

**MOODY MARINE LTD**

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**MSC Assessment Report for**  
**Pelagic Freezer-Trawler Association Atlanto-Scandian Herring Fishery**  
**Client: Pelagic Freezer-Trawler Association**  
**Version 4: Final Report**  
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# 1 SUMMARY

1. This report sets out the results of the assessment of the Pelagic Freezer-Trawler Association Atlanto-Scandian Herring Trawl Fishery against the Marine Stewardship Council (MSC) Principles and Criteria for Sustainable Fishing. The assessment was carried out over the period November 2009 to March 2010.
2. The assessment was carried out by a team of three assessors: Jim Andrews, Guus Eltink and Stephen Lockwood. The assessment of Principle 1 was led by Stephen Lockwood; Principle 2 was led by Guus Eltink; and Principle 3 was led by Jim Andrews. A full account of the assessment team members' relevant experience is set out in section 10.1 of this report.
3. The evaluation process for this assessment involved gathering information relevant to the fishery during a site visit in IJmuiden; discussions with experts and stakeholders; and reviewing relevant literature. The assessment team then compiled a draft report, and met to 'score' the performance of the fishery. The draft report that was produced by the team has been considered by the client, subject to peer review, and then published for stakeholder comment (in March 2010) before being published as a Final Report on the MSC website (in June 2010).
4. The main strengths of this fishery are that the stock is well researched and in a good state; the fishery and its interactions have been studied by international scientists for a considerable time; and the client is a large, well-organised association with clear policies and procedures in place for managing its activities. The client fleet operates under a statutory management regime that links together scientific advice and fisheries regulation. Compliance with this regime is measured and is reported to be good.
5. The team did not identify any significant weaknesses in the status of the target stock, the effects of the fishery on the marine environment, or the management regime for the fishery. These findings echo those of the previous assessments of fisheries prosecuting this stock against the MSC Principles & Criteria.
6. Moody Marine has determined that this fishery should be certified according to the Marine Stewardship Council Principles and Criteria. No conditions were identified. This outcome is consistent with the findings of other assessments relating to this stock.

## 2 INTRODUCTION

This report sets out the results of the assessment of the Pelagic Freezer-Trawler Association Atlanto-Scandian Trawl Fishery against the Marine Stewardship Council (MSC) Principles and Criteria for Sustainable Fishing.

### 2.1 The fishery proposed for certification

The client for this assessment is the Pelagic Freezer-Trawler Association, which is an international association of ten companies based in five EU Member States. The membership of the PFA, and the vessels that are proposed for inclusion in this assessment are set out in Table 1.

The MSC Guidelines to Certifiers specify that the unit of certification is "*The fishery or fish stock (=biologically distinct unit) combined with the fishing method/gear and practice (=vessel(s) pursuing the fish of that stock)*" The fishery proposed for certification is therefore defined as:

<b>Species:</b>	Herring ( <i>Clupea harengus</i> ) Atlanto-Scandian / Norwegian Spring Spawning Stock
<b>Geographical Area:</b>	ICES Divisions IIa and IIb
<b>Method of Capture:</b>	Pelagic Trawl
<b>Stock</b>	Atlanto-Scandian / Norwegian Spring Spawning Herring
<b>Management:</b>	The main agreement for dividing and managing the TAC is the coastal states agreement between EU, Norway, Iceland, Faroes and Russia. The agreements are implemented in Norway under National management systems and advised by ICES.
<b>Client Group:</b>	PFA Members only

In the course of the certification it is possible that further companies/vessels may join the client group. This would be in accordance with the MSC's stated desire to allow fair and equitable access to the certification. Any changes to the membership of the client group on a permanent or temporary basis will be reported on an ongoing basis by the client and reviewed at annual surveillance audits.

## **2.2 Report Structure and Assessment Process**

The aims of the assessment are to determine the degree of compliance of the fishery with the MSC Principles and Criteria for Sustainable Fishing, as set out in Section 8.

This report sets out:

- the background to the fishery under assessment and the context within which it operates in relation to the other areas where the target species is fished
- the qualifications and experience of the team undertaking the assessment
- the standard used (MSC Principles and Criteria)
- stakeholder consultation carried out. Stakeholders include all those parties with an interest in the management of the fishery and include fishers, management bodies, scientists and environmental Non-Governmental Organisations (ENGO's)
- the methodology used to assess ('score') the fishery against the MSC Standard.
- a scoring table with the Scoring Indicators adopted by the assessment team and Scoring Guidelines which aid the assessment team in allocating scores to the fishery. The commentary in this table then sets out the position of the fishery in relation to these Scoring Indicators.

The intention of the earlier sections of the report is to provide the reader with background information to interpret the scoring commentary in context.

Finally, as a result of the scoring, the Certification Recommendation of the assessment team is presented, together with any conditions attached to certification.

In draft form, this report has been subject to critical review by appropriate, independent, scientists ('peer review'). The comments of these scientists are appended to this report. Responses are given in the peer review texts and, where amendments are made to the report on the basis of peer review comments; these are also noted in the peer review text. Following peer review, the report was released for public scrutiny on the MSC website.

The report, containing the recommendation of the assessment team, any further stakeholder comments and the peer review comments has then been considered by the Moody Marine Governing Board (a body independent of the assessment team). The Governing Board has made the final certification determination on behalf of Moody Marine Ltd.

It should be noted that, in response to comments by peer reviewers, stakeholders and the Moody Marine Governing Board, some points of clarification may have been added to the final report.

This final report, containing the Moody Marine Ltd Determination and all amendments, has been released for further stakeholder scrutiny.

## **2.3 Stakeholder meetings attended**

Information used in the main assessment has been obtained from interviews and correspondence with stakeholders in this fishery, notably:

- I1. Interview with client: Gerard van Balsfoort (Chairman of PFA), IJmuiden, 5<sup>th</sup> January 2010
- I2. Interview with Johan Muller, Fleet Manager, Cornelis Vrolijk's Visserij Maatschappij BV, IJmuiden, 5<sup>th</sup> January 2010
- I3. Interview with Arie K. Guyt, skipper of fishing vessel Maartje Theadora, Amsterdam, 5<sup>th</sup> January 2010.
- I4. Interview with Cor van Duyn, production manager, fishing vessel Maartje Theadora, Amsterdam, 5<sup>th</sup> January 2010.
- I5. Interview with Maarten van Klaveren, skipper of fishing vessel Cornelis Vrolijk, IJmuiden,

- 5<sup>th</sup> January 2010
- I6. Interview with P.A. van der Plas, production manager, fishing vessel Cornelis Vrolijk, IJmuiden, 5<sup>th</sup> January 2010.
  - I7. Interview with Frans van Beek, IMARES, IJmuiden, 6<sup>th</sup> January 2010.
  - I8. Interview with Gerard Reijmer, General Inspection Service, The Hague, 7<sup>th</sup> January 2010.
  - I9. Interview with Henk Offringa, Policy Advisor, Ministry of Agriculture, Nature & Food Quality, The Hague, 7<sup>th</sup> January 2010.
  - I10. Interview with Inge Janssen, Policy Advisor, Ministry of Agriculture, Nature & Food Quality, The Hague, 7<sup>th</sup> January 2010.
  - I11. Interview with Laurent Gorissen, Quota Manager, Ministry of Agriculture, Nature & Food Quality, The Hague, 7<sup>th</sup> January 2010.
  - I12. E-mail correspondence from Marine and Fisheries Agency concerning compliance of the PFA fleet in the UK, 25<sup>th</sup> March 2010.
  - I13. E-mail correspondence concerning levels of compliance from local fishery officer, Ministry of Agriculture, Nature and Food Quality, IJmuiden, 13<sup>th</sup> April 2010.
  - I14. Letter from Mr Lutz Wessendorf, Bundesanstalt für Landwirtschaft und Ernährung (BLE), Hamburg, concerning enforcement activities and levels of compliance by PFA vessels in Germany, 19<sup>th</sup> April 2010.

## 2.4 Other information sources

Published information and unpublished reports used during the assessment are listed below:

ACOM (2009). Norwegian spring-spawning herring. ICES Advice, Book 9: 9.4.5. <http://www.ices.dk/products/icesadvice.asp>

AFWG 2009. Report of the Arctic Fisheries Working Group (AFWG). ICES CM 2009\ACOM:02 588pp.

Angerman, H., Lund, O. & Rasmussen, B. (1961). Norway's fishing industry. In: Atlantic Ocean Fisheries (Borgstrom, G. & heighway, A.J. eds), pp 69–85. London: Fishing News Books.

Barrett, R.T., Anker-Nilssen, T., Gabrielsen, G.W. and Chapdelaine, G. 2002. Food consumption by seabirds in Norwegian waters. ICES Journal of Marine Science, 59: 43–57.

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BFAFI, (2010b). The proposed tracks of the different vessels participating in the international hydroacoustic survey on herring and blue whiting. Available from [http://www.bfa-fish.de/cln\\_012/nn\\_820230/SharedDocs/Bilder/Institute/ISH/Forschungsreisen/2007/da\\_05-2007\\_fig1\\_en.html](http://www.bfa-fish.de/cln_012/nn_820230/SharedDocs/Bilder/Institute/ISH/Forschungsreisen/2007/da_05-2007_fig1_en.html). Accessed 7<sup>th</sup> February 2010.

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Europa, (2009). Activities of the European Union: Summaries of legislation. FIG – Financial Instrument for Fisheries Guidance. Viewed at <http://europa.eu/scadplus/leg/en/lvb/l60017.htm>

European Commission (2009(a)). Common Fisheries Policy. Viewed at [http://ec.europa.eu/fisheries/cfp\\_en.htm](http://ec.europa.eu/fisheries/cfp_en.htm)

European Commission (2009(b)). Fisheries Compliance Scoreboard. Viewed at [http://ec.europa.eu/fisheries/cfp/control\\_enforcement/scoreboard\\_en.htm](http://ec.europa.eu/fisheries/cfp/control_enforcement/scoreboard_en.htm)

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Helmond van A.T.M. and Overzee van H.M.J. 2009. Discard sampling of the Dutch pelagic freezer fishery in 2003-2007. CVO report 09.001 (<http://www.cvo.wur.nl/default.asp?ZNT=S0T2O463>)

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### 3 GLOSSARY OF ACRONYMS AND ABBREVIATIONS USED IN THE REPORT

ACOM	ICES Advisory Committee on Management
ASH	Atlanto-Scandian herring
<i>B</i>	Biomass, the sum total of living matter
CFCA	Community Fisheries Control Agency
EC	European Commission
EEZ	Exclusive economic zone
EU	European Union
<i>F</i>	Instantaneous rate of fishing mortality
HCR	Harvest control rule
ICES	International Council for the Exploration of the Sea
IMARES	Institute for Marine Resources and Ecosystem Studies (Dutch institute for fisheries Research)
IMR	Norwegian Institute of Marine Research
ITQ	Individual transferable quota
IUU	Illegal, unreported and unregulated (IUU) fishing
lim (subscript)	Limit reference point for a stock parameter which should not be exceeded (for Biomass, $B_{lim}$ is the <u>minimum</u> acceptable biomass; for fishing mortality $F_{lim}$ is the <u>maximum</u> acceptable level of fishing mortality).
<i>M</i>	Instantaneous rate of natural mortality
mgt (subscript)	Management target
MSC	Marine Stewardship Council
msy (subscript)	Maximum sustainable yield
NASCO	North Atlantic Salmon Conservation Organization
NEAFC	North East Atlantic Fishery Commission
NSSH	Norwegian spring-spawning herring
OSPAR	(Oslo & Paris) Convention for the protection of the marine environment of the North Atlantic
pa (subscript)	Precautionary approach
PFA	Pelagic Freezer trawler Association
SSB	Spawning stock biomass
TAC	Total allowable catch
VMS	(Satellite) Vessel monitoring system
WGPNBW	ICES Working Group on Northern Pelagics and Blue Whiting
WGWD	ICES Working Group on Widely Distributed Species

## 4 BACKGROUND TO THE CLIENT FISHERY

The Atlanto-Scandian Herring Stock is currently the world's largest herring stock and the largest commercial fish stock in the North East Atlantic. Several fleets of vessels prosecuting this stock have already attained MSC certification. This section sets out the background to the MSC certification assessment of the Pelagic Freezer-Trawler Association Atlanto-Scandian Herring fishery.

### 4.1 The Client

The Pelagic Freezer-Trawler Association (PFA) represents the interests of ten European pelagic freezer-trawler companies on an international level. It has members in the UK, Ireland, France, Germany, Lithuania and the Netherlands. All of its members catch and process pelagic fish for human consumption. The PFA fleet currently comprises a total of 27 freezer-trawler vessels, ranging in size from 55 to 140 metres overall length (see section 4.3). 26 of these vessels are included in the unit of certification for this fishery (see Table 1)

The PFA plays an active role in various sectoral and international bodies where fisheries policy is discussed and advice is formulated. These include the European Regional Advisory Council for pelagic stocks (the Pelagic RAC), and the Regional Advisory Council for the EU fleet that operates in external waters (the Long Distance RAC). The PFA is also represented in the pelagic working group of the European Association of Producers Associations as well as in *Europêche* / Cogeca and the Advisory Committee on Fisheries Affairs (ACFA), an official advisory body of the European Commission. The PFA serves as a point of contact for the EC, national administrations, regional fisheries organisations and other stakeholders on issues concerning pelagic freezer trawling.

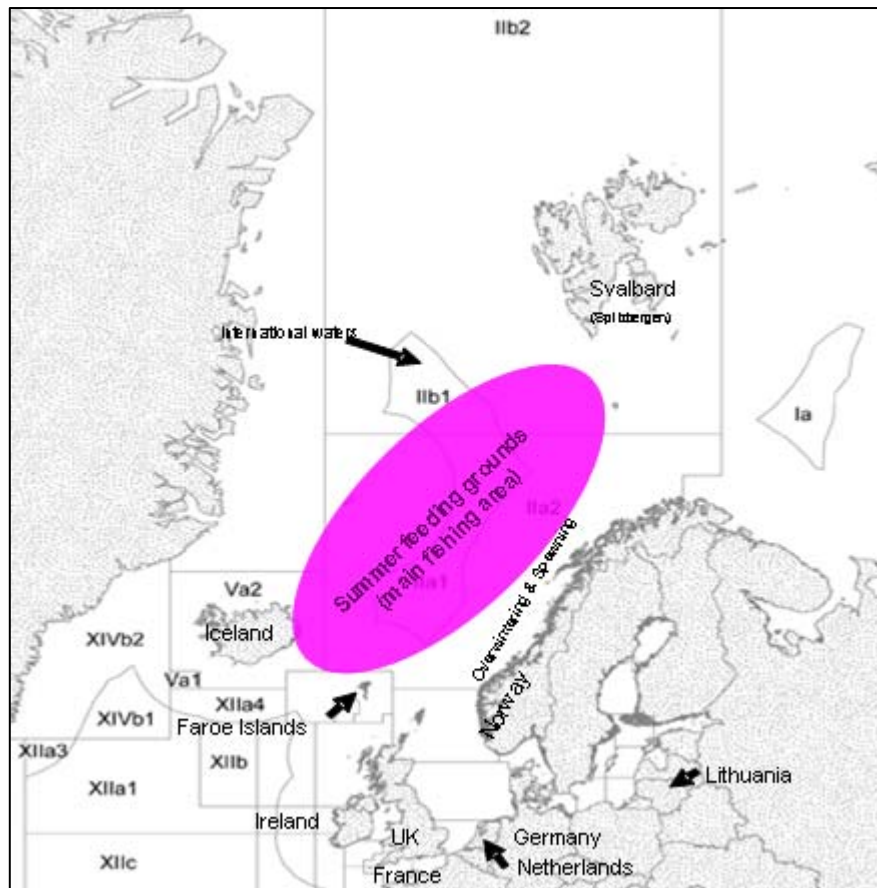
Another important role of the PFA is to set an over-arching operational policy for its members. This is set out in a policy document "*Pelagic fishing activities: sustainable development anchored in policy*" (PFA, 2000). The complete text of this PFA policy document is added as Appendix C (section 18) to this report. All of the PFA's members are required to adhere to this policy which aims to encourage regional co-operation, prevent over-fishing and reduce by-catches.

### 4.2 Location of the fishery

The Atlantic herring *Clupea harengus* is found throughout the temperate-sub-polar regions of the North Atlantic from the east coast of North America, around Iceland, into the Barents Sea, around the British Isles and south as far as the Bay of Biscay. Within this global distribution the species is divided into a number of more or less independent stocks; i.e. populations separated from their neighbouring populations by physical or hydrographic boundaries and showing different variations in morphology, growth, spawning season and recruitment characteristics. Among the largest of the herring stocks is the Atlanto-Scandian herring (ASH – but referred to by ICES as Norwegian spring-spawning herring; NSSH) stock.

The ASH occupies an area of the NE Atlantic more or less bounded by Norway–Faroe–Iceland–Svalbard (Spitzbergen) (Figure 1) and it is this ASH stock that is the subject of this assessment. This stock is located in ICES fishery areas IIa and IIb.

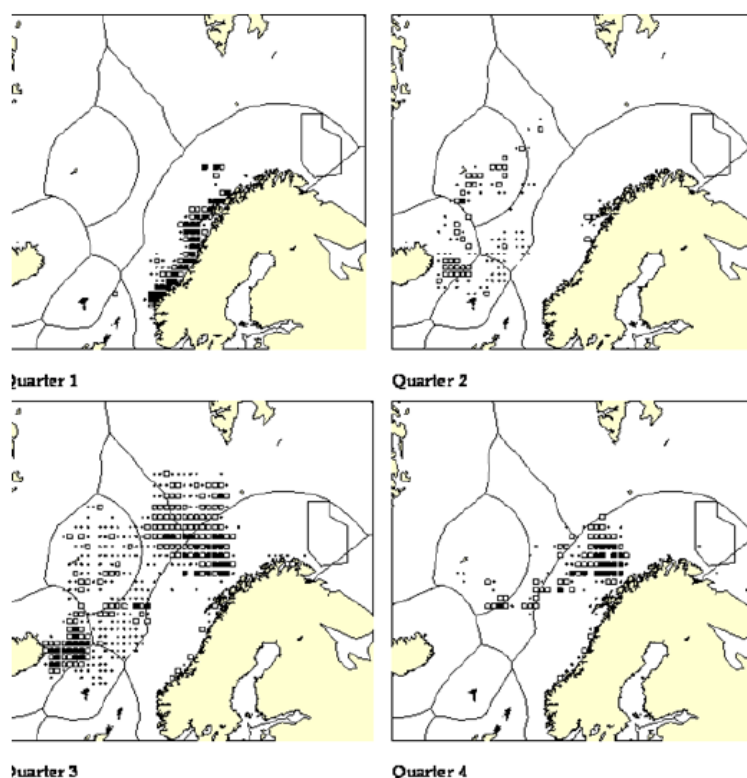




**Figure 1:** Chart illustrating the location of the proposed unit of certification, countries named in the text, ICES fishery areas and the annual migration path of Atlanto-Scandian herring. The fishery is based in ICES areas Ila1, Ila2, Iib1 and Iib2, the summer feeding area of the stock.

The annual fishery begins inshore along the west coast of Norway in spring (Figure 2) where mature fish spawn. After spawning, adult fish move north–northwest to summer feeding grounds between Svalbard (Spitzbergen) and Iceland during which time they are fished by the international fleet (Figure 2, Quarter 3). The migration reverse in late summer autumn (Figure 2, Quarter 3) when the fish return to Norwegian waters (Figure. 2, Quarter 4) to overwinter and spawn once more. Fishing in the second quarter of the year tends to be concentrated in the westernmost part of the stock distribution, between Faroe Islands and Iceland.





**Figure 2:** Total reported catches of Atlanto-Scandian herring in 2008 by quarter and ICES rectangle. Grading of the symbols: black dots less than 300 t, open squares 300–3000 t, and black squares > 3000 t (WGWIDE, 2009).

### 4.3 Fleet and Gear Description

All the vessels in the client fleet are pelagic freezer trawlers. All use mid-water trawls when fishing for ASH. None of these trawls is rigged for bottom-skimming semi-pelagic fishing; therefore, there is no seabed contact by any part of the fishing gear during normal fishing operations. None of the vessels' trawls are equipped with either escape panels or sorting grids as a norm. All catches are processed and frozen on board. All vessels are equipped with dual-frequency, multi-beam echo sounders and sonar plus trawl-mounted acoustic catch sensors.

The vessels carry a variety of nets on board. These are designed to optimise catching efficiency and selectivity for different target species of fish. The trawls typically used for herring have a mouth around 150m wide and 50m deep. The net construction uses a variety of mesh sizes and shapes, ranging from over 24cm in the mouth of the net to a cod end mesh of 20mm. Fish are caught at depths between the surface and a depth of 400m. Nets are towed at a speed of around 3-4 knots (slower in cold water; faster in warmer water).

The Pelagic Freezer-trawler Association holds individual transferable quota (ITQ) for ASH issued by the Dutch fishery authorities and catch entitlements of ASH in France and Germany. The PFA distributes the quota among the member vessels comprising the PFA fleet. The quota allocation can be made by transfer from one member state to another via the vessel's flag-state fishery authorities. Catches are then recorded against the flag state even though (virtually) all PFA vessel landings are made to ports in the Netherlands. (See section 7 for greater detail of quota allocation and management.)

The fleet proposed for certification is listed in Table 1.

**Table 1:** List of the vessels and companies in the Pelagic Freezer-Trawler Association<sup>1</sup>

Company	Vessel name	Registration	Flag state
<b><i>Dutch Members of PFA</i></b>			
Jaczon BV	Afrika	SCH-24	NL
	Zeeland	SCH-123	NL
	Wiron 5	SCH-22	NL
	Wiron 6	SCH-23	NL
Parlevliet & van der Plas BV			
	Dirk Diederik	KW-172	NL
	Annelies Ilena	KW-174	NL
W. van der Zwan BV	Alida	SCH-6	NL
	Franziska	SCH-54	NL
	Ariadne	SCH-303	NL
	Oceaan IV	SCH-333	NL
	W. van der Zwan	SCH-302	NL
Cornelis Vrolijk's Visserij Maatschappij BV	Carolien	SCH-81	NL
	Frank Bonefaas	SCH-72	NL
<b><i>UK Members of PFA</i></b>			
Interfish Ltd	Wiron 1*	PH-110	UK
	Wiron 2*	PH-220	UK
North Atlantic Fishing Company Ltd	Cornelis Vrolijk Fzn	H-171	UK
	Atlantic Princess	H-90	UK
<b><i>German Members of PFA</i></b>			
Doggerbank Seefischerei GmbH	Jan Maria	BX-783	D
	Maartje Theadora	ROS-171	D
	Annie Hillina	ROS-170	D
	Helen Mary	ROS-785	D
France Pélagique s.a.r.l	Sandettie	FC-716999	FR
	Prins Bernhard	FC-716900	FR
	Scombrus	FC-716630	FR
<b><i>Irish member of PFA</i></b>			
Jaczon Ireland Ltd	Johanna Maria	SO-117	IE
<b><i>Lithuanian Members of PFA</i></b>			
UAB Atlantic High Seas Fishing Company	Margiris	KL-749	LT

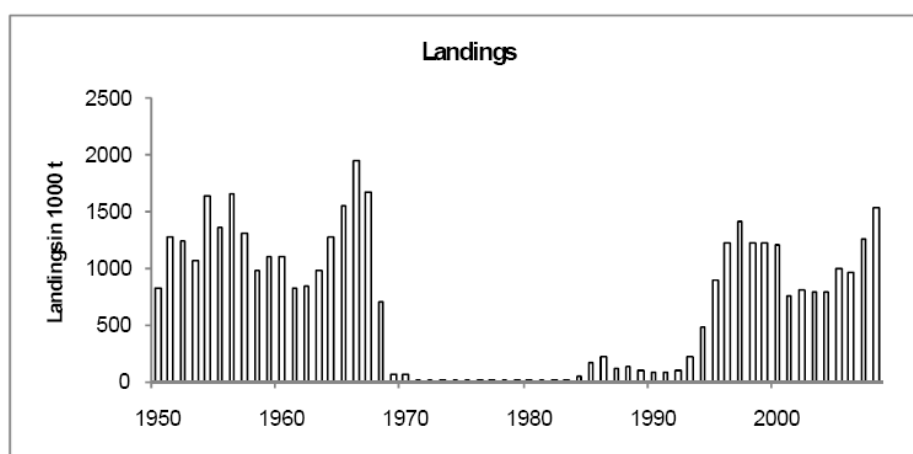
\* The two Wiron vessels are pair trawlers.

<sup>1</sup> In the course of the certification it is possible that further companies/vessels may join the client group. This would be in accordance with the MSC's stated desire to allow fair and equitable access to the certification. Any changes to the membership of the client group on a permanent or temporary basis will be reported on an ongoing basis by the client and reviewed at annual surveillance audits.

#### 4.4 Recent history of the international fishery

Historically, and in common with other fisheries for pelagic species, ASH were caught exclusively by drift nets in and relatively small amounts were caught by purse-seiners and ring-netters that operated only in sheltered coastal waters and fjords. Following the Second World War pelagic trawling was increasingly adopted by some European fishing fleets, including the Dutch (Postuma, 1972; Postuma & Zijlstra, 1964).

By the mid 1950s the total ASH landings reached 1.5 Mt (Figure 3) and then showed signs of decline. This trend was reversed following the introduction of single-boat purse-seining techniques and the Puretic power block (Angerman et al., 1961; Kristjonsson, 1968; Fridman, 1998). Both innovations enabled the pursers to handle the gear and catch more quickly than previously and fish with greater safety in the open sea. However, this rapid expansion in fishing effort proved unsustainable and resulted in the collapse of all NE Atlantic herring stocks and landings, including the ASH (Figure 3.; Bull. Stat., 1975).



**Figure 3:** Total landings of Atlanto-Scandian herring (ASH) reported to ICES 1950–2008 (ACOM, 2009).

Following this collapse there was a prolonged period of recruitment failure and not until the mid 1980s did slightly increased landings indicate the first small signs of stock recovery. Following the introduction of more rigorous and robust international management measures in the 1990s (ACOM, 2009) the stock has increased and landings have been relatively stable around one million tonnes ( $\pm c. 25\%$ ) for more than a decade (Figure 3).

In summarizing recent trends, ICES (ACOM, 2009) has noted that: “Due to limitations for some countries to enter the EEZs of other countries in 2008, the fisheries (Figure 2) do not necessarily depict the distribution of herring in the Norwegian Sea. A special feature of the summer fishery in 2005 and 2006 was the prolonged fishery in the Faroese and Icelandic zone up to late August, where the oldest age groups were present in the second and third quarter. In 2007 and 2008 a clean herring fishery was hampered by mixture of mackerel schools in the area. This was especially the case for the Faroese fleet, which usually targets mackerel later in the year (October November).”

## 4.5 The PFA fishery

Typically, the PFA fishery takes place in the third quarter of the year, in the eastern part of ICES area IIa1, and also in areas IIa2, IIb1 and IIb2 (see Figure 1). The fish are caught in the upper half of the water column, in waters over 1000m deep. Catches are taken on board and initially placed in 50 t refrigerated storage tanks to bring the fish down to 0° C before processing. All fish are frozen on board and packed into (notional) 20 kg cartons, each labelled with species, actual weight of contents, date and location of capture. Irrespective of the vessel's flag state, virtually all PFA catches are landed in one of the major Dutch ports: Vlissingen, IJmuiden, Scheveningen. Before landing, the vessel must notify the receiving port fishery authorities of time and place of landing and the pallets of frozen fish may only be unloaded under the immediate supervision of a fishery inspector. The inspector checks each pallet against log-sheet records for total weight and a statutory subsample of pallets is set aside, allowed to thaw, and the actual carton contents weighed to verify the accuracy of the log-sheet and labelling records. (See section 7.3.3 for further details of monitoring and compliance.)

Whilst at sea, the total quantities of fish caught and location of capture are recorded daily on log sheets that must be up-to-date and available for inspection at any time at sea by a recognised NEAFC (international waters) or coastal-state (Faroe Islands, Iceland, Norway) fishery officer. All vessels participating in the offshore ASH fishery, including the PFA vessels, must be equipped with an operational vessel monitoring system (VMS) unit. Through the VMS, flag states can monitor the location of each of their vessels at any time and the Norwegian Coastguard can monitor the location of all nations' vessels when they are fishing in Norwegian waters.

On landing, a copy of vessel log sheets have to be available for inspection by the receiving port fishery authority and the top copy must be returned to the flag-state authorities immediately. Quantities of fish landed at non-flag-state ports (eg by PFA, UK-registered vessels landing in IJmuiden) are recorded and reported to the flag state by the receiving port authority. All officially recorded landing records are made available to ICES for use in the annual stock assessment. These data contain total catch in tons by quarter of the year and ICES rectangle (half degree latitude by one degree longitude; see Figure 2). The total reported catch in 2008 was 1 545 656 t (ACOM, 2009) of which the PFA catch was 36,900t (2.4%).

Under normal circumstances, there is a commercial imperative to take clean catches of ASH and avoid mixed catches as they have a lower landing value than do clean catches. All PFA vessels are equipped with multi-beam, multi-frequency sonar that provides a high degree of discrimination and enables an experienced skipper to identify shoal species with a high degree of reliability. This is made easier by the adult ASH occurring in isolation from both juvenile ASH and other species. Thus, on the overwhelming majority of occasions, each haul comprises a clean catch of mature, saleable herring. Only under rare circumstances of *force majeure* might a skipper be inclined to slip (i.e. release) a clean catch of herring. On comparably rare occasions a (relatively) clean catch of another species (most probably blue whiting, *Micromesistius poutassou*) might be taken and slipped<sup>2</sup> (legally, even in Norwegian waters) – if the PFA company does not have quota that will enable the vessel to retain and land the fish. In general, however, PFA vessels are expected to take all practical measures to avoid non-target species as it is company policy not to discard, slip nor high-grade<sup>3</sup> fish at sea (Appendix C (section 19)). (See section 6 for further discussion of discarding and slipping of non-target species.)

There are some occasions during a year when species other than ASH might be taken in small (trivial) quantities, most probably blue whiting or (more rarely) mackerel (*Scomber scombrus*). Even more rarely, during the course of a fishing trip (typically 2 weeks) a small number of individual salmon (*Salmo salar*; c. 40–50 cm), redfish (*Sebastes* spp.) and saithe (*Pollachius virens*) might be taken. Salmon go to the galley, redfish and saithe are sorted, recorded and retained, but usually go for

<sup>2</sup> Slipping - releasing a catch from the net without taking it aboard. Even if alive when released it is probable that the majority will subsequently die.

<sup>3</sup> High-grade – to slip or discard fish of a particular size and optimise quota by retaining fish of higher commercial value.

reduction to fish meal on landing as the quantities are too small to attract commercial interest (PFA pers. comm).

#### **4.6 Management regime**

The Atlanto-Scandian herring stock is distributed across in the northeast Atlantic and catches are taken in Norwegian, EU and international waters. The management objectives for the fishery are set by the “Coastal States Agreement” that has been established for the stock. The governments of Norway, Russia, Iceland, the Faroe Island and the European Community are all parties to this agreement. A TAC is agreed and shared by these parties in response to scientific advice on stock status every year.

Within the EU and Norwegian waters, the Coastal States agreement is implemented through further allocations of the TAC as quotas to fishing companies and Producer Organisations. National governments monitor landings from the fishery to ensure compliance with TAC and quota regulations. Enforcement activity is also carried out at sea to ensure that technical restrictions on fishing gear and regulations on catch composition and the size of fish retained by vessels are all met.

A full description of the management regime is set out in section 7 of this report.

## 5 THE TARGET SPECIES

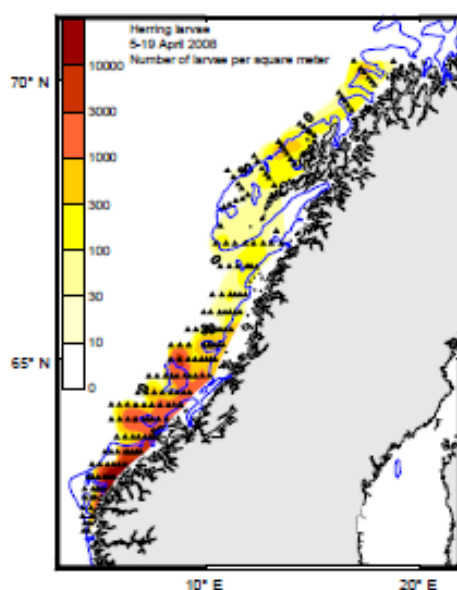
### 5.1 Biology of Atlanto-Scandian herring

#### 5.1.1 Distribution in space & time

Adult ASH undertake an annual migration around the Norwegian Sea from spring spawning grounds along the Norwegian coast (Figure 4) to the principal feeding areas in the north, towards and around Svalbard, and west towards Iceland. The distributional limits to these annual migrations are probably set by a combination of environmental variables but were first linked to temperature by Tåning *et al.* (1955).

The stock is considered to be distinct from neighbouring stocks, but around the extreme margins of this annual distribution pattern, it is possible that there is some intermixing with other NE Atlantic herring stocks: Icelandic herring in the west, Faroese in the south-west, West of Scotland and North Sea Buchan herring in the south, herring from the Skagerrak in the southernmost overwintering areas. The degree of mixing probably varies from year to year, depending on factors affecting the annual migrations of each of these adjoining stocks, but it is considered to be small relative to the size of the ASH stock and its long-term integrity as a unit stock.

In spring, mature ASH are found close inshore along the length of the Norwegian west coast where they spawn (Figure 4). After spawning the fish move west towards Iceland and in summer north-eastward and prior to overwintering east-south-east towards Norway (Figure 1). During this phase of their annual migration they are found in the upper half of the water column but typically in depths less than 1000 m.



