FISHERY ASSESSMENT REPORT

IFFO GLOBAL STANDARD FOR RESPONSIBLE SUPPLY OF FISHMEAL AND FISH OIL

FISHERY:	**Blue whiting (*Micromesistius poutassou*)**
LOCATION:	**Northeast Atlantic (ICES subdivisions I-IX, XII & XIV, combined stock)**
DATE OF REPORT:	**Feb 2013**
ASSESSOR:	**Sam Peacock**

1. Application Details and Summary of the Assessment Outcome

Name: UK/Ireland, Iceland and Norway	
Address:	
Country:	**Zip:**
Tel. No.	**Fax. No.**
Email address:	**Applicant Code**
Key Contact:	**Title:**

Certification Body Details

Name of Certification Body:

Assessor Name:	**Peer Reviewer:**	**Assessment Days:**	**Initial/Surveillance/Re-Approval:**
Sam Peacock	Mike Platt	10	Re-approval
Assessment Period	January 2013		

Scope Details

1. Scope of Assessment:	IFFO Global Standard for Responsible Supply – Issue 1
2. Fishery	Blue Whiting in the North-East Atlantic – Iceland, UK, Ireland and Norway
3. Fishery Location	ICES subdivisions I-IX, XII & XIV, combined stock
4. Fishery Method	Pelagic trawl

Outcome of Assessment

5. Overall Fishery Compliance Rating	**Medium**
6. Sub Components of Low Compliance	None
7. Information deficiency	Minor
8. Peer Review Evaluation	The reviewer agrees to the conclusion of this re-approval , but recommends that this status may be suspend once again if the participants within the fishery break with the agreed international plan
9. Recommendation	**Approve with condition**

2. Quality of Information
Good; primarily governmental and ICES websites.

3. Compliance Level Achieved
Medium
Recommendation
Approve fishery with condition – see assessment determination

4. Guidance for On-site Assessment
Based on High Compliance Findings
Based on Medium Compliance Findings
•
Key Stakeholders of the Fishery

5. Assessment Determination

The North-East Atlantic blue whiting stock was first assessed under the IFFO RS scheme in 2010, solely for the Icelandic component of the fishery. In this initial assessment the fishery was awarded high compliance in every section. Subsequent assessments have raised concerns about certain aspects of the quota setting process, until in late 2012 it was discovered that the Russian Federation had unilaterally set its own TAC independently of the international management plan. Approval for the blue whiting stock was suspended pending a full re-assessment.

This document details the outcome of this re-assessment, and as such represents a fresh analysis of the blue whiting management process, this time combining the assessments for Norway, Iceland and the UK & Ireland. As at the time of the first assessment in 2010, the majority of the requirements of the IFFO RS standard are met easily. Management, enforcement and sanctions mechanisms are in place both nationally and internationally, and in general management decisions are underpinned by a good scientific understanding of the stock.

The assessment team has awarded the fishery high compliance in all but two sections. Section D3 has been awarded medium compliance due to a lack of hard data to illustrate the effects of the fishery on non-target species and the broader ecosystem. Section D1, which considers whether quotas have been set in line with scientific advice, goes into detail to explain why the assessment team consider the fishery to now be deserving of re-approval despite the unilateral action of the Russian Federation in 2011, and has been awarded a medium compliance rating.

The result of these scorings is that the assessment team now considers the fishery to be suitable for re-approval against the IFFO RS scheme, albeit on the **condition that a similar process of suspension and re-assessment be implemented in future if any further unilateral quota action is taken by Russia or any other prosecuting nation.**

HIGH COMPLIANCE

A1, A2, A3, B1, B2, C1, D2, E1, E2

MEDIUM COMPLIANCE

D1, D3

SUMMARY OF LEVEL OF COMPLIANCE					
	The Management Framework and Procedures	Stock assessment procedures and management advice	Precautionary approach	Management measures	Implementation
legal and administrative basis					
Fisheries management should be concerned with the whole stock unit					
Management actions should be scientifically based					
Research in support of fisheries conservation and management should exist					
Best scientific evidence available should be taken into account when designing conservation and management measures					
The precautionary approach is applied in the formulation of management plans					
The level of fishing permitted should be set according to management advice given by research organisations					
Where excess fishing capacity exist, mechanisms should be in established to reduced capacity					
Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment					
A management system for fisheries control and enforcement should be established					
A framework for sanctions of violation of laws and regulations should be efficiently exists					

KEY: Low Compliance Medium Compliance High Compliance:

6. Rationale of the Assessment Outcome

a. The Management Framework and Procedure

LEVEL OF COMPLIANCE	a.i. The management of the fishery must include a legal and administrative basis for the implementation of measures and controls to support the conservation of the fishery.	References	Rating
LOW MEDIUM HIGH	**Determination:** ***Fisheries management in Iceland, Norway and the EU is based on firm legal and administrative foundations. As a widely distributed stock, blue whiting is also subject to a considerable range of international management arrangements, which are coordinated by the NEAFC. The assessment team considers the management framework for the fishery to be both adequate and effective.*** Blue whiting (*Micromesistius poutassou*) is a pelagic gadoid that is widely distributed in the eastern part of the North Atlantic. The fishery is prosecuted by a varying number of EU states, Iceland, Norway, the Faroe Islands and the Russian Federation. This assessment considers only the Icelandic, UK & Ireland, and Norwegian components of the fishery, each of which implements a different legal and administrative framework for the management of national fisheries in general, and the blue whiting fishery specifically. International cooperation on the management of the blue whiting stock is largely coordinated by the North East Atlantic Fisheries Commission, the Regional Fisheries Management Organisation (RFMO) for the North East Atlantic. NEAFC's objective is to ensure the long-term conservation and optimum utilisation of the fishery resources in the Convention Area, providing sustainable economic, environmental and social benefits. To this end, NEAFC adopts management measures for various fish stocks and control measures to ensure that they are properly implemented. NEAFC also adopts measures to protect other parts of the marine ecosystem from potential negative impacts of fisheries. The contracting parties to the NEAFC are the EU, Norway, Iceland, the Russian Federation, and Denmark (in respect of the Faroe Islands & Greenland).	D, E, F, G, H, I, W	HIGH

Iceland

Modern Icelandic fisheries management is based on the Fisheries Management Act of 1990, and is the responsibility of the Ministry of Fisheries and Agriculture. The objectives of the Fisheries Management Act are to promote the conservation and efficient utilisation of the marine resources and thus to ensure stable employment and economic viability of fishing communities. In other words, the aim is to ensure the sustainability of the fisheries while emphasising the economic benefits of the fisheries sector. The fisheries management system in Iceland is primarily based on extensive research on the fish stocks and the marine ecosystem, decisions made on the conduct of fisheries and allowable catches on the basis of scientific advice, and effective monitoring and enforcement of the fisheries and the total catch. These are the main pillars of the Icelandic fisheries management intended to ensure responsible fisheries and the sustainability of the ocean's natural resources.

