6	8.8	1.0	18.6	2.9	0
2005	0	0	0	0	2.0	59.2	6.1	4.1	26.5	2.0	0
2006	0	0	3.8	0	0	42.3	19.2	7.7	26.9	0	0
2007	3.8	0	3.8	0	0	57.7	15.4	3.8	15.4	0	0
2008	0	1.3	0	0	2.6	60.5	11.8	2.6	18.4	2.6	0
2009	0	0	4.1	0	0.0	63.3	10.2	0	16.3	6.1	0
2010	0	2.8	3.7	0	0	70.6	7.3	0.9	11.9	0.9	1.8
2011	0	0	14.3	0	0	57.1	4.8	0	19.0	4.8	0
2012	0	0	5.3	0	0	61.8	15.8	1.3	13.2	2.6	0
Total	**0.2**	**0.6**	**2.9**	**0.0**	**0.5**	**63.4**	**10.8**	**1.9**	**17.0**	**2.4**	**0.3**

Table 20. Stock numbers as per IAAs sampled in the Paamiut fishery by year 2002-2012;

Paamiut	Iceland (n)	Russia (n)	Norway (n)	Sweden (n)	Denmark (n)	UK Scotland (n)	Ireland (n)	UK N. Ireland (n)	UK England & Wales (n)	France (n)	Spain (n)	Total (n)
2002	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2004	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2005	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2006	0	0	2	0	0	10	2	0	2	0	0	16
2007	0	1	0	0	0	32	8	0	7	1	0	49
2008	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2009	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2010	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2011	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2012	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Total	**0**	**1**	**2**		**0**	**42**	**10**	**0**	**9**	**1**	**0**	**65**

Table 21. Stock numbers as per IAAs sampled in the Illulissat fishery by year 2002-2012;

Illulissat	Iceland (n)	Russia (n)	Norway (n)	Sweden (n)	Denmark (n)	UK Scotland (n)	Ireland (n)	UK N. Ireland (n)	UK England & Wales (n)	France (n)	Spain (n)	Total (n)
2002	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2004	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2005	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2006	0	0	1	0	0	13	4	0	5	0	0	23
2007	0	0	0	0	0	2	0	0	3	0	0	5
2008	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2009	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2010	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2011	1	0	0	0	0	1	0	0	0	0	0	2
2012	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Total	**1**	**0**	**1**		**0**	**16**	**4**	**0**	**8**	**0**	**0**	**30**

Table 22. Stock numbers as per IAAs sampled in the Sisimiut fishery by year 2002-2012;

Sisimiut	Iceland (n)	Russia (n)	Norway (n)	Sweden (n)	Denmark (n)	UK Scotland (n)	Ireland (n)	UK N. Ireland (n)	UK England & Wales (n)	France (n)	Spain (n)	Total (n)
2002	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2004	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2005	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2006	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2007	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2008	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2009	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2010	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
2011	0	0	0	0	0	7	1	1	4	0	0	13
2012	0	0	0	0	0	13	1	1	4	0	0	19
Total	**0**	**0**	**0**		**0**	**20**	**2**	**2**	**8**	**0**	**0**	**32**

Table 23. A comparison of the relative proportions of Irish salmon by year 2002-2012 sampled in the Maniitsoq, Nuuk and Qaqortoq fisheries;

Ireland	Maniitsoq (n)	Nuuk (n)	Qaqortoq (n)	Total (n)
2002	8	3	11	22
2004	11	26	9	46
2005	1	14	3	18
2006	7	33	5	45
2007	9	3	4	16
2008	13	12	9	34
2009	8	7	5	20
2010	5	12	8	25
2011		2	1	3
2012	24		12	36
Total	**86**	**112**	**67**	**265**

Ireland	Maniitsoq %	Nuuk %	Qaqortoq %	
2002	36.4	13.6	50.0	
2004	23.9	56.5	19.6	
2005	5.6	77.8	16.7	
2006	15.6	73.3	11.1	
2007	56.3	18.8	25.0	
2008	38.2	35.3	26.5	
2009	40.0	35.0	25.0	
2010	20.0	48.0	32.0	
2011				
2012				
2002-2010	**32.5**	**42.3**	**25.3**	

