
FISHERY ASSESSMENT REPORT

IFFO GLOBAL STANDARD FOR RESPONSIBLE SUPPLY OF FISHMEAL AND FISH OIL



FISHERY:	Atlanto-Scandian Herring
LOCATION:	Northeast Atlantic(ICES Division Va, ICES Division Vb, ICES Sub Area IIa, ICES Sub Area IIb, ICES Sub Area IVa)
DATE OF REPORT:	12th April 2010
ASSESSOR:	Mike Platt

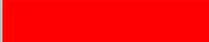
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1. APPLICATION DETAILS AND SUMMARY OF THE ASSESSMENT OUTCOME			
Name: Icelandic Association of Fishmeal Manufacturers			
Address: [REDACTED]			
Country: Iceland		Zip: [REDACTED]	
Tel. No. [REDACTED]		Fax. No. [REDACTED]	
Email address: [REDACTED]		Applicant Code	
Key Contact: [REDACTED]		Title: [REDACTED]	
Certification Body Details			
Name of Certification Body:		Global Trust Certification Ltd.	
Assessor Name	Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-certification
Mike Platt	Dave Garforth	6	INITIAL
Assessment Period	April to August 2010		
Scope Details			
1. Scope of Assessment		IFFO Global RS Standard Issue 1.0	
2. Fishery		Atlanto Scandian Herring	
3. Fishery Location		Northeast Atlantic ICES Division Va, ICES Division Vb, ICES Sub Area IIa, ICES Sub Area IIb, ICES Sub Area IVa	
4. Fishery Method		Purse Seine nets, Midwater pelagic trawls	
Outcome of Assessment			
5. Overall Fishery Compliance Rating		HIGH COMPLIANCE	
6. Sub Components of Low Compliance		NONE	
7. Information deficiency		NONE	
8. Peer Review Evaluation		ACCEPT	
9. Recommendation		CIRCULATE TO CERTIFICATION COMMITTEE	

2. QUALITY OF INFORMATION
The Quality of information available to undertake the desk top study assessment was considered appropriate. A good level of material came directly from the responsible organisations for research, assessment, and management of the Norwegian spring-spawning Herring Fishery.
3. COMPLIANCE LEVEL ACHIEVED
A HIGH level of compliance has been awarded. Refer to table detailing summary level of compliance.
Recommendation
Circulate Report to Certification Committee
4. GUIDANCE FOR ONSITE ASSESSMENT
Based on HIGH compliance findings
<ul style="list-style-type: none"> • The auditor should check that there are no IUU activities and that the enforcement and control systems are in place • The on-site assessment should confirm that there is a procedure and records that demonstrate that each supplying vessel is legally entitled to fish in the fishery. • The auditor should inspect a fisher log book and note any comments on interactions with ETP species etc. • The auditor should review permits etc. to ensure they are valid • The auditor should review a catch to ensure that no more than 20% by volume has fish less than 13cm long, if it does has the captain been informed that this fishery is now closed.
Based on MEDIUM compliance findings
<ul style="list-style-type: none"> • Not Applicable
Based on LOW compliance findings
<ul style="list-style-type: none"> • Not Applicable
5. ASSESSMENT DETERMINATION
Overall a HIGH compliance rating has been assigned at this time. The summary details of compliance achieved is provided
HIGH Compliance
In the view of the assessment team all sections of the fishery achieved a High compliance.
MEDIUM Compliance
<ul style="list-style-type: none"> • Not applicable
LOW Compliance
<ul style="list-style-type: none"> • Not applicable

SUMMARY OF LEVEL OF COMPLIANCE					
	The Management Framework and Procedures	Stock assessment procedures and management advice	Precautionary approach	Management measures	Implementation
legal and administrative basis	A1				
Fisheries management should be concerned with the whole stock unit	A2				
Management actions should be scientifically based	A3				
Research in support of fisheries conservation and management should exist		B1			
Best scientific evidence available should be taken into account when designing conservation and management measures		B2			
The precautionary approach is applied in the formulation of management plans			C1		
The level of fishing permitted should be set according to management advice given by research organisations				D1	
Where excess fishing capacity exist, mechanisms should be in established to reduced capacity				D2	
Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment				D3	
A framework for sanctions of violation of laws and regulations should be exist					E1
A management system for fisheries control and enforcement should be established					E2
KEY:	Low Compliance: 	Medium Compliance: 	High Compliance: 		

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FISHERY SUMMARY

This following report reviews solely the Norwegian spring-spawning Herring (*Clupea harengus*) Fishery in the Northeast Atlantic ICES Division Va, ICES Division Vb, ICES Sub Area IIa, ICES Sub Area IIb, ICES Sub Area Iva and cannot be used to assess any other Herring Fishery in the North Atlantic, due to their quite distinct geographical locations of each fishery.

The herring is the most abundant fish in the North Atlantic, a close relative, the Pacific herring (*Clupea pallasii*) is also found in the northern Pacific Ocean. It is a pelagic zooplankton feeder, mostly feeding on the copepods *Calanus finmarchicus*. It is commonly between 30 and 40 cm length; the largest herring measured in Icelandic waters was 46.5 cm. It is a multispawner as opposed to the capelin and generally spawns in shallow waters in spring or summer. It can reach up to 25 years of age.

The North Atlantic herring is split into many stocks, based on where and when they spawn. Historically, the largest of these stocks is the Atlanto-Scandian herring (also called the Norwegian spring spawning herring ATLANTO-SCANDIAN). This stock spawns along the coast of central Norway. Generally the larvae then drift to nursing areas along the coast of northern Norway, Russia and in the Barents Sea, where the juveniles stay until they are sexually mature at the age of 4 to 6. When mature, the herring undertook large scale feeding migrations to the waters north and east of Iceland. During winter the stock condensed into large schools in the waters east of Iceland and during the spring it went back to the Norwegian spawning grounds. This pattern does however change with oceanographic conditions, stock size and stock composition.

The Icelandic summer spawning herring (ISUM) is different from the Atlanto-Scandian stock as this stock is a coastal stock and does not leave Icelandic waters. It also differs in another respect, as it spawns in July. Currently these two stocks have quite separate distribution patterns and do not mix in Icelandic grounds, although previously they shared similar feeding grounds in early summer, north or east of Iceland.

The fishing seasons; starts in May and carries on through the summer until January. The best fishing takes place between June and August with the catching method of a pelagic trawl and purse seine.

On 18 January 2007, the EU, the Faroe Islands, Iceland, Norway and Russia concluded an agreement on the management of the Norwegian spring-spawning herring fish stock. limiting the catches of Herring for the coastal states to no more than 1.28 million tonnes. The following quotas were agreed, 6.51% for the European Community, 5.16% for the Faroe Islands, 14.51% for Iceland, 61% for Norway and 12.82% for the Russian Federation (*MNSSH, 2007*).

The herring spawns along the Norwegian west coast in February to March. The larvae drift north and northeast to the Norwegian coast and the Barents Sea, where the main areas for immature fish are found. Most of the young herring leave the Barents Sea as three years of age and feed off northern Norway for two years, before recruiting to the spawning stock at 5 years old.