UK & Ireland / EU

The UK & Ireland are Member States of the European Union, and therefore in Community waters implement the Common Fisheries Policy (CFP). In force since 1983, the CFP aims to reconcile resource conservation with the preservation of income and jobs in coastal zones that offer few alternatives in terms of production or employment. It therefore covers not just resources but also markets and structures.

With regards to resource management, the CFP regulations comprise:

- A traditional management tool based on TACs and quotas;
- Technical measures relating to gear or catch;
- Effort-related management, based on vessel engine power and the number of days at sea.

The CFP also provides for the introduction of measures to rebuild, over a period of several years, stocks that are threatened in terms of sustainable harvesting, and for recourse to effort-related management rules to supplement TACs and quotas.

UK

The Department for Environment, Food and Rural Affairs (DEFRA), the Marine Management Organisation (MMO) and inshore fisheries and conservation authorities (IFCAs) work together to achieve sustainable fisheries management and marine conservation. The MMO is an executive non-departmental public body established by the Marine and Coastal Access Act 2009, with a wide range of responsibilities, including:

- implementing a new marine planning system designed to integrate the social requirements, economic potential and environmental imperatives of our seas
- implementing a new marine licensing regime that is easier for everyone to use with clearer, simpler and quicker licensing decisions
- managing UK fishing fleet capacity and UK fisheries quotas
- working with Natural England and the Joint Nature Conservation Committee (JNCC) to create and manage a network of marine protected areas (marine conservation zones and European marine sites) designed to preserve vulnerable habitats and species in UK marine waters
- responding to marine emergencies alongside other agencies
- developing an internationally recognised centre of excellence for marine information that supports the MMO's decision-making process.

Ireland

The Irish governmental department with responsibility for capture fisheries is the Department of Agriculture, Food and the Marine. The Department is responsible for, amongst other things, sea fisheries administration, seafood policy and development, harbour management, environmental assessment, and fisheries research.

The Sea Fisheries Protection Authority (SFPA) was established under the provisions of the Sea-Fisheries and Maritime Jurisdiction Act 2006 and is Ireland's competent authority for Seafood Safety and Sea-Fisheries

Protection. The SFPA's mission is:

"The Sea Fisheries Protection Authority is committed to the effective and fair regulation of the seafishing and seafood sectors that fall within our mandate. This means all fishing vessels operating within Irelands 200-mile limit, Irish fishing vessels wherever they operate, and all seafood produced in Ireland wherever it is marketed."

Norway

The Norwegian Ministry of Fisheries and Coastal Affairs is responsible for, amongst other activities, ensuring long-term, optimal exploitation of living marine resources; ensuring sound management of the marine environment; and progressing towards a profitable, self-sustained fisheries industry.

The regulatory system for fisheries management in Norway is an interactive and iterative process based on incremental changes, and is sometimes referred to as the regulatory chain. The chain has no set start or finish, but can rather be seen as a continuous process. The timeframe of the regulatory chain is approximately one calendar year.

First, scientific research of the fish stocks is crucial in order to ensure that the quota allocation complies with the overarching principles of the Norwegian resource management regime. The International Council of the Exploration of the Sea (ICES), the Institute of Marine Research (IMR) and others research institutions provide such scientific advice.

About 90 per cent of Norway's fish stocks are shared with other states (Capelin is shared with Russia (for the Barents & Norwegian Sea stock), and Greenland and Iceland (for the Iceland and East Greenland Stock)), and bilateral or multilateral negotiations therefore takes place in order to set quotas. After the quotas have been negotiated with the relevant states, the Directorate of Fisheries makes a proposal regarding the regulations for the upcoming year. This proposal includes:

- when to start and stop the fishing
- technical regulations

- size of by-catch
- criteria for participating in various fisheries

This is then presented to stakeholders in an open meeting held in late November or early December. A broad range of participants attend this open meeting – including representatives from the Norwegian Fishermen's Association, Federation of Norwegian Fishing Industries, the Norwegian Seamen's Union, The Norwegian Food and Allied Workers' Union, The Sami Parliament, environmental NGOs, the regional counties, as well as recreational fishermen.

After this meeting, the Directorate of Fisheries recommends next year's fisheries regulations to the Ministry of Fisheries and Coastal Affairs. The Ministry bases its final decision on outcomes from the quota negotiations with other states, discussions from the open meeting, the recommendation from the Directorate of Fisheries, as well as input from various fisheries industry organisations.

The regulations are normally valid for one calendar year at a time. It is common, however, that some adjustments to the regulations take place during the year. One such adjustment could be changes in by-catch regulations. It is important to note that the experiences from previous year's fishing are of great importance in the decision process for the following year. One reason for this is to ensure predictability and stability for the fishing fleet. In order to exchange views on and evaluate the current fishing year, another open meeting is held in early summer.

	a.ii. Fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account fishery removals and the biology of the species	References	Rating
LOW MEDIUM HIGH	**Determination:** ***The current geographical definition of the stock unit for management purposes matches the current scientific understanding of the biological stock. The biology of the species is factored heavily into the stock assessment and management process, and although the stock assessment process does not include discards, these are considered to be negligible.*** Prior to 1993, for the purposes of assessment, it was assumed that blue whiting had two components, a northern and a southern component. In 1993 it was argued that there was no strong evidence to maintain this division, after results from an otolith age reading workshop at that time showed no significant difference in mean annual ring diameter between northern and southern stocks. Since then the blue whiting stock has been assessed as a single unit in the North-East Atlantic; however, due to the large population size, its considerable migratory capabilities and wide spatial distribution, the stock composition and dynamics require continued monitoring. Several approaches have been employed to investigate the stock structure of blue whiting. The details of studies relating to genetics, larval otolith growth patterns and the movements of eggs and larvae have been published in recent years. In 2009 the stock identification methods working group (SIMWG) of ICES stated that the perception of blue whiting in the NE Atlantic as a single unit stock is not consistent with recently observed differences in genetics and growth and should be revised. They recommended that a precautionary approach should initially treat blue whiting populations in areas VIIk and VIIj and further south as a separate unit from all other NE populations. Contrastingly, recent results from length-at-age and otolith shape analysis in 2012 did not provide evidence two separate stocks but rather substantial mixing of individuals on the common spawning grounds. The working group came to the conclusion that there is no scientific evidence in support of multiple stocks with distinct spawning locations or timings. The emerging picture is one of a single stock whose large scale spatial distribution varies as a function of hydrographic conditions and total abundance; this is commonly described as an abundance-occupancy relationship. Further, there seem to be a number of core nursery and feeding areas with marginal areas being	A, J, K	HIGH

		occupied at times of high stock abundance. As a result, the ICES WGWIDE working group decided to recommend treating blue whiting in ICES subareas I–IX, XII and XIV as a single stock for assessment purposes. Thus although there is continuing debate over the nature of the biological extent of the stock, the current management area represents continuing adherence to the best scientific understanding. Figure A2 illustrates the geographical extent of fishery removals. The ICES stock assessment process considers removals by all participating nations, but does not include discard data. ICES considers discarding of blue whiting to be negligible.		