**Figure 4:** Larval distribution of Atlanto-Scandian herring 2008. The 200 m isobath is also shown (WGWIDE, 2009).

Historically, adult ASH overwintered in the open ocean but following the stock collapse in the late 1960s this habit changed and overwintering fish were found among the islands and west-coast fjords of Norway (Røttingen, 2007). In recent years, however, there has been a reversion to the earlier pattern with the fish overwintering further offshore.

The Norwegian Institute of Marine Research (IMR) undertakes annual plankton surveys (Figure 4) to

estimate the abundance of ASH larvae as an index of spawning stock abundance. The 2009 larval abundance index was the lowest since 2003 but the larvae were larger than expected for the time of sampling (WGWISE, 2009). At present, it is a matter of speculation as to whether the low larval index is a function of late sampling (hence larger than expected larvae) or higher than usual predation on eggs or yolk-sac larvae. It is unexpected, and as yet unexplained, inter-annual fluctuations in spawning productivity such as this that make the relationship between spawning stock size and subsequent recruitment of juvenile fish to the spawning stock difficult to predict.

### **5.1.2 Fecundity, spawning & nursery areas**

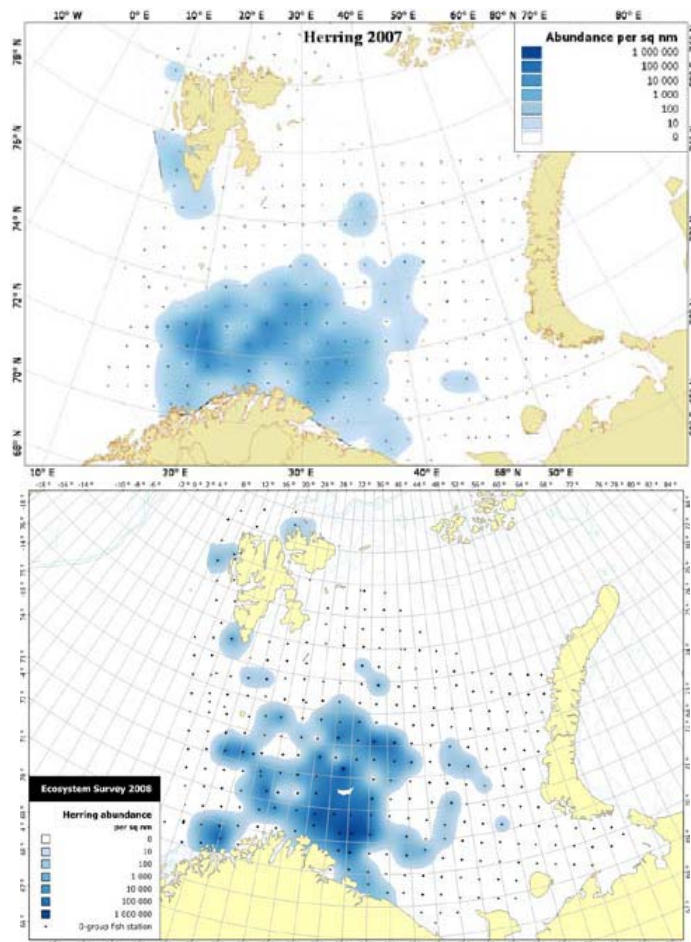
The number of eggs spawned by individual fish, its fecundity, is an approximate linear function of its weight. ASH have a fecundity from c. 20 000 (Óskarsson et al., 2002) to 50 000 eggs (Kurita et al., 2003), in the smallest fish, rising to 100 000+ eggs in the largest individuals. Herring are demersal spawners; their eggs stick to hard surfaces that can range from seabed gravel banks to the near-vertical face of fjords where they remain until hatching as yolk-sac larvae. The ASH spawn in spring between 62° and 71° N (Figure 4) and it takes several weeks (depending on temperature) before the larvae emerge. Once hatched, the larvae drift northwards in the Norwegian coastal current (see section 6). As the current approaches northern Norway it divides, taking some larvae, post-larvae and 0-group fish northwards to Bear Island and Svalbard but, in most years, the greater number are swept into the Barents Sea. The juvenile fish remain in the Barents Sea area for 2–4 years, gradually moving westwards until they join the adult stock as 3–5 year-old fish (WGWISE, 2008).

### **5.1.3 Recruitment**

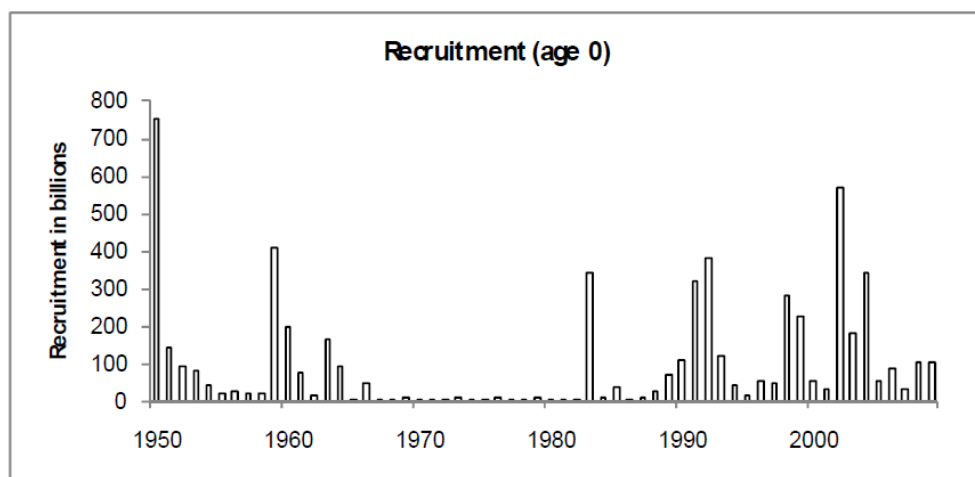
Estimates of juvenile recruitment are generated primarily through the standard ICES age-structured stock assessment procedures (WGWISE, 2009) but these estimates are moderated by recruitment indices gathered in the course of acoustic-trawl surveys in the Barents Sea, northern Norwegian Sea and south and east of Iceland (WGNPBW, 2007). The overwhelming majority 0–2 age-group ASH are found in the Barents Sea (Figure 5).

Even ignoring the prolonged period of recruitment failure following stock collapse in the late 1960s (section 4.2), it is clear that recruitment can fluctuate by at least two orders of magnitude (Figure 6). The reasons for this are numerous and far from certain. Water temperature and the wind-driven component of speed of the northbound Norwegian coastal current probably play a part. In particular they influence the distribution, and therefore vulnerability to predation, of larvae and early 0 groups as they pass chick-rearing puffin (*Fratercula arctica*) colonies along the north coast (Durant, et al., 2006). Sætre et al. (2002) have modelled these three variables to show an index of 0-group herring abundance the following summer.

To date, no reliable stock–recruitment relationship has been identified as weak year classes appear across the full range SSB (Figure 7). Nevertheless, the majority of the absolute lowest estimates of recruitment coincide with the absolute lowest estimates of spawning stock biomass (SSB).

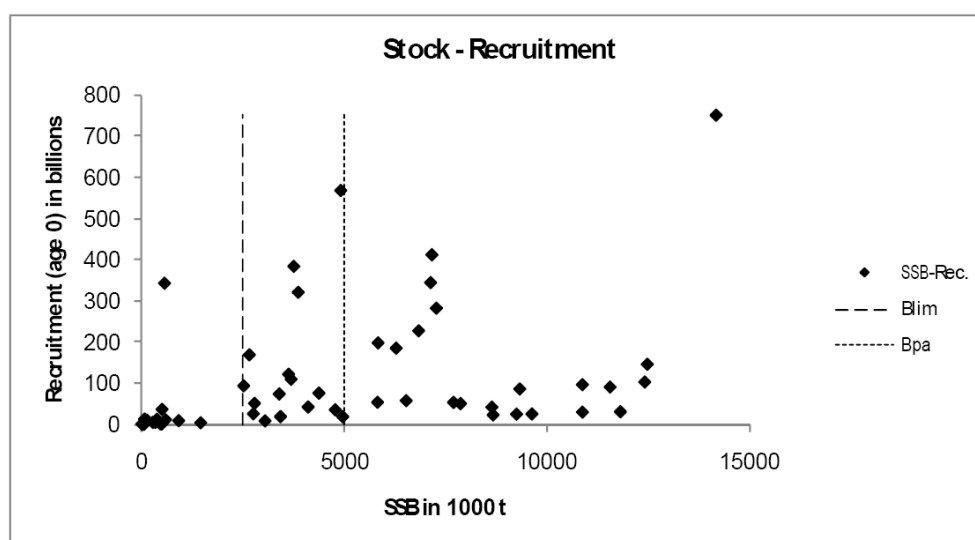


**Figure 5:** Atlanto-Scandian herring (ASH) 0 group surveys in August–September in the Barents Sea; 2007 (above) and 2008 (below).



**Figure 6:** Estimates of ASH 0 group recruitment 1950 – 2008 (WGWISE, 2009).





**Figure 7:** Relationship between estimates of spawning stock biomass (SSB) and 0 group recruitment (WGWIDE, 2009)

#### 5.1.4 Feeding

Throughout their life, herring are planktonic feeders. As post yolk-sac larvae they feed predominantly on phytoplankton but as they grow there is a progressive shift towards ever larger zooplankton. Adult herring feed selectively on large copepods, particularly *Calanus* spp., and euphausiids such as *Meganytiphanes norvegica*, but they will also take smaller specimens of other fish, including post-larval herring (Hardy, 1924).

#### 5.1.5 Predation & position in food web

In common with other abundant, shoaling pelagic species, herring are prey to a wide range of other species and play a key role in the NE Atlantic ecosystem (Hamre, 1994). From the very onset of spawning, herring are eaten by other fish: as eggs by (e.g.) haddock *Melanogrammus aeglefinus* (Toresen, 1991), as adults by (e.g.) spur dogfish *Squalus acanthias* (Hardy, 1959), seabirds such as puffin *Fratercula arctica* (Sætre *et al.*, 2002; Durant, *et al.*, 2006) and the full range of indigenous marine mammals, including killer whales *Orcinus orca* (van Opzeeland *et al.*, 2005). The dominant predator of herring in the area is cod (*Gadus morhua*) (Hamre, 2003).

It is inevitable, therefore, that whenever this stock has been subject to significant fluctuations, either through fishing or natural events, the predator populations will be prone to similar fluctuations unless there is sufficient alternative prey (Hamre, 1994) (these ecosystem relationships are discussed in greater detail in section 6).

#### 5.1.6 Natural mortality

Estimation of values for natural mortality,  $M$ , was reviewed by the ICES stock-assessment working group in 2008 (WGWIDE, 2008). It was agreed that for stock-assessment purposes,  $M = 0.9$  for ASH less than 3 years of age and  $M = 0.15$  for 3+ year olds (WGWIDE, 2008; 2009). Deviations about these figures can occur either due to variations in predator pressure or disease. Predation is assumed to be the principal causes of natural mortality but in recent years there has been an outbreak of the fungal parasite *Ichthyophonus* among Icelandic summer-spawning herring (Óskarsson & Pálsson, 2009). Infection results in loss of somatic condition, reduced swimming speed and possible damage to the heart and arterial system. It is estimated that more than 30% of the Icelandic spawning stock may be infected with a concomitant increase in natural mortality (NWWG, 2009). Although there is a degree of mixing between Icelandic summer-spawning and ASH, recent monitoring surveys have not indicated any significant infection of ASH (WGWIDE, 2009).

## 5.2 Stock status

Information in the paragraphs that follow is drawn almost exclusively from recent ICES stock assessment reports, notably, WGWIDE (2009) and the corresponding summary published by ICES in the annual ACOM (2009) report.

As the spawning is inshore (Figure 4) and the current system carries the larvae and juvenile fish northwards along the Norwegian west and north coast and into the Barents Sea (Figure 5), the international fishery in the open Norwegian Sea only exploits mature fish. The client's landing data was examined during the site visit to confirm this (I2).

### 5.2.1 Scientific stock monitoring & sampling programmes

Scientific research effort dedicated to the ASH stock tends to be in proportion to the quota allocations to each of the participating NEAFC signatories: EU, Faroe Islands, Iceland, Norway, Russia. Thus, the greater part of the research effort is committed by Norway but EU members states also contribute, both through the biological sampling programmes of their nationally registered fishing vessels and participating in research-vessel cruises. Each year the EC commissions a member state's research vessel (frequently the Danish RV *Dana*; Kloppmann, M., 2007) to participate in the Norwegian Sea ecosystem research programme. Member states with an active interest in the ASH fishery provide scientists to participate in the programme.

Biological sampling of PFA catches is undertaken by the Dutch Institute for Marine Resources & Ecosystem Studies (IMARES) in IJmuiden and by the German Institute of Sea Fisheries in Hamburg. Each year, scientists sail on a number of these PFA fishing vessels some of which usually include a vessel fishing ASH in the Norwegian Sea. On these occasions, unsorted biological samples are taken from the trawl as the catch is pumped aboard. As well as recording lengths, weights, maturity and taking otoliths from representative samples, records are kept and samples taken of non-target species. In addition to this observer-based sampling programme, IMARES has an arrangement with the PFA whereby samples of unsorted catch are frozen and returned to IJmuiden for analysis at the IMARES laboratory. All of these data contribute to the ICES working group stock assessment (WGWIDE, 2009).

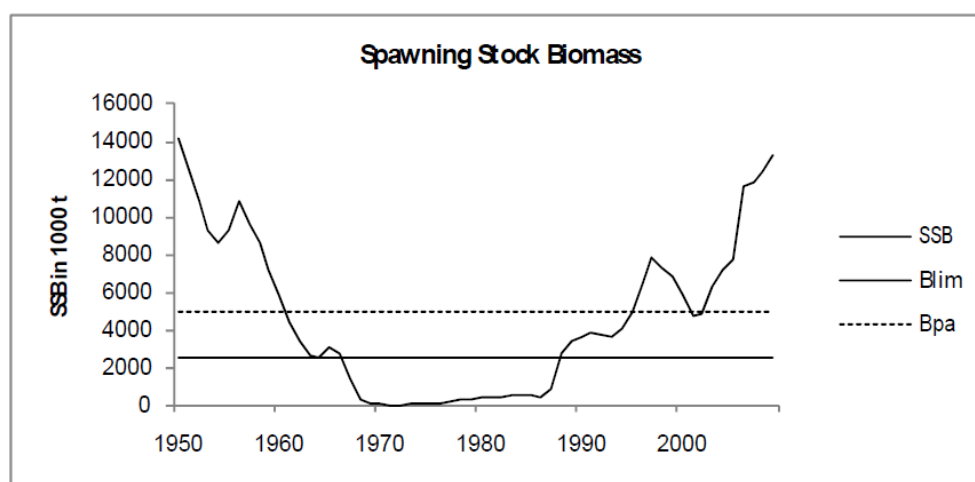
IMARES does not take biological samples at the port of landing as the catches are sorted and frozen by size category on board; i.e. landed catches are not representative of the population at point of capture. All landings are monitored continuously by the Dutch fishery authorities and landings are only permitted in the presence of a fishery inspector. The inspector checks the quantity of landed catch against the log-sheet records. Virtually all PFA vessel catches are landed in the Netherlands but occasionally German-registered PFA members will land in Germany where the landings are monitored as in the Netherlands. Annual total landings by Dutch vessels are notified to ICES for inclusion in the ICES working group stock assessment (WGWIDE, 2009), as are catches from all other nations participating in this fishery.

ICES is satisfied that international unreported and unrecorded catches are trivial relative to the total catch and that sampled catches accounted for 95% of the total catches. This level of sampling provides adequate data on length and age compositions of commercial catches, weight at age and maturity at age (WGWIDE 2009).

### 5.2.2 Scientific stock assessment

The annual stock assessment is undertaken with the most recent ICES-standard, age-structured virtual population analysis (VPA) model. This estimates numbers of fish at age in the population each year back to 1988 (the year when it is deemed that ASH had recovered from over-fishing and its prolonged period of recruitment failure) and stock projections for the current and following year. The numbers at age are converted to weights with weight-at-age data gathered as part of the biological sampling programme (Section 5.2.1). Simultaneously, the model estimates fishing mortality  $F$  for each age

group in each year by the corresponding ratio of catch at age and estimated stock size.



**Figure 8:** Estimates of Atlanto-Scandian herring spawning stock biomass 1950 – 2009, based on sampling and survey data 1988 – 2009 (WGWIDE, 2009; ACOM, 2009).

The current estimate for ASH spawning stock biomass (SSB) is c. 13 Mt, the highest it has been since 1988 and almost as high as the highest recorded estimate (1950; Figure 8). Even with a well-managed fishery showing high compliance with the regulations, it is anticipated that the SSB will decrease slowly over the next 2–3 years (c. 11 Mt in 2011) in response to the declining contribution by the strong 2002 and 2004 year classes (Figure 5.3.1b; ACOM, 2009). Nevertheless, the ICES view is that the stock continues to maintain its full reproductive capacity, i.e. there is no recruitment over-fishing, and that the stock is being exploited sustainably at current levels of fishing mortality.

Inevitably, there are uncertainties associated with the assessments, mostly stemming from the data upon which the assessments are based. ICES has highlighted these as:

*“There is uncertainty about recent recruitment estimates. A source of uncertainty is caused by the lack of coherence in some of the survey information for the youngest ages. In addition, the catch in 2008 from directed fisheries by Norway and Russia in the 3rd and 4th quarter contained relatively high numbers of 1 and 2 year olds (year classes 2007 and 2006). The available surveys, however, indicate that these year classes are not strong.*

*“There is uncertainty in the estimate of SSB and fishing mortality related to the exclusion of the 2009 survey point of the Norwegian herring larvae survey on the Norwegian shelf. Including the 2009 survey point would have resulted in the estimate of SSB being about 10% lower.*

*“The international ecosystem survey in the Nordic Seas in May is the most important survey in the assessment and will remain so in future assessments. It is important that this survey is maintained and that the vessels participating in this survey have access to the survey grounds. As well it is essential to maintain good geographical survey coverage to avoid increases in assessment uncertainty and maintain the integrity of the assessment.*

*“While discarding of this stock is estimated to be low, an un-quantified amount of slippage is known to occur, thus it has not been possible to account for slippage in the assessment.”*

The significance and implications of these uncertainties are evaluated in the course of the annual stock assessment. Over all, the ICES assessment working group is satisfied that the uncertainties do not have a significant influence on the most recent best-estimate of stock status and only the uncertainties

stemming from the most recent (and therefore least reliable) recruitment estimates have a major influence on stock forecast. The key feature here is that, on the basis of current recruitment indices, SSB will decline slowly in the immediate future but not to a level causing immediate concern.

### 5.2.3 *Biological reference points, uncertainty and assessment of harvest control rules*

ICES advice is provided, and the fishery is managed with respect to two paired reference points:  $B_{lim}$ , the absolute minimum acceptable spawning stock biomass below which there is assumed to be a significant risk of stock-related recruitment failure (Figure 5.2.2a), and  $F_{lim}$ , the corresponding fishing mortality rate;  $B_{pa}$  (and  $F_{pa}$ ), the minimum prudent level to which SSB should be allowed to fall without risk of recruitment failure. Ideally, a third reference point would be  $B_{msy}$  (and  $F_{msy}$ ) but this has not been estimated for this stock. Instead,  $F_{mgt}$  has been identified as a surrogate for  $F_{msy}$  in the agreed stock management plan.

The value for each of reference points in use since 1998 is :

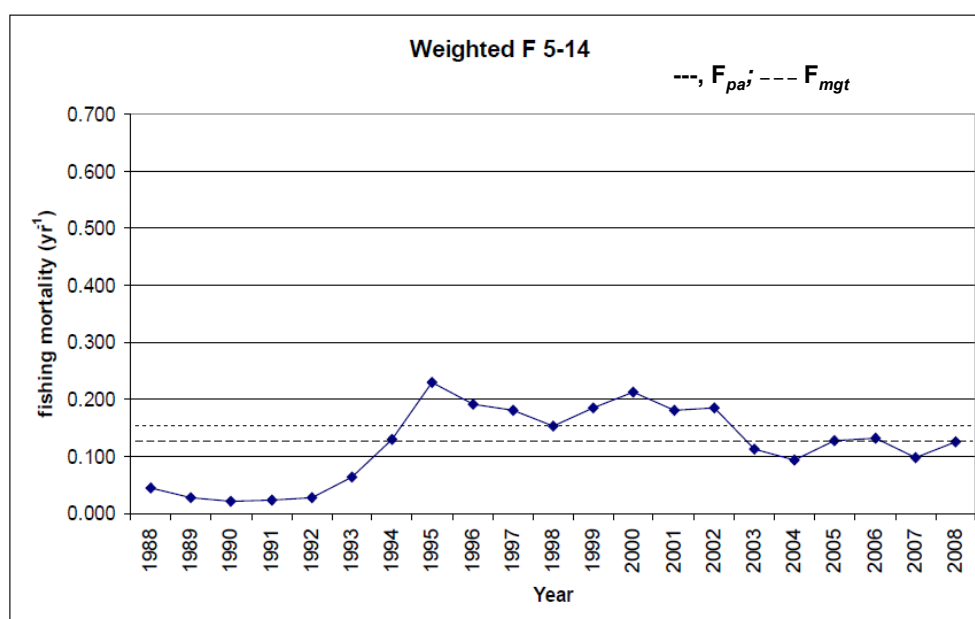
$$\begin{array}{ll} B_{lim} = 2.5 \text{ Mt} & F_{lim} = \text{not defined (but given as 0.05 in the management} \\ & \text{plan – below)} \\ B_{pa} = 5.0 \text{ Mt} & F_{pa} = 0.15 \\ & F_{mgt} \leq 0.125 \end{array}$$

They were agreed in 1999 as the basis for a long-term management plan among the ICES–NEAFC members that exploit the stock: EU, Faroe Islands, Iceland, Norway, and Russia (the “Coastal States Agreement”). The contracting parties agreed:

1. *Every effort shall be made to maintain a level of Spawning Stock Biomass (SSB) greater than the critical level ( $B_{lim}$ ) of 2 500 000 t.*
2. *For the year 2001 and subsequent years, the Parties agreed to restrict their fishing on the basis of a TAC consistent with a fishing mortality rate of less than 0.125 for appropriate age groups as defined by ICES, unless future scientific advice requires modification of this fishing mortality rate.*
3. *Should the SSB fall below a reference point of 5 000 000 t ( $B_{pa}$ ), the fishing mortality rate referred to under paragraph 2, shall be adapted in the light of scientific estimates of the conditions to ensure a safe and rapid recovery of the SSB to a level in excess of 5 000 000 t. The basis for such an adaptation should be at least a linear reduction in the fishing mortality rate from 0.125 at  $B_{pa}$  (5 000 000 t) to 0.05 at  $B_{lim}$  (2 500 000 t).*
4. *The Parties shall, as appropriate, review and revise these management measures and strategies on the basis of any new advice provided by ICES.*

Within this plan there is an explicit harvest control rule (para. 3) to be implemented in the event of SSB falling to  $\leq B_{pa}$ . ICES considers that this agreement is consistent with the precautionary approach.

When this management plan was first agreed (1999) the fishing mortality rate was greater than  $F_{pa}$  (but significantly lower than the peak value of  $F = 0.35$  estimated in the late 1960s immediately before the stock collapsed; ACOM, 2009). Once agreement was reached, it was 4 years before  $F$  fell below the level of  $F_{pa}$ , when it also fell just below  $F_{mgt}$  (Figure 9). Since 2003, the fishing mortality rate has been at or below  $F_{mgt}$  indicating that, year-on-year, the fishery is complying with the agreed management plan.



**Figure 9:** Estimates of fishing mortality on exploited age groups in the Atlanto-Scandian herring fishery 1988 – 2008 (modified from WGWIDE, 2009).

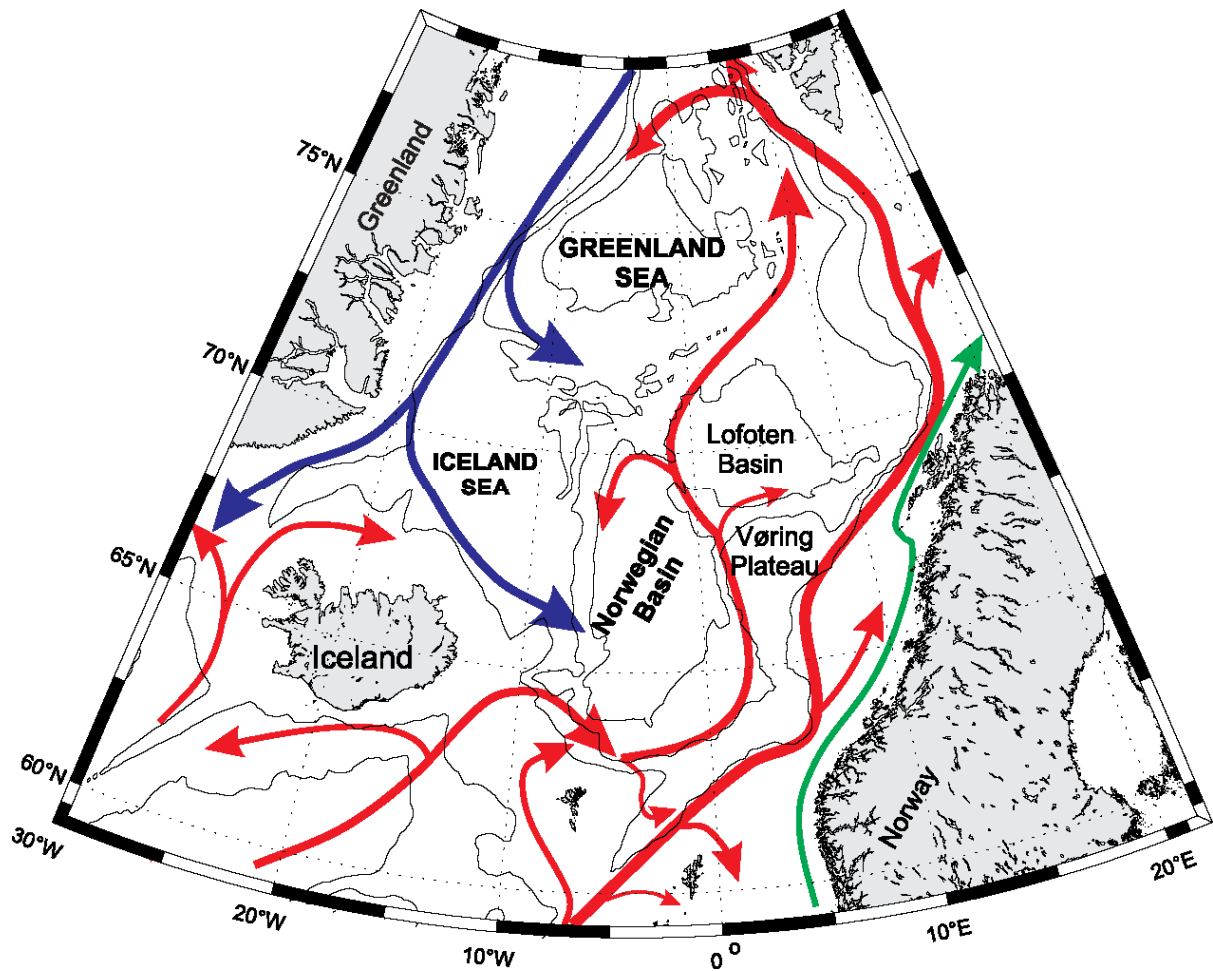
#### 5.2.4 *Scientific advice to managers*

The current ICES advice to fishery management bodies is that the ASH stock has full reproductive capacity, is being harvested sustainably and that the recent fishing mortality rate has been “at target”. Thus, the stock can continue to be exploited at a level  $\leq F_{pa}$ , i.e. equivalent to a total allowable catch for 2010 ( $TAC_{2010} \leq 1.5$  Mt). However, “In the absence of strong year classes after 2004, the stock is expected to decline in the near future even when fished according to the management plan. This is normal behaviour of stocks which show spasmodic recruitment dynamics. The decline of the stock will result in a reduction in the projected catches in incoming years” (ACOM, 2009). There is no other explicit advice on the management of this fishery.

## 6 ECOSYSTEM CHARACTERISTICS

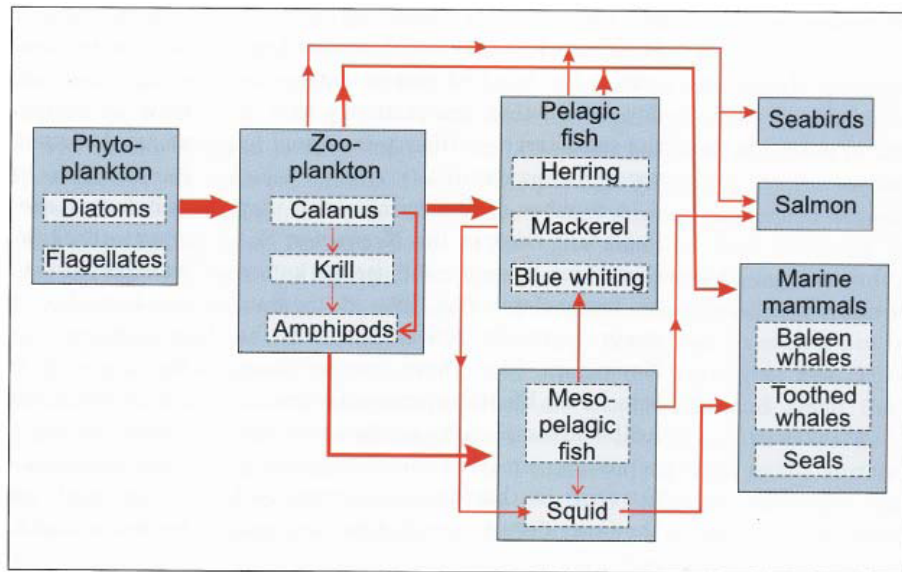
### 6.1 Overview

The information on ecosystem characteristics is based on information provided by ICES (2008) and Skjoldal *et al.* (2004). The circulation in the Norwegian Sea (Figure 10) is strongly affected by the topography.



**Figure 10:** Norwegian Sea surface current pattern. Red lines indicate warm currents, blue lines indicate cold currents and green lines show low salinity coastal water (ICES, 2008).

The North Atlantic Current transports warm and high salinity waters eastward from the Northwest Atlantic to the Northeast Atlantic mainly through the Faroe–Shetland Channel. The major part of the waters continues northward as the Norwegian Atlantic Current along the Norwegian shelf, but parts of it branches into the North Sea. In the Norwegian Sea low salinity coastal current flows from the North Sea in the south along the Norwegian coast into the Barents Sea. Relative cold, low salinity arctic water flows south along Greenland’s east coast into the western Norwegian Sea. The sea surface temperature has, since early 1980s, increased by up to 3° C (ICES, 2007(a)). The Norwegian Sea has an area of 1.1 million km<sup>2</sup> and an average depth of about 2000 m. The Norwegian Sea is divided into two separate basins with 3000 m to 4000 m depth, with a maximum depth of 4020 m. Along the Norwegian coast there is a relatively narrow continental shelf, which is between 40 and 200 km wide and which has varied topography and geology. This continental shelf varies in depths between 100 and 400 m.



**Figure 11:** Simplified diagram of the food web in the Norwegian Sea (Skjoldal, 2004).

The most important groups of phytoplankton are the diatoms and flagellates. The primary production peaks in spring. The zooplankton community is dominated by large calenoid copepods and euphausiids (krill) both important prey species groups for herring. In the Norwegian Sea, fish communities are dominated by large quantities of pelagic species, notably mackerel (*Scomber scombrus*), blue whiting (*Micromesistius poutassou*) and herring (*Clupea harengus*). All three species are widely distributed and are also found in the neighbouring seas. Because of the size of the stocks of these species they must be expected to have major influences on the ecosystem. Studies on this subject have, however, only been carried out to a limited degree and are mainly of a descriptive character. In the Barents Sea capelin (*Mallotus villosus*) is the dominant pelagic species along with the (predominantly) juvenile NSS herring.

The most important commercial demersal species are cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*) and saithe (*Pollachius virens*). The demersal species are in general connected to the eastern shelf area and mainly present in the Norwegian Sea during spawning. The fish then migrate back to the Barents Sea for feeding. The fry, also in general, drift out of the Norwegian Sea and into the Barents Sea. As compared to the pelagic species the demersal stocks must accordingly be regarded as less significant for the Norwegian Sea ecosystem as a whole.

Barrett et al. (2002) estimated that about 6.1 million seabirds breed along the Norwegian coast of the Norwegian Sea. In addition about 270 000 pairs breed on Jan Mayen, large numbers of northern fulmars (*Fulmarus glacialis*) are spread over most of the Norwegian Sea throughout the year, and a similarly large number of little auks (*Alle alle*) breeding in the Barents Sea along the Norwegian coast. The total consumption by all marine birds in the Norwegian Sea was estimated by Barrett et. al. (2002) to be nearly 680 000 tonnes; this may affect the abundance of fish (Sætre et al (2002).

The most recent estimates of abundance suggest that there are approximately 600 000 harp seals (*Phoca groenlandica*) and 70 000 hooded seals (*Cystophora cristata*) in the North East Atlantic (ICES 2007(b)). Harp seals feed primarily on zooplankton (krill and amphipods) and pelagic fish such as polar cod (*Boreogadus saida*) and capelin (*Mallotus villosus*), whereas hooded seals feed on squid, polar cod and benthic fish species such as redfish (*Sebastes* spp.) and Greenland halibut (*Reinhardtius hippoglossoides*).

The Norwegian Sea has abundant stocks of whales feeding on plankton, pelagic fishes and Cephalopods. Large whales visit the area in summer while representatives of the smaller toothed whales stay there all year around.