6. RATIONALE OF THE ASSESSMENT OUTCOME

A. THE MANAGEMENT FRAMEWORK AND PROCEDURE

LEVEL OF COMPLIANCE

A1. The management of the fishery must include a legal and administrative basis for the implementation of measures and controls to support the conservation of the fishery.

LOW	An administrative framework that ensures an efficient management of the fishery for its conservation is not established.
MEDIUM	An administrative framework that ensures an efficient management of the fishery for its conservation is somehow established, but there is evidence of not being efficient to ensure the conservation of the stock.
HIGH	A legal and administrative framework that ensures an efficient management of the fishery for its conservation is established and works efficiently toward the conservation of the stock.

There is a legal and administrative framework that allows for the efficient management of the fishery for sustainable utilization and conservation. **H**

The Norwegian spring-spawning herring stock is the largest fish stock in the North Atlantic and has been rebuilt since it collapsed in the late 1960’s. Commercial fishing was restored in 1989 and is now being exploited in a controlled manner to ensure the long term conservation of the stock.

Since the stock both straddles a number of coastal states and migrates within International waters of the North Atlantic, the North East Atlantic Fisheries Commission mandated through the 1982 Convention of the Law of the Sea (NEAFC) this the principal management authority outside of State EEZ’s. All coastal states fishing this stock, Iceland, Norway, Russia, Faroe, EU States are participating parties of NEAFC and as stated in the Summary, party to the **2007 Management Agreement, concluded an agreement on the management of the Norwegian spring-spawning herring fish stock.** limiting the catches of Herring for the coastal states to no more than 1.28 million tonnes. The following quotas were agreed, 6.51% for the European Community, 5.16% for the Faroe Islands, 14.51% for Iceland, 61% for Norway and 12.82% for the Russian Federation (*MNSSH, 2007*).

The five-party international agreement was a major new step forward in cooperation on the management of fish stocks in the North-East Atlantic. This cooperation also involves efforts to combat illegal, unregulated and unreported fishing (IUU fishing). The agreement was an important tool in these efforts and shows what can be achieved when coastal states are willing to enter into binding cooperation on a sustainable management regime that takes account of the economic interests of all parties concerned. The NEAFC regulates which countries can enter the fisheries it controls to ensure the long term conservation of these international fishing stocks.

Within the Icelandic EEZ, Iceland manages its quota allocation administered through this agreement. Iceland.

Iceland operates a structured, legal fisheries management system to ensure responsible fisheries, focusing on the sustainable utilization of the fish stocks and good treatment of the marine ecosystem. The fisheries management in Iceland is primarily based on extensive research on the fish stocks and the marine ecosystem, decisions made on the conduct of fisheries and allowable catches on the basis of scientific advice, and effective monitoring and enforcement of the fisheries and the total catch. These are the main pillars of the Icelandic fisheries management intended to ensure responsible fisheries and the sustainability of the ocean’s natural resources.

The Ministry of Fisheries and Agriculture in Iceland was founded in 2007. The Principal Fisheries Management Instrument is the Fisheries Management Act 1996. There are supporting Acts allowing for the effective governance of the fishery resources of Iceland.

This Ministry is responsible for the following:

- Fisheries
- Research, conservation and utilization of fish stocks, other living marine resources of the ocean and the seabed and management of areas where these resources can be harvested, undertaken through the state managed, Marine Research Institute of Iceland.
- Control of conservation and utilization of fish stocks, other living marine resources of the ocean and the seabed and management of areas where these resources can be harvested
- Research and control of production and import of fisheries products
- Mariculture of marine species
- Supporting the research, development and innovation in the fisheries sector.

(Icelandic Ministry of Fisheries and Agriculture, R1)

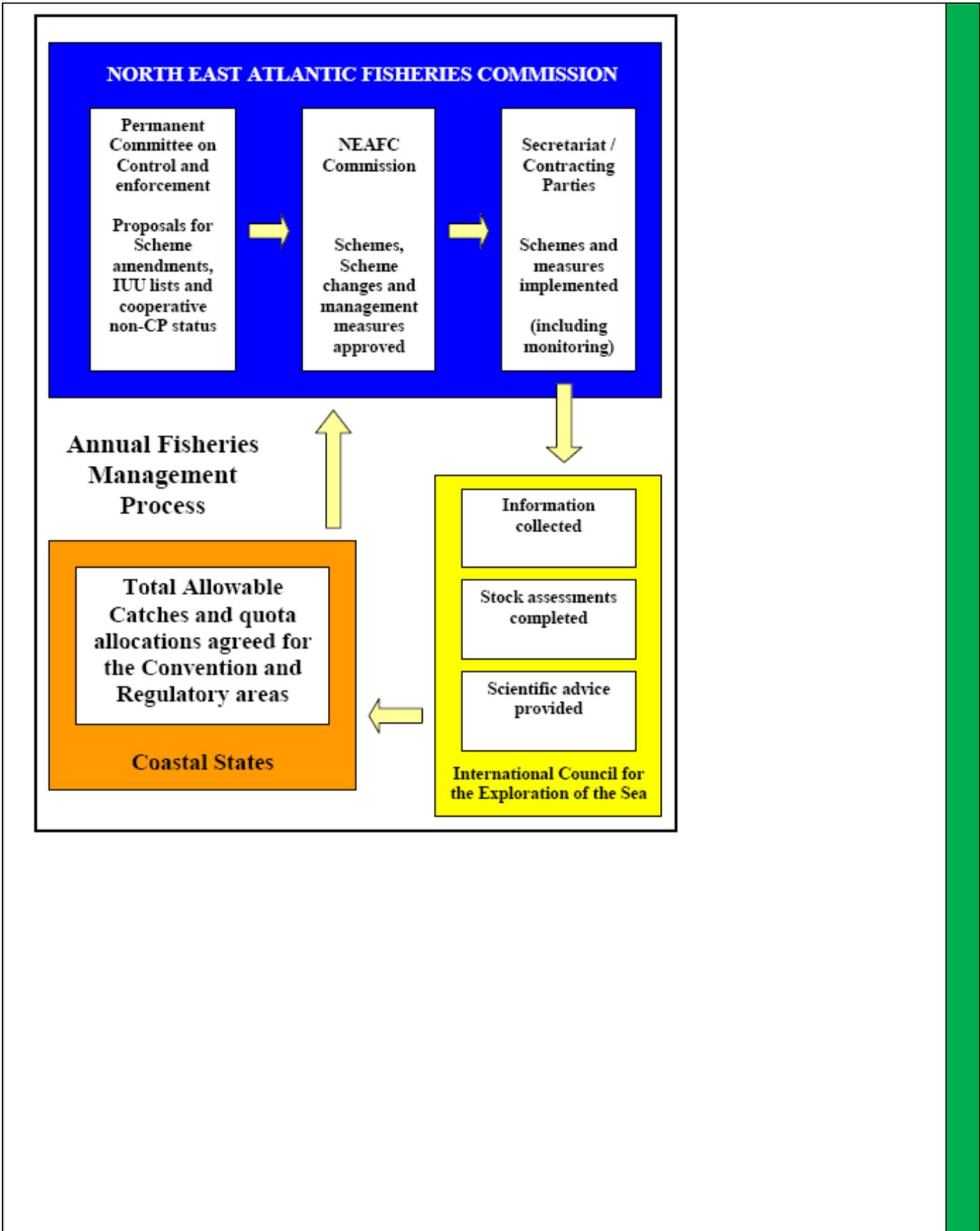
The Ministry is supported by the Directorate of Fisheries, the Marine Research Institute (MRI) and the Icelandic Fisheries Laboratory (IFL).