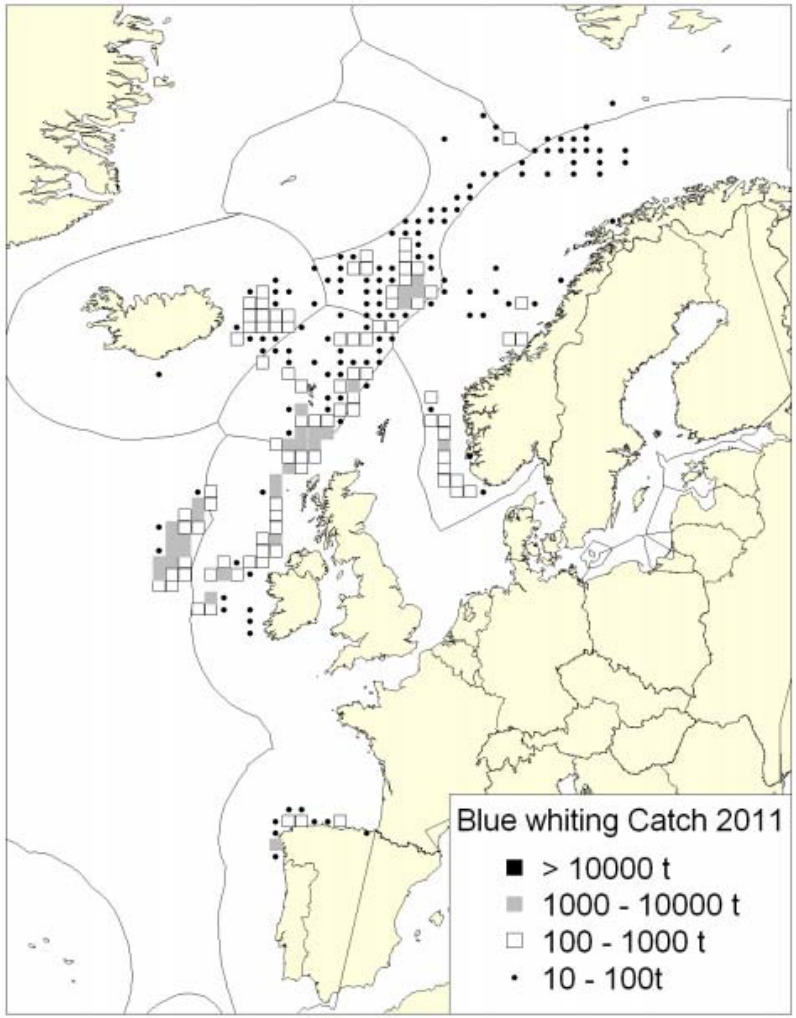

Fig A2 – Total blue whiting catches (t) in 2011 by ICES rectangle. Catches below 10 t are not shown. From the ICES WGWIDE working group report, 2012 (Ref J).

		a.iii .Management actions should be based on long-term conservation objectives	References	Rating
LOW		**Determination:** ***Management of the blue whiting stock is based primarily on an internationally-agreed management plan with long-term biomass and fishing mortality objectives. The plan, its objectives, and the harvest control rules utilised are under ongoing review.***	A, B, J, K, N, P	HIGH
MEDIUM				
HIGH		Since 2008 the fishery has been managed according to an internationally-agreed management plan to which Norway, the EU, the Faroe Islands and Iceland are all signatories. Work is underway to evaluate a NEAFC request concerning an updated management plan, on which ICES will issue advice in advance of the Working Group on Widely Distributed Stocks (WGWIDE) in 2013. The 2008 management plan has been assessed by ICES and was found to be adherent to the precautionary approach. The long-term objective of the plan is to ensure with high probability that the size of the stock is maintained above 1.5 million tons, and to exploit the stock with a fishing mortality of 0.18. The initial objective for the plan was to reduce fishing mortality by 35% annually, to shrink the fishery to sustainable levels. The management plan also sets a series of harvest control rules for future quota setting as follows: • In the case that the spawning biomass is forecast to reach or exceed 2.25 million tonnes (SSB trigger level) on 1 January of the year for which the TAC is to be set, the TAC shall be fixed at the level consistent with the specified fishing mortality. • In the case that the spawning biomass is forecast to be less than 2.25 million tonnes on 1 January of the year for which the TAC is to be set (B), the TAC shall be fixed consistent with a fishing mortality given by: F = 0.05 + [(B - 1.5)(0.18 - 0.05) / (2.25 - 1.5)] • In the case that spawning biomass is forecast to be less than 1.5 million tonnes on 1 January of the year for which the TAC is to be set, the TAC will be fixed that is consistent with a fishing mortality given by F = 0.05. The Pelagic Regional Advisory Council (PRAC) prepares and provides advice on the management of pelagic fish		

		stocks on behalf of the fisheries sector and other stakeholders. In 2010 the PRAC decided to establish a focus group to investigate potential changes to the blue whiting management plan with the aim of providing increased TAC stability between years with fluctuating stock assessments. In June 2012 the PRAC presented its recommendations for an updated harvest control rules basis as illustrated below. Note that it is not clear whether this proposal will be adopted for management of the resource in the future, nor does the assessment team have an indication of the probability of international agreement on a change in management plan. This information is provided primarily to indicate the ongoing work being carried out to improve and refine the blue whiting management process.		