Table 24. A comparison of the relative proportions by year 2002-2012 of Scottish salmon sampled in the Maniitsoq, Nuuk and Qaqortoq fisheries;

UK Scotland	Maniitsoq (n)	Nuuk (n)	Qaqortoq (n)	Total (n)
2002	28	10	58	96
2004	56	144	69	269
2005	6	53	29	88
2006	23	145	11	179
2007	40	39	15	94
2008	57	61	46	164
2009	25	17	31	73
2010	68	24	77	169
2011		17	12	29
2012	94		47	141
Total	**397**	**510**	**395**	**1302**

UK Scotland	Maniitsoq %	Nuuk %	Qaqortoq %
2002	29.2	10.4	60.4
2004	20.8	53.5	25.7
2005	6.8	60.2	33.0
2006	12.8	81.0	6.1
2007	42.6	41.5	16.0
2008	34.8	37.2	28.0
2009	34.2	23.3	42.5
2010	40.2	14.2	45.6
2011			
2012			
2002-2010	**30.5**	**39.2**	**30.3**

Table 25. A comparison of the relative proportions by year 2002-2012 of English and Welsh salmon sampled in the Maniitsoq, Nuuk and Qaqortoq fisheries

UK England & Wales	Maniitsoq (n)	Nuuk (n)	Qaqortoq (n)	Total (n)
2002	3	4	14	21
2004	14	39	19	72
2005	1	19	13	33
2006	9	29	7	45
2007	9	9	4	22
2008	9	14	14	37
2009	7	7	8	22
2010	19	9	13	41
2011			4	4
2012	21		10	31
Total	92	130	106	328

UK England & Wales	Maniitsoq %	Nuuk %	Qaqortoq %
2002	14.3	19.0	66.7
2004	19.4	54.2	26.4
2005	3.0	57.6	39.4
2006	20.0	64.4	15.6
2007	40.9	40.9	18.2
2008	24.3	37.8	37.8
2009	31.8	31.8	36.4
2010	46.3	22.0	31.7
2011			
2012			
2002-2010	28.0	39.6	32.3

Table 26. A comparison by year of the proportion of Irish, Scottish, English & Welsh salmon, sampled in the West Greenland fishery, which were captured in the Maniitsoq fishery;

Maniitsoq	UK Scotland %	Ireland %	UK England & Wales %
2002	29.2	36.4	14.3
2004	20.8	23.9	19.4
2005	6.8	5.6	3.0
2006	12.8	15.6	20.0
2007	42.6	56.3	40.9
2008	34.8	38.2	24.3
2009	34.2	40.0	31.8
2010	40.2	20.0	46.3
2011			
2012			
2002-2010	**30.5**	**32.5**	**28.0**

Table 27. A comparison by year of the proportion of Irish, Scottish, English & Welsh salmon sampled in the West Greenland fishery, which were captured in the Nuuk fishery;

Nuuk	UK Scotland %	Ireland %	UK England & Wales %
2002	10.4	13.6	19.0
2004	53.5	56.5	54.2
2005	60.2	77.8	57.6
2006	81.0	73.3	64.4
2007	41.5	18.8	40.9
2008	37.2	35.3	37.8
2009	23.3	35.0	31.8
2010	14.2	48.0	22.0
2011			
2012			
2002-2010	**39.2**	**42.3**	**39.6**

Table 28. A comparison by year of the proportion of Irish, Scottish, English & Welsh salmon sampled in the West Greenland fishery, which were captured in the Quqortoq fishery.

Qaqortoq	UK Scotland %	Ireland %	UK England & Wales %
2002	60.4	50.0	66.7
2004	25.7	19.6	26.4
2005	33.0	16.7	39.4
2006	6.1	11.1	15.6
2007	16.0	25.0	18.2
2008	28.0	26.5	37.8
2009	42.5	25.0	36.4
2010	45.6	32.0	31.7
2011			
2012			
2002-2010	**30.3**	**25.3**	**32.3**