The following information is from ICES Advice 2009 (book 9):

- Impacts of fisheries in the ecosystem:  
*The herring in the Northeast Atlantic stock is a straddling stock. Juveniles and adults of this stock form an important part of the ecosystem in the Barents Sea, the Norwegian Sea, and the Norwegian coast. Herring is an important food resource for higher trophic level predators (e.g. large fish, seabirds, and marine mammals), and also a consumer of zooplankton in the Norwegian Sea and capelin larvae in the Barents Sea. Little information is available on the impact of the herring fishery on the ecosystem. The fishery is entirely pelagic. There is little quantitative information on the bycatches in the fisheries for herring, but these are thought to be small. Therefore, unintended effects of the fishery on the ecosystem are probably small.*
- Impacts of the environment on the fish stock:  
*The stock undergoes extensive migrations in the Northeast Atlantic, which have been linked to changes in ocean climate and changes in zooplankton distribution. During 1995-2005, a weak relationship existed between zooplankton biomass in May and herring condition in the autumn. The March April North Atlantic Oscillation (NAO) index in 2004 and 2005 was successfully used to predict the herring condition index in the winters of 2005 and 2006. Although no such analyses are available for the most recent years, the average biomass of zooplankton in the Norwegian Sea in May has been decreasing since 2002 and, in 2009, reached a record low level since the measurements started in 1997. The Arctic front is a central feeding area for the herring stock. During periods when the Arctic front is shifted westwards, part of the stock feeding in the western Norwegian Sea also moves westward. The position of the Arctic front is correlated with large-scale environmental events.*

## 6.2 Retained species

The Atlanto-Scandian Herring fishery conducted by the PFA vessels can be classified as single species fisheries with herring as the target species and only small by-catches of retained species of mainly blue whiting, redfish, and mackerel.

PFA vessels are obliged to register retained species in the log-book. Some quantitative information on retained species was available to the assessment team from the Dutch and German PFA freezer trawler fleet.

Van Helmond en van Overzee (2009) report on the discard sampling of the Dutch pelagic freezer fishery during the period 2003-2007. The retained by-catch species for the Dutch PFA fleet are blue whiting, mackerel and “other species”, which appeared to be only redfish (Pers. Comm. Edwin van Helmond, IMARES, IJmuiden). From table 1a of van Helmond and van Overzee (2009) information can be obtained on the retained by-catches in the directed Atlanto-Scandian herring fishery by the Dutch PFA fleet. This table 1a presents the landings per year, species and ICES area by the Dutch freezer trawler fleet. It can be transformed into the text table below (Table 2) (catches of greater argentines are excluded, because these fish are caught in a special directed fishery for greater argentines which is close to the bottom).



**Table 2** Annual species composition of Dutch total landings from Div. IIa (Greater argentine catches excluded as explained above) (based on Table 1a from van Helmond en van Overzee, 2009)

	Atl.-Scand. herring	Blue whiting	Mackerel
2003	81.1%	18.9%	0.0%
2004	87.7%	12.2%	0.1%
2005	90.5%	9.5%	0.0%
2006	90.9%	9.1%	0.02%
2007	99.6%	0.3%	0.04%

The text table above shows over the years 2003 – 2007 a clear decreasing trend in the retained catch of blue whiting and a very low retained catch of mackerel. Over the years the Dutch PFA fleet “learned” to reduce by-catches and therefore “learned” to carry out a clean directed fishery for Atlanto-Scandian herring.

The impact of the Atlanto-Scandian herring fishery on the retained non-target populations blue whiting and mackerel can be quantified as all landings count against the TAC for these species, and are therefore included in the assessment that is carried out by ICES. Stock assessments are carried out by ICES for the blue whiting and mackerel. At present, the North East Atlantic stocks of both species are above  $B_{pa}$  and above the target reference points specified in the management plans for each species. If these populations would be out of biologically safe limits there would be management measures in place to ensure recovery and rebuilding.

Based on information collected during discard observer trips in Sub-area II the Atlanto-Scandian herring catches by the German PFA fleet in ICES Sub-area II accounted for 100%, 93.5% and 99.98% of the total catch respectively in 2002 (1<sup>st</sup> Q), 2006 (3<sup>rd</sup> Q) and 2009 (3<sup>rd</sup> Q) (pers. comm. Jens Ulleweit, Institute for Sea Fisheries, Hamburg). Retained by-catch species are blue whiting and redfish (*Sebastes mentella*). In 2006 the retained by-catch consisted for 93% out of blue whiting and for 7% out of redfish. This indicates that also the German PFA fleet is able to carry out a clean fishery for Atlanto-Scandian herring.

In previous years, catches of deep-sea redfish (*Sebastes mentella*) in ICES Sub-areas I and II by German-flagged vessels were taken as by-catches in the gadoid bottom trawl fishery or in the pelagic fishery on Norwegian spring-spawning herring and blue whiting. The catch of *S. mentella* from German pelagic trawlers from Sub-areas I and II varied between 2 - 40 tonnes in 2003-2005 (Table 6.5 AFWG, 2009). However, after Russian trawlers started a directed fishery on pelagic redfish in the Norwegian Sea in 2005, several vessels under German flag joined the international fleet in the international zone in the second half of 2006 and caught 2475 tonnes *Sebastes mantella*. In 2007, only one German vessel was involved in the directed pelagic redfish fishery in the Norwegian Sea and the catch was 497 tonnes. In 2008 and 2009 the German directed redfish fishery appeared to have been stopped and redfish was only taken again as by-catch in both the demersal and pelagic trawl (provisional catch 2008 is 17 tonnes (Table 6.1 of AFWG, 2009). The total international catch of *Sebastes mentella* in 2008 was 13860 tonnes (AFWG, 2009). Therefore, the total of both the demersal and pelagic by-catch of redfish by Germany in Sub-area I and II in 2008 and 2009 is expected to be in the order of 0.12% (=17/13860) compared to the total redfish catch in this area. The ICES advice (ICES, 2009 Book 3) for redfish (*Sebastes mentella*) in Subareas I and II is: "There should be no directed trawl fishery on *Sebastes mentella* in Subareas I and II in 2010. Area closures should be maintained and by-catch limits should be as low as possible until a significant increase in the spawning-stock biomass (and a subsequent increase in the number of juveniles) has been verified."

The impact of the directed Atlanto-Scandian herring fishery by the PFA on the retained non-target species of redfish is expected to have a negligible effect on the redfish population in recent years (2008 and 2009), because the by-catch of redfish in the PFA Atlanto-Scandian herring fishery is

assumed to be around 0.1% of the total international redfish catch. However, a significant impact on the redfish population might be expected if a directed pelagic redfish fishery would start again by the PFA fleet.

### 6.3 Discarding

On board pelagic freezer trawlers, the catch is sorted and the unwanted fish is dropped into a gutter and flushed over board, a practice called discarding. Sorting/grading is carried out to split mixed catches by species and to split by species into specific size categories. Fish normally will not survive the catch and sorting procedure. The estimation of total amounts of discards in a fishery play an important role in stock assessments, because both the landings and the discards together determine changes in fish population size. During the normal procedure of processing catch on board, discards are removed from the conveyor belt where the catch is sorted. They are removed because fish have no commercial interest, are below minimum landing size, have low quality or are damaged. Discarding also occurs due to limits on quota or lack of storage space on board.

A less frequently used method of discarding from pelagic fisheries is referred to as slippage. Relatively large amounts of a catch can be “slipped” either straight from the net (net slippage) or after being held in the cooling tanks aboard the vessel (tank slippage). The reason why certain catches are subjected to slippage can vary. At present, species composition and length frequency of “slipped” catch is unknown within this fishery. Accurate numbers of discards per species can therefore not be calculated. Undesirable mixtures of species in the catch or lack of storage capacity at the end of the trip could be reasons for slipping catch.<sup>4</sup>

Van Helmond and van Overzee (2009) presented the results of the discard sampling programme on the Dutch pelagic trawl fisheries in the North East Atlantic in the period 2003-2007, which was instigated as part of the EC regulation 1543/2000 and 1639/2001 on data collection in European waters. Van Helmond and van Overzee (2009) reported 0% herring discards in Division IIa during the period September – November 2007 (for earlier years it was not possible to obtain herring discards percentages for Division IIa separately, because herring discards were reported for combined Divisions only). Furthermore they report on a discarding / slippage level in 2007 in Division IIa by the Dutch PFA fleet of only 2% - 3% being blue whiting and other species (no mackerel discards). Skippers state that slipping is rare in the PFA Atlanto-Scandian Herring fishery.

The discards by the German PFA fleet during the Atlanto-Scandian herring fishery in ICES Sub-area II accounted for 0%, 1.2% and 0.02% of the total landings respectively in 2002 (1<sup>st</sup> Q), 2006 (3<sup>rd</sup> Q) and 2009 (3<sup>rd</sup> Q) (Pers. comm. Jens Ulleweit Institute for Sea Fisheries, Hamburg).

In 2006 the blue whiting (*Micromesistius poutassou*) discards accounted for less than 0.1% of the total catches, saithe (*Pollachius virens*) discards for 0.03% of the total catches and only one specimen of Atlantic wolffish (*Anarhichas lupus*) was discarded. In 2009 the blue whiting (*Micromesistius poutassou*) discards accounted for only 0.02% of the total catches and no other species were discarded.

The present Dutch and German discard studies indicate that, discarding of target species on an annual level in the PFA fleet is low. It can be concluded that this fishery has a high level of efficiency when targeting fish and therefore a low discard level can be achieved by experienced skippers.

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<sup>4</sup> The client has a clear policy commitment against any type of slipping. Their vessels are incapable of “tank slipping” because of the design of the cooling tanks and catch handling systems on board.

## 6.4 Endangered, Threatened & Protected Species

The interaction between the PFA Atlanto-Scandian herring fisheries and endangered, threatened and protected (ETP) species are considered to be very limited. ICES has expressed no specific concerns hitherto with respect to pelagic fisheries in the Norwegian Sea (ICES Advice 2009 book 3). The PFA has implemented a programme for recording any interactions with ETP species by its vessel skippers.

The broad categories of ETP species that are typically vulnerable to fishing activities are considered here for completeness.

### 6.4.1 Benthic species

The cold water coral, *Lophelia pertusa*, is known to occur within the unit of certification area. However this species, and any other benthic species are highly unlikely to be affected by the fishery. The pelagic trawls used in this fishery are not used to skim the seabed so there can be no physical impact of the fishery on benthic habitats or species.

### 6.4.2 Fish

A number of ETP fish species are known to occur in the unit of certification area. These include the Atlantic cod, *Gadus morhua*; the redfish species *Sebastes marinus* and *S. mentella*; allis shad (*Alosa alosa*) and twaite shad (*Alosa fallax*); and Atlantic blue fin tuna (*Thunnus thynnus*). Several elasmobranch species that are the subject of varying levels of international concern are known to occur in the area, including basking sharks (*Cetorhinus maximus*); porbeagle sharks (*Lamna nasus*); blue shark (*Prionace glauca*); tope (*Galeorhinus galeus*); and also skate (*Dipturus* spp) and rays (*Raja* spp.).

Reports from observers and skippers operating in this fishery suggest that ETP fish species are rarely, if ever, caught by pelagic trawlers fishing for herring.

### 6.4.3 Birds

The trawls used in this fishery operate at depths beyond the diving range of the birds that occur in the area. The main direct interaction between birds and the fishery is likely to occur when birds are scavenging fish from nets as the catch is recovered at the surface.

The PFA skippers report that birds rarely, if ever, become entangled in the fishing gear used in this fishery.

### 6.4.4 Marine mammals

According EU Council Regulation (EC) 812/2004 observer programmes are to be carried out annually to estimate the incidental bycatches of cetaceans and to report on by-catches of ETP species. By-catch data on ETP species is available for the Dutch and German part of the PFA vessels. No bycatch of cetaceans were recorded for the Dutch PFA fleet (Couperus, 2007, 2008 and 2009). The observed bycatch rate of 0.00 dolphins per day is in line with the findings from 2006 and 2007 when the bycatch rate was also 0.00 dolphins per day. No bycatch of cetaceans were recorded for the German PFA fleet in recent years (Pers. comm. Jens Ulleweit Institute for Sea Fisheries, Hamburg).

## 6.5 Habitat Impacts

There is no physical contact between the pelagic trawls operated by the PFA vessels and the sea bed and therefore the impact of the PFA Atlanto-Scandian Herring fishery on the habitat is negligible.

## 6.6 Ecosystem impacts

Atlanto-Scandian Herring is one of the main predators on zooplankton in the Norwegian Sea and is itself an important prey for a large number of top predators (Figure 11). Because of the size of the stock it most likely has a major impact on the ecosystem. The main impact of the herring fishery on the ecosystem is therefore believed to be the indirect effect of the removal of the target species may have on the prey and predator species.

The evidence suggests that in the Barents and Norwegian Seas, herring and capelin (*Mallotus villosus*) are the key prey species at the fish level of the food chain and that cod (*Gadus morhua*) are the dominant predator (Hamre, 2003). The abundance of immature herring determines the survival of 0-group capelin; and the abundance of immature cod determines the mortality of surviving herring. The dynamics of the system are governed by the inflow of Atlantic water, which determines the distribution, recruitment success, and growth of the main species involved. This climate-stock relationship has been modelled (Hamre & Hatlebakk, 1998). In essence, a high frequency of warm periods is favourable for herring, but has a negative effect on capelin and cod populations. It appears that the interrelationships between climate and fish stocks may determine the magnitude and variability of the total fish production of the region.

The indirect effect on the ecosystem of the removal of the herring can therefore be considered insignificant. However, very few studies have been conducted on the subject and it is not possible to quantify the interaction between the PFA fishery, the Atlanto-Scandian Herring stock and the Norwegian Sea ecosystem (section 6.1 and Skjoldal et. al. (2004)). However, the stock is exploited sustainably with a fishing mortality that is less than the natural mortality.

The North Atlantic Salmon Conservation Organisation (NASCO) has expressed concern about salmon by-catch in high-seas pelagic trawl fisheries and asked ICES to keep the matter under annual review. Although relatively little information is available on by-catches of salmon in high-sea fisheries there is no indication that the Atlanto-Scandian Herring fishery constitute a threat to the salmon (WGNAS, 2008). PFA skippers mention an occasional catch of a salmon in the directed Atlanto-Scandian herring fishery.

## 7 FISHERY MANAGEMENT FRAMEWORK

### 7.1 Overview

The fishery for Atlanto-Scandian herring spans the EU Fisheries zone, the Norwegian fisheries zone, the Faroese fisheries zone and international waters (Figure 12). This shared resource is managed through a “Coastal States Agreement” between five contracting parties (Norway, Iceland, Faroe Islands, the European Community and the Russian Federation).

This “Coastal States Agreement” is reviewed annually with respect to agreed long-term management objectives for the stock and current scientific advice. The Coastal States agree an overall TAC for the stock, national quotas, and arrangements for seasonal, zonal, and inter-annual flexibility to optimise utilisation and conservation of the stock.



**Figure 12:** Chart showing the extent of the Norwegian Economic Zone and adjacent fishing areas where the Norwegian spring spawning herring are fished. (Source: Norwegian Ministry of Fisheries and Coastal Affairs)

The Coastal States Agreement is implemented through national and EC legislation within the fisheries zones of its contracting parties. The agreement is implemented in international waters by the North East Atlantic Fisheries Commission (NEAFC).

The key details of this management framework are set out in this section of the assessment.

## **7.2 Governance & policy**

The broad context of the fishery management system for the unit of certification is considered here in respect of the legal framework for fisheries management; consultation roles and responsibilities; the roles of different management organisations; long term objectives for the fishery; and the incentives that the management system creates for sustainable fishing.

### **7.2.1 Legal / customary framework**

The management framework for this fishery is provided by international agreements and delivered through enforceable legislation made by the EC and by the Norwegian Government.

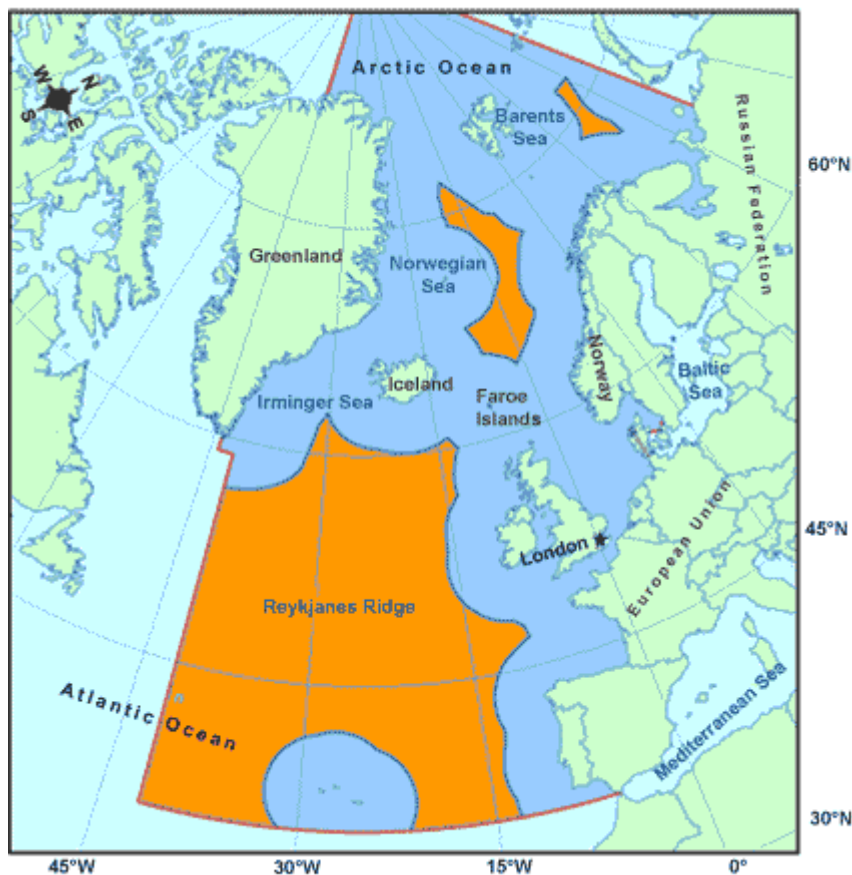
#### **7.2.1.1 International agreements**

The framework for managing the shared fishery resources in the North-East Atlantic is set out in the *Convention on the Future Multilateral Cooperation in North-East Atlantic Fisheries* (NEAFC, 2007a). This “new” convention replaced the original 1982 convention and incorporates revisions to give effect to other international agreements including the UN Convention on the Law of the Sea (United Nations, 1982), the UN “Straddling Stocks” agreement (United Nations, 1995), the FAO “Compliance Agreement” (FAO, 1993), and the FAO Code of Conduct for Responsible Fisheries (FAO, 1995). NEAFC has also reached agreements with the International Council for the Exploration of the Seas and with the OSPAR Commission to ensure that its activities are informed by, and compatible with, current fisheries advice and initiatives to conserve the marine environment (NEAFC, 2007b; NEAFC, 2008a).

Since 1999, the Atlanto-Scandian Herring stock has been managed under a “Coastal States Agreement” between Norway, Iceland, Faroe Islands, the European Community and the Russian Federation. This agreement is implemented through the legislative framework of each contracting party within their respective fisheries zones, and by the NEAFC in international waters. The Coastal States meet every year to agree a TAC for the following year based upon a management plan for the stock and current advice from ICES scientists. The annual agreement also sets out national quotas, and provisions for sharing quota between the contracting parties (NEAFC, 2009c).

The “Coastal States Agreement” is implemented by enforceable legislation within each contracting party’s fisheries zone. Fishing activity in international waters is managed by NEAFC through international cooperation. The contracting parties to the Coastal States agreement carry out enforcement activity in this area. In 2009, the Dutch General Inspection Service carried out an enforcement cruise in area IIa1 for 3 weeks, working in close collaboration with Norwegian and Swedish authorities (Ref to Ministry Info). The contracting parties also collaborate to gather information about the Norwegian Spring Spawning (Atlanto-Scandian) herring stock through international research cruises in the area (BFAFI. 2010 (a), (b); I7).

NEAFC also provides a vehicle for driving improvements in the management of this stock. In 2009, NEAFC reached an agreement to address IUU fishing in the area (NEAFC, 2009f), and is also progressing proposals to prevent any discarding of fish in international waters.



**Figure 13:** Showing the area of jurisdiction of the North East Atlantic Fisheries Commission (bounded by orange line). The extent of national and EU fisheries zones are shaded in blue. International waters are shaded in orange.

### 7.2.1.2 Legislation and Regulation

Within the EU fisheries zone, the Coastal States Agreement is implemented through the EU Common Fisheries Policy (CFP). The CFP came into being in 1983. It has been reviewed thoroughly and the current basic fisheries regulation (No.2731/2002)<sup>5</sup> was adopted by the Council of Ministers on 20 December 2002.

This Regulation sets out the strategic aims of the CFP and enables the Council of Ministers, or in certain cases the Commission, to make more detailed Regulations. The principal Regulations relevant to the herring fishery are those that set the Total Allowable Catch and Quota for fishing fleets<sup>6</sup>; specify technical restrictions for fishing activity (such as limits on trawl mesh size); and restrict fishing in the North Sea to encourage the recovery of cod stocks<sup>7</sup>. Outside the CFP framework other

<sup>5</sup> EC Regulation (EC) No 2371/2002 of 20 December 2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy *OJ L 358, 31.12.2002, p. 59–80*

<sup>6</sup> See, for instance, Council Regulation (EC) No 43/2009 of 16 January 2009 fixing for 2009 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where catch limitations are required. *OJ L 22 26.1.2009, p1-205*

<sup>7</sup> Commission Regulation (EC) No 714/2001 of 10 April 2001 amending Regulation (EC) No 259/2001 establishing measures for the recovery of the stock of cod in the North Sea (ICES subarea IV) and associated conditions for the control of activities of fishing vessels *OJ L 100, 11.4.2001, p. 5–6*

EC legislation dealing with habitats and species protection is also relevant to fisheries management and to fishermen.

EC Regulations are directly applicable in each Member State and throughout EC waters, meaning that all vessels are legally required to abide by their provisions. Implementation of the CFP at a national level is carried out by each Member State's fishery enforcement agency. Member States Fisheries enforcement authorities co-operate in policing the fishery (e.g. satellite monitoring, landing recording etc). National Governments may also make their own domestic legislation to support the enforcement of EC Regulations.

The European Commission's fisheries inspectorate monitors the national enforcement process and its results. The Commission can also request fishery related data from member states.

Within the Norwegian fisheries zone, the Coastal States Agreement is implemented through national legislation. The Norwegian Government also has a range of regulations in force to restrict fishing in certain areas (such as around Svalbard (Fiskeridirektoratet 2008b); and also to govern the landing and trans-shipment of fish in Norwegian waters (Fiskeridirektoratet, 2009a).

### **7.2.2 Management systems and processes**

The fishery is managed by a range of organisations, ranging from the international to the local level, and it provides opportunities for participation from a wide range of organisations. The key features of the management systems and processes relating to this fishery are summarised here.

#### **7.2.2.1 Management regime**

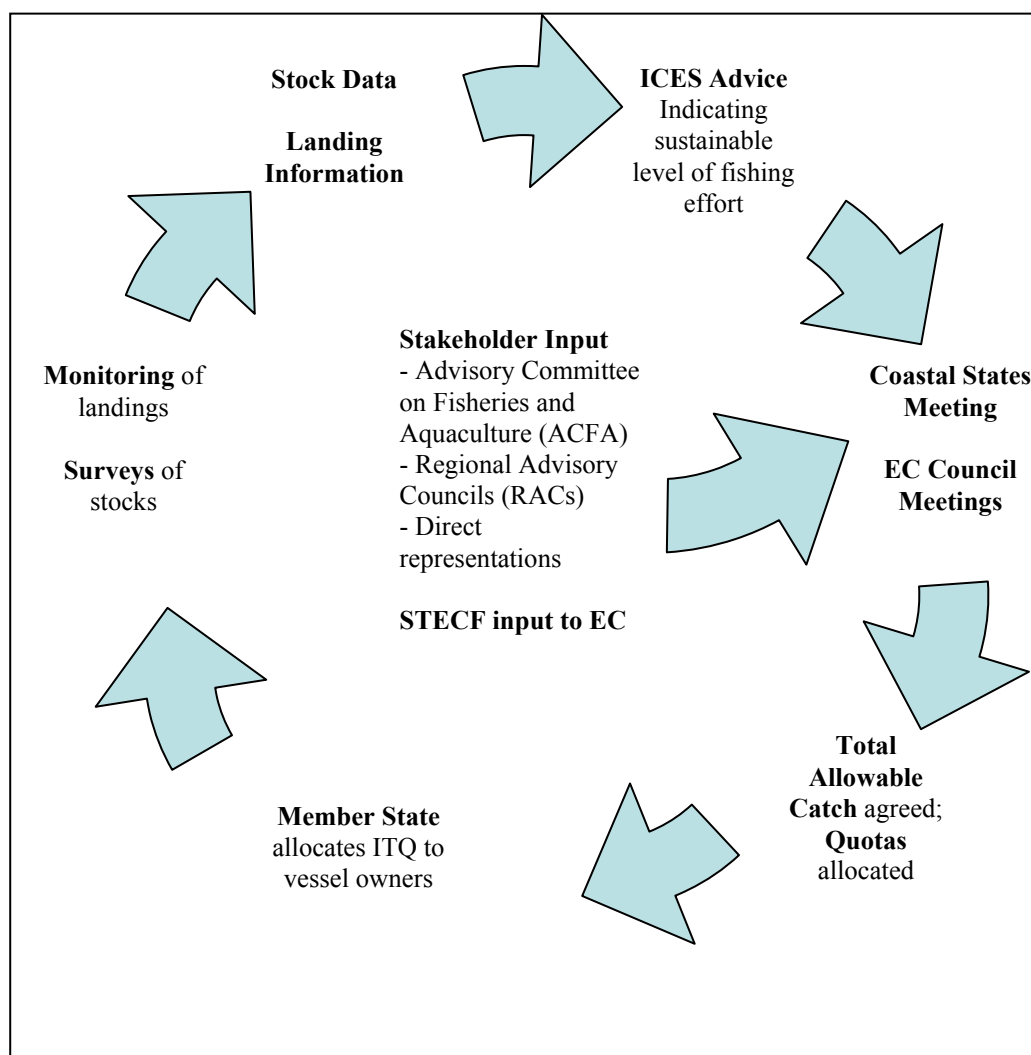
The management of this fishery is based upon a system of regular stock assessments and management review, carried out by many different organisations working together. The overall system is summarised in Figure 14 and explained below.

Scientific advice lies at the core of the management regime. This advice is provided by the ICES Advisory Committee (ACOM) which draws on the on-going work of international scientists from relevant research laboratories and institutions on the stock biology and marine science. The main working group now responsible for advice is the Working Group on Widely Distributed Stocks (WGWISE). The assessment working group may draw on the work of many other ICES working groups, study groups and workshops on for example surveys, reference points, recruitment processes and N.E. Atlantic ecology.

Scientific research and assessment is carried out by ICES Working Groups. The assessments are reviewed and evaluated by the ICES Advisory Committee (ACOM) which then provides advice on the status of target and non-target stocks to the European Commission. Where relevant (as for herring) the advice is considered at a joint meeting between officials of the EU and other coastal states. ICES advice, translated into Commission proposals, is brought into the annual EU Council of Ministers for decision-making on management measures, in particular TACs and quotas. TACs and quotas for this fishery are set in this regulation for EU member states and recorded for Norway.

Stock assessment and data collection methodologies are regularly reviewed - at ICES level and at the level of the contributing laboratories and research institutions. Within ICES, a methods working group keeps methods for fish stock assessment under regular review, and there are specific working groups dealing with various issues relevant to the fishery (in 2010 for instance, these will include a workshop on estimation of maturity ogive in Norwegian spring spawning herring)





**Figure 14:** Diagram of the procedure for administering the management of the Atlanto-Scandian Herring Fishery.

The advice from the ICES Advisory Committee informs the deliberations of the Parties to the Coastal States Agreement, and the EC Fisheries Council. Meetings of and decisions by the Coastal States and the subsequent decision of the EC Fisheries Council in December of each year will determine the Total Allowable Catch for Atlanto-Scandian herring for the following year, based on this advice.

The annual EU TAC is divided according an agreed dividing key among member states. Within EU member states, Fisheries Departments divide the national quota agreed each year between their various vessel-owners. In Holland, this quota is allocated as an “Individually Transferable Quota”. The vessel owners can form groups within which the ITQ for herring and other species can be swapped. This allows individual vessels to operate with some flexibility without exceeding national quotas or the overall TAC.

Compliance with the ITQ system is monitored carefully. Vessels have to report landings to the National Authorities who in turn report aggregate national information to the European Commission. If the stage is reached when the national quota is near to being taken, the member state authority will make a decision to close the fishery of that member state, working with the industry to achieve this. PFA member organisations operate according to this system.

The management regime for the fishery allows for regular and ongoing review of its performance. This occurs at every level of the system with policy documents formulated at a European Commission level as a result of initiatives at national, sub-national and European levels. These policies and resulting operational plans and practices are then subject to wide consultation before ratification, and prescribed monitoring and evaluation processes after ratification. These systems also include formal consultation and review processes involving all EC Member State fisheries administrations, and committees such as ACOM (the body through which ICES provides formal advice), STECF (the committee by which the European Commission seeks expert opinion on fisheries), the Advisory Committee on Fisheries and Aquaculture (ACFA) dealing with all stakeholder concerns at a European / “horizontal” level), and the Regional Advisory Councils (RACs) dealing with regionally specific technical issues (of which the body specifically incorporating herring industry and NGO’s interests is the Pelagic RAC).

Data gathered by management institutions also informs the management regime, and the work of the management organisations in every Member State is subject to review itself. The data that is used to inform the management regime includes the register of vessels, fleet activity (days at sea & VMS data), inspection and monitoring of landings, and catch monitoring (through scientific observer programmes). The enforcement agencies also set performance targets, which are monitored by Government. The General Inspection Service in Holland has an objective of monitoring 25% of landings from the fishery each year<sup>8</sup>.

#### **7.2.2.2 Consultation**

Extensive consultative processes are in place at national and European levels to debate policy, plans and management, and recent years have seen the introduction of more formal procedures to incorporate a wider stakeholder community within such consultations.

At a European level, key institutions are the Advisory Committee on Fisheries and Aquaculture (ACFA) - which comprises a contact group at the European level for all stakeholders at national and regional levels – and the recently formed Regional Advisory Councils (RACs) – which comprise a contact group dealing with particular fisheries at the regional level.

At a national level, administrations operate formal consultation procedures combining mailings on current issues and proposed changes to management systems and regular scheduled face-to-face meetings with key stakeholders. Recently, the Dutch Government organised meetings with the industry to explain and assist the introduction of the new EC regulations relating to IUU fishing, and is also working with vessels in the client fleet to trial hardware and software needed for implementation of the new “electronic logbook” EC Regulations.

#### **7.2.3 Long term objectives**

Clear long-term objectives for this fishery are set out in the “Coastal States Agreement” (NEAFC, 2008b). The Agreement sets out an explicit management plan with clear objectives that embrace a precautionary approach, and which determine management policy for the fishery (see section 5.2.3).

In summary, the Coastal States have agreed a long-term precautionary management plan which is intended to constrain harvesting within safe biological limits and to provide for sustainable fisheries. It aims to maintain a SSB of 5,000,000t for the fishery by limiting fishing mortality (F) for the stock, and sets out provisions for managing the stock if the SSB should drop below this level.

The effectiveness of this management plan is monitored by ICES through ongoing measurement of both SSB and F. The ICES Working Group on Widely Distributed Stocks (WGWIDE) consolidates and reports this information.

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<sup>8</sup> See section 7.3.3 for further information on monitoring procedures

The management regime also includes measures that are relevant to MSC Principle 2. These can be seen at the international level, in EC legislation, and through the actions of the Norwegian Government.

The NEAFC Convention seeks to “...*promote the long-term conservation and optimum utilisation of the fishery resources in the North-East Atlantic area, and in doing so to safeguard the marine ecosystems in which the resources occur...*” (NEAFC, 1997a). NEAFC has subsequently agreed a Memorandum of Understanding with the OSPAR Commission, which exists to protect the marine environment of the North-East Atlantic (OSPAR, 2009). This agreement sets out a formal commitment to work toward the “...*conservation and sustainable use of marine biological diversity including protection of marine ecosystems in the North-East Atlantic...*” (NEAFC, 2008a).

The EC Common Fisheries Policy regulation presently in force (Regn 2371/2002) contains provisions to enable fisheries to be managed in order to protect marine ecosystems (at Article 8(1)); and the current Green Paper on the review of the CFP takes this commitment further (European Commission, 2009c).

Norwegian fisheries legislation also demonstrates a commitment to protect the marine environment. The measures taken to prohibit fishing for Atlanto-Scandian herring around Svalbard are among a suite of fisheries regulations that have stemmed from national legislation for the protection of marine living resources (Fiskeridirektoratet, 2008a, b.).

#### **7.2.4 Incentives for sustainable fishing**

Economic and social incentives are provided by the management regime through the allocation of resources (quota) at a level compatible with sustainable fishery management. This regime is supported by a legal regime that provides an additional incentive to comply with management measures, through the penalties that can be imposed for non-compliance with the CFP.

Administrative, technical and quota-related offences can all result in legal action, prosecution and fines. These measures all contribute to sustainable fishing and ecosystem management, and are regularly reviewed as part of the ongoing process of fisheries management established by the CFP and the Coastal States Agreement.