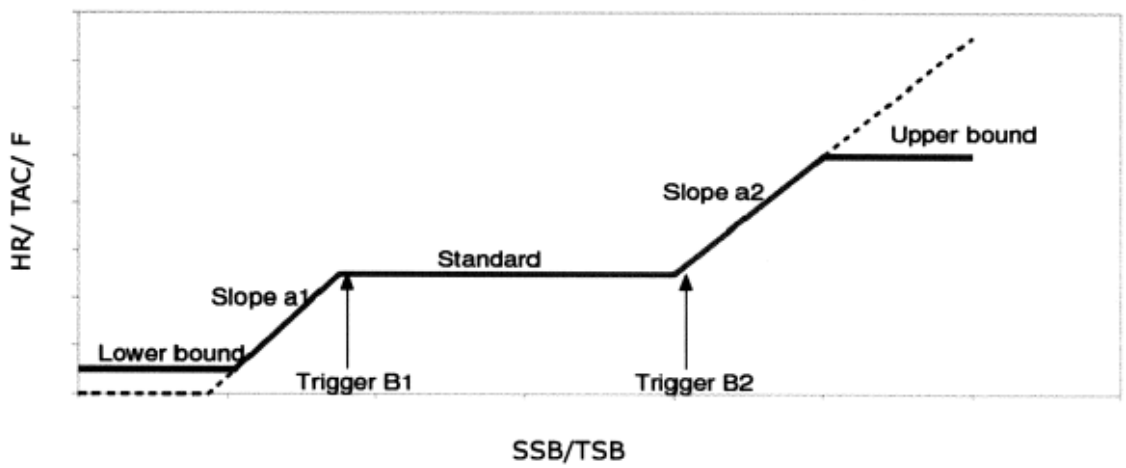

Figure 1. General outline of the new harvest rule examined, with different parameters indicated.

This rule has 5 parameters and optionally a lower and upper bound for the TAC. The parameters are:

- **Trigger B1:** If SSB/ TSB falls below this point, some reduction in exploitation is prescribed.
- **Slope a1:** Determines how strongly the exploitation shall be reduced in the region where SSB/TSB is below trigger B1.
- **Standard:** This is the TAC to be applied under normal conditions.
- **Trigger B2:** If SSB/ TSB exceeds this value, exploitation will be increased. The purpose of this part of the rule is to handle situations with exceptionally high productivity.
- **Slope a2:** Determines how strongly the exploitation of the stock should be increased when SSB/ TSB is above Trigger B2.

General outline of the updated harvest control rule proposed by the PRAC in June 2012 (Ref N).

b. Stock Assessment Procedures and Management Advice

LEVEL OF COMPLIANCE		bi. Research in support of fisheries conservation and management should exist.	References	Rating
LOW		**Determination:** ***The blue whiting stock is subject to an annual stock assessment conducted by ICES and based on the best available fishery dependent and independent data. Although the reliability of the primary survey data is variable, and has indeed been removed from the stock assessment process in some years, the assessment team considers that on balance the research conducted in the blue whiting fishery is sufficient to ensure sustainable management of the stock.***	A, B, C, J, K	HIGH
MEDIUM				
HIGH		The scientific basis for the management of the stock is provided by annual stock assessments conducted by the ICES WGWIDE. The stock assessment is based on a variety of fishery dependent and independent data sources. The assessment itself uses an age-based analytical process to generate quota recommendations based on the management plan, an MSY approach, a highly precautionary approach, and a range of target F-values. A summary of the assessment recommendations from the 2012 ICES report is shown in figure B1. **Fishery dependent data** Total landings by country and ICES area are considered to be accurate representations of fishery removals. Discards of blue whiting are thought to be small. Estimates from the DCF discard sampling programme carried out by the Netherlands on pelagic trawlers in 2008, 2009 and 2010 are 3%, 1% and 4% in weight respectively. In total 697 samples were collected from the fisheries in 2011: 82,757 fish were measured and 12,205 were aged. Current precision levels of the sampling intensity are unknown and ICES recommends reviewing the sampling frequency and intensity on a scientific basis and provide guidelines for sampling intensity. Length and age composition data from the commercial catch samples were utilised in the stock assessment process.		

Fishery independent data

International Blue Whiting spawning stock survey

The International Blue Whiting Spawning Stock Survey (IBWSS) is carried out on the spawning grounds west of the British Isles in March-April, and is the only survey that covers almost the entire distributional area of the spawning stock. The survey started in 2004 and is carried out by Norway, Russia, the Faroe Islands and the EU. During the 2010 survey, poor weather and a mismatch between vessels led to a gap in coverage in north Porcupine and south Hebrides. It was agreed within ICES that the gap in area coverage occurred in an area of concentrated fishing effort and thus contained a high but un-quantified biomass, and so during the 2011 WGWIDE working group meeting it was decided to exclude the 2010 values from the IBWSSS time series. Due to good planning and favorable weather conditions the implementation of the survey in 2012 resulted in high quality data. The IBWSS forms the primary basis for annual biomass estimates and therefore is a key foundation for ICES quota recommendations.

International ecosystem survey in the Nordic Seas (IESNS)

An international ecosystem survey is carried out annually in the Nordic Seas from late April to early June aimed at observing the pelagic ecosystem in this area. This survey focuses on Norwegian spring spawning herring, blue whiting, zooplankton and hydrography. Ages 1-2 from this survey were used as recruitment indices, but recruitment series were not used in the 2012 assessment.

Norwegian survey on the spawning grounds

The Norwegian survey on the spawning grounds for blue whiting, west of the British Isles, provides the longest time series covering a significant part of the blue whiting stock, and is an important time series for tuning the assessment. This survey was carried out from 1991-2006. The time series from 1991 – 2003, ages 3-8 is currently used to tune the assessment. This survey was replaced by the International spawning stock survey.

Other surveys

A number of other fishery-independent surveys were not used directly in the stock assessment process, but do

provide additional information to scientists. These include the Norwegian bottom trawl survey in the Barents Sea, Spanish, Portuguese, French and Irish bottom trawl surveys, and a number of other historical survey indices.

Figure B2 provides a graphical summary of many of these data sources.

Outlook for 2013

Basis: F (2012) = 0.13 (catch constraint = 391 = TAC); SSB (2013) = 5130; R (2012) =24594 million at age 1; R (2013) and R (2014) = GM (1981–2009) = 13250 million.

Rationale	Catch (2013)	Basis	F (2013)	SSB (2014)	% SSB change[1)]	% TAC change[2)]
Management plan	643	F = 0.18 for SSB(2013)>2250	0.18	5674	12	64
MSY framework	643	F_{MSY}	0.18	5674	12	64
Zero catch	0	F = 0	0.00	6305	25	-100
Other	162	1.00*F(2011)	0.04	6144	22	-59
	249	0.50*F(2012)	0.07	6058	20	-36
	484	1.00*F(2012)	0.13	5824	15	24
	708	1.50*F(2012)	0.20	5609	11	81
	921	2.00*F(2012)	0.27	5400	7	136

Weights in thousand tonnes.
[1)] SSB 2014 relative to SSB 2013.
[2)] Catch 2013 relative to TAC 2012 (391 kt).

Fig B1 - ICES stock assessment outputs, TAC recommendations, predicted 2014 biomass and TAC changes for the 2013 fishery. From the ICES advice, September 2012 (Ref A).