The Directorate of Fisheries is an Icelandic Government institution under the ultimate responsibility of the Minister of Fisheries. The Directorate is responsible for implementing government policy on fisheries management and handling of seafood products.

The Directorate enforces laws and regulations regarding fisheries management, monitoring of fishing activities and imposition of penalties for illegal catches. Collection, processing and publication of fisheries data is also the responsibility of the Directorate of Fisheries in collaboration with Statistics Iceland *(Directorate of Fisheries, R4)*.

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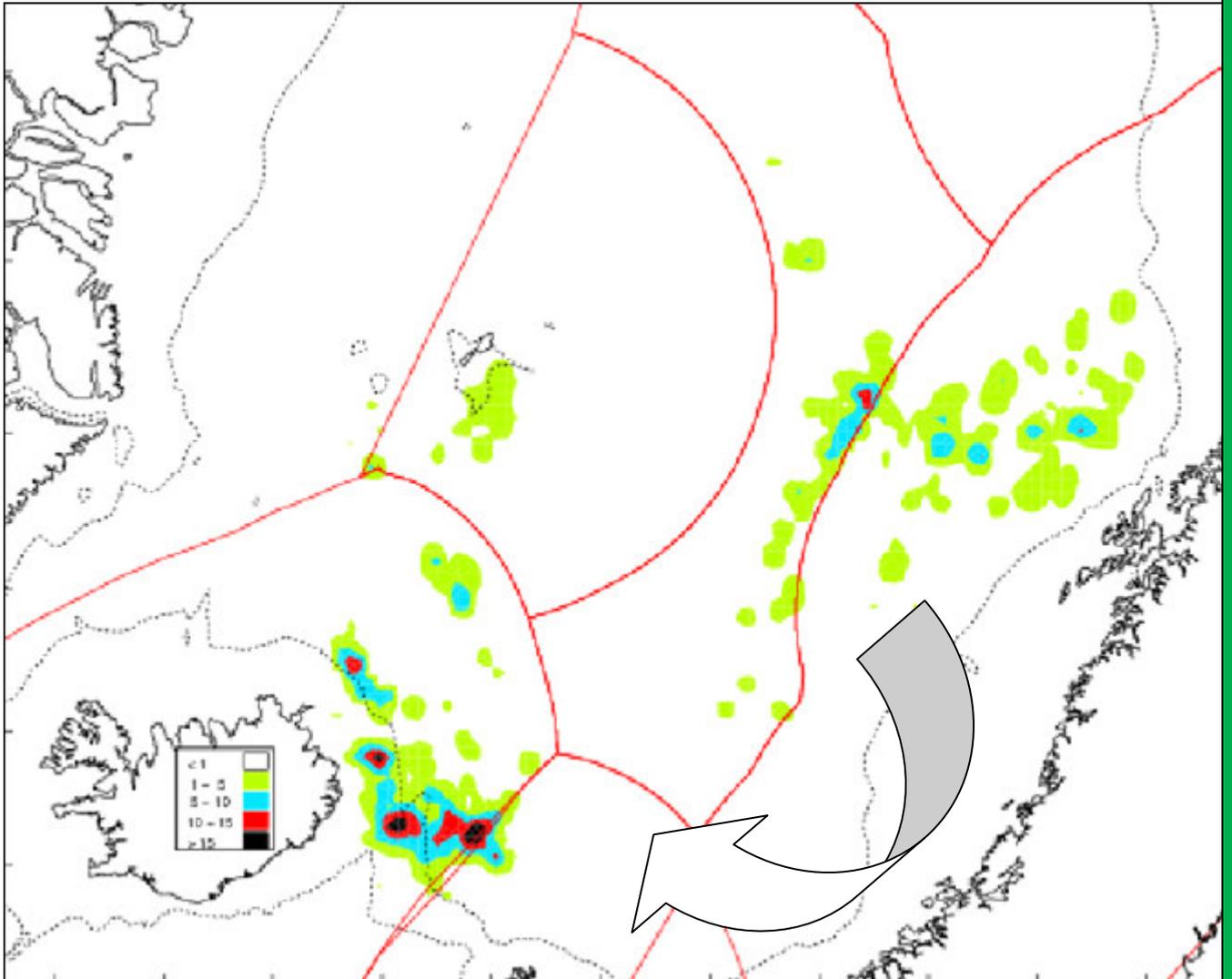
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LEVEL OF COMPLIANCE	
A2. Fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account fishery removals and the biology of the species.	
LOW	Fisheries management is not concerned with the whole stock unit over its entire area of distribution and do not take into account any of the matters listed in 'A1'.
MEDIUM	Fisheries management is concerned with matters listed in 'A1' but not entirely. Fisheries, in relation to 'A1' statement, should improve to ensure the long term conservation of the marine resource.
HIGH	Fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account: <ul style="list-style-type: none"> All fishery removals The biology of the species

H



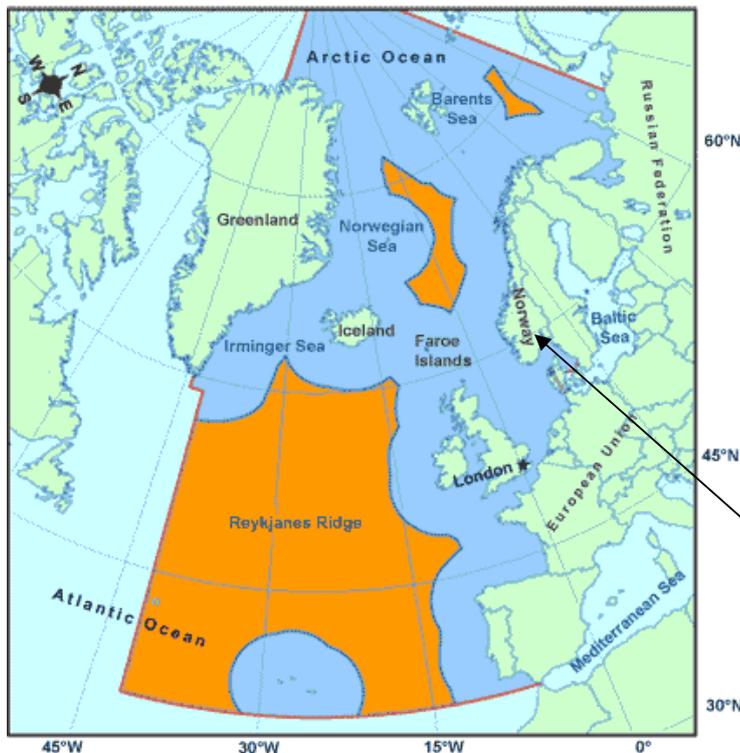
(ATLANTO-SCANDIAN fishing grounds by the Icelandic fleet in 2008, dark areas indicate highest catches (t/nm2))

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Fisheries management is concerned with the whole stock unit for ATLANTO-SCANDIAN over its entire area of distribution and within the Icelandic jurisdiction and quota take into account all fishery removals. There is a high level of research and information of the biology of the species, pertinent to its range and conservation (fishery stock assessment for Spawning stock biomass targets and fishing mortality). A highly compliant rating has been determined by the assessment team.