The EC and Member States provide funding to the fishing industry. Until recently this was provided via the Financial Instrument for Fisheries Guidance (FIFG), which was superseded by the European Fisheries Fund in 2007. Concerns have been raised by some NGOs that FIFG represented a subsidy to the industry. However the actual aims of FIFG were to “*achieve a balance between fisheries resources and their exploitation*”. The purpose of the EFF is to both support the industry as it adapts its fleet to make it more competitive and also to promote measures to protect and enhance the environment. One of the main objectives of the EFF is to “*promoting environmentally-friendly fishing and production methods*”. It is therefore clear that the objectives of both FIFG and EFF are consistent with MSC Principles, and that there are no subsidies that would encourage unsustainable fishing.

Within Norwegian waters, where much of the fishery is prosecuted, there is a ban on discarding the main commercial fish species, including herring (Fiskeridirektoratet, 2009b). NEAFC has also recently adopted a ban on discarding in high sea fisheries (NEAFC 2009e).

The client group’s own internal policy is firmly committed to reducing unsustainable practices, both through the practice of its members, and through representations to the EC to encourage the introduction of further management measures.

### **7.3 Fishery specific management system**

This section focuses on the aspects of the management system that apply directly to the unit of certification.

#### **7.3.1 Fishery – specific objectives**

The administration of the fishery provides a mechanism for transposing the overall objectives of the Coastal States Agreement into a specific quota allocation for each vessel operating in the fishery. This mechanism is briefly summarised here.

Clear long-term objectives are set out in the “Coastal States Agreement” for this stock (summarised in section 7.2.3). The Agreement sets out an explicit management plan with clear objectives that embrace a precautionary approach, and which determine management policy for the fishery.

Short-term management objectives are determined for the fishery annually at the meeting of the Parties to the Coastal States Agreement where fishing opportunities (TACs) for the coming year are set in the light of the long-term objectives for the fishery. The overall TAC for the stock is then shared as a quota for each contracting party. The relative share of the TAC allocated to each contracting party is negotiated annually. The quota allocated to each contracting party has generally been agreed in accordance with the levels determined in previous years, and is not a fixed proportion of the TAC.

The Coastal States Agreement allows for a specified degree of quota swapping and sharing between contracting parties. It also allows some flexibility in quota uptake – a contracting party may exceed its quota by up to 10% provided that the excess is “paid back” the following year through a quota deduction. Parties may also transfer unutilised quota from one year as a “credit” for the following year (up to a limit of 10% of the allocated quota). These arrangements allow for ongoing adjustment of fishing activity within the overall framework set by the long term objectives.

The quota that is allocated to the EC by the Coastal States Agreement is shared among the EC Member States. The quota allocation between EC Member States is largely pre-determined, according to rules of “Relative Stability” which ensure that each Member State receives a predictable share of the resource. Quota allocations can be “swapped” between Member States.

At the national level, the quota is shared between vessels on the basis of historic rights and other quota entitlements through national allocations. These allocations determine the fishing opportunities for each vessel prosecuting the Atlanto-Scandian herring stock. Again, opportunities arise for “swapping” quota between vessels, subject to certain rules.

Compliance with these objectives is measured by the EC and Member States, through monitoring of landings, surveillance of fishing fleets, inspections of vessels at sea, and monitoring of vessels during fishing trips. Information gathered by monitoring the fishery is used to inform future management decisions.

During 2010, the client fleet and General Inspection Service intend to start work on a catch monitoring scheme at sea which will be related to real-time management action to address problems (such as the capture of under-sized fish, which is not a problem in this fishery but can be an issue in others).

##### **7.3.1.1 Additional management measures**

In addition to the statutory administrative and legal arrangements summarized above, the Pelagic Freezer-Trawler Association (PFA) also has operational policies that the members of the association must adhere to. These policies apply to all of the fisheries that the PFA prosecutes (PFA, 2000). The PFA policies that are most relevant to this assessment are:

- *Where possible, the PFA takes initiatives (or supports initiatives) for activities that lead to adequate measures to counter by-catches and discards.*
- *The member ships of the PFA are not permitted to deliberately discard marketable fish to make room for fish of a higher commercial value that are caught later ('highgrading'). This is subject to strict monitoring.*

Other pertinent policies include:

- *The concept of sustainability is anchored in the total policy of the PFA.*
- *The PFA accepts the precautionary approach and is willing to co-operate on safety measures that are being taken on the basis of the precautionary approach. Where necessary, the PFA initiates and stimulates (additional) scientific research.*
- *The PFA pursues a transparent policy. The PFA is striving to achieve an open dialogue with involved stakeholders.*
- *The PFA makes information about the fishing activities available to interested organisations. Scientific data obtained from research will be communicated through different channels.*
- *The members of the PFA are striving for continuity in fishing activities. Growth is desirable only if it can be seen as being part of sustainable development. This means, inter alia, that the preservation of fish stocks forms the basis of the development of new fishing activities.*
- *The members of the PFA invest jointly in the education and training of all personnel, both on land and on board of the ships.*
- *The PFA pursues a policy for the further improvement of the working conditions of employees.*
- *The PFA has initiated certain specific environmental projects on board members' vessels.*
- *The members of the PFA provide a substantial contribution to the acquisition of scientific data on pelagic fish stocks.*
- *The members of the PFA fish in such a way that negative effects on the ecosystem are minimised to a generally acceptable level.*
- *The members of the PFA do all possible, through the application of modern technology, to further reduce the occurrence of by-catches and discards to an even lower percentage.*

Compliance with the policy is assessed and reviewed at PFA Board meetings (van Balsfoort, pers. comm.)

### **7.3.2 Decision making processes**

Both the EC CFP process and the Coastal States Agreement represent established decision making processes that result in measures and strategies that deliver fishery specific objectives – such as setting annual TACs that are compatible with maintenance of SSB for the fishery and that are compatible with  $B_{pa}$  for the fishery.

Decisions are based upon the best available information, provided by ICES and stakeholder groups. Performance of the fishery relative to these objectives is measured on a monthly basis through landings data, which provides near real-time recording of catch levels and quota uptake. The ICES WGWIDE working group monitors and reports on performance of the fishery relative to SSB and F annually, as well as reporting on unrecorded mortality.

The decision making process provides a mechanism for responding to all relevant issues, through opportunities for stakeholder engagement, and through a broad suite of management objectives that are set out in the CFP. Stakeholders have the opportunity to participate in the management of the fishery at national and EC levels. The Pelagic Regional Advisory Council (Pelagic RAC) provides a formal mechanism for key stakeholders to participate directly in the management of this fishery.

Tried and tested procedures exist to reduce harvest in response to annual scientific advice and ongoing

monitoring results. These measures can be quickly implemented. This was demonstrated for herring in 1996 when the TAC was halved in the middle of a fishing year after scientists advised that the biomass had fallen to a level well below  $B_{lim}$ .

As well as adjusting quota, the EC and national administrations can restrict fishing activity in particular areas to address management issues if necessary. For instance, the Norwegian Government has imposed restrictions on fishing for spring spawning herring in the vicinity of Svalbard as a measure to conserve marine wildlife (Fiskeridirektoratet, 2008).

At the EC level, the division of quotas between Member States is determined according to the principle of “Relative Stability”, which means that proportional allocations of TAC to Member States are consistent from year to year. The outcome of meetings of the Council of Ministers clearly demonstrates that all of this information is taken into account, and explains the basis for management actions. This information is formally reported.

The NEAFC decision making process is less transparent. Although the TAC is determined according to clear rules set out in the long-term management plan, there is no formally agreed allocation key for the quota. National quotas for herring and for some other shared stocks are re-negotiated annually, and this can lead to an impasse when the contracting parties are unable to reach agreement. This happened in 2006 for the 2007 quota allocations, but under those circumstances the parties all ensured that fishing remained at a level below the TAC for the stock. The Coastal States publish the outcome of their annual TAC agreement and quota negotiations on the NEAFC website.

### **7.3.3 Compliance & enforcement**

Each of the contracting parties to the Coastal States Agreement is responsible for implementing the agreement by taking appropriate action to enforce legislation and monitor compliance. Within the European Union, it is the responsibility of each Member State to make sure that the rules agreed under the CFP are enforced. Within the Norwegian fisheries zone, the Norwegian Government is responsible for this.

The system for enforcing regulations and monitoring compliance with them within the unit of certification is summarised here.

#### **7.3.3.1 Monitoring, control & surveillance**

Fishing vessels working outside of their national fisheries jurisdiction (within the 200 nautical mile zone or to median lines with adjacent states) are liable to inspection at sea or otherwise by the fisheries inspectorates of the country in whose waters they are working. In those circumstances any alleged infringements of EC rules would be prosecuted in the courts of the jurisdiction in which the alleged offence was detected.

All EU vessels are subject to EC satellite monitoring (VMS) if over 15m and if fishing in EU waters – as defined within Common Fisheries Policy. For Norway, vessels with an overall length exceeding 24 meters require VMS. However, the bilateral agreement between Norway and EU has required mutual tracking of vessels above 15 meters from 1 January 2005. These monitoring measures discourage the misreporting of fishing locations. All of the client fleet carry VMS equipment, and are reported by the General Inspection Service to use it constantly. In cases of VMS malfunction, the PFA skippers provide their national authorities with regular updates of their position to ensure that their activities can be monitored (I8).

National authorities are also responsible for aggregating national fleet catches to a national total and policing other EC control requirements applicable on landing and as the fish moves through the distribution chain. This information is gathered from log books that vessels must complete while fishing, and monitoring of the fish landed on their return to port. In Holland, the General Inspection

Service employs 52 enforcement officers who monitor compliance with regulations by all fishing vessels.

Freezer-Trawler vessels returning from the fishing grounds are required to inform the authorities of their arrival in at one of the designated ports for landing at least 72 hours in advance, which enables inspection of catches to be planned. The Dutch General Inspection Service is committed to inspecting 25% of all fish landings. Inspections are carried out according to specified methods, which ensure a consistent and thorough approach is taken. For instance, when PFA vessels are inspected, a team of officers will spend several days monitoring the quantity of fish unloaded from the vessel, and will take samples of frozen fish for inspection. The fishery officers have the power to halt unloading of the vessel at any time under national legislation.

Similar control measures are in place in Germany. The Bundesanstalt für Landwirtschaft und Ernährung (BLE) is responsible for managing national quota and monitoring uptake. BLE officers work with the industry and local fishery officers to gather data and monitor fishing activity. The BLE also plays a proactive role, holding meetings to alert fishermen to new legislation when it is introduced. BLE work closely with the German PFA company (Doggerbank GmbH), who submit catch reports twice a month to assist with quota management. BLE report that the fishermen and representatives of the PFA are fully aware of and compliant with the management system in place. (Wessendorf, pers comm. (I14))

In April 2005 the EC Council of Ministers agreed to set up the Community Fisheries Control Agency (Council Regulation (EC) No 768/2005). The Agency was created to undertake operational co-ordination to help Member States fulfil their control and inspection obligations. It strengthened the uniformity and effectiveness of enforcement by pooling EU and national means of fisheries control and monitoring resources and co-ordinating enforcement activities. This operational co-ordination has helped to tackle the shortcomings in enforcement resulting from the disparities in the means and priorities of the control systems in the Member States. The Agency has not changed the obligations of the Member States in enforcing CFP measures or those of the European Commission in ensuring that Member States fulfil these obligations. The CFCA is instead providing a coordinating role working to encourage collaborative enforcement by Member States that is specifically targeted at particular fishing activities.

Within the Norwegian fisheries zone, vessels of all nationalities are required to comply with Norwegian fisheries regulations and are subject to regular inspection by the Norwegian Navy. These regulations include requirements to notify the Norwegian authorities in advance of any plans to make fish landings, and also to make themselves available for inspection at nominated points in the Norwegian sector before leaving. The Norwegian authorities collaborate with other nations to control fishing in this area – for instance in 2009, a Dutch patrol vessel collaborated with Norwegian aircraft to monitor fishing activity in the international waters (area IIa1) within the unit of certification area.

### **7.3.3.2 IUU Fishing**

The bodies responsible for managing this fishery have recently taken steps to reduce the incidence of Illegal, Unregulated and Unreported (IUU) fishing.

Until recently, the responsibility for addressing IUU fishing lay with the “flag state” of each fishing vessel. This approach required the flag state to take action if one of its registered vessels was found to be carrying out IUU fishing. There have been growing concerns about the effectiveness of this approach. New measures now apply in the unit of certification area which enable concerted international action against IUU fishing through the application of “port state measures”.

The measures that have been introduced for the unit of certification are summarised here.

The EC has made a Regulation under the CFP to address IUU fishing specifically (Council Regulation 1005/2008). This came into force on 1<sup>st</sup> January 2010, and sets out a legally enforceable framework based upon a catch certification scheme that will distinguish legally caught fish from IUU fish. These requirements mean that all fish have to be accompanied by paperwork that unambiguously identifies its provenance.

The Norwegian Government has also taken action against IUU fishing. It has supported work by the FAO to address this issue, and recently reached agreement with the EC to develop the catch certification scheme and systems for strengthening administrative cooperation (EC, 2009a). The Faroe Islands have reached a similar agreement recently (EC, 2009b).

NEAFC (2009e) has implemented a system for addressing IUU fishing in international waters. Under this system, vessels reported of IUU fishing are first placed under investigation (on their 'A' list), and if the reports of IUU fishing are validated, the vessel is placed on their 'B' list and subject to sanctions (including bans on fishing and entry into ports within the NEAFC and its contracting parties' areas of jurisdiction). There are currently 11 vessels listed on the NEAFC 'B' list (April 2010).

This suite of measures means that any vessels that are engaged in IUU fishing can be readily identified, prevented from landing fish in the Unit of Certification area, and prosecuted for breaching Port State Measures (PSM). PSMs are now being enforced by the relevant authorities throughout the Unit of Certification area and in all of the PFA fleet's Member States.

The Dutch General Inspection Service is working closely with the industry to assist the implementation of the new IUU rules and to monitor compliance.

These measures are complemented by the client's own traceability systems which ensure that the precise source of all fish on board each vessel can be traced (see section 13).

#### **7.3.3.3 Compliance**

Compliance with regulations is monitored by national enforcement bodies. At a wider level, the EC has produced a fisheries compliance scoreboard to report how effectively Member States have implemented the CFP. The most recent scoreboard, published in 2006, reports compliance up to the end of 2005.<sup>9</sup> The Norwegian Government produces a similar record, called the "Black List" which lists vessels that have breached international rules since 1998 (Fiskeridirektoratet, 2009). NEAFC also maintains lists of vessels that have participated in IUU fishing in international waters (NEAFC, 2009f).

The assessment team has obtained feedback from enforcement bodies about the compliance of the PFA fleet with all rules and regulations in force. This feedback indicates the PFA fleet complies with all relevant rules and regulations (I8, I11, I12, I13, I14). None of the client fleet vessels are listed on the Norwegian Black List or the NEAFC "A" and "B" lists (NEAFC, 2009f).

The assessment team has also noted that unlike some other pelagic fisheries in the North East Atlantic, no concerns about systematic non-compliance are raised in the ICES advice for the fishery or in the Coastal States Agreement.

#### **7.3.4 Research Plan**

Research into this fishery is largely undertaken by ICES, which brings together the work of national fisheries scientists within an international organisation that facilitates cooperation, collaboration and consistency in fisheries research and advice. ICES reports on current stock status, and through its working groups identifies priorities for future research. The research is carried out by various ICES 'working groups' and is published in the form of advice by the Advisory Committee (ACOM).

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<sup>9</sup> [http://ec.europa.eu/fisheries/cfp/control\\_enforcement/scoreboard\\_en.htm](http://ec.europa.eu/fisheries/cfp/control_enforcement/scoreboard_en.htm)



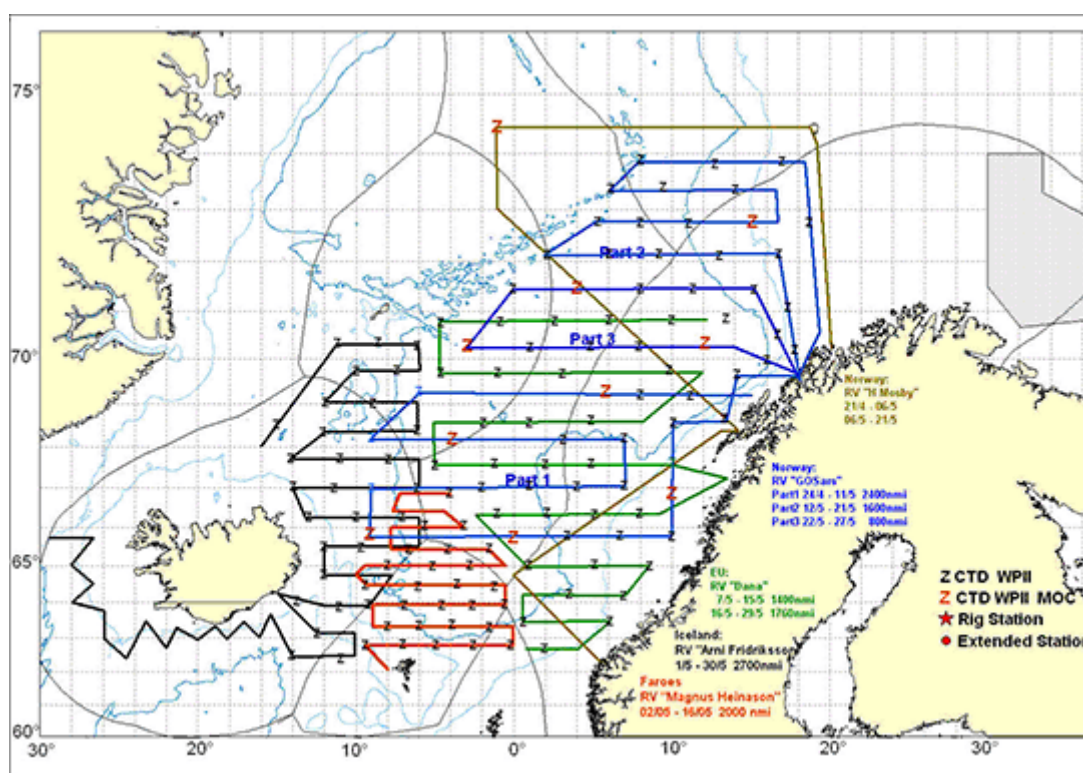
Scientists from nine countries (Denmark, Ireland, UK, Sweden, Netherlands, Faroes, Iceland, Norway and Germany) collaborate to carry out the International Acoustic Survey. The survey is conducted annually by vessels from Norway, Iceland and the Faroes, and also a vessel from the EU. This work is planned in advance and its main objective is to assess the pelagic fish stocks in the Norwegian Sea. Atlanto-Scandian Herring and blue whiting are the main stocks of interest for this survey. The extent of a typical survey is illustrated in Figure 15.

The ICES working groups routinely gather and analyse information on stock status, and also investigate specific issues such as recruitment and larval survival. The ICES working groups also develop and review assessment methodologies used in the fishery. Other issues such as climate change, associated changes to plankton, and ecosystem effects of fisheries are also investigated by ICES study groups and workshops.

The results of ICES research are condensed into management advice by ACOM. This advice is submitted to the Coastal States, NEAFC, and the EC to guide future management of the stock in advance of annual negotiations of TACs and fishing opportunities.

NEAFC has recently agreed a Memorandum of Understanding with ICES (NEAFC, 2007b), and has also established a Permanent Committee on Management and Science (NEAFC, 2009a). These steps have established clear mechanisms for linking stock management to fisheries science.

All of the results of ICES research are disseminated to interested parties in a timely fashion through reports and publications, all of which are readily available from the ICES website.



**Figure 15** Illustrating the tracks of research vessels from different nations which took part in the annual international hydroacoustic survey of herring and blue whiting in 2007 in the certification area [Source: BFAFI, 2010b).

### 7.3.5 Monitoring and evaluation

The management regime for this fishery incorporates measures that allow for review of both the

Coastal States agreement between the EU, Norway, Iceland, the Faroe Islands and Russian Federation, as well as for the EC Common Fisheries Policy.

The Coastal States Agreement is reviewed annually, in the light of ICES advice. The TAC is adjusted in response to this advice (in 2007 this was set at 1,280Mt; 1,518Mt in 2008; and 1,643Mt in 2009). This annual review is subject to internal scrutiny, and through ICES advice on the status of stocks and performance of the short and long-term management system (requirements that are set out in a Memorandum of Understanding between NEAFC and ICES) are also subject to regular and comprehensive external review (NEAFC, 2007b).

Within the CFP, regular internal review of the management system occurs at every level. At the EC level, policy documents are reviewed internally and by Member States. The resulting policies, operational plans and practices are then subject to wide consultation before implementation, and regular evaluation. These systems also include formal consultation and review processes involving all EC Member State fisheries administrations, and committees such as ACOM, STECF, ACFA dealing with industry concerns at a European level), and the Regional Advisory Councils (RACs) dealing with specific technical and management issues (of which the body specifically incorporating this fishery's interests is the Pelagic RAC).

There is also on-going and extensive review of stock assessment and data gathering methodologies at ICES level and at the level of the contributing laboratories and research institutions. Within ICES, a methods working group keeps methods for fish stock assessment under regular review. In addition, other study and working groups exist to review the precautionary approach, discards, biological sampling, reference points, and recruitment variability..

ICES can, and does, involve external scientists in extensive review of its methodologies if considered necessary, and working group stock assessments are subject to external review. The Pelagic RAC, where a range of interested stakeholders come together, also provides an opportunity for review of management advice and decisions.

The next major opportunity for external participation in the review of the management system will occur in the lead-up to the review of the CFP in 2012. When the CFP was last reviewed in 2002, the review was preceded by formal consultations and regional 'roadshows' that provided many opportunities for external involvement in the review of the management system.

In summary, the management system is subject to internal review at all levels while key parts of the management system are subject to rather less frequent external review.

## 8 OTHER FISHERIES AFFECTING TARGET STOCK

### 8.1 Other pelagic fisheries

The target stock (Atlanto-Scandian Herring) can be affected by other pelagic fisheries in the area. Herring can be taken as a by-catch in both mackerel and horse mackerel fisheries. In some instances the herring are retained, but in other instances they might be either discarded or ‘slipped’ from nets (see section 5.1 of this report for a full account of these practices).

Where herring are retained and landed from other fisheries, the fishing-related mortality can be recorded and estimated. However if herring were discarded or slipped then the effect of fishing mortality may be unrecorded. A recent analysis suggested that these sources of mortality are negligible for herring (Dickey-Collas & van Helmond, 2007).

The effects of discarding and slippage are taken into account by the procedure for estimating stock abundance (see section 5.2), so they would not undermine the scientific basis of stock management.

### 8.2 MSC certified fisheries

The pelagic fisheries in the north-east Atlantic are a focus of interest for MSC assessment and certification. Several mackerel and herring fisheries have been certified to the MSC standard, including fisheries targeting Atlanto-Scandian herring.

There are currently four MSC certified fisheries for this stock: the Danish Pelagic Producer’s Organisation (certified in July 2009); the Faroese Pelagic Organisation Atlanto-Scandian Herring (certified in March 2010); the Norway Spring Spawning Herring (certified in April 2009); and the Scottish Pelagic Sustainability Group Ltd Atlanto-Scandian Herring (certified in March 2010).

The MSC recognises that need for harmonisation when several fisheries prosecuting the same stock using the same fishing method area all assessed. The procedure for this is set out in the MSC Technical Advisory Board (TAB) Directive D-015(v2) of July 2008. The intent of this procedure is that Certification Bodies *“assessing fisheries that have areas of overlap are required to ensure consistency of outcomes so as not to undermine the integrity of MSC fishery assessments.”*

The assessment team has had regard to the reports produced for these other fisheries, and notes that while there are some minor differences in scoring that can be attributed to variations between the units of certification and the timing of the assessments, the overall outcome of the assessments are harmonious and compatible with one another.

## 9 STANDARD USED

The MSC Principles and Criteria for Sustainable Fisheries form the standard against which the fishery is assessed and are organised in terms of three principles. Principle 1 addresses the need to maintain the target stock at a sustainable level; Principle 2 addresses the need to maintain the ecosystem in which the target stock exists, and Principle 3 addresses the need for an effective fishery management system to fulfil Principles 1 and 2 and ensure compliance with national and international regulations. The Principles and their supporting Criteria are presented below.

### 9.1 Principle 1

**A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.<sup>10</sup>**

The intent of this principle is to ensure that the productive capacities of resources are maintained at high levels and are not sacrificed in favour of short term interests. Thus, exploited populations would be maintained at high levels of abundance designed to retain their productivity, provide margins of safety for error and uncertainty, and restore and retain their capacities for yields over the long term.

#### Criteria:

1. The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.
2. Where the exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level consistent with the precautionary approach and the ability of the populations to produce long-term potential yields within a specified time frame.
3. Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.

### 9.2 Principle 2

**Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.**

The intent of this principle is to encourage the management of fisheries from an ecosystem perspective under a system designed to assess and restrain the impacts of the fishery on the ecosystem.

#### Criteria:

1. The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to trophic cascades or ecosystem state changes.
2. The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels and avoids or minimises mortality of, or injuries to endangered, threatened or protected species.
3. Where exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level within specified time frames, consistent with the precautionary approach and considering the ability of the population to produce long-term potential yields.

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<sup>10</sup> The sequence in which the Principles and Criteria appear does not represent a ranking of their significance, but is rather intended to provide a logical guide to certifiers when assessing a fishery. The criteria by which the MSC Principles will be implemented will be reviewed and revised as appropriate in light of relevant new information, technologies and additional consultations

### 9.3 Principle 3

**The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.**

The intent of this principle is to ensure that there is an institutional and operational framework for implementing Principles 1 and 2, appropriate to the size and scale of the fishery.

#### **A. Management System Criteria:**

1. The fishery shall not be conducted under a controversial unilateral exemption to an international agreement.

The management system shall:

2. Demonstrate clear long-term objectives consistent with MSC Principles and Criteria and contain a consultative process that is transparent and involves all interested and affected parties so as to consider all relevant information, including local knowledge. The impact of fishery management decisions on all those who depend on the fishery for their livelihoods, including, but not confined to subsistence, artisanal, and fishing-dependent communities shall be addressed as part of this process.
3. Be appropriate to the cultural context, scale and intensity of the fishery – reflecting specific objectives, incorporating operational criteria, containing procedures for implementation and a process for monitoring and evaluating performance and acting on findings.
4. Observe the legal and customary rights and long term interests of people dependent on fishing for food and livelihood, in a manner consistent with ecological sustainability.
5. Incorporates an appropriate mechanism for the resolution of disputes arising within the system<sup>11</sup>.
6. Provide economic and social incentives that contribute to sustainable fishing and shall not operate with subsidies that contribute to unsustainable fishing.
7. Act in a timely and adaptive fashion on the basis of the best available information using a precautionary approach particularly when dealing with scientific uncertainty.
8. Incorporate a research plan – appropriate to the scale and intensity of the fishery – that addresses the information needs of management and provides for the dissemination of research results to all interested parties in a timely fashion.
9. Require that assessments of the biological status of the resource and impacts of the fishery have been and are periodically conducted.
10. Specify measures and strategies that demonstrably control the degree of exploitation of the resource, including, but not limited to:
  - a) setting catch levels that will maintain the target population and ecological community's high productivity relative to its potential productivity, and account for the non-target species (or size, age, sex) captured and landed in association with, or as a consequence of, fishing for target species;

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<sup>11</sup> Outstanding disputes of substantial magnitude involving a significant number of interests will normally disqualify a fishery from certification.

- b) identifying appropriate fishing methods that minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;
  - c) providing for the recovery and rebuilding of depleted fish populations to specified levels within specified time frames;
  - d) mechanisms in place to limit or close fisheries when designated catch limits are reached;
  - e) establishing no-take zones where appropriate.
11. Contains appropriate procedures for effective compliance, monitoring, control, surveillance and enforcement which ensure that established limits to exploitation are not exceeded and specifies corrective actions to be taken in the event that they are.

## **B. Operational Criteria**

Fishing operation shall:

- 12. Make use of fishing gear and practices designed to avoid the capture of non-target species (and non-target size, age, and/or sex of the target species); minimise mortality of this catch where it cannot be avoided, and reduce discards of what cannot be released alive.
- 13. Implement appropriate fishing methods designed to minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas.
- 14. Not use destructive fishing practices such as fishing with poisons or explosives;
- 15. Minimise operational waste such as lost fishing gear, oil spills, on-board spoilage of catch etc.
- 16. Be conducted in compliance with the fishery management system and all legal and administrative requirements.
- 17. Assist and co-operate with management authorities in the collection of catch, discard, and other information of importance to effective management of the resources and the fishery.

## **10 BACKGROUND TO THE EVALUATION**

### **10.1 Evaluation Team**

This fishery assessment has been prepared by a team of three expert assessors:-

#### **Jim Andrews.**

Jim has 18 years experience as a specialist in marine fisheries and environmental management and regulation. He is presently Director of AWJ Ltd, a company he founded in 2006. His previous experience includes running the North Western and North Wales Sea Fisheries Committee as its Chief Executive from 2001 to 2005, having previously worked between 1996 and 2001 as the Sea Fisheries Committee's Marine Environment Liaison Officer. He previously worked for English Nature on a series coastal and marine wildlife management projects, starting in 1992. He has a formal academic training in both marine science and environmental law. These roles have given him an extensive practical knowledge of the UK's fisheries and marine resource management regime. Jim has been involved in the review of several MSC certification assessments including the South-West Mackerel Handline Fishery, Loch Torridon Nephrops, Burry Inlet Cockles, North Sea Herring and South Georgia Patagonian Toothfish. He has worked as an expert advisor and team leader for several MSC assessments in the UK and Europe. He has also carried out MSC pre-assessments and Chain of Custody certifications for clients in the UK and Europe.

#### **Guus Eltink**

Guus Eltink is a retired Dutch government fisheries biologist, who worked at the Netherlands Institute for Fisheries Research from 1980-2005 on pelagic fish species (mackerel, horse mackerel, herring, sardine and anchovy). During these years he participated to all ICES Assessment Working Group meetings on mackerel, horse mackerel, sardine and anchovy (5 years as chairman); furthermore to all meetings of the ICES Mackerel and Horse Mackerel Egg Surveys (7 years as chairman). These egg surveys result in spawning stock biomass estimates, which are the basic information for the assessment working group. Furthermore he participated for a number of years in the ICES Herring Assessment Working Group and meetings of STECF (Scientific, Technical and Economic Committee for Fisheries) in Brussels.

#### **Dr Stephen Lockwood**

Dr. Stephen Lockwood is an independent consultant with over 40 year's experience of marine fishery and environmental research and management. From 1967 to 1999 he was a government fishery scientist at the Fishery Laboratory (now Cefas) Lowestoft and then Conwy, North Wales. His research covered fishery coastal ecology, stock assessment and management, and fishery interests in coastal zone management. As a consultant he has prepared environmental impact assessments for a variety of coastal and offshore developments and contributed both as an assessor and peer reviewer for numerous UK, European and North American fisheries seeking MSC certification.

### **10.2 Previous certification evaluations**

This fishery has not been previously assessed against the MSC standard. Several other fisheries prosecuting the Atlanto-Scandian Herring (also known as the Norwegian Spring Spawning Herring) stock have been assessed, or are under assessment. This assessment has been harmonised with these other assessments, in line with MSC guidance, and as outlined in section 8 of this report. Harmonisation is particularly relevant to the assessment of Principles 1 and 3 of this fishery.

### 10.3 Inspections of the Fishery

Inspection of the fishery focused on the practicalities of fishing operations, the mechanisms and effectiveness of management agencies and the scientific assessment of the fisheries.

Meetings were held as follows. Some of the key issues discussed have been summarised for each meeting.

Name	Affiliation	Date	Key Issues
Gerard van Balsfoort	Chairman of PFA	5 <sup>th</sup> January 2010	
Johan Muller	Fleet Manager, Cornelis Vrolijk's Visserij Maatschappij BV	5 <sup>th</sup> January 2010	
Arie K. Guyt	Skipper of fishing vessel Maartje Theadora	5 <sup>th</sup> January 2010	Fishing areas, techniques, and
Cor van Duyn	Production manager, fishing vessel Maartje Theadora	5 <sup>th</sup> January 2010	Catch handling, packaging and on-board traceability systems.
Maarten van Klaveren	Skipper of fishing vessel Cornelis Vrolijk		
P.A. van der Plas	Production manager, fishing vessel Cornelis Vrolijk		
Frans van Beek	IMARES	6 <sup>th</sup> January 2010	Monitoring of stocks, fleet activity and effects on non-target species.
Gerard Reijmer	General Inspection Service	7 <sup>th</sup> January 2010	Enforcement and regulation of the fleet in port and at sea; levels of compliance.
Henk Offringa	Policy Advisor, Ministry of Agriculture, Nature & Food Quality	7 <sup>th</sup> January 2010	Government role in management of the fishery and fleet.
Inge Janssen	Policy Advisor, Ministry of Agriculture, Nature & Food Quality	7 <sup>th</sup> January 2010	Coastal States Agreement for Atlanto-Scandian Herring – nature and outcome of 2009 discussion for 2010 TAC.
Laurent Gorissen	Quota Manager, Ministry of Agriculture, Nature & Food Quality	7 <sup>th</sup> January 2010	Procedures for allocating and monitoring quota uptake & levels of compliance.