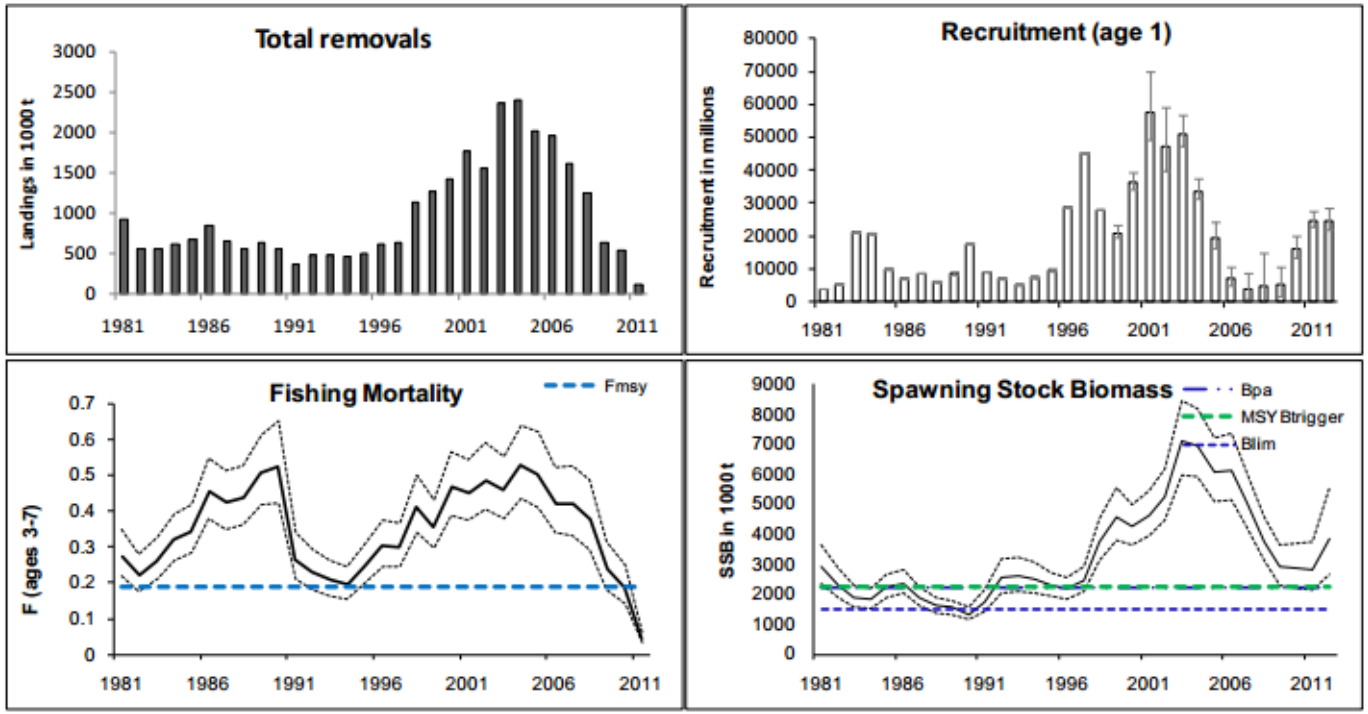

Fig B2 - Blue whiting in Subareas I–IX, XII, and XIV. Summary of available data (weights in thousand tonnes; the estimated shaded recruitment is assumed equal to the 2011 recruitment). From the ICES advice, Sep 2012 (Ref A).

LEVEL OF COMPLIANCE		b.ii Best scientific evidence available should be taken into account when designing conservation and management measures	References	Rating
LOW		**Determination:** ***The management advice and broader expertise provided by ICES forms the basis for the majority of management decisions made across the stock as a whole. Fishery management decisions on a national level are informed by advice from national advisory organisations.***	A, I, J, K, T, U, V	HIGH
MEDIUM				
HIGH		A management plan was agreed for this stock between the four coastal states (Norway, Faroe Islands, Iceland, and EU) in December 2005. ICES evaluated this management plan in 2006 and found it not to be in accordance with the precautionary approach in a period of low recruitment. A meeting was held in 2008 at which a number of potential management strategies for blue whiting were examined through simulations. Following this meeting a new management plan was proposed by the Coastal States. The full text of this plan is also presented in the stock annex. ICES was requested by the coastal states to evaluate this proposed management plan and this evaluation was carried leading to the development of an updated management plan which came into force in 2008. The current international management plan aims to: 1) Maintain, as the previous plan intended, the spawning-stock biomass above 1.5 million t (Blim) in the long-term but reduce the target fishing mortality at which the stock is exploited to 0.18 (Fy); 2) Reduce the fishing mortality by 35% a year in 2009 and 2010 or until the fishing mortality reaches 0.18; 3) Once the target fishing mortality has been reached, implement a harvest control rule, setting F at 0.18 when SSB is expected to reach or exceed the trigger biomass (2.25 million t = Bpa); reducing F to 0.05 when SSB < Blim and linearly reducing F between these two states. The process of development and implementation of this management plan is indicative of the ICES-based processes at the heart of the management of the blue whiting fishery. Additional management measures recommendations are made by the NEAFC to its members and are also based on ICES advice and reports. National fisheries management decisions are informed by information provided by national scientific		

		organisations. These are the Marine Research Institute in Iceland; the Institute of Marine Research in Norway; the Centre for Environment, Fisheries & Aquaculture Science in the UK; and the Marine Institute in Ireland.		

c. The Precautionary Approach

LEVEL OF COMPLIANCE		c.i The precautionary approach is applied in the formulation of management plans.	References	Rating
LOW		**Determination:** ***Previous IFFO RS assessments of this stock have raised concerns over discrepancies between a strictly precautionary approach and historical management decisions. However, the assessment team now considers the more recent management of the stock to be sufficiently precautionary to warrant a score of high compliance.*** The management plan used to determine quotas for this fishery has been reviewed by ICES as adhering to the precautionary approach; however the 2010 ICES advice highlighted the potential discrepancy between management-plan-based quotas and a highly precautionary. A fully precautionary approach would have led to a closed fishery, whereas the management plan implied a quota of 40,100t. In the 2011 advice, ICES again noted that the management-plan-based quota (391,000t) was greater than the precautionary-approach-based quota (315,000t). The 2012 quota was eventually set at 391,000t, again in line with the management plan. In previous assessments this discrepancy between the TAC implied by the management plan and the TAC implied by following the precautionary approach has led to the fishery being awarded a score of medium compliance under this category. However, ICES has since reviewed the reference points upon which its precautionary advice was based, and determined that they did not correspond in any meaningful way with the chosen biomass reference points. ICES considers the determination of F_{lim} as the highest observed F to be inappropriate. As F_{pa} was determined by adding a buffer to the F_{lim} value,	A, B, J, K	HIGH
MEDIUM				
HIGH				

		this was also considered inappropriate. The ICES working group decided that both these reference points could be removed, thus rendering any previous conclusions about the precautionary nature of the management plan unreliable. The fact that ICES has reviewed the current management plan and found it to be adherent to the precautionary approach leads the assessment team to consider that a score of high compliance is now appropriate under this section.		