The Norwegian spring spawning herring (ATLANTO-SCANDIAN) is a highly migratory stock that is distributed throughout large parts of the North-East Atlantic during its lifespan. All the coastal states have direct control of their own EEZ where the ATLANTO-SCANDIAN migrate. The area indicated in the map below is controlled by the NEAFC. To ensure that the entire distribution range of the ATLANTO-SCANDIAN is covered when management decisions for this fishery are made. There is a high level of research and understanding of both the migratory pattern of this stock and the biology of the species, acoustic surveys and linked in particular to spawning stock biomass targets for management purposes.

Within the coastal states, including Iceland, reporting is within the authority of each respective State. Iceland operates a comprehensive reporting system for all landings, including herring through official landing stations and authorised accredited staff and contractors of the Directorate of Fisheries. In this respect, Icelandic fishery removals are accounted for.



The areas not covered by the coastal state EEZ are covered by the NEAFC jurisdiction covered in orange in the above map. The full distribution of this fishery is covered by a management framework and is rated highly compliant to the standard.

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LEVEL OF COMPLIANCE	
<i>A3. Management actions should be based on long-term conservation objectives</i>	
LOW	Management actions are not based on long term management objectives.
MEDIUM	Management actions are based on long term management objectives. However the actions are not scientifically formulated.
HIGH	Management actions are based on long term management objectives, and actions are science based.

The management of this stock is concerned with the long term conservation of the stock and as such has been scored highly compliant to the standard. H

The fishery is jointly managed by Iceland, Norway, the European Community, the Faroe Islands, and Russia with the responsibility for waters outside national jurisdiction falling to the North East Atlantic Fisheries Commission (NEAFC).

After the collapse, a near moratorium was soon established on the herring fisheries. Until 1984 catches of the Atlanto-Scandian stock were always less than 20 thousand tonnes annually and the juvenile fishery has almost completely been stopped. From 1986 to 1992 catches were around 100 thousand tonnes annually. After this time, strong year classes have been recruited to the fishery and the stock has been rebuilding fast. Catches have also been increasing rapidly to a maximum of 1.5million tonnes in 1997. Total catches have been in the range of 750 thousand to 1,3 million tonnes since then. Because of the increased stock size, the ATLANTO-SCANDIAN stock now again undertakes large migration movements to the Norwegian Sea. Although it has not yet gone back to the Icelandic EEZ en masse, considerable catches are now taking place in Icelandic waters.

Icelanders began catching this herring again in 1994 and the annual catches since then have been between 100 and 200 thousand tonnes, still mostly outside the EEZ.

Since the rebuilding phase of the stock began in the 1980's it was agreed to keep the fishing mortality to less than F0.05, which apart from a few years was achieved. A minimum landing size of 25cm has also been in place since 1977, which had the intention to prevent the exploitation of young herring. These regulations have directly resulted in the building of the SSB to well above the precautionary limit of 5 million tonnes. Since then a long term conservation plan had been agreed by all parties in NEAFC that oversees the management of this herring stock.

B. STOCK ASSESSMENT PROCEDURES AND MANAGEMENT ADVICE	
LEVEL OF COMPLIANCE	
<i>B1. Research in support of fisheries conservation and management should exist.</i>	
LOW	Research to support the conservation and management of the stock, non-target species and physical environment does not exist
MEDIUM	Research to support the conservation and the management of the stock, non-target species and physical environment exists, however research programmes could be significantly improved to decrease scientific advice uncertainty.
HIGH	Research to support the conservation and the management of the stock, non-target species and physical environment exist, and existent research is considered most adequate for the long term conservation of the target, non-target and physical environment

Research in support of fisheries conservation and management exists, continues to develop in areas where uncertainty exists and is considered most adequate for the long term conservation of the target, non-target and physical environment.

H

Research in support of fisheries conservation is undertaken at a variety of levels and supported by the 5 Party Agreement of NEAFC. Research programmes are coordinated and/or reported through NEAFC. NEAFC takes scientific advice from ICES, which itself undertakes peer review and offers advice to States and NEAFC.

With regard to the specific assessment methods used, the SeaStar age-based assessment model has been used by ICES in the evaluation of this stock since 2002 (ICES, 2007a). Data sources used are commercial catches from each State and a total of eight different survey data sets with varying coverage and target age groups are combined in the age-based model (ICES, 2007b). Research focuses particularly on migratory patterns, understood to be changing.

The adult herring have a clockwise annual pattern in the Norwegian Sea. The migration pattern changes over time. At present the herring spawn on the Norwegian coast (mainly between 62° and 71°N) and feed in the Norwegian Sea. Since 2003, a more southwestern feeding pattern has been observed with increasing amounts of older herring feeding in the waters north of the Faroes and east of Iceland during the early feeding in May to June. As the feeding season progresses, the herring has a northerly migration through the Jan Mayen zone along the polar front zone. After the feeding season, the herring contracts into the wintering areas in September to October. These areas are unstable and since 1950 the stock has used at least 6 different wintering areas in different periods. During the 1950s and 1960s they were situated east of Iceland and since around 1970 in Norwegian fjords. In 2001–2002 a new wintering area was established off the Norwegian coast between 69°30'N and 72°N and in 2007\2008 no herring was observed in the fiords in winter. After wintering, the spawning migration starts around mid January.

As the stock’s migratory patterns to spawning, feeding and wintering areas are very flexible and have been shown to have changed in recent years, the selection of survey data was conservative. It was found that Norwegian wintering and spawning surveys no longer covered the entire distribution of the stock and although redesigns have since been made, recent data were excluded (ICES, 2007b). Although tagging data is available for this stock and was used in the assessments for over 10 years (ICES, 2006), it has not been used since 2006 as both tagging and recapture rates are considered too low given the stock size, meaning results were extremely sensitive to the tagging data (ICES, 2007a). The assessment was found to be sensitive only to tagging data, with the inclusion or exclusion of

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other surveys having very little effect on the results (ICES, 2007a).

As results had been consistent in previous years, only two models were used for data exploration with both producing similar trends, although the alternative model estimated SSB lower and F higher than SeaStar (ICES, 2007a). Results appear to be more sensitive to the data used than to the assessment model selected (ICES, 2007b). Catch curves were used to verify consistency in survey and catch data (ICES, 2007a). The final procedure used was, with minor exceptions, the same as the previous year's (ICES, 2007a).