## 11 STAKEHOLDER CONSULTATION

### 11.1 Stakeholder Consultation

A total of 40 stakeholders were identified and consulted specifically by Moody Marine. Information was also made publicly available at the following stages of the assessment:

Date	Purpose	Media
13 <sup>th</sup> November 2009	Announcement of assessment	Direct E-mail/letter Notification on MSC website Advertisement in press
13 <sup>th</sup> November 2009	Notification of Assessment Team membership	Direct E-mail Notification on MSC website
13 <sup>th</sup> November 2009	Notification of intent to use MSC FAM Standard Assessment Tree	Direct E-mail Notification on MSC website
24 <sup>th</sup> November 2009	Notification of assessment visit and call for meeting requests	Direct E-mail Notification on MSC website
4 <sup>th</sup> -7 <sup>th</sup> January 2010	Assessment visit	Meetings
19 <sup>th</sup> January 2010	Notification of Proposed Peer Reviewers	Direct E-mail Notification on MSC website
22 <sup>nd</sup> April 2010	Notification of Public Comment Draft Report	Direct E-mail Notification on MSC website
June 2010	Notification of Final Report	Direct E-mail Notification on MSC website

### 11.2 Stakeholder Issues

The main issues discussed by the assessment team were:-

- **Non-target species** - the team sought information about catch rates of non-target species, particularly those of no commercial value and any ETP species (such as birds or cetaceans) in this fishery. Published reports, observer records and anecdotal evidence from vessel skippers were gathered to enable an informed opinion to be formed about this issue.
- **Compliance with regulations** – the team sought information from regulators about levels of compliance within the fishery, and inspected records maintained by the fleet to establish the procedures in place for ongoing monitoring of quota uptake and catch composition.
- **Traceability** – inspections of fishing vessels were carried out to determine the procedures in place for ensuring traceability of fish during catching, grading, processing, packaging and storage at sea. Copies of operational procedures were obtained and inspected.

## **12 OBSERVATIONS AND SCORING**

### **12.1 Introduction to scoring methodology**

The MSC Principles and Criteria set out the requirements of certified fishery. These Principles and Criteria have been developed into a standard (Fishery Assessment Methodology) assessment tree - Performance Indicators and Scoring Guideposts - by the MSC, which is used in this assessment.

The Performance Indicators (PIs) have been released on the MSC website. In order to make the assessment process as clear and transparent as possible, each PI has three associated Scoring Guideposts (SGs) which identify the level of performance necessary to achieve 100, 80 (a pass score), and 60 scores for each Performance Indicator; 100 represents a theoretically ideal level of performance and 60 a measurable shortfall.

For each Performance Indicators, the performance of the fishery is assessed as a 'score'. In order for the fishery to achieve certification, an overall weighted average score of 80 is necessary for each of the three Principles and no Indicator should score less than 60. As it is not considered possible to allocate precise scores, a scoring interval of five is used in evaluations. As this represents a relatively crude level of scoring, average scores for each Principle are rounded to the nearest whole number.

Weights and scores for the Fishery are presented in the scoring table (Appendix A).

## **13 TRACEABILITY**

Traceability of product from the sea to the consumer is vital to ensure that the MSC standard is maintained. There are several aspects to traceability that the MSC require to be evaluated: Traceability within the fishery; at-sea processing; at the point of landing; and subsequently the eligibility of product to enter the chain of custody. These requirements are assessed here.

### **13.1 Traceability within the fishery**

Traceability of broad-scale fishing activity within this fishery is provided by the statutory requirements to record all fishing in logbooks and through monitoring of vessel activity by fisheries enforcement bodies and satellite monitoring equipment (VMS).

Further traceability is provided by the client's own internal systems that record the date and time of fishing activities, and the date and time of packaging on board vessels. All of the frozen fish landed from this fishery can be traced back to the date and location of the trawl haul in which the fish were caught.

The new EC measures that have been implemented to address problems with landing of Illegal Unlicensed and Unregulated (IUU) fishing provide an additional safeguard against mixing of fish from different sources (see section 7.3.3.2). All landings of fish by PFA vessels must be accompanied by certificates stating the origin of the fish. These new Port State Measures and the accompanying penalties for non-compliance, coupled with the client's own traceability systems, mean that the risk of IUU fish being landed by PFA vessels is negligible.

The vessels included in this unit of certification are listed in Appendix D of this report. In the course of the certification it is possible that further companies/vessels may join the client group. This would be in accordance with the MSC's stated desire to allow fair and equitable access to the certification. Any changes to the membership of the client group on a permanent or temporary basis will be reported on an ongoing basis by the client and reviewed at annual surveillance audits.

### **13.2 At-sea processing**

Fish are processed at sea. The processing involves grading fish into size classes and freezing the fish into blocks (of 20-22kg weight). Blocks are packaged on the day of capture and printed with the date, time and other information that ensures traceability.

All boxes of fish are labelled with a unique code aboard the vessel when it is packed aboard the vessel. These labelled boxes are stacked on pallets in the hold. Fish from separate production batches are kept on separate pallets and are never mixed. Pallets are placed in specific locations and layers in the hold. Information on the content and location of each pallet is recorded in the hold inventory that is maintained by the production manager aboard the vessel and communicated to the vessel owners daily. This means that there is a constant, up-to-date and cross-checked record of the hold inventory.

With these comprehensive, tested and legally enforceable measures in place, it is appropriate for the at-sea processing activities of the fleet to be embraced in the scope of this assessment and certification.

### **13.3 Point of landing**

Fish are only landed by the PFA fleet at designated ports within the EU. Catches are inspected by enforcement bodies at these ports. The PFA fleet lands nearly all of its herring at the Dutch ports of Flushing, IJmuiden, and Scheveningen. Some landings are occasionally made at the German ports of

Bremerhaven and Sassnitz.

Vessels are required to give 72h notice of their arrival in port so that arrangements can be made for the inspection of catches.

#### **13.4 Eligibility to enter chains of custody**

The scope of this certification ends at the points of landing (detailed in section 13.3 above). Downstream certification of the product would require appropriate certification of storage and handling facilities at these locations.

#### **13.5 Eligibility date**

The eligibility date for mackerel from this fishery is 29<sup>th</sup> October 2009 (which was 6 months prior to the publication of the Public Comment Draft Report for this fishery on 29th April 2010).

## 14 ASSESSMENT RESULTS

The Performance of the Fishery in relation to MSC Principles 1, 2 and 3 is summarised below:

MSC Principle	Fishery Performance
<b>Principle 1:</b> Sustainability of Exploited Stock	Overall : 96
<b>Principle 2:</b> Maintenance of Ecosystem	Overall : 95
<b>Principle 3:</b> Effective Management System	Overall : 93

**The fishery attained a score of 80 or more against each of the MSC Principles and did not score less than 80 against any Indicators. It is therefore determined that the Pelagic Freezer-Trawler Atlanto-Scandian Herring Trawl Fishery be certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries.**

The scores for individual Performance Indicators are summarised in Table 3. The scoring commentary and justification for each score is set out in Appendix A of this report.

### 14.1 Conditions

The fishery attained a score of over 80 against all of the Performance Indicators. The assessment team has not therefore set any conditions for this fishery.

### 14.2 Recommendations

The assessment team has also made a recommendation that would improve the performance of the fishery against the MSC Principles and Criteria. Recommendations do not have to be implemented to maintain certification, and accordingly the action taken and timescales are at the discretion of the client. The certification team's recommendation is that:

1. In response to ICES current concerns about the status of redfish stocks, the PFA should try to keep the by-catches of redfish as low as possible in this fishery, and ideally should refrain from participation in the directed pelagic redfish fishery.
2. The score awarded for the performance indicators relating to effects on ETP species could be improved if the PFA adopted a formal and comprehensive strategy for managing impacts on all ETP species that is above national and international requirements for protecting these species; and also adopted a strategy for gathering quantitative information about these species.
3. The score awarded for Performance Indicators 1.2.2, 1.2.3 and 1.2.4 would be improved if the extent and effect of slippage was better understood. New enforcement measures, such as the use of CCTV on fishing vessels, may improve understanding of this issue and should be supported.
4. All bycatches of salmon in the Atlanto-Scandian herring fishery should be officially reported even if only one or a few fish are caught. NASCO and ICES can only evaluate the impact of high seas fisheries on the wild salmon stocks if this information becomes available.

**Table 3** MSC scoring table for this fishery.

Prin- ciple	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle		Score	Contribution to Principle Score	
							Either	Or		Either	Or
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	0.333 0.1667	100	25.00	16.67
				1.1.2	Reference points	0.5	0.25	0.333 0.1667	95	23.75	15.83
				1.1.3	Stock rebuilding			0.333 0.1667		0.00	0.00
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125		95	11.88	11.88
				1.2.2	Harvest control rules & tools	0.25	0.125		90	11.25	11.25
				1.2.3	Information & monitoring	0.25	0.125		95	11.88	11.88
				1.2.4	Assessment of stock status	0.25	0.125		95	11.88	11.88
Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667		100	6.67	6.67
				2.1.2	Management	0.333	0.0667		100	6.67	6.67
				2.1.3	Information	0.333	0.0667		100	6.67	6.67
	Bycatch	0.2	2.2.1	Outcome	0.333	0.0667		100	6.67	6.67	
			2.2.2	Management	0.333	0.0667		100	6.67	6.67	
			2.2.3	Information	0.333	0.0667		95	6.33	6.33	
	ETP species	0.2	2.3.1	Outcome	0.333	0.0667		100	6.67		
			2.3.2	Management	0.333	0.0667		90	6.00		
			2.3.3	Information	0.333	0.0667		90	6.00		
	Habitats	0.2	2.4.1	Outcome	0.333	0.0667		100	6.67		
			2.4.2	Management	0.333	0.0667		90	6.00		
			2.4.3	Information	0.333	0.0667		95	6.33		
	Ecosystems	0.2	2.5.1	Outcome	0.333	0.0667		80	5.33		
			2.5.2	Management	0.333	0.0667		90	6.00		
			2.5.3	Information	0.333	0.0667		95	6.33		
Three	1	Governance and policy	0.5	3.1.1	Legal & customary framework	0.25	0.125		95	11.88	
				3.1.2	Consultation, roles & responsibilities	0.25	0.125		95	11.88	
				3.1.3	Long term objectives	0.25	0.125		90	11.25	
				3.1.4	Incentives for sustainable fishing	0.25	0.125		100	12.50	
	Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1		90	9.00		
			3.2.2	Decision making processes	0.2	0.1		90	9.00		
			3.2.3	Compliance & enforcement	0.2	0.1		95	9.50		
			3.2.4	Research plan	0.2	0.1		95	9.50		
			3.2.5	Management performance evaluation	0.2	0.1		80	8.00		
Overall weighted Principle-level scores										Either	Or
Principle 1 - Target species						Stock rebuilding PI not scored				95.63	
						Stock rebuilding PI scored					79.38
Principle 2 - Ecosystem										95.00	
Principle 3 - Management										92.50	

## **15 APPENDIX A: SCORING TABLE**

### **Scoring Table Overleaf**

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
Principle 1	A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.			
1.1	Management Outcomes:			
1.1.1	<b>Stock Status:</b> The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing	It is <u>likely</u> that the stock is above the point where recruitment would be impaired.	It is <u>highly likely</u> that the stock is above the point where recruitment would be impaired.  The stock is at or fluctuating around its target reference point.	There is a <u>high degree of certainty</u> that the stock is above the point where recruitment would be impaired.  There is a <u>high degree of certainty</u> that the stock has been fluctuating around its target reference point, or has been above its target reference point, <u>over recent years</u> .
<b>Scoring Comments</b>				
The stock is at the highest level it has been for the past 20 years and is virtually at the same level as the highest level ever recorded. It is known that the stock exhibits erratic levels of recruitment, even at very high levels but historic events in the late 1960s and 1970 show that fishery related recruitment failure is only likely to be a problem when the stock is at a level significantly lower than it is now, or has been in recent years. The stock has been comfortably in excess of $B_{pa}$ (5.0 Mt) since total catches were brought into line with the target reference point of $F_{mgt}$ (<0.125) in the early 2000s.				
<b>Score: 100</b>				
The current stock level ensures a high degree of certainty that recruitment over fishing is not a risk and there a similar high level of certainty that the fishery has been running at or about its target reference point $F_{mgt}$ since 2004.				
<b>Audit Trace References</b>				
Section 5.2; WGWISE, 2009; ACOM, 2009				



1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
1.1.2	<b>Reference Points:</b> Limit and target reference points are appropriate for the stock.	<p>Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.</p>	<p>Reference points are appropriate for the stock and can be estimated.</p> <p>The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.</p> <p>The target reference point is such that the stock is maintained at a level consistent with <math>B_{MSY}</math> or some measure or surrogate with similar intent or outcome.</p> <p>For low trophic level species, the target reference point takes into account the ecological role of the stock.</p>	<p>Reference points are appropriate for the stock and can be estimated.</p> <p>The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of relevant <u>precautionary issues</u>.</p> <p>The target reference point is such that the stock is maintained at a level consistent with <math>B_{MSY}</math> or some measure or surrogate with similar intent or outcome, <u>or a higher level</u>, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.</p>
<b>Scoring Comments</b>				
<p>The limit and target reference points are appropriate. There are internationally agreed levels for <math>B_{lim}</math>, 2.5 Mt, a level that generated levels of recruitment in the 1960s comparable with current medium–poor recruitment and <math>B_{pa}</math>, 5.0 Mt, a level that has generated some of the highest levels of recruitment in the past.</p> <p>As herring have an asymptotic yield-per-recruit curve it is not possible to define a precise <math>F_{msy}</math>; in its place there is an internationally agreed target reference point of <math>F_{mgt}</math>. The fishery has operated at this level for the past 5 – 6 years and the stock has continued to grow. The ecological role of herring in the NE Atlantic ecosystem is recognised, is subject to ongoing research and is an aspect of the ICES considerations when formulating management advice.</p>				
<b>Score: 95</b>				
<p>The reference points for the stock are appropriate and have been estimated. Historic events indicate that the limit reference points are set at above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of relevant precautionary issues. The target reference point is such that the stock is maintained at a level consistent with <math>B_{MSY}</math> or some measure or surrogate with similar intent or outcome, or a higher level, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.</p> <p>The score reflects the absence of an explicitly defined target reference point for <math>MSY</math>.</p>				
<b>Audit Trace References</b>				
Section 5.2.3; WGWIDES, 2009; ACOM, 2009.				

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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1.1.3	<b>Stock Rebuilding:</b> Where the stock is depleted, there is evidence of stock rebuilding.	<p>Where stocks are depleted rebuilding strategies which have a <u>reasonable expectation</u> of success are in place.</p> <p>Monitoring is in place to determine whether they are effective in rebuilding the stock within a <u>specified</u> timeframe.</p>	<p>Where stocks are depleted rebuilding strategies are in place.</p> <p>There is <u>evidence</u> that they are rebuilding stocks, or it is highly likely based on simulation modelling or previous performance that they will be able to rebuild the stock within a <u>specified</u> timeframe.</p>	<p>Where stocks are depleted, strategies are <u>demonstrated</u> to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the <u>shortest practicable</u> timeframe.</p>
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<b>Scoring Comments</b>
The stock is not depleted
<b>Score: N/A</b>
N/A
<b>Audit Trace References</b>
N/A

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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1.2	Harvest Strategy (management)			
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1.2.1	Harvest Strategy: There is a robust and precautionary harvest strategy in place	<p>The harvest strategy is <u>expected</u> to achieve stock management objectives reflected in the target and limit reference points.</p> <p>The harvest strategy is <u>likely</u> to work based on prior experience or plausible argument.</p> <p><u>Monitoring</u> is in place that is expected to determine whether the harvest strategy is working.</p>	<p>The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy <u>work together</u> towards achieving management objectives reflected in the target and limit reference points.</p> <p>The harvest strategy may not have been fully tested but monitoring is in place and <u>evidence</u> exists that it is achieving its objectives.</p>	<p>The harvest strategy is responsive to the state of the stock and is <u>designed</u> to achieve stock management objectives reflected in the target and limit reference points.</p> <p>The performance of the harvest strategy has been <u>fully evaluated</u> and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.</p> <p>The harvest strategy is <u>periodically reviewed and improved</u> as necessary.</p>
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<b>Scoring Comments</b>				
There is an internationally agreed harvest strategy in place that ICES considers to be consistent with the precautionary approach to fishery management. Since it was agreed (1999) and became fully operational (2004, i.e. $F \leq F_{\text{mgt}}$ ) the stock has been among the largest fish stocks in the world and has been able to support the aspirations of the fleets that exploit it. The strategy includes the harvest control rule that will apply in the event of a (significantly) reduced stock size. The strategy includes the provision for review if the stock declines significantly.				
<b>Score: 95</b>				
The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points. At current high stock levels, there is little doubt that the strategy is achieving its objectives. The opportunity has not yet arisen to fully evaluate whether it is able to maintain stocks above limit reference points if there is a succession of poor recruitment. The strategy will be reviewed in response to need rather than “periodically”.				
<b>Audit Trace References</b>				
WGWIDE, 2009; ACOM, 2009.				

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
1.2.2	Harvest control rules and tools: There are well defined and effective harvest control rules in place	<p><u>Generally understood</u> harvest control rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.</p> <p>There is <u>some evidence</u> that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.</p>	<p><u>Well defined</u> harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.</p> <p>The <u>selection</u> of the harvest control rules takes into account the <u>main</u> uncertainties.</p> <p><u>Available evidence indicates</u> that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules</p>	<p><u>Well defined</u> harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.</p> <p>The <u>design</u> of the harvest control rules take into account a <u>wide</u> range of uncertainties.</p> <p><u>Evidence clearly shows</u> that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.</p>
<p><b>Scoring Comments</b></p> <p>The harvest control rule (HCR) relating to stock in excess of <math>B_{pa}</math> is well defined and is meeting current circumstances. The rule also outlines the actions to be taken, albeit less explicitly, in the event the stock falls below <math>B_{pa}</math>. The opportunity has not yet arisen to test the efficacy of this part of the rule. The stock is made up of several year classes, many of which are well represented, and this has the effect of cushioning the effects of poor recruitment on SSB provided that it does not persist over a long period.</p> <p>The consideration of uncertainties affecting the assessment data and assessment methodology are a routine part of the annual ICES stock assessment procedure. Of the principal sources of uncertainty, unreported catches are recognized as a probable reality but are assumed to be trivial relative to the scale of the stock and fishery; recruitment is known to be erratic and it is assumed that a recent run of low – medium recruitment will result in declining SSB in the immediate future. Management options are considered with respect to a range of recruitment possibilities. ICES is also aware that <i>Ichthyophonus</i> fungal infection could strike in the near future with concomitant implications for natural mortality rates. This potential problem is being monitored.</p> <p>With all the evidence that is available for the fishery since 1988 (i.e. post collapse) and 1999 (post agreed management plan) it appears that the management rules and tools that are in place are effective in maintaining high productivity and avoiding recruitment over fishing.</p> <p><b>Score: 90</b></p> <p>The HCR in place for current stock levels is well defined and is achieving the exploitation levels required. In so far as there are any uncertainties, these relate to the fact that there has not yet been an opportunity (or need) to test the HCR at lower stock levels. All available evidence indicates a management plan that is effective.</p> <p><b>Audit Trace References</b></p> <p>Sections 5.2.4, 7.2.3, 7.3.1; WGWIDE, 2009; ACOM, 2009.</p>				

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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1.2.3	<b>Information / monitoring:</b> Relevant information is collected to support the harvest strategy	<p><u>Some</u> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.</p> <p>Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.</p>	<p><u>Sufficient</u> relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.</p> <p>Stock abundance and fishery removals are <u>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</u>, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.</p> <p>There is good information on all other fishery removals from the stock.</p>	<p>A <u>comprehensive range</u> of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly relevant to the current harvest strategy, is available.</p> <p><u>All information</u> required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent <u>uncertainties</u> in the information [data] and the robustness of assessment and management to this uncertainty.</p>
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#### Scoring Comments

This stock has been subject to intense biological investigation for the past 60+ years. Historically the research has focussed very much on the fundamental biology of the species and this stock, and this aspect continues to this day. In recent years, however, there has been an expansion towards a greater ecosystem-based vision where the species is seen to be an integral part of a greater whole, both being affected by the environment of which it is part and affecting the species upon which it preys or by which it is preyed upon. As understanding of these additional complexities increases, they are being drawn ever more closely into the assessment process and the implications considered during formulation of management advice. Although a greater part of the research programme is undertaken by Norway and Russia, their efforts are supported by complementary research undertaken by other nations with an interest in the stock and its fishery: EU states, Faroe Islands, Iceland.

The data are subject to rigorous peer review, either through the scientific publication procedure or as an aspect of the annual ICES assessment programme.

The principal uncertainty relating to data collection concerns the absence of information on unreported catches. Whilst recognising they may exist, ICES assumes the quantities are trivial relative to the scale of stock and fishery.

#### Score: 95

There is a very comprehensive range of data available covering all of the first SG100 requirement, that is both at the very relevant to the core of the assessment and management, as well as considerable, arguably more peripheral information that can help with interpretation even if it cannot be incorporated directly.

All the data essential for the effective monitoring and implementation of the HCR is gathered as a routine and kept under constant review with respect to quantity, quality and reliability. Major uncertainties are understood and their implications for reliability of assessments is analysed as a part of the ICES assessment system. If these uncertainties were addressed, a score of 100 would be warranted; the score of 95 reflects the fact that some uncertainties exist.

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Audit Trace References				
Sections 5.2.1, 5.2.2; Kurita, 2003; Óskarsson, 2002; Óskarsson & Pálsson, 2009; NWWG, 2009; Røttingen, 2007; Sætre <i>etal.</i> , 2002; Toresen, 1991; Van Opzeeland , 2005;WGNPBW, 2007;WGWISE, 2009, ACOM, 2009.				

1.2.4	<b>Assessment of stock status:</b> There is an adequate assessment of the stock status	<p>The assessment estimates stock status relative to reference points.</p> <p>The assessment identifies major sources of uncertainty..</p>	<p>The assessment is appropriate for the stock and for the harvest control rule, and is evaluating stock status relative to reference points.</p> <p>The assessment takes uncertainty into account.</p> <p>The assessment of stock status is subject to peer review.</p>	<p>The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.</p> <p>The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.</p> <p>The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.</p> <p>The assessment has been <u>internally and externally</u> peer reviewed.</p>
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Scoring Comments				
<p>The annual assessment procedure is thorough, comprehensive and robust. Insofar as there are shortcomings of significance it is the lack of data on unreported catches (assumed to be trivial) and uncertainties surrounding recruitment indices stemming, not least, from inter-annual variation in 0 group distribution. Major sources of uncertainty are given explicit consideration as part of the assessment process – including the potential implications of a stock-wide <i>Ichthyophonus</i> infection. ICES basic methodologies are kept under review and the NSSH working groups do test the basic assessment with alternative models, including statistical analysis.</p> <p>The assessment is subject to formal and informal review within the ICES framework, by fishery management bodies, including the EC STECF, the international fishing industry and other interested parties. ICES also undertake periodic reviews of its methodologies whilst the parties to the management agreement undertake annual and periodic reviews of their management procedures and strategies.</p>				
<b>Score: 95</b>				
The fishery meets all of the SG100 requirements, except that the frequency of external review of the assessment is limited, justifying a score of 95.				
Audit Trace References				
Section 5.2.2; WGWISE, 2009; ACOM, 2009.				

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Principle 2	Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends			
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2.1	Retained non-target species			
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2.1.1	<p><b>Status:</b> The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species.</p>	<p>Main retained species are <u>likely</u> to be within biologically based limits or if outside the limits there are <u>measures</u> in place that are <u>expected</u> to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.</p> <p>If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.</p>	<p>Main retained species are <u>highly likely</u> to be within biologically based limits, or if outside the limits there is a <u>partial strategy</u> of <u>demonstrably effective</u> management measures in place such that the fishery does not hinder recovery and rebuilding.</p>	<p>There is a <u>high degree of certainty</u> that retained species are within biologically based limits.</p> <p>Target reference points are defined and retained species are at or fluctuating around their target reference points.</p>
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Scoring Comments				
<p>The directed Atlanto-Scandian herring fishery is very ‘clean’, retaining small quantities of non-target species, and therefore does not pose a risk of serious or irreversible harm to them. This is a result of the fishing strategy of the fleet. The selection of fishing grounds and the use of sophisticated sonar equipment allows discrimination between pelagic fish shoals, to ensure that the catch is composed almost entirely of Atlanto-Scandian herring. There is evidence of occasional retained catches of blue whiting, redfish and mackerel in the directed Atlanto-Scandian herring fishery in small quantities.</p> <p>The impact of the fishery on the retained non-target populations (blue whiting and mackerel) can be quantified as all landings count against the TAC for these species, and are therefore included in the assessment that is carried out by ICES. Stock assessments are carried out by ICES for the blue whiting and mackerel. At present, the North East Atlantic stocks of both species are above <math>B_{pa}</math> and above the target reference points specified in the management plans for each species. If these populations would be out of biologically safe limits there would be management measures in place to ensure recovery and rebuilding.</p> <p>Redfish (<i>Sebastes mentella</i> and <i>S. marinus</i>) are occasionally caught in the fishery. The impact of the PFA Atlanto-Scandian herring fishery on the retained non-target population of redfish is expected to have a negligible effect on the redfish population, because the by-catch of redfish in the PFA Atlanto-Scandian herring fishery is assumed to be around 0.1% of the total international redfish catch in Sub-area I and II (the German PFA fleet participated in this fishery in 2006 and 2007, but no longer targets redfish).</p>				
<b>Score: 100</b>				
The directed Atlanto-Scandian herring fishery has a very low level of incidental capture of non-target species. The retained non-target species populations are at their				

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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reference levels. The fishery therefore meets the requirement of SG100

#### Audit Trace References

Section 6.2; WGWIDE (2009); AFWG (2009); interview PFA; interview skipper of Cornelius Vrolijk; relevant ICES advice for 2009 (mackerel, blue whiting and redfish.

2.1.2	<p><b>Management strategy:</b> There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species.</p>	<p>There are <u>measures</u> in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.</p> <p>The measures are considered <u>likely</u> to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).</p>	<p>There is a <u>partial strategy</u> in place, if necessary that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.</p> <p>There is some <u>objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or species involved.</p> <p>There is <u>some evidence</u> that the partial strategy is being <u>implemented successfully</u>.</p>	<p>There is a <u>strategy</u> in place for managing retained species.</p> <p>The strategy is mainly based on information directly about the fishery and/or species involved, and <u>testing</u> supports <u>high confidence</u> that the strategy will work.</p> <p>There is <u>clear evidence</u> that the strategy is being <u>implemented successfully</u>, and intended changes are occurring.</p> <p>There is some evidence that the strategy is <u>achieving its overall objective</u>.</p>
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#### Scoring Comments

The retained non-target species in a directed Atlanto-Scandian herring fishery are only blue whiting, mackerel and redfish. As noted in 2.1.1 above, the directed Atlanto-Scandian herring fishery is very ‘clean’. The fleet has a strategy for ensuring clean catches of fish, using a combination of experience and technology to ensure that the catch is composed almost entirely of the target species. This practice is formally endorsed in the client fleet’s policy document, which pledges a commitment to support measures that will reduce by-catch and discards. The fleet has equipment on board for sorting the catch, so that non-target species can be separated from herring and retained. The level of capture of non-target species can be verified from EC log-book and landings data, and the impact of the fishery on the retained non-target populations (blue whiting and mackerel) can be quantified as all landings count against TAC, and are therefore included in the assessment that is carried out by ICES.

The client gathers and retains comprehensive information on the catch composition of every haul, during a fishing trip. Examples of such information were inspected during the



1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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site visit. This information could provide an objective basis for confidence that the bycatch avoidance strategy can be applied successfully. This directed Atlanto-Scandian herring fishery has very limited direct impact on the blue whiting and mackerel populations. This is because the catch as bycatch of both species is very low compared to the annual quota of blue whiting and mackerel for which this PFA fleet also has a directed fishery.

Only in 2006 and 2007 the German PFA fleet carried out a directed pelagic redfish (*Sebastes mentella*) fishery in the Norwegian Sea in international waters (catches resp. 2475 tonnes and 497 tonnes). PFA followed ICES advice in 2008 and 2009 that there should be no directed trawl fishery on *Sebastes mentella* in Sub Areas I and II and that redfish by-catches should be kept to a minimum.

**Score: 100**

The fleet under assessment uses a fishing strategy to minimise capture of non-target species, and any non-target species retained in the fishery count against the TAC for that species, ensuring that adverse impacts on the stock are accounted for. Evidence that these measures are being implemented effectively is provided by official logbook and landings data. The fishery therefore meets the requirement of SG100.

#### **Audit Trace References**

Section 6.2; WGWIDE (2009); AFWG (2009); ICES advice (2009).

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
2.1.3	<p><b>Information / monitoring:</b> Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species.</p>	<p><u>Qualitative information</u> is available on the amount of main retained species taken by the fishery.</p> <p>Information is <u>adequate</u> to <u>qualitatively</u> assess outcome status with respect to biologically based limits. *</p> <p>Information is adequate to support <u>measures</u> to manage <u>main</u> retained species.</p>	<p><u>Qualitative information</u> and some quantitative information are available on the amount of main retained species taken by the fishery.</p> <p>Information is <u>sufficient</u> to estimate outcome status with respect to biologically based limits.*</p> <p>Information is adequate to support a <u>partial strategy</u> to manage <u>main</u> retained species.</p> <p>Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).</p>	<p>Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.</p> <p>Information is <u>sufficient</u> to <u>quantitatively</u> estimate outcome status with a <u>high degree of certainty</u>. *</p> <p>Information is adequate to support a <u>comprehensive strategy</u> to manage retained species, and evaluate with a <u>high degree of certainty</u> whether the strategy is achieving its objective.</p> <p>Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.</p>

\* These guideposts are not relevant when RBF is used to score PI2.1.1

Scoring Comments
<p>The mid water pelagic Atlanto-Scandian herring fishery has limited interaction with species other than blue whiting, mackerel and redfish. Van Helmond and van Overzee (2009) report only 0.3% retained non-target species by the Dutch PFA fleet in Division IIa in 2007. Onboard use of multi frequency sonar systems has increased the ability of crews to distinguish mixed shoals, which has led to a reduction in non-target species. Dutch PFA skippers mention an occasional catch of a salmon.</p> <p>Quantitative information is available on the amount of non-target retained species taken by the fishery, derived from EC logbook and landings data. This information is sufficient to estimate the outcome of capture of the non-target species with respect to biologically based limits, and this information is adequate to support a strategy to manage the capture of the retained species.</p> <p>The EC and the client are committed to an ongoing programme of data collection that would detect any increase in risk. This information is accurate and verifiable, and is sufficiently detailed to allow the mortality of retained species to be determined. These data, and other information, are evaluated by the relevant ICES working groups for the non-target species.</p>

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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<b>Score: 100</b>				
Qualitative and quantitative information is available on the amount of bycatch of herring and horse mackerel; this information is sufficient to quantitatively estimate outcome status with a high degree of certainty, and adequate to support a comprehensive strategy to manage retained herring and horse mackerel, and evaluate with a high degree of certainty whether the strategy is achieving its objective. Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to blue whiting, mackerel and redfish. All of the SG100 indicators are therefore met.				
<b>Audit Trace References</b>				
Section 6.2; WGWIDE (2009); van Helmond and van Overzee (2009); I1; I2; I3; I5; I7.				