d. Management Measures

LEVEL OF COMPLIANCE		d.i The level of fishing permitted should be set according to management advice given by research organisations.	References	Rating
LOW		**Determination:** ***The North-East Atlantic blue whiting fishery was suspended from the IFFO RS scheme in autumn 2012 due to concerns over the unilateral decision by the Russian Federation to set a quota considerably above the level agreed by the other participating nations. After considering the additional information gathered since that time, the assessment team proposes the re-instatement of the fishery for the reasons explored below. However, due to the danger to the sustainability of the stock, the team also proposes a condition be placed on the fishery that approval shall again be immediately suspended pending further re-assessment if unilateral actions are taken in future.***	A, B, C, J, K, L, M, O, R	MEDIUM
MEDIUM				
HIGH	.	Historically, the total TACs and landings in the blue whiting fishery have been considerably higher than the ICES recommendations. When it was agreed in 2008, the management plan was intended to take full effect from 2011, with a 35% reduction in TAC each year until then. Quotas have seen significant annual reductions since 2008 (TAC was 1.8 million tonnes in 2007, 1.25 million tonnes in		

		2008; 606,000t in 2009, see fig D1), and have recently begun to reflect the long-term aims of the management plan. In 2010 the agreed TAC (548,000t) was only slightly higher than the recommended TAC (540,000t). ICES recommended that to adhere to the management plan the TAC in 2011 should be set at no more then 40,000t. At the time of the previous IFFO RS assessment of the stock, in late 2011, it appeared that the TAC had been agreed at 40,000t and so the fishery was approved. However, in subsequent ICES advice it was revealed that the Russian Federation had filed a formal protest to the NEAFC and set a unilateral TAC in 2011 of 45,000t. The approval of the blue whiting fishery was suspended pending this re-assessment. The assessment team has since examined the situation in more detail, and considers the reinstatement of the fishery into the IFFO RS scheme to be appropriate for the following reasons. **1 – 2011 landings were within the range of options recommended by ICES** Although adherence to the management plan (to which the Russian Federation is not a signatory) would imply a TAC in 2011 of 40,100t, ICES also provided advice based on a number of other management objectives. These included transitioning to an MSY-based approach, the results of which implied quotas of anywhere between 50,700t and 223,000t. The total landings in 2011 were 105,000t, well within the upper limit of the ICES advice. **2 – The 2010 ICES advice is now recognised to be based on flawed survey data** The primary source of fishery-independent data used during stock assessments is the International Blue Whiting spawning stock survey (IBWSS). During the 2010 survey, poor weather and a mismatch between vessels led to a gap in coverage in north Porcupine and south Hebrides. It was agreed within ICES that the gap in area coverage occurred in an area of concentrated fishing effort and thus contained a high but un-quantified biomass, and so during the 2011 WGWIDE working group meeting it was decided to exclude the 2010 values from the IBWSSS time series. At the time of the		

		2010 ICES advice, these flawed survey results were used to substantially underestimate blue whiting biomass and led to the extremely low 40,100t quota recommendation. **3 – The 2011 TAC represented a huge reduction on the previous year** The 2011 TAC of 40,000t agreed by signatories to the management plan represented a 93% reduction on the 2010 quota of 548,000t. Such substantial, rapid changes pose a significant economic problem for the fishing industry, and subsequent work carried out by the PRAC has aimed to redesign the harvest control rules to minimise year-on-year variation (see section A3). Setting quotas using rules which provide additional long-term stability will reduce the probability of such unilateral action in future. **4 – The blue whiting stock is now showing signs of recovery** Spawning stock biomass has increased by 1 million tonnes from 2011 to 2012 and is now estimated to be above B_{pa}. An increase in recruitment has also been observed over the past two years. The 2012 ICES advice recommended landings of up to 643,000t. **5 – The 2012 and 2013 quotas have been based on the ICES advice and management plan** The ICES advice for the 2012 TAC was 391,000t, based on the management plan, and was ultimately adopted by the signatory nations. The ICES advice for the 2013 TAC was 643,000t, which was also adhered to when the 2013 TAC was finally agreed internationally in January 2013. **Condition** The examination of the circumstances surrounding the unilateral quota-setting by the Russian Federation leads the assessment team to conclude that the probability of a serious detrimental impact on the stock in this instance was probably minimal. However, it must be recognised that such unilateral management action on international stocks has the potential to seriously undermine efforts towards sustainable management, and this conclusion must in no way be seen to legitimise		

		such activity in a generalised sense. For this reason, the assessment team proposes that the fishery be approved only on the condition that it will once again be potentially suspended upon the unilateral action of any nation prosecuting the fishery, pending further in-depth exmination of the circumstances as has occurred in this instance.		

Year	ICES Advice	Predicted Catch corresp. to advice	Agreed TAC	ICES catch
1987	TAC for northern areas; no advice for southern areas	950	-	665
1988	TAC for northern areas; no advice for southern areas	832	-	558
1989	TAC for northern areas; no advice for southern areas	630	-	627
1990	TAC for northern areas; no advice for southern areas	600	-	562
1991	TAC for northern areas; no advice for southern areas	670	-	370
1992	No advice	-	-	475
1993	Catch at *status quo* F (northern areas); no assessment for southern areas	490	-	481
1994	Precautionary TAC (northern areas); no assessment for southern areas	485	650[1]	459
1995	Precautionary TAC for combined stock	518	650[1]	579
1996	Precautionary TAC for combined stock	500	650[1]	646
1997	Precautionary TAC for combined stock	540		672
1998	Precautionary TAC for combined stock	650		1125
1999	Catches above 650 000 t may not be sustainable in the long run	650		1256
2000	F should not exceed the proposed F_{pa}	800		1412
2001	F should not exceed the proposed F_{pa}	628		1780
2002	Rebuilding plan	0		1556
2003	F should be less than the proposed F_{pa}	600		2321
2004	Achieve 50% probability that F will be less than F_{pa}	925		2378
2005	Achieve 50% probability that F will be less than F_{pa}	1075		2027
2006	F old management plan	1500	2100[2]	1966
2007	F should be less than the proposed F_{pa}	980	1847[3]	1612
2008	F should be less than F_{pa}	835	1250[4]	1246
2009	Maintain stock above B_{pa}	384	606[5]	636
2010	Follow the agreed management plan	540	548	540
2011	See scenarios	40–223	40	105
2012	Follow the agreed management plan	391	391	
2013	Follow the agreed management plan	643		

Weights in thousand tonnes.
[1]NEAFC proposal for NEAFC regions 1 and 2.
[2] Agreed TAC from four Coastal States of 2 million tonnes, and an additional allocation to Russia in the international zone of 100 000 t.
[3]Agreed TAC from four Coastal States of 1.7 million tonnes, and an additional allocation to Russia and Greenland of 147 000 t.
[4]Agreed TAC from four Coastal States of 1.1 million tonnes, and an additional allocation to Russia and Greenland.
[5]Agreed TAC from four Coastal States of 0.59 million tonnes, and an additional allocation to Russia (0.016 million tonnes).