The update on last year's assessment is an upwards correction of the stock biomass and a downwards revision of fishing mortality, mostly due to the reassessment of three strong year classes from the international survey on the feeding grounds in the Norwegian Sea (ICES, 2007b). The estimate of SSB has been revised upwards for the past three years, as year classes recruited to the fishery are apparently depleting very slowly. This could be an artefact caused by changes in migration or distribution or could be caused by the feeding grounds survey design (ICES, 2007a).

There is an international ecosystem survey in the Nordic Seas carried out each **May which is considered the most important survey in the assessment.**

The research is considered adequate for the management of the stock, collection of environmental data which may support the understanding of migratory patterns and combined with landing and observer programmes of participating States and NEAFC allows the collection of data on non-target species.

Discarding is not thought to be an issue in the fishery but data is not available and as such it is not contemplated in the assessment (ICES, 2007a). Underreporting including unaccounted mortality caused by fishing operations e.g. slippage is thought to occur but given the large catches in recent years its importance has been judged low and estimates have no longer been made (ICES, 2007a). Areas of uncertainty in the data are known and investigated. A source of uncertainty is caused by the lack of coherence in some of the survey information for the youngest ages.

LEVEL OF COMPLIANCE	
<i>B2. Best scientific evidence available should be taken into account when designing conservation and management measures.</i>	
LOW	Scientific advice is not taken into account when designing conservation and management measures.
MEDIUM	Scientific advice is taken into account, when designing conservation and management measures. However some areas of discrepancy are identified that could have a significant impact in the long term conservation of the marine environment.
HIGH	Scientific advice is taken into account, when designing conservation and management measures, in a comprehensive manner.

There is a management plan for the Atlanto-Scandian herring which has been independently verified by ICES, follows scientific advice and also is based on precautionary principles for fishery management. Therefore, scientific advice is taken into account, when designing conservation and management measures in a comprehensive manner.

H

The fishery is managed by the EU, the Faroe Islands, Iceland, Norway and Russia through a management plan in practice since 1997 and found by ICES to be consistent with the precautionary approach (ICES, 2007a). The management plan fishing mortality of 0.125, which corresponds to landings of 1,643,000t follows ICES' (2008g) advice.

The management plan is based on the following:

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.

Refer to References for specific stock reference points.

The fishing mortality has been low and close to the target defined in the management plan, contributing to a rapid recovery of the stock after its collapse in the mid 1960s (ICES, 2007a). Historically, the stock relied on occasional strong year classes to maintain a viable spawning stock size and these have recently become more frequent (ICES, 2007b): the 1998 and 1999 year classes were strong and currently dominate the spawning stock and the 2002 and 2004 classes also appear to be strong (ICES, 2007a). Also contributing to the stock's recovery, by protecting juveniles from fishing pressure, is the minimum landing size of 25 cm which has been in place since 1977 (ICES, 2007b).

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A climate index has been shown to be an important factor in predicting spring-spawning herring recruitment rates (ICES, 2007a). The prognosis with this model is for the high recruitment pattern to end in 2007 at a historic high (ICES, 2007a).

Migratory patterns to feeding and overwintering areas have undergone significant changes in the past few years, with consequences on the distribution of the fisheries (ICES, 2007b) and therefore on the coverage area of the surveys used in the assessment. There are indications that new, un-surveyed wintering areas are being used (ICES, 2007a). An increasingly south-westwards trend in feeding migrations could be explained by more favourable climatic conditions and plankton concentrations (ICES, 2007a) which would account for the higher growth rates (ICES, 2007b) and higher condition factor in these herring (ICES, 2008a). A number of other factors could also be playing a part, such as the increase in stock size, through density-dependent effects (ICES, 2008a).

The two models applied in the most recent stock assessment (ICES, 2007a) are in good agreement as to recent stock trends and both suggest an improvement in the state of the stock on the situation depicted in last year’s assessment. No fundamental alterations to the previous year’s advice were found to be necessary.

Regular sampling is conducted from landings and the individual’s length measured and weighed as well as determining their sex and gonad maturity. Moreover, otoliths or scales are sampled for age determinations. With available statistics on landings the total catch can be divided into age groups both by numbers and weight.

In addition to regular sampling of landings and data on catch per unit of effort from mandatory skipper's fishery log-books, a great amount of fishery independent information is obtained from research surveys. These include pelagic fish acoustic surveys. The various data are utilized in stock abundance estimates using a number of different stock assessment models based on a one species or multi-species approach.

An increasing attention is paid to research on behavior, availability and migration of fish by tagging as well as on species interactions, feeding and growth within the food chain. Finally, research is aimed at minimizing the catch of juveniles by improving fishing gear as well as by regular closure of spawning and juvenile areas (*Marine Research Institute*).

C. THE PRECAUTIONARY APPROACH	
LEVEL OF COMPLIANCE	
<i>C1. The precautionary approach is applied in the formulation of management plans.</i>	
LOW	The precautionary approach is not applied in the formulation of management plans.
MEDIUM	The precautionary approach is applied, however not all uncertainties are taken into account.
HIGH	The precautionary approach is applied, taking into account uncertainties relating to the dynamic of fish population (recruitment, mortality, growth and fecundity), and the impact of the fishing activities, such as discards and by-catch of non-target species as well as on the physical environment (Habitats).

The precautionary approach is applied in the formation of management plans and takes into account uncertainties relating to the dynamics of the fish population and the impact of fishing activities such as discards and by-catch and on the physical environment.

The stock management plan is precautionary according to ICES (2007b), ensuring high long-term yields at low risk to the spawning stock.

Specifically for Iceland, fisheries management is focused on the fisheries being both economical and sustainable with respect to the natural resources’ utilization and renewal. Iceland, through the Ministries of Fisheries and Agriculture, Environment and Economic Affairs has developed a detailed Marine Policy (2005) which asserts Iceland’s commitment to sustainable utilization of stocks.

Relating to the FAO definition of precautionary approach specific to the target stock, the fisheries management plan has been peer reviewed by ICES and is described to meet the requirements of a precautionary approach. (i.e. there is a reference point determined for stock size and actions to be taken if stock is estimated to fall below this – 5 million tonnes (Bpa). Bpa is twice Blim- the min. Biological Acceptable Level. Current estimates of SSB place the stock closer to 12 million tonnes.

Research continues to focus on the understanding of climatic effects on migratory patterns and year class strength and it is likely that the changing migratory-feeding pattern toward the south west and higher growth rates and condition of the stock is influenced by climatic conditions and phytoplankton productivity.

Discarding is reported (ICES) to be low and accounted for within stock assessment. Iceland has a zero discarding policy for all fisheries and a strong management/regulatory framework for monitoring and control.