2.2	<b>Discarded species (also known as “bycatch” or “discards”)</b>			
2.2.1	<p><b>Status</b> The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups.</p>	<p>Main bycatch species are <u>likely</u> to be within biologically based limits, or if outside such limits there are mitigation <u>measures</u> in place that are <u>expected</u> to ensure that the fishery does not hinder recovery and rebuilding.</p> <p>If the status is poorly known there are measures or practices in place that are expected result in the fishery not causing the bycatch species to be biologically based limits or hindering recovery.</p>	<p>Main bycatch species are <u>highly likely</u> to be within biologically based limits or if outside such limits there is a <u>partial strategy</u> of <u>demonstrably effective</u> mitigation measures in place such that the fishery does not hinder recovery and rebuilding.</p>	<p>There is a <u>high degree of certainty</u> that bycatch species are within biologically based limits.</p>

<b>Scoring Comments</b>
<p>Under some circumstances, non-target species caught by pelagic trawlers may either be discarded by the vessel or “slipped” from nets. This can happen if the fish are unmarketable or if the vessel has no quota for them.</p> <p>According to ICES there is evidence that discarding and slipping is not an issue within the Atlanto-Scandian herring fishery. Observer data reported by van Helmond and van Overzee (2009) indicate that there has only been 2%-3% discarding in 2007 in Division IIa during the fishery on Atlanto-Scandian herring by the Dutch PFA fleet (this was discarding of blue whiting, but no discarding of herring or mackerel). There are reports of individual redfish and saithe being caught occasionally and discarded by the herring</p>

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
	<p>fleet.</p> <p>Overall, the directed Atlanto-Scandian herring fishery is very ‘clean’, retaining and discarding small quantities of non-target species, and therefore does not pose a risk of serious or irreversible harm to them. This is a result of the fishing strategy of the fleet. The selection of fishing grounds and the use of sophisticated sonar equipment allows discrimination between pelagic fish shoals, to ensure that the catch is composed almost entirely of Atlanto-Scandian herring.</p> <p>The quantity of non-target species caught and discarded or slipped by the herring fleet are negligible, a consequence of the fishing practices used in this fishery. The client reported that pelagic redfish (<i>Sebastes mentella</i>) occasionally caught, but in very low numbers indeed (occasional individual fish rather than shoals). There is therefore a high degree of certainty that the fishery does not pose a risk of serious or irreversible harm to these species.</p> <p>The quantity of target species that are caught and discarded or slipped is also negligible, again a consequence of both the fishing practices and the life history of the Atlanto-Scandian herring (only mature fish are found in the fishing grounds – the smaller juveniles are located in the Barents Sea). Discarding is accounted for in ICES stock advice, and does not pose a risk of serious or irreversible harm to the target species.</p>			
	<b>Score: 100</b>			
	All of the SG100 requirements are met.			
	<b>Audit Trace References</b>			
	Section 6.3; ICES Advice 2009; van Helmond and van Overzee 2009; I1; I2; I3; I5; I7.; Figure 5.1.3.a			

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
2.2.2	<p><b>Management strategy:</b></p> <p>There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations.</p>	<p>There are <u>measures</u> in place, if necessary, which are expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.</p> <p>The measures are considered <u>likely</u> to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).</p>	<p>There is a <u>partial strategy</u> in place, if necessary, for managing bycatch that is expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.</p> <p>There is <u>some objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or the species involved.</p> <p>There is <u>some evidence</u> that the partial strategy is being implemented successfully.</p>	<p>There is a <u>strategy</u> in place for managing and minimising bycatch.</p> <p>The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports <u>high confidence</u> that the strategy will work.</p> <p>There is some <u>evidence</u> that the strategy is achieving its objective.</p> <p>There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.</p>

Scoring Comments
<p>The PFA has had a policy document in place since 2000 which endeavours to achieve a discard rate of less than 3%. Independent evidence suggests that rates of discarding in this fishery are currently 2-3% of total catch. At sea, the skippers make maximum use of the electronic aids available, and mutual exchange of information among skippers whilst fishing, to minimise capture of anything other than target species.</p> <p>All evidence indicates that bycatch is not an issue within the PFA Atlanto-Scandian herring fishery showing that the overall strategy is successful.</p>
Score: 100
<p>The strategy in place, comprising the PFA policies and the customary operation practice of the fleet at sea meets all of the SG100 requirements, with independent data confirming that the strategy is successful.</p>
Audit Trace References
<p>Section 6.3; ICES advice 2009; van Helmond and van Overzee 2009; I1; I2; I3; I5; I7..</p>

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
2.2.3	<p><b>Information / monitoring</b></p> <p>Information on the nature and amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch.</p>	<p><u>Qualitative information</u> is available on the amount of main bycatch species affected by the fishery.</p> <p>Information is <u>adequate</u> to <u>broadly understand</u> outcome status with respect to biologically based limits. *</p> <p>Information is adequate to support <u>measures</u> to manage bycatch.</p>	<p><u>Qualitative information and some quantitative information</u> are available on the amount of main bycatch species affected by the fishery.</p> <p>Information is sufficient to estimate outcome status with respect to biologically based limits.*</p> <p>Information is adequate to support a <u>partial strategy</u> to manage main bycatch species.</p> <p>Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).</p>	<p><u>Accurate and verifiable information</u> is available on the amount of all bycatch and the consequences for the status of affected populations.</p> <p>Information is <u>sufficient</u> to quantitatively estimate outcome status with respect to biologically based limits with a <u>high degree of certainty</u>. *</p> <p>Information is adequate to support a <u>comprehensive strategy</u> to manage bycatch, and evaluate with a high degree of certainty whether a strategy is achieving its objective.</p> <p>Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.</p>

\* These guideposts are not relevant when RBF is used to score PI2.2.1

Scoring Comments
<p>Accurate and verifiable information is available both from data on discarding gathered by the client fleet and from independent observer data. The monitoring programme, combined with independent stock assessment data for the discarded species is sufficient to assess ongoing mortalities and estimate outcome status with a high degree of certainty. This information is adequate to support the current management strategy in place and to confirm that it is achieving its objective.</p> <p>There is accurate and verifiable information on all bycatch species affected by the fishery and this is sufficient to enable the outcome on affected populations to be modeled. The client has a partial strategy in place to minimise discarding, and there is an established and ongoing observer programme in place.</p>
<b>Score: 95</b>
<p>The fishery meets all of the SG80 requirements and completely meets three of the four SG100 requirements. The fourth SG100 requirement is only partially met, justifying a score of 95.</p>

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Audit Trace References
Section 6.3; ICES advice 2009; van Helmond and van Overzee 2009; I1; I2; I3; I5; I7.

2.3	Endangered, Threatened and Protected (ETP) species
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2.3.1	<p><b>Status:</b> The fishery meets national and international requirements for protection of ETP species.</p> <p>The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species.</p>	<p>Known effects of the fishery are <u>likely</u> to be within limits of national and international requirements for protection of ETP species.</p> <p>Known direct effects are <u>unlikely</u> to create <u>unacceptable impacts</u> to ETP species.</p>	<p>The effects of the fishery are known and are <u>highly likely</u> to be within limits of national and international requirements for protection of ETP species.</p> <p>Direct effects are <u>highly unlikely</u> to create <u>unacceptable impacts</u> to ETP species.</p> <p>Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.</p>	<p>There is a <u>high degree of certainty</u> that the effects of the fishery are within limits of national and international requirements for protection of ETP species.</p> <p>There is a <u>high degree of confidence</u> that there are <u>no significant detrimental effects (direct and indirect)</u> of the fishery on ETP species.</p>
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Scoring Comments
<p>The effects of the fishery on ETP species are known from observer data, and the client fleet also monitors bycatch of ETP species. Interactions with benthic species are negligible; there is little or no capture of ETP fish species or birds in the fishery, and accidental capture of marine mammals is very rare. These observations are supported by information gathered by observers, and the client fleet. This has been confirmed during interviews with vessel skippers.</p> <p>By-catch data on ETP species is available for the Dutch and German part of the PFA vessels. No accidental bycatches of cetaceans were recorded in recent years (Couperus, 2007, 2008 and 2009; Pers.comm. Jens Ulleweit, Institute for Sea Fisheries, Hamburg). The interactions between the PFA Atlanto-Scandian herring fisheries and ETP species are considered to be very limited.</p> <p>The fishery is fully compliant with all national and international conventions, legislation and agreements to safeguard ETP species. No concerns about the fishery have been raised by the ICES working group for the North-East Atlantic ecosystems or by the Norwegian nature conservation agencies about the effect of this fishery on ETP species. There is therefore a high degree of confidence that there are no significant detrimental effects of the PFA Atlanto-Scandian herring fishery on ETP species.</p>
<b>Score: 100</b>
There is a high degree of confidence that this fishery does not have significant detrimental effect on ETP species, and also a high degree of certainty that the effects of the

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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fishery are within national and international requirements for protecting these species, meeting all of the SG100 requirements.

#### Audit Trace References

Section 6.4; EU Council Regulation (EC) 812/2004; Couperus 2007, 2008 and 2009; I1; I2; I3; I5; I7..

2.3.2	<p><b>Management strategy</b></p> <p>The fishery has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> <li>- meet national and international requirements;</li> <li>- ensure the fishery does not pose a risk of serious or irreversible harm to ETP species;</li> <li>- ensure the fishery does not hinder recovery of ETP species; and</li> <li>- minimise mortality of ETP species.</li> </ul>	<p>There are <u>measures</u> in place that minimise mortality, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.</p> <p>The measures are <u>considered likely</u> to work, based on <u>plausible argument</u> (eg general experience, theory or comparison with similar fisheries/species).</p>	<p>There is a <u>strategy</u> in place for managing the fishery's impact on ETP species, including measures to minimise mortality, that is designed to be highly likely to achieve national and international requirements for the protection of ETP species.</p> <p>There is an <u>objective basis for confidence</u> that the strategy will work, based on <u>some information</u> directly about the fishery and/or the species involved.</p> <p>There is <u>evidence</u> that the strategy is being implemented successfully.</p>	<p>There is a <u>comprehensive strategy</u> in place for managing the fishery's impact on ETP species, including measures to minimise mortality, that is designed to achieve <u>above</u> national and international requirements for the protection of ETP species.</p> <p>The strategy is mainly based on information directly about the fishery and/or species involved, and a <u>quantitative analysis</u> supports <u>high confidence</u> that the strategy will work.</p> <p>There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is evidence that the strategy is achieving its objective.</p>
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#### Scoring Comments

The fishery is fully compliant with all national and international conventions, legislation and agreements to safeguard ETP species. Independent observer data and evidence gathered by the client indicates that there is very limited interaction with ETP species and supports the high confidence that the way the PFA Atlanto-Scandian herring fishery is operated minimise mortality of ETP species.

The PFA policy document endeavours to minimise discarding of all species, and the client has also implemented a scheme for recording accidental capture of cetacean species by its vessels. These measures provide an effective strategy for managing impacts on ETP species which provides quantitative information and evidence that levels of accidental capture are low and that both policy commitments and legal requirements are being met.



1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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<b>Score: 90</b>				
The fishery meets all of the SG80 requirements and two of the three SG100 requirements. The score here would be improved if the client's policy document and practices were amended to set out an explicit and comprehensive management strategy for ETP species (see Recommendation 2).				
<b>Audit Trace References</b>				
Section 6.4; EU Council Regulation (EC) 812/2004; Couperus 2008 and 2009; I1; I2; I3; I5; I7..				

2.3.3	<b>Information / monitoring</b> Relevant information is collected to support the management of fishery impacts on ETP species, including: <ul style="list-style-type: none"> <li>- information for the development of the management strategy;</li> <li>- information to assess the effectiveness of the management strategy; and</li> <li>- information to determine the outcome status of ETP species.</li> </ul>	Information is <u>adequate</u> to <u>broadly understand</u> the impact of the fishery on ETP species.  Information is adequate to support <u>measures</u> to manage the impacts on ETP species  <u>Information</u> is sufficient to <u>qualitatively</u> estimate the fishery related mortality of ETP species.	Information is <u>sufficient</u> to determine whether the fishery may be a threat to protection and recovery of the ETP species, and if so, to measure trends and support a <u>full strategy</u> to manage impacts.  <u>Sufficient data</u> are available to allow fishery related mortality and the impact of fishing to be <u>quantitatively</u> estimated for ETP species.	Information is <u>sufficient</u> to <u>quantitatively</u> estimate outcome status with a high degree of certainty.  Information is adequate to support a <u>comprehensive strategy</u> to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.  <u>Accurate and verifiable information</u> is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species
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<b>Scoring Comments</b>				
Information available from the client and from independent observers indicates that there is negligible interaction with ETP species by the pelagic herring trawl fleet.				
No concerns have been raised by national or international statutory or voluntary organisations that pelagic trawling in the Norwegian Sea gives specific or undue cause for concern.				
Information is sufficient to quantitatively estimate the impact of the PFA trawl fishery on ETP species with a high degree of certainty. This information is verifiable and provides an accurate estimate of impacts mortalities and injuries. There is a strategy in place to minimise and record impacts.				
<b>Score: 90</b>				
The fishery meets all of the SG80 requirements and two of the three SG100 requirements. The score here would be improved if the client's policy document and practices were				

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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amended to set out an explicit and comprehensive management strategy for gathering quantitative information about ETP species (see Recommendation 2).

#### Audit Trace References

Section 6.4; EU Council Regulation (EC) 812/2004; Couperus 2008 and 2009; I1; I2; I3; I5; I7..

#### 2.4 Strategies have been developed within the fisheries management system to address and restrain any significant negative impacts of the fishery on habitats

2.4.1	<b>Status</b> The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function.	The fishery is <u>unlikely</u> to reduce habitat structure and function to a point where there would be serious or irreversible harm.	The fishery is <u>highly unlikely</u> to reduce habitat structure and function to a point where there would be serious or irreversible harm.	There is <u>evidence</u> that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
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#### Scoring Comments

Fishing for the Atlanto-Scandian herring by the PFA trawler fleet takes place within the upper and mid-water column, with no interaction with the seabed. The Atlanto-Scandian herring fishery takes place in waters of depth of more than 1500m, while the maximum depth at which the PFA vessels operate their trawl is approximately 400m. The fishery will have negligible and transient impacts upon the structure and function of the pelagic habitat. Pelagic trawling for Atlanto-Scandian herring does not have a direct impact on the physico-chemical characteristics of pelagic habitats. Benthic impacts are expected to be minimal.

Information on the nature, sensitivity and distribution of habitats relevant to the fishing operations exists. Distribution of fishing effort is fully monitored through the use of logbooks, VMS, spotter planes and the activities of the Dutch General Inspection Service (AID). The seasonal distribution of fishing operations is mapped, and environmental factors and habitat interactions are regularly monitored.

There is evidence of low levels of discarding and slipping from this fishery, therefore it is unlikely that discarded fish sinking to the bottom will have any serious or irreversible impact on seabed habitats.

There is evidence that the fishery is highly unlikely to reduce the pelagic habitat structure and function to a point where there would be serious or irreversible harm. Benthic impacts by touching the seabed with trawls and by slipping whole catches are expected to be limited.

#### Score: 100

The fishery meets all of the requirements of SG100.

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Audit Trace References
Section 6.5; ICES Advice 2009 book 3; WGWISE (2009); I1; I2; I3; I5; van Helmond and van Overzee 2009.

2.4.2	<p><b>Management strategy</b></p> <p>There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types.</p>	<p>There are <u>measures</u> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.</p> <p>The measures are considered <u>likely</u> to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).</p>	<p>There is a <u>partial strategy</u> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.</p> <p>There is some <u>objective basis for confidence</u> that the partial strategy will work, based on information directly about the fishery and/or habitats involved.</p> <p>There is <u>some evidence</u> that the partial strategy is being implemented successfully.</p>	<p>There is a <u>strategy</u> in place for managing the impact of the fishery on habitat types.</p> <p>The strategy is mainly based on information directly about the fishery and/or habitats involved, and testing supports high confidence that the strategy will work.</p> <p>There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.</p>
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Scoring Comments
<p>The strategy of pelagic trawling is to fish in midwater for pelagic fish with very limited contact with the seafloor. The impact on pelagic and benthic habitats is very limited. Clear waste management protocols are in place on all vessels and vessels must maintain a waste oil logbook.</p> <p>‘Ghost fishing’ that results from gear losses is not an issue in the PFA herring pelagic fishery. Fishing is done in mid-water with efforts made to avoid contact between net and seabed. Nets are extremely expensive and are treated with considerable care to avoid damage caused by impact with seabed structures (e.g. wrecks, large boulders, etc.).</p> <p>When fishing the pelagic trawl is connected with a “lifeline” in case the pelagic trawl would burst or to ensure recovery of the net after damage. At the end of the net’s working life the nets are returned to the netting company Maritiem to be recycled. All such damaged gear will be taken to shore and disposed of through a safe and recognised route.</p> <p>Current fishing practices of mid-water trawling avoid serious or irreversible harm to pelagic habitats. There is therefore an objective basis for confidence that this strategy will and has been working, on the basis of information about the fishery and habitats involved.</p>
<p><b>Score: 90</b></p> <p>The fishery meets all of the SG100 requirements, but falls short of this score because the strategy is an outcome of the fundamental nature of the fishing method, rather than a</p>

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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response to information on the fishery or habitats involved.

#### Audit Trace References

Section 6.5; ICES Advice 2009 book 3; WGWIDE (2009); I1; I2; I3; I5.

2.4.3	<b>Information / monitoring</b> Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types.	<p>There is a basic understanding of the types and distribution of main habitats in the area of the fishery.</p> <p>Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.</p>	<p>The nature, distribution and vulnerability of all main habitat types in the fishery area are known at a level of detail relevant to the scale and intensity of the fishery.</p> <p>Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.</p> <p>Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).</p>	<p>The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.</p> <p>Changes in habitat distributions over time are measured.</p> <p>The physical impacts of the gear on the habitat types have been quantified fully.</p>
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#### Scoring Comments

There is evidence of negligible impact on pelagic habitat structure and function and no unacceptable impacts have been demonstrated for the benthic habitats. The pelagic habitat is made up of the physico-chemical characteristics, the plankton population and the nekton (all free swimming organisms). The benthic habitat is in and on the seabed and fishermen report no interaction with the seabed.

Pelagic habitat impacts are reasonably expected to be negligible as the fishery is conducted primarily in the water column. The main impact of the Atlanto-Scandian herring pelagic trawl fishery is the depletion of the target stock biomass. This impact is assessed as part of P1, and further considered as an ecosystem impact under 2.5 below.

Information on the nature, sensitivity and distribution of habitats relevant to the fishing operations exists. The seasonal distribution of fishing operations is mapped, and environmental factors and habitat interactions are regularly monitored. This notwithstanding, there is still no comprehensive understanding of the links between the ecosystem and Atlanto-Scandian herring.

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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<p>The PFA pelagic Atlanto-Scandian herring trawl fishery is highly targeted and the effects of the fishery on the wider biological diversity are within acceptable limits.</p> <p>The distribution of pelagic habitat types is known over their range. There is no known vulnerable pelagic habitat type within the area of certification. Changes in pelagic habitat distributions over time are measured. The gear fishes midwater with no contact with the seabed.</p>				
<b>Score: 95</b>				
The fishery meets most of the SG100 requirements, falling short of the 100 score because physical impacts of fishing gear on pelagic habitats have not been fully quantified.				
<b>Audit Trace References</b>				
Section 6.5; ICES Advice 2009 book 3; WGWIDE (2009); I1; I2; I3; I5.				

2.5	Ecosystem			
2.5.1	<p><b>Status</b> The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function.</p>	<p>The fishery is <u>unlikely</u> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.</p>	<p>The fishery is <u>highly unlikely</u> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.</p>	<p>There is <u>evidence</u> that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.</p>

<b>Scoring Comments</b>
<p>Atlanto-Scandian Herring is one of the main predators on zooplankton in the Norwegian Sea and is itself an important prey for a large number of top predators. Because of the size of the stock it most likely has a major impact on the ecosystem. The main impact of the herring fishery on the ecosystem is therefore believed to be the indirect effect of the removal of the target species may have on the prey and predator species. To date, no specific concerns have been expressed that the current harvest and recent exploitation patterns have posed an unacceptable risk to herring predator populations. The stock is exploited sustainably with a fishing mortality that is less than the natural mortality. The indirect effect on the ecosystem of the removal of the herring is therefore highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.</p>
<b>Score: 80</b>
The fishery meets all of the SG80 requirements.

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Audit Trace References
Section 6.6; ICES Advice 2009 book 3; I7; I8; I9.

2.5.2	<p><b>Management strategy</b></p> <p>There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function.</p>	<p>There are <u>measures</u> in place, if necessary, that take into account potential impacts of the fishery on key elements of the ecosystem.</p> <p>The measures are considered likely to work, based on <u>plausible argument</u> (eg, general experience, theory or comparison with similar fisheries/ ecosystems).</p>	<p>There is a <u>partial strategy</u> in place, if necessary, that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.</p> <p>The partial strategy is considered likely to work, based on <u>plausible argument</u> (eg, general experience, theory or comparison with similar fisheries/ ecosystems).</p> <p>There is <u>some evidence</u> that the measures comprising the partial strategy are being implemented successfully.</p>	<p>There is a <u>strategy</u> that consists of a <u>plan</u>, containing measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and the Components and elements of the ecosystem.</p> <p>This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm.</p> <p>The measures are considered likely to work based on <u>prior experience</u>, plausible argument or <u>information</u> directly from the fishery/ecosystems involved.</p> <p>There is <u>evidence</u> that the measures are being implemented successfully.</p>
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Scoring Comments
<p>The fishery is subject to internationally agreed management plan. The management plan including the harvest control rule adopted by the coastal States only addresses the direct impact of the fishery on the Atlanto-Scandian Herring stock and does not take into account possible indirect impact the removal of the herring may have on the Norwegian Sea ecosystem. There is, however, no indication that the current management strategy have resulted in a risk of serious or irreversible harm to the Norwegian Sea ecosystem and function.</p> <p>The main impact of the Atlanto-Scandian herring pelagic trawl fishery on ecosystems is the depletion of the target and non-target stock biomass, and the abundance of ETP species. These issues are addressed in detail under Principle 1 and Performance Indicators 2.1, 2.2, and 2.3 above. Each impact is addressed through an appropriate</p>

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
	<p>management strategy, with the exception of management of impacts on ETP species. There is, however, no overall plan for ecosystem management in the area.</p> <p>The management strategies in place for addressing the potential ecosystem effects of this fishery take account of available information and there is evidence that for the key aspects of the ecosystem (the abundance of target and non-target species) these measures are working and being implemented successfully.</p>			
	<b>Score: 90</b>			
	The fishery meets all of the SG80 requirement (for a partial strategy); and there is evidence that the measures work and are being implemented successfully, which partially satisfies SG100, justifying a score of 90.			
	<b>Audit Trace References</b>			
	Section 6.6; ICES Advice 2009 book 3; 17; 18; 19..			

2.5.3	<p><b>Information / monitoring</b></p> <p>There is adequate knowledge of the impacts of the fishery on the ecosystem.</p>	<p>Information is adequate to <u>identify</u> the key elements of the ecosystem (e.g. trophic structure and function, community composition, productivity pattern and biodiversity).</p> <p>Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but <u>have not been investigated in detail</u>.</p>	<p>Information is adequate to <u>broadly understand the key elements</u> of the ecosystem.</p> <p>Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but <u>may not have been investigated in detail</u>.</p> <p>The main functions of the Components (i.e. target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are <u>known</u>.</p> <p>Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.</p> <p>Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of</p>	<p>Information is adequate to <u>broadly understand the key elements</u> of the ecosystem.</p> <p>Main <u>interactions</u> between the fishery and these ecosystem elements can be inferred from existing information, and <u>have been investigated</u>.</p> <p>The impacts of the fishery on target, Bycatch, Retained and ETP species and Habitats are identified and the main functions of these Components in the ecosystem are <u>understood</u>.</p> <p>Sufficient information is available on the impacts of the fishery on the Components <u>and elements</u> to allow the main consequences for the ecosystem to be inferred.</p> <p>Information is sufficient to support the development of strategies to manage ecosystem impacts.</p>
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Scoring Comments
<p>Information is adequate to broadly understand the key elements of the Norwegian Sea ecosystem.</p> <p>Interactions between all fisheries in the North East Atlantic and the North East Atlantic ecosystem are kept under regular review by ICES and the impact of the fisheries on the Atlanto-Scandian Herring, bycatch, retained and ETP species and habitats are identified.</p> <p>Information is adequate to broadly understand the key elements of the ecosystem. The main interactions between the fishery and the ecosystem elements can be inferred from existing information, and have been investigated. The main functions of the Components are known, and information is sufficient to support the development of strategies to manage ecosystem impacts.</p>
Score: 95
<p>The fishery meets all of the SG80 requirements and the SG100 requirements, relating to a broad understanding of key elements of the ecosystem; the impacts of the fishery on retained, discarded, ETP species, and habitats; information is available to allow interactions to be inferred, and information is available to support the development of strategies to manage impacts. By meeting 4 of the 5 SG100 requirements, a score of 95 is warranted.</p>
Audit Trace References
<p>Hamre &amp; Hattlebak (1998); Hamre (2003); Section 6.6; ICES Advice 2009 book 3; I7; I8; I9.</p>



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Principle 3	The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable			
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3.1	Governance and Policy			
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3.1.1	<p><b>Legal and/or customary framework</b></p> <p>The management system exists within an appropriate and effective legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> <li>- Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2;</li> <li>- Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and</li> <li>- Incorporates an appropriate dispute resolution framework.</li> </ul>	<p>The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.</p> <p>The management system incorporates or is subject by law to a <u>mechanism</u> for the resolution of legal disputes arising within the system.</p> <p>Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.</p> <p>The management system has a mechanism to <u>generally respect</u> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>	<p>The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.</p> <p>The management system incorporates or is subject by law to a <u>transparent mechanism</u> for the resolution of legal disputes which is <u>considered to be effective</u> in dealing with most issues and that is appropriate to the context of the fishery.</p> <p>The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges.</p> <p>The management system has a mechanism to <u>observe</u> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>	<p>The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.</p> <p>The management system incorporates or is subject by law to a <u>transparent mechanism</u> for the resolution of legal disputes that is appropriate to the context of the fishery and has been <u>tested and proven to be effective</u>.</p> <p>The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges.</p> <p>The management system has a mechanism to <u>formally commit</u> to the legal rights created explicitly or established by custom on people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>
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<b>Scoring Comments</b>				
Management of the fishery is conducted under the NEAFC Convention, the Coastal States Agreement, the EC Common Fisheries Policy and national legislation. This is all				

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	<p>consistent with laws aimed at achieving the MSC Principles 1 and 2 (see section 7.2.1 of this report).</p> <p>At the international level, a system has been established to resolve disputes between contracting parties in the Coastal States Agreement, and this has proved to be effective in most cases. However in 2006 and at present, the contracting parties have failed to reach agreement on the TAC for the fishery. At the regional (EC) and national level, mechanisms exist to address disputes through judicial action, with appropriate mechanism for appeal.</p> <p>The management system for the fishery provides opportunities for the industry and managers to collaborate, through Producer Organisations, the Pelagic RAC and ACFA in a proactive manner to avoid disputes arising. The client plays an active and prominent role in the Pelagic RAC. The client has also established its own suite of policies to avoid disputes.</p> <p>The management system contains formal commitments to the legal rights of people dependent on fishing for food and livelihood. The NEAFC Convention embraces this with its commitment to the FAO Code of Conduct for Responsible Fisheries; and the EC Common Fisheries Policy states that: <i>“In view of the precarious economic state of the fishing industry and the dependence of certain coastal communities on fishing, it is necessary to ensure relative stability of fishing activities by the allocation of fishing opportunities among the Member States, based upon a predictable share of the stocks for each Member State.”</i> (16<sup>th</sup> Recital).</p>			
	<b>Score: 95</b>			
	The legal and customary framework for the fishery meets all of the SG80 requirements and the first three of the SG100 requirements.			
	<b>Audit Trace References</b>			
	Section 7.2; Council Regulation 1005/2008; FAO, 1995; NEAFC, 2007a; NEAFC, 2004; European Council, 2009; PFA 2000			

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
3.1.2	<p><b>Consultation, roles and responsibilities</b> The management system has effective consultation processes that are open to interested and affected parties.</p> <p>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties.</p>	<p>Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <u>generally understood</u>.</p> <p>The management system includes consultation processes that <u>obtain relevant information</u> from the main affected parties, including local knowledge, to inform the management system.</p>	<p>Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <u>explicitly defined and well understood for key areas</u> of responsibility and interaction.</p> <p>The management system includes consultation processes that <u>regularly seek and accept</u> relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.</p> <p>The consultation process <u>provides opportunity</u> for all interested and affected parties to be involved.</p>	<p>Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <u>explicitly defined and well understood for all areas</u> of responsibility and interaction.</p> <p>The management system includes consultation processes that <u>regularly seek and accept</u> relevant information, including local knowledge. The management system demonstrates consideration of the information and <u>explains how it is used or not used</u>.</p> <p>The consultation process <u>provides opportunity and encouragement</u> for all interested and affected parties to be involved, and <u>facilitates</u> their effective engagement.</p>
<p><b>Scoring Comments</b></p> <p>The management system for this fishery involves scientists, stakeholders and fisheries managers in a process that explicitly defines and explains the respective roles of all parties in all areas of responsibility. Scientific advice from ICES forms the core of the management system, and local knowledge is sought through the involvement of Regional Advisory Councils (the Pelagic RAC in this case) and ACFA in the management process. The management procedure is described in some detail in section 7.2.2 of this report.</p> <p>The outcome of meetings of NEAFC, the contracting parties to the Coastal States Agreement and the Council of Ministers clearly demonstrates that all of this information is taken into account. The EC also explains how the information is used; NEAFC is less explicit about this. The annual consultation process for TACs at the Coastal States and EC level, and stakeholder engagement in Regional Advisory Councils (such as the Pelagic RAC), and the decadal consultation on the review of the CFP provide opportunities for stakeholders to engage directly in the management process, and this involvement is facilitated at the EC and national level.</p> <p><b>Score: 95</b></p> <p>The management system in place meets all of the requirements of SG80. The EC regime meets all of the SG100 requirements for this indicator; the NEAFC regime is deficient in that it does not explain how information is used or not used, and does not facilitate stakeholder engagement directly (although both requirements are satisfied indirectly by the participation of the EC and nationally accountable representatives at Coastal State meetings).</p> <p><b>Audit Trace References</b></p> <p>Section 7.2.2; EC Regulation 2371/2002; NEAFC, 2007b; EC Regulation 43/2009;</p>				

1 SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
3.1.3	<p><b>Long term objectives</b> The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach.</p>	<p>Long-term objectives to guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are <u>implicit</u> within management policy.</p>	<p><u>Clear</u> long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are <u>explicit</u> within <u>and required by</u> management policy.</p>
<p><b>Scoring Comments</b></p> <p>Clear long-term objectives for this fishery are set out in the “Coastal States Agreement”. The Agreement sets out and explicit management plan with clear objectives that embrace a precautionary approach, and which determine a long-term management policy for the fishery. These objectives are, however, limited to sustainable management of the target stock (MSC Principle 1) and not non-target species (MSC Principle 2). However the agreement operates in the context of the NEAFC convention and the Memorandum of Understanding between NEAFC and the OSPAR Commission, which addresses this shortcoming.</p> <p>Although the Coastal States Agreement provides an objective basis for determining the annual TAC for the fishery, it does not explicitly set out a procedure for allocating the quota among the contracting parties (these are instead set according to precedent). There have been some occasions when it has not been possible to agree quota allocations in recent years but under such circumstances the contracting parties have all acted in a manner consistent with the objectives of the agreement and thus with MSC Principles.</p> <p>The EC Common Fisheries Policy is consistent with MSC Principles, and its daughter Regulations deliver conservation measures that incorporate the precautionary approach in respect of MSC Principles 1 &amp; 2 (such as setting sustainable TACs for stocks, and prohibiting fishing for species that are endangered, such as the spurdog). The CFP is due for review in 2012, and the Green Paper setting out proposals for this review makes further commitments to ecosystem management.</p> <p>The Norwegian management system demonstrates a commitment to MSC Principles 1 &amp; 2 through the implementation of measures to conserve fish stocks, and a Marine Resources Act which enables fisheries regulations to be used to prohibit fishing where necessary to protect marine living resources. An ecosystem management plan is in place for the Barents Sea and is being developed for the Norwegian Sea.</p> <p>The client fleet has a policy document in place which explicitly sets out its long-term objectives, which are also consistent with the MSC Principles.</p> <p>In summary, the management policy at all levels is explicitly consistent with MSC Principles and the precautionary approach. These long-term objectives have shaped management policy for this fishery.</p>			
<b>Score: 90</b>			

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The fishery meets the SG100 requirements in most respects other than for the explicit allocation of quota among contracting parties under the Coastal States Agreement.				
<b>Audit Trace References</b>				
Section 7.2.3; Fiskeridirektoratetm 2008, a, b; European Commission (2009c); EC Regulation 2371/2002; EC Regulation 43/2009; Norway, 2005; NEAFC 2007a, 2008a, 2009g.				