Fig D1 - Historical ICES advice, quotas and landings for blue whiting in the North-East Atlantic. From the ICES advice, Sep 2012 (Ref A).

LEVEL OF COMPLIANCE		d.ii Where excess fishing capacity exist, mechanisms should be in established to reduced capacity to allow for the recovery of the stock to sustainable levels.	References	Rating
LOW		**Determination:** ***The management of excess fishing capacity is handled differently, though satisfactorily, in each of the countries under assessment. Annual quotas remain the primary mechanism for limiting fishing effort, although capacity-reducing processes are also in place.***	Q, X	HIGH
MEDIUM				
HIGH	.	Fishing effort across the entire blue whiting stock is primarily limited by annual quotas, which are set as described in sections A3, B1 and D1. The EU and Norway have strict rules in place regarding entry into the fishery, whereas effort restriction in Iceland is primarily implemented through the quota system. **Iceland** The main instrument in Icelandic fisheries and fleet management is a system based on Individual Tradable Quota (ITQs). During the past 15 years there has been no specific fleet management system in Iceland; fishing licences are readily available for anyone with a seaworthy vessel, and no decommissioning schemes are in place. Under the ITQ system, each vessel is allocated a certain share of the TAC of the relevant species. Decommissioning occurs indirectly, as companies increase their share of the TAC by buying out vessels and thus receiving the quota attached to those vessels. **UK & Ireland / EU** The entry-exit regime, which applies to the majority of EU Member State vessels, is one of the main pillars of the European-wide fishing capacity management system. The entry-exit regime applies separately to the capacity measured in terms of tonnage and power. Any entry of capacity into the fleet of a Member State has to be compensated by the previous exit of at least the same amount of capacity. As a general rule, the capacity of the national fleets cannot increase with respect to its levels on 1 January 2003, for 'EU 15' Member States and on the accession date for Member States which acceded to the Community after 2003. The second pillar of the fishing capacity management		

		system is the rule that capacity leaving the fleet with public aid cannot be replaced. Such capacity, expressed both in tonnage and power, is subtracted directly from the maximum fleet capacity of each Member State. Capacity reductions supported with public aid are therefore permanent. **Norway** *Licenses in Norway* The law on trawling, which dates back to 1951, prohibits all use of trawls without a license issued by the fisheries authorities. Since then the license has been transformed from a kind of general rights document into several sub-categories where each sub-category grants the right to trawl for identified species only. However, the most important reform to license regulation was the introduction of vessel quotas for the coastal fleet in the fishery for Northeast Arctic cod, in the late 1980s. The cod stock was at a serious state and in 1989, the coastal fishery was closed after only three and a half months. Because of this, an individual vessel quota system was established in the costal fleet. This represented exclusive rights to fish distributed to a limited number of fishermen based on tradition. More than 3000 vessels were excluded from the vessel quota arrangement. This caused upheaval in fishing communities and provoked public debate on fisheries management. Today all fisheries of importance require every vessel to hold a license that allows it to participate in the fishery. Limitations on access to fisheries are critical to management as well as to the economics of the fleet. *Registration requirements* Other measures of access limitation are certain registration requirements set out in the annual regulation for each fishery. The most common requirements relate to the vessel and/or the owner/master of the vessel. The annual regulation requires the vessel to be listed in the official register of fishing vessels, and similarly require the master of the vessel to be officially registered as a fisherman. These mandatory registrations were introduced in order to reserve fishing rights for		

		professional fishermen and thereby reduce effort.		
LEVEL OF COMPLIANCE		d.iii Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment.	References	Rating
LOW MEDIUM HIGH	.	**Determination:** ***Although the available information largely suggests that the impacts of the fishery on non-target species and the physical environment are minimal, the lack of solid data on bycatch and the level of PET interaction, and the minimal consideration of the potential ecosystem impacts of the fishery leads the assessment team to consider a score of medium compliance to be appropriate under this section.*** **Non-target species / bycatch** Overall, most of the blue whiting is caught in directed fisheries for reduction purposes, and by-catch is considered to be small. The Norwegian fishery reports little by-catch during the spawning season, although catches of juveniles, as well as saithe and redfish, increase when this fishery has continued later in the season. By-catch of saithe, silver smelt and cod was been reported at below 1% in the Icelandic blue whiting fishery in 2004. An average saithe by-catch rate of 3.5% was reported by Faroese monitoring of the blue whiting fleet. Dutch fleets also report almost no by-catch of other species. Overall ICES has stated that the Blue Whiting is a relatively clean fishery and overall the by-catch rates are minimal, although actual data on the by-catch is considered incomplete for the fishery. Discarding is prohibited in the Icelandic and Norwegian fisheries. **PET species** The broadness of blue whiting's distribution implies a habitat overlap with many species of Northeast Atlantic seabirds and marine mammals. Data on effects of the fishery on PET species is sparse but a European Commission study group considered blue whiting pelagic trawling a fishery where monitoring for cetacean by- catch is a priority. Several studies have reported the interaction	A, B, J, K	MEDIUM

		of dolphins with midwater/pelagic trawl fisheries in the NE Atlantic, The information on the overall impact of this fishery on PET species is still insufficient, but no critically endangered species appear to be impacted. Marine mammals and seabirds in EU waters are currently protected by a set of directives, conventions (e.g. Bern Convention and the Habitats Directive) and multilateral agreements between countries (ICES, 2010b). **Ecosystem considerations** The ICES stock assessment process includes consideration of the potential ecosystem effects on the blue whiting stock. However, there appears to be minimal consideration of the effects of fishery removals on the broader ecosystem, although this is an aspect of fishery management which organisations such as the Sustainable Fisheries Partnership are attempting to improve. **Physical environment** Direct effects on habitat and seafloor are typically minimal for pelagic gears, although occasional contact is known to occur and, in these cases, can potentially cause damage to fragile ecosystems (e.g. corals).		