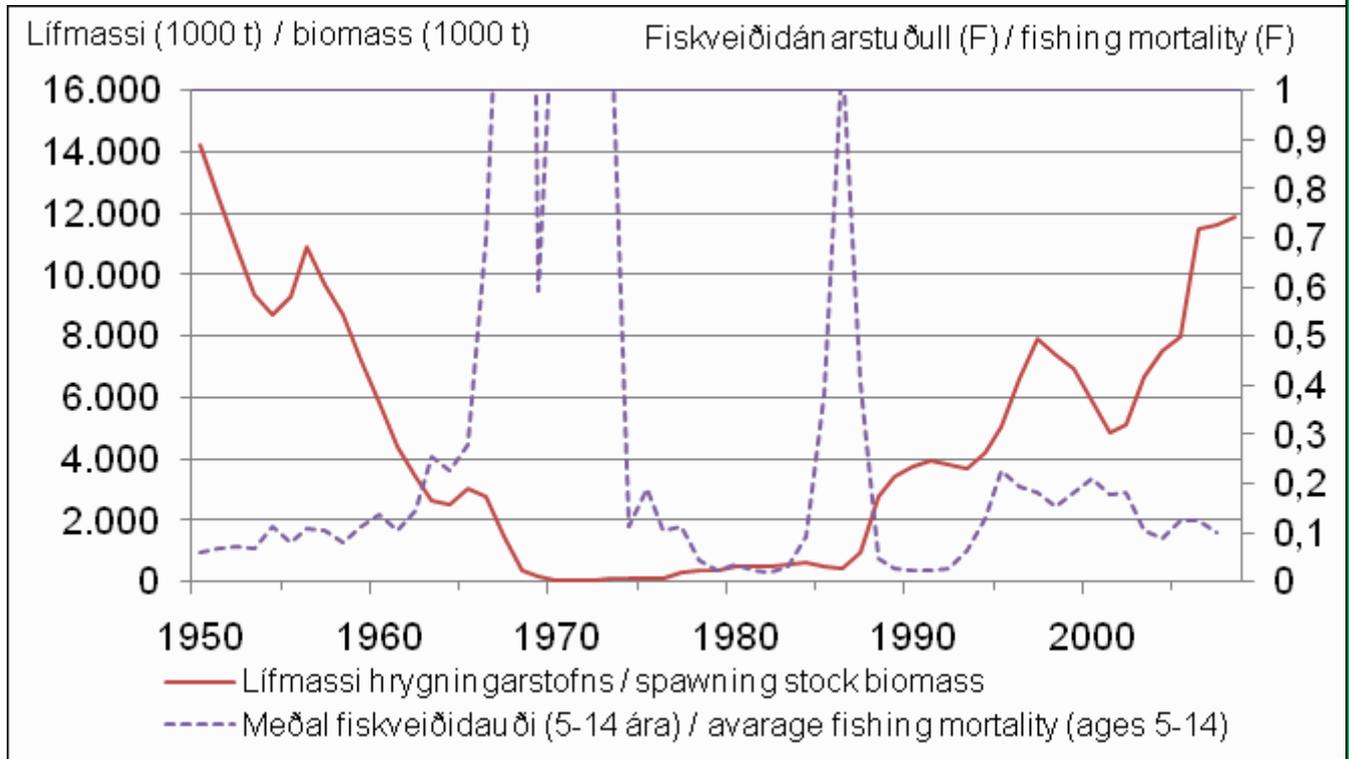
Effects on other non target organisms such as cetaceans is reported in Section D.

The fishery for the ATLANTO-SCANDIAN herring is in general a single species fishery and not aimed at any other fish.

In 2004/2005, ATLANTO-SCANDIAN was found to be mixed with the summer spawning Icelandic Herring (ISUM) catch off the east coast of Iceland. The mixing of these two herring stocks is due the summer feeding migration of the ATLANTO-SCANDIAN which has now become increasingly more westerly in recent years and is approaching the Icelandic Spring Spawning Herring (ISPR) summer distribution as it used to be before the stock collapse in the late 1960s (ICES, 2007).

H

From the stage of maturity the ATLANTO-SCANDIAN is easily distinguishable from the ISUM and the by-catches of the ATLANTO-SCANDIAN in the ISUM fishery are thought to be low.



SSB has recovered well since the collapse in the 1970s and is now well above the target reference point for the precautionary SSB limit of 5 million tonnes, current estimates put the SSB closer to 12 million tonnes.

Efforts are currently being expended to establish an ecologically coherent network of well-managed marine protected areas in the NE Atlantic (OSPAR, 2007). Within spring-spawning herring’s distribution are three sites proposed off Norway’s coast, where more are also being considered for the protection of seabirds (OSPAR, 2007). The network is planned to be established in 2010.

D. MANAGEMENT MEASURES	
LEVEL OF COMPLIANCE	
<i>D1. The level of fishing permitted should be set according to management advice given by research organisations.</i>	
LOW	The level of fishing permitted is not set according to management advice given by research organisations.
MEDIUM	The level of fishing permitted is higher than management advice given by research organisations. However, the difference is not considered to have a significant impact of the sustainability of the stock
HIGH	The level of fishing permitted is set according to management advice given by research organisations.

The level of fishing permitted is set according to management advice given by research organizations.

The minister of fisheries determines the annual TAC of every species subject to quota regulation with advice from the Marine Research Institute, ICES and NEAFC activities. A scientific assessment of the state of the fish stocks and the condition of the ecosystem constitutes the main basis of determining the TAC each year.

Conformity between the scientific fisheries advice and the authorities’ decisions on the TAC is a principal factor for ensuring responsible fisheries management. The authorities’ decisions on the maximum catch are based on social and economic factors, yet always focused on ensuring the long-term renewal of the fish stocks. The Icelandic authorities have implemented a utilization strategy with the long-term objective of ensuring sustainable fisheries (Icelandic Ministry of Fisheries and Agriculture).

In 2008, 217 000t of ATLANTO-SCANDIAN was landed by Icelandic boats with international landing totaling around 1.3 million t. For 2009 ICES recommended a TAC of 1.643 million t and Iceland’s share was 238 000t.

Atlantic Herring

2008 - Final data

	XEU	FRO	GRL	ISL	XJM	XNE	NOR	RUS	XSV	Total
European Union	700				9,762	6,797	78,041			95,300
Faroe Islands		3,657		8,493	7,646	19,368	35,097			74,261
Greenland		1,508				2,302				3,810
Iceland		4,356		125,281	24,909	18,514	40,917			213,977
Norway					2,667	12,532	946,364			961,603
Russian Federation		793			9,334	23,118	134,138	27	25,709	193,119
Total	700	10,314	0	133,774	54,338	82,631	1,234,577	27	25,709	1,542,070