3.1.4	<b>Incentives for sustainable fishing</b> The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that negative incentives do not arise.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and <u>explicitly considers</u> incentives in a <u>regular review</u> of management policy or procedures to ensure that they do not contribute to unsustainable fishing practices.
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<b>Scoring Comments</b>				
<p>Economic and social incentives are provided by the management regime through the allocation of resources (quota) at a level compatible with sustainable fishery management. This regime is supported by a legal regime that provides an additional incentive to comply with management measures, through the penalties that can be imposed for non-compliance with the CFP. Administrative, technical and quota-related offences can all result in legal action, prosecution and fines. These measures all contribute to sustainable fishing and ecosystem management, and are regularly reviewed as part of the ongoing process of fisheries management established by the CFP, Norwegian legislation, and the Coastal States Agreement.</p> <p>Within Norwegian waters, where much of the fishery is prosecuted, there is a ban on discarding the main commercial fish species, including herring. NEAFC has also recently adopted a ban on discarding in high sea fisheries. The EC does not have a discard ban, but is committed to reducing discarding of fish.</p> <p>The EC and Member States provide funding to the fishing industry. Until recently this was provided via the Financial Instrument for Fisheries Guidance (FIFG), which was superseded by the European Fisheries Fund in 2007. Concerns have been raised by some NGOs that FIFG represented a subsidy to the industry. However the actual aims of FIFG were to “<i>achieve a balance between fisheries resources and their exploitation</i>”. The purpose of the EFF is to both support the industry as it adapts its fleet to make it more competitive and promote measures to protect and enhance the environment. One of the main objectives of the EFF is to “<i>promoting environmentally-friendly fishing and production methods</i>”. It is therefore clear that the objectives of both FIFG and EFF are consistent with MSC Principles, and that there are no subsidies that would encourage unsustainable fishing.</p> <p>The client group’s own internal policy is firmly committed to reducing unsustainable practices, both through the practice of its members, and through representations to the EC to encourage the introduction of further management measures.</p> <p>Taken together these measures create incentives for sustainable fishing that are explicit and consistent with MSC Principles 1 and 2, and which are regularly reviewed to ensure they remain effective.</p>				

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<b>Score: 100</b>				
The management system for this fishery meets all of the SG100 requirements.				
<b>Audit Trace References</b>				
Section 7.2.4; Fiskeridirektoratet, 2009b; NEAFC, 2009e; IEEP, 2002; PFA, 2000;				

3.2	<b>Fishery- specific management system</b>			
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3.2.1	<b>Fishery-specific objectives</b> The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <u>implicit</u> within the fishery's management system.	Short and long term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <u>explicit</u> within the fishery's management system.	Well defined and measurable short and long term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <u>explicit</u> within the fishery's management system.
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<b>Scoring Comments</b>				
<p>Well defined and measurable short and long-term objectives are established within the management framework for this fishery which demonstrably meet the outcomes expressed by MSC Principle 1 (reference points, harvest strategy and harvest control rule). These objectives are met in the setting of the annual TAC in line with ICES advice and the long term management plan set out in the Coastal States Agreement.</p> <p>Fishery objectives are also consistent with the outcomes expressed by Principle 2 (with respect to measures that protect non-target species, ETP species, and marine ecosystems). These objectives are met by the TACs set for non-target species and rules to reduce capture and discarding of these species; and by measures taken by NEAFC, the EC and Norwegian Government to protect ETP species, marine habitats and ecosystems.</p> <p>The PFA policy also sets out fleet-specific objectives that are consistent with MSC Principles 1 &amp; 2.</p>				
<b>Score: 90</b>				
Fishery specific objectives are explicitly defined for the target species, non-target species and ETP species. The fishery therefore meets all of the SG80 requirements for both Principle 1 and Principle 2. For Principle 1, the fishery also meets the SG100 requirements; for Principle 2, the fishery's objectives are explicitly stated, but are not as well defined or measurable. A score of 90 has been awarded since the indicator combines the two Principles.				
<b>Audit Trace References</b>				
Section 7.3.1; Fiskeridirektoratetm 2008, a, b; European Commission (2009c); EC Regulation 2371/2002; EC Regulation 43/2009; Norway, 2005; NEAFC 2007a, 2008a,				

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3.2.2	<b>Decision-making processes</b> The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives.	There are <u>informal</u> decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.  Decision-making processes respond to <u>serious issues</u> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take <u>some</u> account of the wider implications of decisions.	There are <u>established</u> decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.  Decision-making processes respond to <u>serious and other important issues</u> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.  Decision-making processes use the precautionary approach and are based on best available information.  <u>Explanations</u> are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	There are <u>established</u> decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.  Decision-making processes respond to <u>all issues</u> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.  Decision-making processes use the precautionary approach and are based on best available information.  <u>Formal reporting</u> to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
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Scoring Comments
<p>The management system is based upon well established decision making processes that result in measures and strategies to achieve the fishery specific objectives. Decisions are based upon the best available information and incorporate a precautionary approach. The performance of the decision-making process varies slightly between the different tiers of management for this fishery however.</p> <p>ICES and the EC Council of Ministers provide formal reports describing how the findings of relevant research have been taken into account, and the management response to these findings. The decision-making process responds to all issues, provides numerous opportunities for stakeholder engagement, and has a track record of delivering timely and adaptive management. The decision making processes within the Norwegian Government display the same characteristics.</p> <p>The Coastal States Agreement provides a well established process for determining long-term objectives which address serious and other significant issues. The NEAFC</p>

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
	<p>convention ensures that this agreement can respond to all issues identified in relevant research. The Coastal States provide a formal record of the outcome of their meetings which provides confirmation that their decisions have been taken in the light of current scientific information and are consistent with their long-term management plan.</p>			
	<b>Score: 90</b>			
	<p>The performance of the decision making processes within ICES, the EC and Norway meet all of the SG100 requirements. The Coastal States agreement is more consistent with the SG80 requirements for this fishery and meets some of the SG100 requirements.</p>			
	<b>Audit Trace References</b>			
	<p>Section 7.3.2; EC Regulation 2371/2002; European Council, 2009; NEAFC, 2007a, b, 2008b, 2009g</p>			



1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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3.2.3	<p><b>Compliance and enforcement</b></p> <p>Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with.</p>	<p>Monitoring, control and surveillance <u>mechanisms</u> exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.</p> <p>Sanctions to deal with non-compliance exist and there is some evidence that they are applied.</p> <p>Fishers are <u>generally thought</u> to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.</p>	<p>A monitoring, control and surveillance <u>system</u> has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.</p> <p>Sanctions to deal with non-compliance exist, <u>are consistently applied</u> and thought to provide effective deterrence.</p> <p><u>Some evidence exists</u> to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.</p> <p>There is no evidence of systematic non-compliance.</p>	<p>A <u>comprehensive</u> monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.</p> <p>Sanctions to deal with non-compliance exist, are consistently applied and <u>demonstrably</u> provide effective deterrence.</p> <p>There is a <u>high degree of confidence</u> that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.</p> <p>There is no evidence of systematic non-compliance.</p>
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Scoring Comments
<p>There is a high degree of enforcement and control and in this fishery, which has increased recently in response to identification of substantial under-reporting, which recent changes and improvements in overall monitoring, control and surveillance have been designed to address. Enforcement includes use of satellite VMS, patrol vessels and aerial surveillance, checked against landings data and paper trails (such as the new catch certificates required by IUU regulations). All landings are weighed at designated points of landing, and 25% of landings are inspected by Fishery Officers.</p> <p>Agreements have been reached between the EC and the Norwegian and Faroese Government to address concerns about IUU fishing, and action has also been taken by NEAFC to address this. Enforcement, management and compliance information is now being shared between organisations to create a comprehensive monitoring, control and surveillance system.</p> <p>Non-compliance is dealt with by the relevant national authorities through their criminal justice systems, and using agreed and tested procedures. Much improved levels of compliance suggest that this system is effective.</p>

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Compliance with management measures is reported through the EC ‘scoreboard’; the Norwegian Government’s “Black List” and the NEAFC “A” and “B” lists. None of the vessels in the proposed unit of certification, nor any of the other vessels in the client’s fleet are on these lists which provides a high degree of confidence that fishers are complying with the management system.

The assessment team interviewed the Dutch General Inspection Service, which is responsible for inspecting the ports where the PFA fleet lands its herring catch. Compliance by this fleet with the relevant regulations is reported to be excellent. The team has also contacted enforcement services in the other PFA Member States, who report excellent compliance with regulations by PFA vessels in this fishery.

The client fleet has set out a formal commitment to support all monitoring of the fishery in its policy document, as well as international agreements such as the FAO code of conduct for responsible fisheries. The PFA collaborates with IMARES to provide catch samples which assist directly with the management of the fishery.

#### Score: 95

The fishery meets all of the SG80 requirements and most of the SG100 requirements.

#### Audit Trace References

Section 7.3.3; EC, 2009a, b; European Commission 2009(b); NEAFC, 2009(b), (c), (d), (g) (f); Fiskeridirektoratet, 2009(c); Verver, 2009; I8; I11; I12; I13; I14.

3.2.4	<b>Research plan</b> The fishery has a research plan that addresses the information needs of management.	<u>Research</u> is undertaken, as required, to achieve the objectives consistent with MSC’s Principles 1 and 2.  Research results are <u>available</u> to interested parties.	A <u>research plan</u> provides the management system with a strategic approach to research and <u>reliable and timely information</u> sufficient to achieve the objectives consistent with MSC’s Principles 1 and 2.  Research results are <u>disseminated</u> to all interested parties in a <u>timely</u> fashion.	A <u>comprehensive research plan</u> provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and <u>reliable and timely information</u> sufficient to achieve the objectives consistent with MSC’s Principles 1 and 2.  Research <u>plan</u> and results are <u>disseminated</u> to all interested parties in a <u>timely</u> fashion and are <u>widely and publicly available</u> .
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#### Scoring Comments

Research is targeted at the requirements of the fishery. It is adequately resourced to provide comprehensive, reliable and timely information. The research carried out for the fishery provides coherent and strategic advice that responds to research needs that are identified through the system of internal and external review in the management system. The body of research that is carried out provides comprehensive information to guide the management of the fishery, and priorities for future research are identified for future action.

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
<p>The Norwegian Government has a Norwegian Sea Research Plan which is being used to develop the Norwegian Sea ecosystem management plan. The EC coordinates annual EU Member States' contribution to the Norwegian Sea ecosystem research surveys. It is also EU policy that all research data are made publicly available and disseminated widely.</p> <p>Research is coordinated by ICES through ACOM, and its various working and study groups, which includes the IMARES biological sampling programme. The ICES working groups routinely gather and analyse information on stock status, and also investigate specific issues such as recruitment and larval survival. The ICES working groups also develop and review assessment methodologies used in the fishery. Other issues such as climate change, associated changes to plankton, and ecosystem effects of fisheries are also investigated by ICES study groups and workshops.</p> <p>All of the results of ICES research are disseminated to interested parties in a timely fashion through reports and publications, all of which are readily available from the ICES website. A Memorandum of Understanding agreed between NEAFC and ICES ensures that the stock status information is available to interested parties well before management decisions are taken.</p>				
<b>Score: 95</b>				
The fishery meets all of the requirements of SG80, and many of the requirements of the SG100 guidepost, justifying the score of 95				
<b>Audit Trace References</b>				
Section 7.3.4; Norwegian Ministry of the Environment (2005); Ministry of Fisheries and Coastal Affairs (2009); NEAFC 2007(b), 2008(b), 2009(a), (g); BFAFI, 2010(a), (b).				

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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3.2.5	<p><b>Monitoring and management performance evaluation</b></p> <p>There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives.</p> <p>There is effective and timely review of the fishery-specific management system.</p>	<p>The fishery has in place mechanisms to evaluate <u>some</u> parts of the management system and is subject to <u>occasional internal</u> review.</p>	<p>The fishery has in place mechanisms to evaluate <u>key</u> parts of the management system and is subject to <u>regular internal</u> and <u>occasional external</u> review.</p>	<p>The fishery has in place mechanisms to evaluate <u>all</u> parts of the management system and is subject to <u>regular internal</u> and <u>external</u> review.</p>
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Scoring Comments
<p>The management regime for this fishery incorporates measures that allow for review of both the Coastal States Agreement, as well as for the EC Common Fisheries Policy.</p> <p>The Coastal States Agreement is reviewed annually, in the light of ICES advice. This review is subject to internal scrutiny, and through ICES advice on the status of stocks and performance of the short and long-term management system (requirements that are set out in a Memorandum of Understanding between NEAFC and ICES) are also subject to regular and comprehensive external review.</p> <p>Within the CFP, regular internal review of the management system occurs at every level. At the EC level, policy documents are reviewed internally and by Member States. The resulting policies, operational plans and practices are then subject to wide consultation before implementation, and regular evaluation. These systems also include formal consultation and review processes involving all EC Member State fisheries administrations, and committees such as ACOM, STECF, ACFA dealing with industry concerns at a European level), and the Regional Advisory Councils (RACs) dealing with specific technical and management issues (of which the body specifically incorporating this fishery's interests is the Pelagic RAC).</p> <p>The CFP is also subject to a comprehensive decadal review of policies, which provides opportunities for both internal and external participation. The 2012 review of the CFP is already underway, with the recent publication of an EC "Green Paper" paving the way for wide engagement in the review process.</p> <p>There is also on-going and extensive review of stock assessment and data gathering methodologies at ICES level and at the level of the contributing laboratories and research institutions. Within ICES, a methods working group keeps methods for fish stock assessment under regular review. In addition, other study and working groups exist to review stock surveys, the precautionary approach, discards, biological sampling, reference points, and recruitment variability.</p>

1	SCORING CRITERIA	SCORING GUIDEPOST 60	SCORING GUIDEPOST 80	SCORING GUIDEPOST 100
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Formal external review of the ICES advice provided to the NEAFC and EC management system is rather more limited. ICES can, and does, involve external scientists in extensive review of its methodologies if considered necessary. However working group stock assessments are subject to external review, and the Pelagic RAC, where a range of interested stakeholders come together, also provides an opportunity for review.

**Score: 85**

The fishery meets all of the SG80 requirements and some of the SG100 requirements.

**Audit Trace References**

Section 7.3.5; European Commission 2009(c); NEAFC 2007a, b; NEAFC 2008a; NEAFC 2009a, b, c, d;

## 16 APPENDIX B: PEER REVIEW REPORTS

### 16.1 Peer Review Biographies

**Michael Pawson.** Mike Pawson recently retired as senior fisheries advisor at Cefas, Lowestoft, after 39 years carrying out biological research and providing scientific advice to Defra, the EC and other national and international organisations on fish stock abundance (marine teleosts, elasmobranchs, salmonids and eels), technical conservation measures and fisheries management regulations, and on related monitoring, sampling, survey and research programmes. Between 1974 and 1980, he initiated and led acoustic surveys for blue whiting and mackerel, in L. Turkana, Kenya, and trawl surveys in the North Sea (1975-1979), and then spent 1 year working as an UNESCO Expert in Ichthyology in Tripoli, Libya. From 1980 to 1990, Mike designed and managed MAFF's coastal fisheries programme, implementing biological sampling, trawl surveys, a fishermen's logbook scheme and socio-economic evaluation of sea bass fisheries, and between 1990 and 2000 he led the Cefas Western demersal team, providing analytical assessments and management advice for 12 finfish stocks. During this time he was co-ordinator of the Anglo-French English Channel Fisheries Study Group (1989-1997) and chairman of the ICES Southern Shelf Demersal Stock Assessment Working Group (1996-98), and subsequently chaired the ICES Seabass Study Group (2000-04) and Elasmobranch Study Group (2001-02). He has initiated and managed EU-funded multi-national projects on methods for egg-production stock biomass estimation, bio-geographical identity of English Channel fish stocks, bio-economic modelling of Channel fisheries, development of assessment methods for elasmobranchs, marine recreational fishing in Europe etc.

Mike has provided scientific evaluation, quality assurance and advice to several national and EC-funded projects on fisheries biology, monitoring and assessment, and one of his major roles over the last 15 years has been peer-reviewing papers, reports and manuscripts in preparation. Since 2002, Mike directed and managed the assessment of salmon and eel stocks in England and Wales and provided scientific advice on their conservation. All of Mike's work has been published in refereed Journals, in ICES and EC working group reports, and in contract reports.

#### **John Nichols.**

John Nichols is a retired UK government fisheries biologist with 42 years research experience in plankton ecosystems in the North Atlantic. He has been a member of ICES working groups on herring, mackerel, horse mackerel, sardine and anchovy assessments; and mackerel and horse mackerel egg surveys. He was also a member of ICES study groups on herring larval surveys and plankton sampling. He was scientist in charge of numerous research vessel surveys for fish stock assessment purposes. He has also recently taken part in assessments of the PFA North Sea Herring, Hastings Fleet Dover sole, herring and mackerel fisheries and SW mackerel fishery re-assessment with Moody Marine.

## 16.2 Peer Reviewer A: Report

This review is in three parts, commenting on the presentation, accuracy and interpretation of the information and evidence used as a basis for the assessment of the above fishery, on the scoring table, and on the overall recommendation for certification including the suitability of the attached recommendations. Throughout, I have identified the section(s) of the report at which my comments are aimed, and have not commented where I am content with the information provided or the conclusions reached.

### Presentation

The presentation of information is generally comprehensive, though there is unnecessary detail and repetition in some parts of the assessment of ecosystem effects and relevant sections of the scoring table. I commend the relative brevity of comments against scoring criteria, with the important information provided in the main report. The consistency in the use of acronyms should be checked (e.g. ASH), omitting those that appear only once in the text, and ensuring that they are fully described the first time they are used, which should also attend the use of scientific names for fish etc.

**Summary:** 3. Note that dates may have to be changed here.

MML Comment: dates have been amended

**2. Introduction:** delete first mention of AS/NNS Stock, and add some information on the sea areas covered by the UoC. Later it would be useful to show where the PFA herring fishery actually takes place.

MML Comment: first reference to the stock is essential to specify the UoC. The location of the fishery is shown in Figure 1 (which has been amended for clarity in response to this comment).

**3. Glossary:** NB lim can also be used for F, which is the maximum acceptable limit.

MML Comment: text has been amended to reflect this point.

**4.2 Location of the fishery:** Figure 1 fails to show the boundary between ICES Divs IIa1 and IIa2 (is this significant), or where the UoC actually takes place (see 4.5 para. 1). The last para. is a little confusing, especially the inference that fishing in Q2 chiefly takes place between Iceland and Faroes, at a time when adult herring are said to have moved N/NW towards the the summer feeding grounds shown in Figure 1. The latter is also at variance with information presented at 5.1.1., para. 2.

MML Comment: Figure 1 has been amended, and its legend altered for clarification; the minor inconsistencies in the text have been edited out.

**4.3 Fleet and gear description:** some information on the gear used and its operation (dimensions of nets, mesh sizes, towing speed, day/night etc.) would be useful.

MML Response: this information has been added to the report.

Note that Table 1 lists 26 vessels, whilst 4.1 suggests the PFA fleet has 27.

MML Comment: the text has been amended.

**4.5 The PFA Fishery:** para. 3, add (2.4%) at the end to indicate the proportion of ASH caught by the UoC.

MML Comment: this has been added to the text.

**5.1.1 Distribution:** some information on how ASH are discriminated from other herring stocks would be useful here.

MML Response: the text has been amended to clarify this.

**5.1.3. Recruitment:** para. 2, what is the evidence that puffins may affect year-class strength?

MML Response: an appropriate reference (Sætre *et al.*(2002)) has been cited as evidence.

**5.1.5. Predation:** is cod a significant predator of herring, and *vice versa*, and is there any evidence for such a relationship (as in North Sea; e.g. gadoid outburst in 1960s)?

MML Response: A good point. Information about this relationship has been added here and in more detail to section 6.6 of the document (ecosystems).

**5.2.2 Stock Assessment:** it would be useful here to provide information about the age structure of herring in PFA (and other fleets') catches, emphasising that the UoC targets adult fish.

MML Response: Text to confirm this has been added to section 5.2 of the report.

**6 Ecosystem characteristics:** this whole section requires some editorial attention, omitting superfluous information and tightening up the text. Specifically:

para. 2, delete scientific names, and note that species, not stocks, are being discussed.

MML Response: scientific names have been retained for clarity; text has been amended to clarify that it is species rather than stocks being considered.

para. 4, what is “winter breeding”, and how does the consumption of fish by birds impact on ASH?

MML Response: reference to “winter breeding” changed to read “breeding”; reference added concerning the effect of birds on stock abundance.

Note that ICES (2009) reports “little information is available on the impact of the herring fishery on the ecosystem” (relevant to scoring under P2), but assumes that ecosystem effects of the fishery are probably small. ICES also suggest that ASH undergoes extensive migrations in the NE Atlantic, which is not the case: it is chiefly restricted to the Norwegian Sea (large as it is).

MML Response: the text is a direct quote from ICES; it is not appropriate for us to amend it; however it is understood that ICES are using the term “North East Atlantic” to cover the Norwegian Sea and Barents Sea.

The para. describing the impact of German-flagged vessels on *S. mantella* seems out of context. It is only necessary to show the proportion of the redfish catch taken by the UoC (as in comments against 2.1.1). I suggest just retaining the section “The ICES advice----has been verified. However, The impact of the directed ASH fishery by the PFA ----international redfish catch”

MML Response: this point is noted; however the text has been retained to explicitly describe the relationship between the fishery under assessment (which has a small by-catch of *Sebastes* spp) and the directed *Sebastes* fishery briefly carried out by certain PFA vessels in 2008 and 2009, which has been a matter of some concern.

**6. ETP Species:** is the by-catch rate actually zero, or a very small positive value?

MML Response: this section has been considerably amended. The observed rates of marine mammal bycatch in this fishery are actually 0.

## 7. Fishery Management

**7.1.1 International agreements:** para. 4, needs some explanation of the scale of IUU fishing, and its potential impact on stocks/assessments (see 7.3.3.2, where it is said to be a “problem”). **Figure 13** is not needed, given that the only International waters area likely to be fished for ASH is shown in **Figure 12**.

MML Response: the term “problem” was used in a generic description of IUU fishing, rather than a specific reference to this area and has been removed. Available information suggests that recorded levels of IUU fishing are low, and the number of vessels on the NEAFC IUU ‘B’ list has been added to the text as evidence. The comment about Figures 12 and 13 is valid; however Figure 13 shows the



full extent of NEAFC's area of jurisdiction while Figure 12 provides some more specific information relevant to the unit of certification.

**7.2.1.2 Legislation:** does the fishery operate in Icelandic waters and, if so, what about regulations etc.?

MML Response: the client fleet does not operate in Icelandic waters.

**7.2.2.1 Management regime:** in para. 4 (and later at **7.3.4 Research plan**) you mention specific ICES working (study?) groups that deal with various issues relevant to the fishery. What are these issues, and are they important from an MSC perspective?

MML Response: some information has been added to clarify the working group activities that are relevant to this fishery.

Here, and in **7.2.2.2 Consultation**, you mention RACs. Which ones cover the UoC fishery? What about Norway and non-EC countries (though noting that all UoC vessels are EC)?

MML Response: the Pelagic RAC is mentioned in the penultimate paragraph of section 7.2.2.1, and the role of Norway and other non-EC countries is described in the text concerning the Coastal States agreement.

**7.3.1 Fishery-specific objectives:** there is potential for confusion between allocation of national quotas (based on "relative stability") and quotas for "contracting parties" (subject to annual negotiations). Re-ordering of paragraphs might help.

MML Response: the national quotas allocated under the EC CFP are determined, for this stock, by the EC share of the annual coastal states agreement. Re-ordering the paragraphs would portray the situation inaccurately. The text seems to be accurate.

**7.3.1.1 Additional management measures:** is there any evidence that the PFA has actually initiated any additional research or specific environmental projects and, if so, what are they?

MML Response: there is no evidence of this.

**7.3.2 Decision-making process:** para. 4, although the TAC was halved in mid-1996 on scientific advice, there was actually no SSB problem (in hindsight, see **Figure 8**). Does this suggest that the science may be somewhat unreliable (at least in the short-term), and is this why you award only a score of 95 against **1.2.4 Assessment of stock status**, when the comments suggest that all SG 100 criteria have been met?

MML Response: the scoring comments for 1.2.4 have been clarified to explain why it did not attain a score of 100; the example of the TAC halving in 1996 does however serve to demonstrate the effectiveness of the management regime in response to the best available advice (even if this later proves to be inaccurate).

## 16. Scoring Table, Appendix 1

I have only commented where there appears to be a conflict between comments against PIs in the scoring table, the evidence provided in the report, or the mark given.

Under each aspect of **2.1. Retained non-target species**, you award a score of 100, but then include a recommendation that the PFA should try to keep the by-catches of redfish as low as possible and not participate in the directed pelagic redfish fishery. If this is actually a problem, or a potential problem, the score should be <100. The repetition of comments against **2.1.2 Management Strategy** does not allow the reader to distinguish the purpose of these two performance indicators.

MML Response: the scoring comments have been amended; the scores remain appropriate. The recommendation concerning redfish is a reflection of ICES concerns about these species rather than a specific concern about this fishery.

**2.1.3 Information / monitoring:** there is a cut and paste problem with the last para. here (i.e. herring

and horse mackerel as by catch). Some mention should be made of the salmon by catch, even if to say that it is negligible.

MML Response: the text has been amended in response to these comments.

**2.4.1 Status (of habitat structure):** mentions pelagic trawling for mackerel (should be herring).

MML Response: the text has been amended.

Under **2.4.3** Information/monitoring, you suggest limited interaction with the sea bed, but elsewhere suggest that the gear never touches the sea bed. Which is the case?

MML Response: the gear does not touch the seabed, and the text has been corrected to reflect this.

If “there is still no comprehensive understanding of the links between the ecosystem and Atlanto-Scandian herring”, how can it be asserted that the effects of the PFA pelagic Atlanto-Scandian herring trawl fishery on the wider biological diversity are within acceptable limits? Do you mean to say under **2.5.1 Ecosystem status** that it is the size of the stock that is most likely to have a major impact on the ecosystems (but evidence suggests that under current management of its fisheries, this is unlikely to be serious or irreversible)?

MML Response: this Performance Indicator has been rescored to reflect these comments.

### **Certification recommendation**

The **Pelagic Freezer-Trawler Association Atlanto-Scandian Herring Trawl Fishery** has been assessed as scoring at least 90 against all but one of the Performance Indicators for each of the three MSC Principles, and I have no reservations with these marks. The assessment team's determination, that the PFA Atlanto-Scandian Herring Trawl Fishery be certified according to the MSC Principles and Criteria for Sustainable Fisheries, appears well based.

The two recommendations, concerning minimising redfish catches and managing potential impacts on ETP species (though neither appears to be imperative), are reasonable.

## 16.3 Peer Reviewer B: Comments

### **General:**

The report is well constructed, well illustrated and full of verifiable factual information on this important fish stock. Indeed it is currently the largest herring stock in the world and the largest commercial fish stock in the North Atlantic. These facts should have been mentioned early in the report rather than being lost in the scoring comments.

[MML Comment: Text has been added to the start of section 4 of the report to reflect this point.](#)

The overall high quality of the report and assessment is no less than I would have expected when one looks at the composition of the assessment team. It comprises members with a vast experience and knowledge, built up over many years, of the scientific assessment and management of pelagic fish stocks in north-west European waters. It is therefore not surprising that there is little of substance that is missing from the report and I have no major criticism of the descriptive narrative.

Whilst I agree with most of the scores, some of the scoring comments and supporting statements need to be further addressed. I fully agree with the overall conclusion of the report that this fishery should be accredited without conditions, making it one of the few fisheries to receive unconditional certification. Whilst I agree with the two recommendations I feel strongly that a further two recommendations should be added. The first relates to the overall fishery problem of underreporting of catches and the related problem of slippage and discarding. This issue, although not considered to be a major concern in the PFA fishery, is always hovering in the shadows of uncertainty in relation to large pelagic fisheries as a whole. It is recognised in section 5.2.2 as a source of uncertainty in the stock assessment process and again in section 7.3.3.2 under IUU catches. This issue should be addressed more thoroughly in Principle 1 which looks at the whole fishery not just the PFA fleet. For an example it is well known that, within the Norwegian purse seine fleet, slippage for whatever reason, be that high grading or poor species mix, is not considered to be discarding. Supported by their own scientists Norwegian fishermen still consider that lightly slipped fish (in particular mackerel) survive and do not constitute mortality. In fact there is no scientific evidence to support this assertion and it is highly unlikely that slipped herring would survive. The second additional recommendation relates to the reported occasional catches of salmon. Whether these are considered as retained species or discarded to the 'galley' they should still be recorded and reported through IMARES. It is noted in section 6.6 that NASCO has expressed concern over these high seas catches. The ICES working group dealing with salmon fisheries also have some concerns about the level of captures of migratory salmon in the high seas pelagic fisheries. Information on captures of this nature, however small, would be of great interest and very much appreciated both by NASCO and ICES.

[MML Comment: these points are noted and recommendations have been added to the report to address the comments relating to salmon bycatch and slippage.](#)

### **Specific comments:**

**2.3** I note that the stakeholder meetings are all within The Netherlands. Whilst I accept that most of the landings are at ports within The Netherlands this is an International fleet and it is recognised that some landings do occur in Germany. I would have been happier with some of the conclusions, for example on enforcement and compliance, had the team taken the trouble to contact enforcement authorities and assessment scientists from say Germany and the UK in order to get a balanced view of the situation. In that context I note that in section 7.3.3.3 it appears that some very limited contact may have been made. This is not specified under site visits and meetings in this section where all relevant contacts should be noted.

[MML Comment: the assessment team contacted enforcement agencies and fisheries scientists in the PFA Members States as part of the assessment process. In response to the Peer Reviewer's comments we contacted them once again, and delayed further progress on the assessment to allow information to be made available to us. The responses confirm that the PFA fleet is compliant with all regulations](#)

and enforcement agencies. German scientists had been contacted during the course of the assessment, and their views and information are integrated in the ICES advice.

**3** IUU and NASCO need to be added to the list of Acronyms.

*MML Comment: these have been added.*

**4.4.** It is unlikely that the development of the offshore purse seine fisheries was entirely responsible for the collapse of the North Sea autumn spawning herring fishery. It is well documented that the unregulated small mesh fisheries in the eastern North Sea which took large numbers of juvenile herring, and the bottom trawling on spawning aggregations over spawning beds in the eastern English Channel, were major factors in the collapse of the stock in the mid 1970's

*MML Comment: These points are noted. Our primary interest is in the Norwegian Spring Spawning Herring stock which was – and continues to be – the dominant contributory biomass.*

**5.1.3** It could be noted here that the mortality of juvenile herring in various fisheries in the Barents Sea is not well known or recorded. Figure 5, showing the distribution of juveniles, clearly illustrates the potential for this problem which has been noted by the ICES working group.

*MML Comment: This is only likely to be a significant problem in the event that there is a significant small mesh fishery in the area – which there is not.*

The stock and recruitment plot, Figure 7, would be more appropriately shown for the post recovery period only; although I suspect that the picture and conclusions will be much the same.

*MML Comment: the figure illustrates the analytical approach that is favoured by ICES for these data and is considered most appropriate for stock management purposes.*

**5.2.1** The last sentence of paragraph 3 refers only to Dutch vessels. This section should also record that annual landings are reported by the flag state to ICES for inclusion .....etc....etc.

*MML Comment: the text has been amended to address these comments.*

**5.2.2.** This section also notes that slippage of catches is a potential problem in the fishery!

**6.3** Slippage is again mentioned and it is accepted that it occurs within the fishery as a whole and for a variety of reasons. The comments again refer only to the PFA fleet but I must again remind the team that this should be considered as an issue under elements of Principle 1 which covers the whole fishery on the stock.

*MML Comment: These points (5.2.2. and 6.3) are noted. Slippage is considered in two contexts in this assessment: under P1 it is integrated in advice for the status of the whole stock; and under P2 we consider it for the fishery under assessment. This approach is in line with MSC requirements.*

**6.4.** The assessment team should note that cetaceans are not the only ETP species. There are other species potentially impacted by this fishery and these species should be addressed.

*MML Comment: The text has been amended to reflect this point by reference to potential impacts on other ETP species – these are considered both here and in other assessments of the same fishery to be negligible.*

**6.6.** The small salmon catches are mentioned here and it is accepted that the PFA fleet does occasionally catch them but does not record or report them. Bearing in mind the concern of both NASCO and ICES there should be a recommendation to the client that the PFA fleet does record and report all instances of their capture. This requirement is simple to achieve and does not in any way preclude their eventual disposal in the vessels galley!

*MML Comment: this recommendation has been added.*

**7 .3.3.1** The scoring comments in 3.2.3 implies that all Dutch landings are subject to inspection and that an inspector is present for all the landings yet this section clearly indicates that only 25% of the landings are inspected. The issue needs to be clarified either here or in the scoring comments.

MML Comment: the text has been modified to clarify this point.

**7.3.3.3.** The contacts mentioned here are not fully recorded in section 2.3. More detail is needed here on exactly what these contacts were. The report should give more detail on how inquisitive these contacts were in terms of past and present problems, not only within this fishery but for PFA member's performance in other pelagic fisheries.

MML Comment: the assessment team has used the published sources of compliance information and has also approached enforcement agencies in Holland, England, Germany, France and Lithuania for their views on compliance. Our conclusion, based on responses received, is that levels of compliance by the client fleet are very good.

### **Scoring:**

Where no comment is made here I am content with both the score and the related scoring comments. I found it extremely helpful in relation to the scoring comments to have the specific sections of the report referred to in the audit trace references.

**1.1.1** The scoring comments here are fine but it would be useful, just as a further reminder, to put the actual values of Bpa (5.0MT) and Fmgt (<0.125) in brackets

MML Comment: these values have been added to the text.

**1.2.1.** You are right to highlight the issue of periodic review and under current guidelines you had to reduce the score accordingly.

**1.2.2** In support of this score you could mention here the stock has the advantage of containing a large number of year classes many of which are well represented. This has the effect of cushioning the effects of low recruitment on SSB provided that it does not persist over a long period.

MML Comment: these comments have been added to the text.

**1.2.3.** The MSC guidance methodology (FAM) specifically describes each of the factors listed under the first element of SG 100. It is the intent of the guidance that each one of these elements should be specifically dealt with in the scoring comments. The team need to re-visit these comments in order to justify the score of 95. This high score could also be further supported by reference to the very high levels of biological sampling of the landings (95% of the landings are covered)

MML Comment: the scoring commentary has been amended to fully justify the score awarded.

**1.2.4.** In justifying the score you have simply repeated all the elements of SG 100. If that is correct then the score should be 100. I suspect that it fails the last element, in that there is no external review, in which case 95 is about right.

MML Comment: the scoring commentary has been amended to fully justify the score awarded.

**2.1.1** I am not sure why the targeted redfish fishery by the German fleet against ICES advice is mentioned here. It was not a part of the ASH fishery and does nothing in relation to the score. However it does highlight a potential problem with the German element of the PFA fleet in that they were content to ignore scientific advice in this case. It might be more appropriately dealt with under Principle 3 (3.2.3) in relation to non compliance with international regulations (in this case advice) and the fact that the German PFA fleet are prepared to ignore scientific advice when it suits them. The occasional catch of salmon should also be mentioned here and I have dealt with the consequences of that in comments on section 6.6 of the report.

MML Comment: the scoring commentary here has been modified to remove reference to the directed redfish fishery and to focus more specifically on the unit of certification.

**2.1.3** In the comments which justify the score you have mentioned the 'by-catch of herring and horse

mackerel. This must be a mistake as the main retained species are blue whiting, mackerel and redfish.  
[MML Comment: this mistake has been corrected.](#)

**2.2.3.** Is there a requirement on the PFA fleet to report and record all discard data and did the team see evidence of this in the log sheets during the site visit? Did they also check with IMARES that they were receiving all the data?

[MML Comment: there is no statutory requirement to report discard data in log books. Discard data are available from Dutch and German observer trips in recent years.](#)

**2.3.1** Only the cetacean by-catch is mentioned here in justifying the score. There are other ETP species which may be impacted and could be at risk from this fishery. This issue should be addressed more fully both in the report and here under the score for this PI. **2.3.2** also relates to the same problem.

[MML Comment: the text has been amended \(in line with changes to section 6.4 of the report\) to reflect this point.](#)

**2.3.3** I completely agree that this PI generates a recommendation but it needs to be made clear in the recommendation that this does not only apply to cetaceans.

[MML Comment: the recommendation has been amended.](#)

**2.4.2** You need to specify which elements of the 100 SG strategy is met or which are not met in order to justify the score in the same way that you have clearly done for 2.4.3

[MML Comment: the text has been amended.](#)

**2.5.1** I agree that the fishery is highly unlikely to disrupt key elements of the underlying ecosystem but it is a step too far to say that there is ‘real evidence’ because there is not. The score should be reduced to 80.

[MML Comment: the scoring has been reduced to 80, which does seem more appropriate for this fishery.](#)

**2.5.2** This strategy, as defined in the MSC guidance methodology (FAM), can only be considered a ‘partial strategy’. Therefore the score should be reduced to 80.

[MML Comment: The scoring comments have been clarified to justify the score of 90; the team does not consider that the FAM excludes a successful “partial strategy” from meeting some elements of SG100.](#)

**2.5.3** The score has not been clearly justified here. Which of the elements of SG 100 have been met? Not enough in my opinion to justify a 95 score and it should be reduced to at most 90.