e. Implementation

LEVEL OF COMPLIANCE		e.i There should be a framework for sanctions of violation of Laws and regulations.	References	Rating
LOW		**Determination:** ***All the nations under assessment have in place a robust framework for sanctioning violations of laws and regulations.***	E, H, S, W	HIGH
MEDIUM		**Iceland**		
HIGH		Breaches of the law and regulations on fisheries management are subject to fines or revoking of the fishing permit, irrespective of whether such conduct is by intent or negligence. Major or repeated intentional offenses are subject to up to six years imprisonment. If the catch of a vessel exceeds the allowable catch of the said vessel of individual species, the relevant fishing company must obtain an additional catch quota for the relevant species. If this is not done within a certain timeframe, the fishing permit may be revoked as well as a charge having to be paid for the illegal catch. Collecting and bringing ashore any catches in the fishing gear of fishing vessels is obligatory; discarding is prohibited and such conduct is subject to penalty according to law. If a vessel catches any species in excess of its fishing permit, the relevant fishing company has the option of obtaining additional quota within a certain period of time after landing the catch. Vessels are authorized to land a small percentage of the catch, usually by-catch, without the use of quota. The catch in question is sold at auction and the proceeds go to a research fund that supports marine research. **UK & Ireland / EU** Infringements of CFP rules are dealt with by the Member State concerned. Monitoring the number of cases detected and the nature and the level of the sanctions imposed is a key part of the Commission's task of ensuring a level playing field for all EU fishers. 2008 Council Regulation (EC) No 1005/2008 established a Community system to prevent, deter and		

		eliminate illegal, unreported and unregulated fishing. Through EU Fishery Policy and Regulations, Member States must apply effective, proportionate and dissuasive sanctions against natural or legal persons engaged in IUU activities. A maximum sanction of at least five times the value of the fishery products obtained is provided for with regard to the committing of the said infringement. In the event of a repeated infringement within a five-year period, the Member States shall impose a maximum sanction of at least eight times the value of the fishery products obtained by committing the serious infringement. **Norway** Norway constantly seeks to regulate its own fisheries sustainably and ensure efficient control of resources both on landing and at sea through the Coast Guard. Moreover, a number of measures have been implemented to deter Norwegian vessels from participating in IUU fishing and to prevent illegally caught fish from entering the Norwegian market. The Norwegian Government's Plan of Action on Economic Crime has been used in order to enforce measures against Norwegian actors in IUU activities. *Black list of vessels* Norway adopted a black list of vessels that had been engaged in IUU activities in Northeast Atlantic waters in 1994, and banned such vessels from fishing in Norwegian waters. The concept of a black list has later been adopted by several regional fisheries management organizations where Norway is a member. Vessels that have taken part in fishing outside quota arrangements in international waters for a stock which is subject to regulations in waters under Norwegian fisheries jurisdiction or take part in fishing operations that contravene regulatory measures laid down by regional or sub regional fisheries management organisations or arrangements are blacklisted. The consequences of being listed are: • Refusal of a licence to fish/ tranship in the Norwegian Economic Zone and the Fishery Zone		

		around Jan Mayen. • Refusal of being registered as a fishing vessel under Norwegian flag.		
LEVEL OF COMPLIANCE		e.ii A management system for fisheries control and enforcement should be established.	References	Rating
LOW		**Determination:** ***Effective fisheries control and enforcement regimes are in place in all the nations under assessment.***	E, H, S, W	HIGH
MEDIUM		**Iceland**		
HIGH		Day to day administration and enforcement of the Fisheries Act and related legislation is in the hands of the Directorate of Fisheries, a government body responsible to the Minister of Fisheries. The Directorate is also responsible for the continuous monitoring of compliance with the Act. The Icelandic Coast Guard, responsible to the Minister of Justice, monitors fishing activities in Icelandic waters, including surveillance of areas closed for fishing and inspection of mesh sizes and other gear related practices. The Department of quota allocations of the Directorate issues commercial fishing permits, allocates catch quotas to Icelandic fishing vessels and maintains records of those rights. It also records quota transfers between vessels and checks that vessels do not fish in excess of their quotas. The department collects data on fishing and the catches landed by the Icelandic fleet and monitors compliance with rules on the weighing and recording of catches. Under a bilateral agreement between Iceland and the European Union (EU), Icelandic inspectors are required on board all EU fishing vessels in Icelandic waters **UK & Ireland / EU** The rules of the Common Fisheries Policy (CFP) are decided by the Council of European Fisheries Ministers, and it is then the responsibility of each Member State to see that these rules are		

		implemented by their own operators and in their national waters. This means not only ensuring that operators know what the rules are, but controlling whether they are following those rules in practice, and where this is not the case, taking effective action to enforce the law. In practice, CFP control as carried out by the Member States' control authorities can be broken down into three broad areas: conservation, structures, and markets. Conservation measures cover issues such as quota management or the implementation of technical measures (e.g. mesh sizes). Inspections are used to ensure that the fishing gear on board vessels meets official norms and that the information entered in log-books. Structural policy plays a key role in the search for a balance between the fishing capacity of Member States, the fishing effort actually deployed, and the available fish resources. Checks are therefore necessary to establish that allocated days-at-sea have not been exceeded. Finally, national inspections are not limited to the catching sector, but also include all operations from landing and marketing to storage and transportation. Operators must, at all times, be in possession of proper documentation detailing the origin, nature, quantity and quality of fish involved in transactions, so that it can be cross-checked with data in log-books and from other sources, such as fish auctions. The UK Marine Management Organisation, and Irish Sea Fisheries Protection Authority are the competent authorities with responsibility of enforcement of sanctions and penalties with respect to the prosecution of fishery rules in each country. National fishing control systems apply EU access regulations in combination with regulations of the total fleet capacity measured by tonnage and engine power. Vessels must be registered and authorised through individual licensing. Legal instruments are brought into force through Ministerial Orders and largely reflect EU Regulations within the CFP framework. **Norway** Norwegian fisheries regulations are enforced at sea, when the fish is landed and when it is exported. At sea, the Coast Guard is responsible for inspecting fishing vessels and checking their catch against		

		their log books. Both Norwegian and foreign fishing vessels are subject to stringent controls in all Norwegian fishing waters. The activity of the Coast Guard is generally considered vital for the functioning of the management regime as a whole. The Coast Guard performs more than 1800 inspections of Norwegian and the foreign vessels that fish in Norwegian waters annually. Vessels over 24 meters (15 meters for vessels from EU) are required to carry satellite transponders that makes it possible to track their activity 24 hours a day all around the year. The Directorate of Fisheries also inspects activities on the fishing grounds. When catches are landed, the landing data are checked against the fishing rights of the vessel. This task is performed by the fish sales organisations and the Directorate of Fisheries. The Directorate also performs physical inspections of landings. The Directorate also performs physical inspections of landings. When irregularities are detected, at sea or on landing or through later controls, serious cases are referred to the courts. Controlling the fishing on shared fish stocks requires close cooperation between the relevant states. Norway currently has co-operative agreements with Russia, Iceland, England, Ireland, Scotland, Sweden, Denmark, Faroe Islands, Netherlands, Germany, Portugal, Canada and Poland.		

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