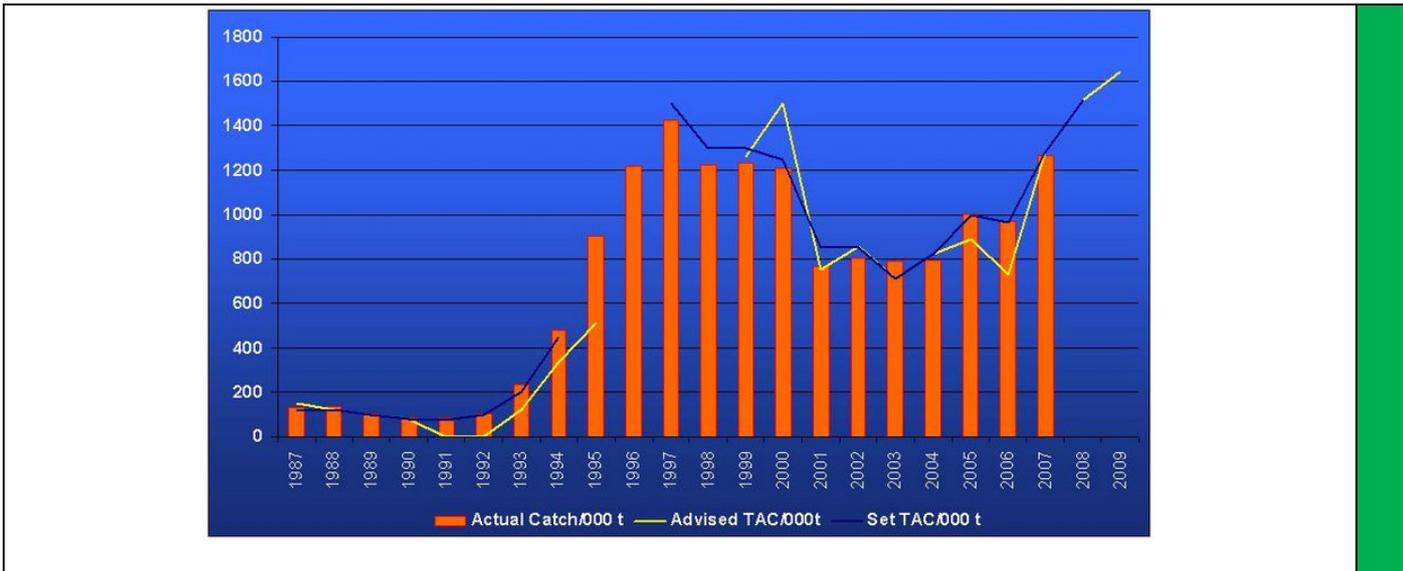


Table 9.4.5.1 Herring in the Northeast Atlantic (Norwegian spring-spawning herring). Single-stock exploitation boundaries (advice), management, and catch.

Year	ICES Advice	Predicted catch corresp. to advice	Agreed TAC	ICES Catch
1987	TAC	150	115	127
1988	TAC	120–150	120	135
1989	TAC	100	100	104
1990	TAC	80	80	86
1991	No fishing from a biological point of view	0	76	85
1992	No fishing from a biological point of view	0	98	104
1993	No increase in F	119	200	232
1994	Gradual increase in F towards $F_{0.1}$; TAC suggested	334	450	479
1995	No increase in F	513	None ¹	906
1996	Keep SSB above 2.5 million t	-	None ²	1 217
1997	Keep SSB above 2.5 million t	-	1 500	1 420
1998	Do not exceed the harvest control rule	-	1 300	1 223
1999	Do not exceed the harvest control rule	1 263	1 300	1 235
2000	Do not exceed the harvest control rule	Max 1 500	1 250	1 207
2001	Do not exceed the harvest control rule	753	850	770
2002	Do not exceed the harvest control rule	853	850	809
2003	Do not exceed the harvest control rule	710	711 ³	773
2004	Do not exceed the harvest control rule	825	825 ³	794
2005	Do not exceed the harvest control rule	890	1 000 ³	1 003
2006	Do not exceed the harvest control rule	732	967 ³	969
2007	Do not exceed the harvest control rule	1 280	1 280	1267
2008	Do not exceed the harvest control rule	1 518	1518	1546
2009	Do not exceed the harvest control rule	1 643	1 642	
2010	Do not exceed the harvest control rule	1 483		

Weights in '000 t.

¹Autonomous TACs totaling 900 000 t.

²Autonomous TACs totaling 1 425 000 t were set by April 1996.

³There was no agreement on the TAC, the number is the sum of autonomous quotas from the individual Parties.

The two tables and graph demonstrate that recorded landings and set TAC's do comply with the scientific recommendation (particularly 2007 onwards).

LEVEL OF COMPLIANCE	
<i>D2. Where excess fishing capacity exist, mechanisms should be in established to reduced capacity to allow for the recovery of the stock to sustainable levels.</i>	
LOW	Mechanisms to allow for recovery of the stock to sustainable levels are not established.
MEDIUM	Mechanisms to allow for recovery of the stock to sustainable levels are somehow established. However there is no evidence of the efficiency of the methods used.
HIGH	Mechanisms are established to reduce capacity to allow for the recovery of the stock to sustainable levels and there are evidences of recovery.

<p>Mechanisms are established to reduce capacity and if the fishery were depleted, the system is appropriate to allow for the recovery of the stock to sustainable levels and there are evidences of recovery.</p> <p>Excess fishing capacity is not a current issue for the Icelandic management system. Although, the Atlanto-scandian herring has previously been in a state of collapse, currently stocks have recovered to high levels and a harvest control rule is in place by the fishing states with a long term objective of ensuring that stocks remain healthy. The harvest control rule ensures that fishing mortality, set through a TAC set to the annual survey results and stock assessments and does not result in fishing mortality above the limit reference point. Hence, overfishing does not occur.</p> <p>Iceland operates a vessel registration, licensing and permit system which is necessary to obtain quota within the Individual transfer quota system. The Marine Policy focuses on economic utilisation of stocks. The system acts to create disincentives for allowing excess capacity in fisheries. In the view of the assessment team these measures will help to ensure the longer term conservation of the ATLANTO-SCANDIAN and have rated the recovery plan as highly compliant to the standard.</p> <p>Other technical measures, including season, permanent and temporary closures act to manage effort and capacity within the permitted fleet.</p>	H
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LEVEL OF COMPLIANCE	
<i>D3. Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment.</i>	
LOW	There are no management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment.
MEDIUM	There are management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment. However it is not science based.
HIGH	There are management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment. Measures are based on scientific information.

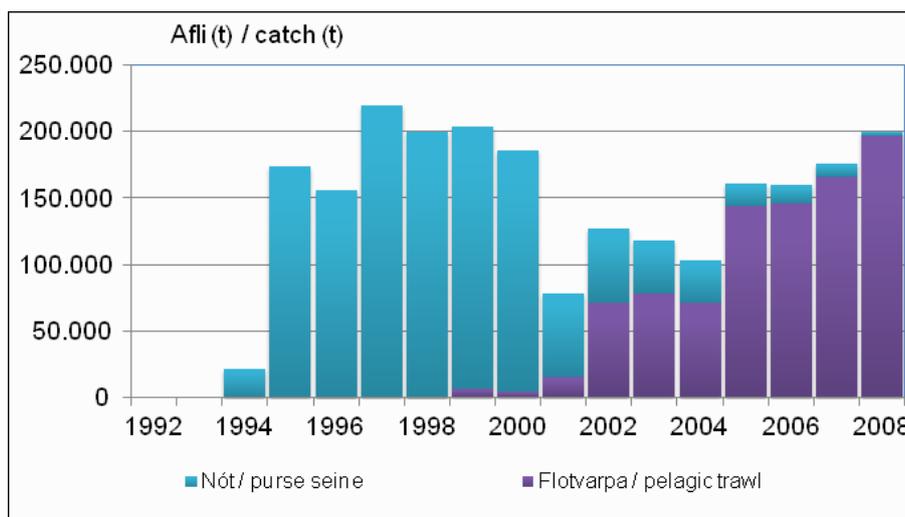
There are management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment. Measures are based on the available scientific information.