[MML Comment: The scoring comments have been clarified; the team conclude that 4 of the 5 SG100 requirements are met as well as all of the SG80 requirements. Applying section 4.2 of the FAM, a score of 95 seems justified.](#)

**3.1.1** Specify which of the three elements of SG 100 have been met.

[MML Comment: text amended to specify this.](#)

**3.1.2.** Again you should be more specific about which of the SG 100 elements are met.

[MML Comment: text amended to specify this.](#)

**3.1.3.** There is a good justification here for reducing the score to 95 in spite of what are not very helpful scoring guidelines in this respect.

[MML Comment: the score of 90 is considered to be appropriate.](#)

**3.2.1.** The justification for the score, which is probably correct, is not clear, in particular the last sentence. The score of 90 suggests that Principle 1 meets the SG 100 and Principle 2 does not. If that

is the case then you should say so in the comments.

[MML Comment: text has been amended to clarify this.](#)

**3.2.3.** As you have chosen to mention the German redfish fishery, which occurred in defiance of ICES advice, then although it is not a part of this ASH fishery it should be addressed here. It is accepted that the fishery was not, strictly speaking, illegal. I am not surprised that this action was perpetrated by the German element of the PFA fleet. I have addressed the issue of German compliance in earlier comments on the report and suggested that it is appropriately dealt with under this PI. Although most of the landings are in The Netherlands the German track record in enforcing compliance with regulations should have been covered by an appropriate, and probing, site visit. This should have included both German scientists and their enforcement authority. In this context the score of 95 is too high.

[MML Comment: these points are noted. After careful consideration the team considers that a reduction of the score for this fishery because of an issue relating to another fishery would not be consistent with MSC scheme requirements.](#)

**3.2.5.** The fifth paragraph of the scoring comments contains a reference to mackerel egg surveys. This comment is not relevant here and should be deleted.

I can appreciate what you mean in your scoring justification. However strictly speaking there is only one element to SG 100 and if the fishery does not meet SG 100 in full then it only scores 80.

[MML Comment: the text has been corrected, and the score reduced to 80 in view of this comment.](#)

## 17 APPENDIX C: PFA POLICY DOCUMENT

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### **PREFACE**

There is an increasing demand for the principle of sustainable fishing activities and for fish products that can be produced in a sustainable manner. This is apparent from different activities of a variety of international organisations.

The United Nations' Food and Agriculture Organisation (FAO) has laid down a 'Code of Conduct' and the European Union is striving for sustainability via the precautionary approach. Organisations such as the International World Wide Fund for Nature (WWF) and Greenpeace are carrying out major campaigns through which their concern for oceans' fish stocks is made known to a wide public. An initiative such as the Marine Stewardship Council (MSC) wants to make sustainable products recognisable for consumers by means of certification.

The Pelagic Freezer-trawler Association (PFA) shares partly the concerns of the above-mentioned institutions and organisations. In recent years, the members of the PFA have embarked on initiatives to convert these concerns into actions and in this way we make a contribution to the practical interpretation of the term 'sustainability'. The PFA has initiated research into the size of the pelagic fish stocks, participates in projects together with research institutes and carried out a feasibility- study for the construction of a fishing harbour in Mauritania.

Up to now, the projects have been initiated on an ad hoc basis. This policy plan takes matters a step further, with sustainability as an integral component of our policy.

On behalf of the Pelagic Freezer-trawler Association,

Chairman



## **INTRODUCTION**

The Pelagic Freezer-trawler Association (PFA) is an association that represents the interests of trawler owners, occupied in pelagic fishing activities, on a national, European and international level. At present, seven trawler companies are members of the PFA, each with a long history in the fishing industry. These are mostly family businesses that have been active in the industry for 50 years or more, and which have grown to become fully-fledged companies operating world-wide.

### **Freezing on board**

Since the early seventies, all trawlers in membership of the PFA have been fitted out as standard with deep-freeze equipment. The introduction of such equipment has had a great influence on the operational management, the fishing methods and the size of the ships. The freezing of fish as a method of conservation makes it possible to supply fish of a high quality all year round.

The ban on herring fishing in the North Sea (1977 - 1983) forced the trawler owners into a reorientation of their activities. It became necessary for them to fish in more distant waters containing different sorts of fish. The freezing of fish on board - to maintain the quality - made this possible.

### **Responsible entrepreneurship**

The PFA has the opinion that sustainability must be anchored in the total policy of the Association and the activities of its members. As a result, the PFA has developed an integral perspective and policy in which responsible entrepreneurship takes a central position.

This policy plan represents the first step of the process to achieve this ambition. In this policy plan, the objectives of the Association and its interpretation will result in concrete activities. The Association wants to improve the transfer of knowledge on pelagic fishing activities between all those concerned, including the consumer.

Chapter I gives an impression of the societal initiatives on sustainability.

Chapter II describes the subjects in respect of sustainability which the PFA considers as its responsibility and the integration thereof in a transparent policy.

Chapter III deals with the management of the PFA. The management is adapted to the demands of the 21st century. This implicates that not just economical considerations play an important role. Also the terms 'sustainable fishing activities' and 'sustainably produced fish' have been introduced.

Stimulation of local fishing industries and economies are an important part of the PFA's management. The local economy must benefit from its country's resource of fish.

Responsible entrepreneurship also requires constant attention to matters such as schooling, training and working conditions. That means investment in the quality of all those employed by the members of the PFA. Because it is they, who have made an extremely important contribution to the trawler sector becoming a healthy industry with a leading position in the market for frozen pelagic fish today.

Chapter IV gives a summary of the way the PFA contributes to an adequate management of the fish stocks.

The fish stocks must be maintained on such a level that both present and future generations can consume (pelagic) fish. Beside that, fishing activities must not endanger the ecosystem.

Chapter V shows that the PFA strives for high quality fish products.

Fish forms a necessary source of food for millions of people. The pelagic fleet of the PFA ensures that fish of a high quality and favourable price can be supplied to these consumers.

Chapter VI describes the concrete activities that will be carried out in the coming years.

The policy principles of the PFA are summarized at the end of every chapter or paragraph.

## **I. PFA AND SUSTAINABILITY: IN RETROSPECT**

Many organisations and institutions are concerned about the effects of commercial fisheries on ecosystems and local fisheries. The UN Conference on Environment and Development (UNCED, Rio de Janeiro, 1992) spoke out for new management of sea and coastal areas based on the precautionary approach.

### **Societal developments**

In 1995 the FAO published a Code of Conduct for Responsible Fisheries. This voluntary Code of Conduct offers opportunities for responsible fishing activities and is directed at governments, companies and other institutions involved in fishing activities. The precautionary approach is further elaborated in the UN treaty on international fish stocks. This principle ('precautionary approach') is also currently being applied by the European Union in the Common Fisheries Policy.

The FAO observed, in the State of the World Fisheries and Aquaculture 1996, that 70% of the commercially interesting species of fish is being fully utilised or, to some extent, being over-fished, or that the fish stocks are currently subject to slow rehabilitation.

Partly on the grounds of the information provided by the FAO, the International World Wide Fund for Nature (WWF) is of the opinion that the oceans' limits have been reached. In 1995 this organisation embarked on the 'Endangered Seas Campaign', which is intended to promote the conservation and sustainable use of sea fish around the whole world. The campaign is directed towards the rehabilitation of stocks of important species of fish such as tuna and swordfish and towards the creation of social and economic stimuli for sustainable fishing activities. Additionally, by-catches must be reduced by at least 50% over the next ten years. In order to achieve this, the WWF and Unilever, producer of deep-frozen fish (Iglo,

Gorton's and Birds Eye), established the Marine Stewardship Council (MSC). The MSC has been in existence since 1997 as an independent organisation, and certifies fish products that meet the criteria for sustainable fishing activities.

### **Initiatives of the trawler owners**

These and other initiatives are sending powerful signals to trawler owners that, to an increasing extent, society is concerned about the management of fish stocks in the oceans. The PFA recognizes that it is important to fish in a controlled and responsible way. The members have therefore developed initiatives to meet societal concerns.

In order to be able to translate sustainability into optimum catch quantities, there is a need for a thorough inventory of fish stocks. In 1998, on the initiative of trawler owners, a biologist from

the Dutch Fish Research Institute (RIVO) was appointed to carry out a study of the pelagic fish stocks off the west coast of Africa. Collaborative activities have also been embarked upon with scientists in Mauritania and Las Palmas (Canary Islands) and the trawler owners commissioned Ballast Nedam to carry out a feasibility study into the construction of a fishing harbour at a location on the coast of Mauritania. The realisation and the actual construction of such harbour by local governmental authorities and other organisations creates all kind of economic activities and opportunities for employment, and in that sense can be considered to be just one of the aspects of sustainable operational management.

## **II SUSTAINABILITY, AN INTEGRAL PART OF POLICY**

The FAO defines sustainable development as "the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such development conserves land, water, plant and genetic resources, is environmentally non-degrading, technologically appropriate, economically viable and socially acceptable." (FAO Council, 94th session 1988)

### **The precautionary approach**

The precautionary approach (Rio Declaration of the UNCED 1992, Principle 15) forms an important basis for sustainable fishing activities. This principle aims at the combination of fishing activities with a minimum of damage to the ecosystem.

The PFA accepts the precautionary approach and is willing to co-operate on safety measures that are being taken on the basis of the precautionary approach. Where necessary, the PFA initiates and stimulates (additional) scientific research.

In areas (where no quota system exists), TAC- and quota systems should be introduced to manage the pelagic fish stocks.

Within the framework of its policy of sustainable fishery, the PFA aims for the rational harvesting of pelagic fish stocks. The level of effort made in the fishing activities is no higher than necessary to achieve optimum catches. This level of efforts is also known as the point of 'maximum sustainable yield' (MSY). In rational harvesting, the ecosystem undergoes a minimum of disturbance. Furthermore, the annual fluctuations in catches caused by variations in the natural growth in fish-populations are cushioned by buffer stocks of older fish.

### **Transparent policy**

With its policy, the PFA wants to achieve understanding and awareness of sustainable fishing activities. To this end, it has a policy to inform interested parties about the measures it is taking to conserve fish stocks and to save the environment. The PFA already receives

reactions and suggestions about its policy from a number of interested organisations, and will be happy to enter into dialogue with more organisations and institutions. Periodically, interested institutions and organisations are invited to discuss the PFA's policy. Furthermore, an advisory board will be established with experts that will critically observe the policy of the PFA. The PFA wishes to continue commissioning independent scientific research in the future, and will make the data emanating from such research available to third parties.

All ships' crews are being informed as to the policy to be followed. Ships that do not adhere to these principles are called to account.

The PFA is a proponent of the sound and intensive control of commercial fishing activities.

The PFA is striving towards having observers on board every fishing vessel, particularly in those areas in which local governmental control is inadequate.

The observations will be combined with details of catches landed, an adequate system of monitoring and information via satellite. In this way the guarantee can be given that the policy will be implemented as agreed.

### **Principles**

- The concept of sustainability is anchored in the total policy of the PFA.
- The PFA accepts the precautionary approach and is willing to co-operate on safety measures that are being taken on the basis of the precautionary approach. Where necessary, the PFA initiates and stimulates (additional) scientific research.
- In areas where no quota system exists, the PFA suggests to introduce a TAC- and quota system to manage the pelagic fish stocks.
- The PFA dedicates itself to standardized production processes on board, to quality monitoring and to uniform packaging, through which a high quality product is being obtained.
- The PFA pursues transparent policy. The PFA is striving to achieve an open dialogue with all involved parties in society.
- The PFA makes information about the fishing activities available to interested organisations. Scientific data obtained from research will be communicated through different channels.

### **III OPERATIONAL MANAGEMENT, ATTUNED TO THE NEEDS OF THE 21ST CENTURY**

In recent years there has been talk of governmental withdrawal to a 'hands-off' position. Increasingly, governmental tasks (and responsibilities) are being transferred to the private sector. As a result of this, society increasingly expects more from this sector.

It is no longer the case that company managers simply need to keep an eye on profits and the developments in the price of their companies' shares. Responsible entrepreneurship demands more. Codes of conduct are being drawn up, companies engage in dialogue with

their 'natural' opponents and covenants are being entered into. Furthermore, responsible entrepreneurship also means ensuring the future of both company and society. Characteristic of this is the safeguarding of both natural resources and their long-term exploitation.

### **Growth following the lines of responsible entrepreneurship**

The basic principle of the PFA is the continuity of the industry, in which growth and making profits form necessary preconditions. This entails, inter alia, that the preservation of fish stocks should be seen as the starting point for the development of new fishing activities. In this, the members of the PFA operate on the basis of the principle of responsible entrepreneurship.

The PFA pursues a policy aiming at the further improvement of working conditions (safety, health and welfare). A policy is being developed and put into practice in the fields of:

1. safety of ship, crew and cargo,
2. personnel (recruitment, schooling, and career guidance),
3. the environment,
4. quality.

In making investments in new ships and equipment, members take into account modifications that create improvements in the working conditions of those on board. A special, internationally recognized, training course has been developed for on board safety. Present crews also have the opportunity to undergo additional training in order to prepare them for suitable employment. To this end, the PFA has set up a schooling programme.

The PFA devotes a great deal of attention to the schooling and training of personnel, both on shore and on board of the ship. In the first place, the personnel are informed about the new policy and of the necessity for it. Furthermore, the personnel are informed regularly about developments to the policy.

Thirdly, the PFA takes into account environmental aspects by (for example) reducing excessive use of freon and by developing freezing equipment that employs less harmful substances. However, these substances may not endanger the safety or health of the people on board.

Finally, in collaboration with the trade unions, a study is in process to investigate the possibilities for extra days off and earlier retirement for crewmembers.

### **Respect for local fishery**

The PFA also maintains the principle that – in the case of fishing activities outside the EU – the local fishing industries should be able to profit from their country's resources of fish with priority. Fears of a policy of 'pay, catch and go', have been borne out regularly in the past. Without the introduction of specific measures, local fishermen could suffer from the activities of a foreign fleet.

In considering suitable measures, the PFA contemplates not only the allocation of part of the available fish stocks to local fishermen, but also the initiation of new land-based activities (infrastructure), and offering employment on PFA members' ships.

### **Sustainable agreements**

Fishing under “third country fishery agreements” such as those entered into by the European Union is justifiable. The PFA supports the decision made by the Board of Ministers of Fishery in 1997, that fishing agreements are a fundamental and integrated part of the mutual fishing policy. The PFA adheres to fishing agreements that fit in with sustainable development and underlines the importance of coherence between agreements and relevant policies of the European Union.

The PFA maintains the principle that every country in possession of fishing rights (within their Exclusive Economic Zone) must treat sustainability as the starting point in any allocation of those rights.

The PFA and its members abide by national and international rules and regulations and respect the permitted catch levels established for the various species of fish. Furthermore, the PFA is a proponent of the introduction of combined TAC's (Total Allowable Catches) for those species of pelagic fish that are frequently caught in combination (for example sardines, sardinella, mackerel and horse mackerel in West African waters). The PFA is urging the relevant bodies for the introduction of TAC's. The trawler owners that fish for pelagic species, must be able to prove that they have adhered to the quota.

### **Principles**

- The members of the PFA are striving for continuity in fishing activities. Growth is desirable only if it can be seen as being part of sustainable development. This means, inter alia, that the preservation of fish stocks forms the basis of the development of new fishing activities.
- The members of the PFA invest jointly in the education and training of all personnel, both on land and on board of the ships.
- The PFA pursues a policy for the further improvement of the working conditions of employees.
- The PFA has initiated certain specific environmental projects on board members' vessels.
- In entering into contracts and agreements, the members of the PFA endeavour to go into partnerships.
- The members of the PFA avoid competition with local products and local fishing activities.

## **IV SUSTAINABLE FISHING ACTIVITIES**

During the UNCED conference in Rio de Janeiro (1992) it was established that in many areas the sea fishing industry is not an adequate manager of fish stocks, and that in the case of a number of stocks over-fishing takes place. Furthermore, a large number of problems have been observed, such as non-regulated fishing activities, over-capacity, registration of fishing vessels in certain countries in order to escape controls, insufficiently selective nets and untrustworthy data. On the basis of these observations, the conference spoke out for sustainable management, based on the precautionary approach.

### **Sustainable fishing activities**

Sustainable fishing stands for activities in which:

- The size of the spawning stock is maintained at a level at which the risk of substantial damage to the stock can be considered to be at an acceptable low level;
- A species can rehabilitate swiftly from depletion;
- No structural damage will be caused to the ecosystem.

By means of sustainable fishing activities, the oceans' fish potential will continue to be sufficient to meet the needs of present and future generations.

For the years to come, the efforts of the PFA are aimed at supporting initiatives to reach regional co-operation, the prevention of over-fishing and the reduction of by-catches and discards.

### **A. Regional management plan**

#### **Shared responsibility**

Pelagic fish stocks migrate, so they can not only be found in the waters of a single coastal state. Furthermore, fishing activities are seldom limited to one single state. Therefore, to put sustainable fishing of pelagic stocks into practice, a regional approach is required in which shared responsibility is a prerequisite. The PFA supports initiatives for regional co-operation. In such co-operation, different parties should be involved:

- The coastal states that have jurisdiction over the economic zones in which the stocks occur;
- The bodies (such as the European Union) that enter into agreements with these coastal states;
- The local fishermen;
- The companies that obtain the fishing rights.

#### **Step-by-step plan towards sustainable regional fishing activities**

The PFA regards the system by which the permitted catch levels are determined and allocated (TAC- and quota system) as being the best method for the realisation of the sustainable management of pelagic stocks. The Association urges its implementation in those

countries in which this method is not in use. In those situations, a number of steps must be taken in order to achieve sustainable, regional fishing activities.

In the first place, an estimate of the size of the fish stocks should be made, which is based on the most reliable scientific data available. On the basis of this, a Total Allowable Catch (TAC) should be determined, taking into account the quality and the amount of data, and the accompanying risk of over-fishing. The lower the quality and/or the completeness of the data (which have to be collected by an independent committee of experts) the more strictly should the security rules be maintained. The TAC will then be allocated amongst the coastal states. Within each coastal state, the national government will have to determine how the national quota are further divided. In the interests of all those concerned, it is important that the TAC is not exceeded. The countries with jurisdiction over fishing zones are jointly responsible for this.

### **Monitoring**

By means of good regional management with binding agreements, the size of the fish stocks can be monitored and over-fishing prevented. A programme of independent monitoring of the fish stocks, registration of the catches and the establishment of technical measures (for example, the minimum mesh-width of the net and minimum sizes of the fish species) is indispensable. The PFA pursues the realisation of the regional management of fish stocks, but in this needs the support of institutions such as the European Union and the FAO.

## **B. Prevention of over-fishing**

### **Two forms of over-fishing**

There are, from a biological viewpoint, two forms of over-fishing:

1. Over-fishing in which the stocks of a species become so low that its natural growth is reduced (recruitment over-fishing).
2. Over-fishing in which the fish is caught at too young an age, as a result of which the fish cannot attain their natural growth (growth over-fishing).

Over-fishing causes reductions in yields, while the efforts that have to be put into fishing activities increase. As a result, there is greater disturbance of the ecosystem than is necessary to achieve optimum catches (maximum sustainable yield).

### **Research into the size of fish stocks**

According to data from the FAO, the area off the coast of West Africa is characterized as being very rich in fish, with no indications of over-fishing of pelagic stocks. In view of the fact that there is as yet only little information available on fish stocks, there is a need for further research and monitoring.

At present, research is being carried out on the current state of a number of pelagic fish stocks off the coast of West Africa. The present permitted catch level is principally based on historical data on catch volumes. The research the PFA is carrying out in Mauritania provides a valuable contribution to the knowledge of the size of the pelagic fish stocks. The PFA considers that research projects carried out in waters outside the EU, are a shared responsibility of the coastal states concerned and the states under whose flags the ships are



fishing. To avoid over-fishing, with fish stocks being unable to recover, a number of safety measures are possible.

#### Size of the ships

Operating large deep-freeze stern trawlers is regularly considered to be a major cause of over-fishing. A number of organisations base their ideas on the assumption that an increase in the size of the individual ships and the fleet as a whole automatically leads to over-fishing.

The catch capacity of deep-freeze stern trawlers, as operated by all members of the PFA, is determined by their freezing capacity (on average 200 tonnes of fish within twenty-four hours) whilst other ships (without freezing facilities) can take catches of 1000 tonnes of fish daily. It is the opinion of the PFA that it is not the size of the ship but the method of fishing and the way in which the fish are dealt with and stored on board that determine catch capacity, and thus the risk of over-fishing.

In the opinion of the PFA, the management of the fish stocks determines the preconditions for the fishing activities. That capacity can be increased within the preconditions is considered by the PFA as justifiable. First of all, a ship must demonstrate that it is adhering to the predetermined agreements on catch quantities, which are based on the sustainable management of fish stocks.

#### Principles

- The members of the PFA provide a substantial contribution to the acquisition of scientific data on pelagic fish stocks.
- Fish stocks are to be maintained at levels higher than the biological minimum (the level at which the natural growth is not harmed).
- The members of the PFA fish in such a way that negative effects on the ecosystem are minimized to a generally acceptable level.

### **C. Reduction of by-catches and discards**

#### Undesirable

By-catches and discards are undesirable side-effects of commercial fisheries. Discards occur in every form of fishing activities. The percentage of discards varies considerably per type of fishing activity. The rate of discards in pelagic fishing is less than 5%. These discards consist principally of damaged fish or fish of which the quota have been reached.

#### Prevention of by-catches

The members of the PFA are striving towards the achievement of a maximally possible reduction in by-catches. The ships use, amongst others, modern maritime electronics (echo-sounders) and special net-provisions.

Whenever possible, the PFA takes initiatives (or supports initiatives) for activities that lead to adequate measures to further increase the selectivity of fishing methods. Such activities include (scientific) projects for the scaring away of bigger species and the use of nets which provide opportunities for escape to species that are not intended to be caught.

### **Minimisation of percentage discards**

The members of the PFA endeavour to reduce the percentage of discards to less than 3% in the first instance. The ultimate objective is to ensure the processing and landing of the maximum amount of fish that is caught and permitted to be retained on board.

At present, the PFA is taking a number of measures that are intended to limit these discards to a minimum. In addition, fishing grounds where undersized fish occur are avoided. In collaboration with the Dutch Fish Research Institute (RIVO), research is being carried out into the recognition of fish species by use of echo-sounders, and studies are made to make nets more selective.

An exceptional form of discards is the deliberately throwing overboard of marketable fish, for example in order to make room for species of a higher commercial value that have been caught later. The ships of the PFA are not permitted to carry out this form of discarding (also known as 'highgrading'). This is subject to strict monitoring.

### **Principles**

- Where possible, the PFA takes initiatives (or supports initiatives) for activities that lead to adequate measures to counter by-catches and discards.
- The members of the PFA do all possible, through the application of modern technology, to further reduce the occurrence of by-catches and discards to an even lower percentage.

## **V. FISH, FOOD FOR A SUSTAINABLE FUTURE**

According to experts, the consumption of fish once or twice a week gives a positive contribution to the composition of our diet. The nutritional value of fish is high. In the main, fish contains unsaturated fat (low cholesterol content). In addition to protein and fat, fish and fish products provide vitamin B (in particular B12), vitamins A and D, iodine and selenium. The nutritional value of fish is even more important in those situations in which the total dietary package is insufficient. Such situations occur in developing countries, where fish is a more important component of the diet than in industrialised countries.

### **PFA takes care of quality**

Immediately after the catch, the fish are stored in special tanks containing liquid ice, causing immediate chilling, thus maintaining their freshness. Within a few hours the majority of the catch is taken from these tanks and deep-frozen (minus 23° C) in special freezer units into blocks of about 20 kilograms. These blocks are wrapped in polyethylene and cardboard

cartons and then stored in the ships' refrigerated holds. The whole process is carried out under strict conditions of hygiene, ruling out the chance of contamination or decay.

When the refrigerated holds are full, the ships return to the port, where the cargo is transferred to the cold storage. From the warehouses, the fish are distributed further into the world-wide fish trade. The refrigerated ships used to transport the fish to the export market meet the highest standards of quality. In this way, the PFA has direct control of the quality of its product right through to the country to which it is being exported. In situations where this is requested and feasible, the PFA provides advice as to quality assurance during further distribution.

## 18 APPENDIX D: COMPANIES & VESSELS IN UNIT OF CERTIFICATION

This table lists the only companies and vessels that are embraced by the unit of certification for this fishery.

Company	Vessel name	Registration	Flag state
<b><i>Dutch Members of PFA</i></b>			
Jaczon BV	Afrika	SCH-24	NL
	Zeeland	SCH-123	NL
	Wiron 5	SCH-22	NL
	Wiron 6	SCH-23	NL
Parlevliet & van der Plas BV			
	Dirk Diederik	KW-172	NL
	Annelies Ilena	KW-174	NL
W. van der Zwan BV	Alida	SCH-6	NL
	Franziska	SCH-54	NL
	Ariadne	SCH-303	NL
	Oceaan IV	SCH-333	NL
	W. van der Zwan	SCH-302	NL
Cornelis Vrolijk's Visserij Maatschappij BV	Carolien	SCH-81	NL
	Frank Bonefaas	SCH-72	NL
<b><i>UK Members of PFA</i></b>			
Interfish Ltd	Wiron 1*	PH-110	UK
	Wiron 2*	PH-220	UK
North Atlantic Fishing Company Ltd	Cornelis Vrolijk Fzn	H-171	UK
	Atlantic Princess	H-90	UK
<b><i>German Members of PFA</i></b>			
Doggerbank Seefischerei GmbH	Jan Maria	BX-783	D
	Maartje Theadora	ROS-171	D
	Annie Hillina	ROS-170	D
	Helen Mary	ROS-785	D
France Pélagique s.a.r.l	Sandettie	FC-716999	FR
	Prins Bernhard	FC-716900	FR
	Scombrus	FC-716630	FR
<b><i>Irish member of PFA</i></b>			
Jaczon Ireland Ltd	Johanna Maria	SO-117	IE
<b><i>Lithuanian Members of PFA</i></b>			
UAB Atlantic High Seas Fishing Company	Margiris	KL-749	LT

In the course of the certification it is possible that further companies/vessels may join the client group. This would be in accordance with the MSC's stated desire to allow fair and equitable access to the certification. Any changes to the membership of the client group on a permanent or temporary basis will be reported on an ongoing basis by the client and reviewed at annual surveillance audits.


## 19 APPENDIX E: STAKEHOLDER COMMENTS

The comments received from stakeholders during the consultation period on the draft report, and the Moody Marine response to these comments are shown in full here.

### 19.1 Stakeholder comments

[www.msc.org](http://www.msc.org)

Marine Stewardship Council



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Monday, May 24, 2010

*Sent via email*

Jim Andrews  
Moody Marine Ltd  
Merlin House  
Stanier Way  
Wyvern Business Park  
Derby DE21 6BF  
UK

Dear Jim

**SUBJECT: MSC Review and Report on Compliance with the scheme requirements**

Please find a below the results of our partial review of compliance with scheme requirements.

	CB	Moody Marine
	Lead Auditor	Jim Andrews
	Fishery	Pelagic Freezer- Trawler Association Atlanto-Scandian Herring Fishery
	Fishery assessment product type	Public Comment Draft Report
	Type of review	Traceability desk study

No.	Type of finding	Scheme requirement	Reference	Details
1.	Major	Section 5.2, Appendix 1 of FCM v6 The report shall set out the scope of the fishery assessment in the context of the assurances the certification body can make about the point to which products from the fishery can be traced and describe known risk factors	Section 13.1 Traceability within the fishery	Section 13.2 states that fish is transferred from other vessels to PFA freezer vessels. From section 13.1 it is unclear however how the client ensures that other vessels that sell and transfer fish to PFA vessels are within the scope of other MSC units of certification.  According to the report, fish is transferred to PFA vessels from

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		prior to or after the point of first landing that may influence subsequent chain of custody assessments.'		<p>other vessels while at sea. The report does not mention how a list of non-PFA member vessels can be accessed.</p> <p>Section 7.3.3.2 states that the bodies responsible for managing this fishery have recently taken steps to reduce the incidence of Illegal, Unregulated and Unreported (IUU) fishing. The report however does not include information on what exactly is done to reduce the incidence of IUU fishing.</p> <p>A risk assessment of IUU fish entering the Chain of Custody is not included under this section.</p>
2.	Major	Section 4 of Policy Advisory 5 V2	Section 13.3 Point of Landing	Section 5.2.1 of the report states that virtually all PFA vessel catches are landed in the Netherlands but occasionally German-registered PFA members will land in Germany where the landings are monitored as in the Netherlands. Section 13.3 of the report however does not include the name of the German port where PFA members land catches.
3.	Guidance	Section 4 of Policy Advisory 5 V2	Section 13.4 Eligibility to enter chains of custody	The content of section 13.4 seems to conflict with section 13.3 in terms of points of landing.

This report is provided for action by the Certification Body and ASI in order to improve consistency with the MSC scheme requirements; MSC does not review all Certification Bodies work products and this review should not be considered a checking service. If any clarification is required, please contact Wetjens Dimmlich ([wetjens.dimmlich@msc.org](mailto:wetjens.dimmlich@msc.org)) for more information.

Regards,



Daniel Suddaby

Senior Fisher Certification Manager

Standards and Licensing Departement

cc: Accreditation Services International

## 19.2 Moody Marine Response



Daniel Suddaby  
Senior Fishery Certification Manager  
Marine Stewardship Council  
6-20 Elizabeth St  
London SW1W 9RB

Date: 28<sup>th</sup> May 2010  
Our Ref: 82109

Dear Daniel

**PELAGIC FREEZER-TRAWLER ASSOCIATION ATLANTO-SCANDIAN HERRING FISHERY:  
MSC REVIEW AND REPORT ON COMPLIANCE WITH SCHEME REQUIREMENTS**

Many thanks for your comments on the Public Comment Draft Report for this fishery assessment.

Under the new arrangements that have been put in place this month by the MSC, your comments and our response will be published in the Final Draft Report. We think that this may be the first occasion that MSC comments on an assessment report are published and seen by other stakeholders. It is therefore appropriate for us to set out the approach that the MSC has adopted for commenting on assessment reports, and the requirements for certification bodies:-

*"A "Major" finding is a lapse in the application of the MSC scheme requirements; and a "Guidance" finding is an area of concern that could be improved (e.g. formatting).*

[...]

*We expect all CBs to comply with scheme requirements, where a Major finding is not addressed and is likely to have a material difference to the outcome of the fishery assessment, then we will raise this directly with ASI and withhold publication of the fishery assessment product (as defined in TAB Directive 27: Withholding Publication of Fishery Assessments)."*

[Letter to Certification Bodies from Andrew Mallison, Director, Standards & Licensing, 10<sup>th</sup> May 2010]

You have grouped your comments into 3 areas. Two of these are "Major" and one is "Guidance". The comments all relate to various aspects of traceability in the fishery. We have made amendments to the report to address the points raised in all of the comments. The specific actions we have taken are set out overleaf. In summary, the response in each case has been to make minor amendments to the relevant parts of the report. None of the issues raised or the amendments to the report have had any effect on the outcome of the assessment. We feel confident that all of the issues you have identified are fully and completely addressed.

We trust that you will find these amendments satisfactory and that the remainder of this assessment process can proceed smoothly.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Jim Andrews'.

JIM ANDREWS  
Lead Assessor  
For Moody Marine Ltd

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**RESPONSE BY MOODY MARINE LTD  
TO MSC COMMENTS:  
PFA ATLANTO SCANDIAN HERRING FISHERY**

**1. Section 13.1: Major findings**

**Comment:**

*Section 13.2 states that fish is transferred from other vessels to PFA freezer vessels. From section 13.1 it is unclear however how the client ensures that other vessels that sell and transfer fish to PFA vessels are within the scope of other MSC units of certification.*

**MML Response**

Following discussions and clarification with the client it has been confirmed that certifying the transfer of MSC-certified fish is not an immediate requirement, but may be an option for the future. The text has been amended to reflect this. If the client decides to purchase fish from vessels certified under other MSC Units of Certification in the future, then appropriate Chain of Custody arrangements (covering PFA members and all affected factory vessels) would be put in place.

**Comment:**

*According to the report, fish is transferred to PFA vessels from other vessels while at sea. The report does not mention how a list of non - PFA member vessels can be accessed.*

**MML Response**

Following the discussions with our client detailed above, the transfer of fish is not presently relevant to this fishery assessment (being a CoC issue). If the client admits other vessels to its fleet, this information will be made available at surveillance audits. Text explaining these arrangements has been added to the report.

**Comment**

*Section 7.3.3.2 states that the bodies responsible for managing this fishery have recently taken steps to reduce the incidence of Illegal, Unregulated and Unreported (IUU) fishing. The report however does not include information on what exactly is done to reduce the incidence of IUU fishing.*

**MML Response**

The text has been amended in section 7.3.3.2 to clarify the port state compliance approach that is used to address IUU fishing in the unit of certification area.

**Comment**

*A risk assessment of IUU fish entering the Chain of Custody is not included in this section.*

**MML Response**

An assessment of this risk has been added to the text.

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## 2. Section 13.3: Major finding

### Comment:

*Section 5.2.1 of the report states that virtually all PFA vessel catches are landed in the Netherlands but occasionally German - registered PFA members will land in Germany where the landings are monitored as in the Netherlands. Section 13.3 of the report however does not include the name of the German port where PFA members land catches.*

### MML Response

The report has been amended to add Bremerhaven and Sassnitz to the list of ports where PFA members land catches.

## 3. Section 13.4: Guidance

### Comment:

*The content of section 13.4 seems to conflict with section 13.3 in terms of points of landing.*

### MML Response

The text has been modified to address any ambiguity.

JIM ANDREWS  
Lead Assessor  
For Moody Marine Ltd

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