The Assessment team requests clarification of the degree of reporting of the interaction of gears with cetaceans in the fishery although on the strength of current evidence presented determines that a high compliance is achieved for D3.

Gears in use include mid-water trawl and purse seine. The operation of these is generally regarded as benign with respect to benthic habitats as gears rarely interact with the seabed.

There are also various technical measures in place to ensure the protection of small fish and vulnerable habitats, such as regulations on the type of fishing gear allowed in different areas and the closing of fishing grounds. There are also rules for the minimum mesh size and the use of small-fish sorting grids to allow juvenile herring and non target species escapement. A minimum mesh size of 32mm for directed ATLANTO-SCANDIAN pelagic trawl fishing was fixed by Council Regulation for areas within NEAFC’s jurisdiction. Within EU waters, permitted mesh size ranges from 16 to 40mm depending on region and minimum percentage of target species (EC No 850/98).

A minimum landing size regulation of 25 cm has been in place since 1977. This has prevented the exploitation of young herring. This regulation has contributed to a rebuilding of the stock to levels well above precautionary limits. Since the 1980s the stock has been considered fully recovered.



Non-target Stocks

There is little quantitative information available on the by-catches of the fishery but they are thought to be small (ICES, 2009b). Mackerel schools can be inter-dispersed in herring fisheries around the Faroes and Iceland (ICES, 2009a). Known by-catches in the Norwegian purse seine fishery consist of a small amount of large saithe chasing the herring migrations. Within the Icelandic EEZ the Directorate of Fisheries operates an observer programme and a reporting system for fishermen allowing temporary closure of areas if the inter-mixture of saithe, itself a quota species managed by Iceland, falls outside of allowable by-catch limits (NMFCA, 2008). The temporary closure system is used extensively throughout Iceland for the majority of quota species.

Predator Species.

The presence of a large herring stock is expected to generally have positive effects on predator species in the ecosystem (ICES, 2009b). With respect to the interaction of cetaceans with fishing gear, the North Atlantic Marine Mammal Commission (NAMMCO) has recommended that countries monitor and report by-catches of marine mammals and seabirds. Information is limited and pelagic trawl and purse seine fishing methods are considered to be species specific catching methods. There is little literature available on interactions of gear with cetaceans and observer programs in Iceland do not suggest a significant level of interaction takes place.

E. IMPLEMENTATION

LEVEL OF COMPLIANCE

E1. There should be a framework for sanctions of violation of Laws and regulations.

LOW	A framework for sanctions of violation of Laws and regulations do not efficiently exist.
MEDIUM	A framework for sanctions of violation of Laws and regulations do exist but do not work efficiently.
HIGH	A framework for sanctions of violation of Laws and regulations exists and is proven to be efficient.

There is an efficient framework for sanctions and violations of laws and regulations in Iceland.

H

The legal and administrative framework consists of laws and regulations that specify and allow the Ministry through the services of the Directorate to prosecute and charge fines through the Courts of Iceland for infringement of fishery regulations. Regulations also allow for the amendment and introduction of new Acts through the Ministry to ensure an effective management structure for the prosecution of offending members of the fishing community. Monitoring programmes are carried out by the Directorate and the Icelandic Coast Guard operates a VMS based monitoring system 24-7 for all vessels inside Icelandic EEZ. Compliance to regulations is high, largely supported by an incentive system for reporting of catches and tolerances for by-catch within the system which acts towards the reduction in discarding and attempts to land unreported catches.

Breaches of the law and regulations on fisheries management are subject to fines or revoking of the fishing permit, irrespective of whether such conduct is by intent or negligence. Major or repeated intentional offenses are subject to up to six years imprisonment. If the catch of a vessel exceeds the allowable catch of the said vessel of individual species, the relevant fishing company must obtain an additional catch quota for the relevant species. If this is not done within a certain timeframe, the fishing permit may be revoked as well as a charge having to be paid for the illegal catch. *(Icelandic Ministry of Fisheries and Agriculture,).*

All commercial fishing activities are subject to quotas. Fishing vessels are allocated a fixed quota share of the species subject to TAC. The combined quota share for all vessels amounts to 100% of each species. The quotas were initially allocated on the basis of catch history prior to the institution of the quota system. The quota share is multiplied by the TAC to give the quantity which each vessel is concerned during the fishing year in question. This is referred to as the vessel's catch quota. Permanent quota shares and annual catch quotas are divisible and transferable to other fishing vessels. The allocation of quotas is subject to a fishing fee. Individual enterprises may not control more than the equivalent of 12% of the value of the total quotas allocated for all species, and 12% to 35% for individual species (Samherji HF website)

Collecting and bringing ashore any catches in the fishing gear of fishing vessels is obligatory. Discarding catch overboard is prohibited and such conduct is subject to penalty according to law. If a vessel catches any species in excess of its fishing permit, the relevant fishing company has the option of obtaining additional quota within a certain period of time after landing the catch. Vessels are authorized to land a small percentage of the catch, usually by-catch, without the use of quota. The catch in question is sold at auction and the proceeds go to a research fund that supports marine research.

LEVEL OF COMPLIANCE

E2. A management system for fisheries control and enforcement should be established.

LOW	A management system for fisheries control and enforcement is not established.
MEDIUM	A management system for fisheries control and enforcement is established but do not work efficiently.
HIGH	A management system for fisheries control and enforcement is established and work efficiently.

A management system for fisheries control and enforcement is established and work efficiently. A high compliance rating is awarded.

H

All commercial fisheries are subject to authorization by the Directorate of Fisheries. The Iceland Coast Guard, which falls under the auspices of the Ministry of Justice, monitors the fisheries of vessels operating in Icelandic waters, as well as monitoring closed areas. Additionally, it inspects the fishing gear, for example the mesh size of the nets *(Icelandic Ministry of Fisheries and Agriculture).*

There are also strict requirements for the keeping of e- logbooks on-board all fishing vessels and they must be made available for fishery inspectors. Furthermore, the logbooks are important for scientific assessment purposes (Responsible Fisheries, R8).

The Icelandic Directorate of Fisheries is responsible for monitoring and inspecting vessels both at sea, through an observer programme and ashore, through a network of official landing sites where all catches are registered by officials who report to a central database. Thus 60 ports of landings in Iceland send electronic data daily to the Directorate. A total of approximately 50.000 landings are registered in the system every year.

Landing data is submitted to the Directorate on a daily basis, forming the basis of a near real-time overview of quota uptake. The Directorate website provides near real time monitoring data of the catches for each vessel and also the remaining quota for each species.

All vessels must be registered, licensed and The Directorate issues fishing permits and allocates catch quotas.

The Fisheries Association of Iceland represents the fishery sector’s interests domestically and internationally. The areas of discussion include environmental issues and responsible resource utilization. The Fisheries Association is a member of the International Coalition of Fisheries Associations (ICFA). The Association represents seven main organizations in the fisheries sector, including both employers and employees.

The Fishery Association provides a mutual board for discussions for these organizations and enables local and international coalitions and multi-cooperative work (FAO, 2004; R5)

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