

MSC SUSTAINABLE FISHERIES CERTIFICATION

Northern Ireland Pelagic Sustainability Group (NIPSG)

North Sea Herring (*Clupea harengus*) Fishery



Public Certification Report

November 2016

Prepared For: **Northern Ireland Pelagic Sustainability Group**
Prepared By: **Acoura Marine Ltd**



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Glossary

ASCOBANS	(Bonn Convention's) Agreement on the Conservation of Small Cetaceans in the Atlanto-Scandian and Baltic.
ACOM	ICES Advisory Committee
ACFA	Advisory Committee on Fisheries and Aquaculture (EC)
ANIFPO	Anglo North Irish Fish Producers' Organisation
Bpa	Precautionary reference point for spawning stock biomass
Blim	Limit biomass reference point, below which recruitment is expected to be impaired.
CEFAS	Centre for Environment, Fisheries and Aquaculture Science (UK)
CFCA	EU Community Fisheries Control Agency
CFP	EU Common Fisheries Policy
CR	Council Regulation
CSA	Coastal States Agreement
DAERA	Department of Agriculture, Environment and Rural Affairs (NI)
DEFRA	Department for Environment, Food and Rural Affairs (UK)
EC	European Commission
EEZ	Exclusive Economic Zone
EFF	European Fisheries Fund
EMFF	European Maritime and Fisheries Fund
ETP	Endangered, threatened and protected species
EU	European Union
F	Fishing Mortality
Flim	Limit reference point for fishing mortality that is expected to drive the stock to the biomass limit
Fpa	Precautionary reference point of fishing mortality expected to maintain the SSB at the precautionary reference point
FAM	MSC's Fisheries Assessment Methodology
FAO	United Nations Food and Agriculture Organisation
HAWG	ICES Herring Assessment Working Group
HCR	Harvest Control Rule
ICES	International Council for the Exploration of the Sea
ITQ	Individual Transferable Quota
IUU	Illegal, unreported and unregulated fishing
LOA	Length Over All
MCS	Monitoring, Control and Surveillance
MMO	Marine Management Organisation (UK)
MS	Member State (of the European Union)
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NEAFC	The North East Atlantic Fisheries Commission
NEA	North East Atlantic
NFFO	National Federation of Fishermen's Organisations
NGO	Non-Governmental Organisation
NI	Northern Ireland
OSPAR	Oslo-Paris Convention (Convention for the Protection of the Marine Environment of the North-East Atlantic)
PAC	Pelagic Advisory Council
PI	MSC Performance Indicator
PO	Producer Organisation
RAC	Regional Advisory Council
RSW	Refrigerated Sea Water
SAWG	ICES Stock Assessment Working Group
SFF	Scottish Fishermen's Federation
SFO	Scottish Fishermen's Organisation
SFPA	Scottish Fisheries Protection Agency
SI	Scoring Issue (MSC)
SPFA	Scottish Pelagic Fishermen's Association

SSB	Spawning Stock Biomass
STECF	Scientific, Technical and Economic Committee for Fisheries
TAC	Total Allowable Catch
UoC	Unit of Certification
UNCLOS	United Nations Convention on the Law of the Sea
VMS	Vessel Monitoring System
VPA	Virtual Population Analysis
WWF	World Wide Fund For Nature
WGECO	ICES Working Group on the ecosystem effects of Fishing Activities
WGRED	ICES Working Group on Ecosystem Description
WGWIDE	ICES Working Group on Widely Distributed Stocks

1. Executive Summary

- » This report provides details of the MSC assessment process for the Northern Ireland Pelagic Sustainability Group (NIPSG) North Sea Herring (*Clupea harengus*) Fishery. The assessment process began in July 2014 and was concluded on the 8th November 2016.
- » A comprehensive programme of stakeholder consultations were carried out as part of this assessment, complemented by a full and thorough review of relevant literature and data sources.
- » A rigorous assessment of the wide ranging MSC Principles and Criteria was undertaken by the assessment team and a detailed and fully referenced scoring rationale is provided in the assessment tree provided in **Appendix 1.1** of this report.
- » Due to the time elapsed between site visit and the completion of this Public Comment Draft Report, a consultation period was opened for submission of new relevant information from stakeholders (as per CR2.0 7.3.4). No new information was submitted. The team reviewed the various elements of the fishery and changes were made to the report in regards to Principle 1 while Principles 2 and 3 remained unaffected.
- » Following a variation approved by the MSC, Principle 1 was rescored using the CR1.3 assessment tree. The new scoring for Principle 1 is contained within the report while the original scoring and a side by side showing the changes in scoring can be found in Appendix 6. Furthermore, this new scoring was peer reviewed, by one peer reviewer, as indicated in Appendix 2. This peer reviewer's table was updated in relation to the new comments on those rescored P1 - PIs.

The assessment team for this fishery assessment comprised of Andy Hough, who acted as team leader and primary Principle 2 specialist; John Nichols who was primarily responsible for evaluation of Principle 1 and Crick Carleton who was primarily responsible for evaluation of Principle 3.

Client strengths

- » The NIPSG fishery is well managed and there is close cooperation between NIPSG members and DARD in managing the fishery.
- » The fishery has very limited ecosystem effects
- » NIPSG actively engage in the scientific process.

Client weaknesses

- » The fishery did not score less than 80 for any PI. The potential weakness of the fishery is that it is a small component of a much larger European fishery, although this is mitigated by most fishers also being MSC certified.

Determination

On completion of the assessment and scoring process, the assessment team concluded that the fishery achieved a score of 80 or more for each of the three MSC Principles, and did not score under 60 for any of the set MSC Criteria. The assessment team therefore recommends the certification of the NIPSG North Sea Herring fishery.

Conditions & Recommendations

- » The fishery did not score less than 80 for any PI. Accordingly, there are no conditions and no recommendations

For interested readers, the report also provides background to the target species and fishery covered by the assessment, the wider impacts of the fishery and the management regime, supported by full details of the assessment team, a full list of references used and details of the stakeholder consultation process.

Acoura Marine confirm that this fishery is within scope.

2. Authorship and Peer Reviewers

2.1 Assessment Team

All team members listed below have completed all requisite training and signed all relevant forms for assessment team membership on this fishery.

Assessment team leader: Andy Hough

Primarily responsible for assessment under Principle 2

Dr Andrew Hough: Marine Environmental Consultant. Andrew has PhD in marine ecology from the University of Wales, Bangor (1987-90). He has been involved in marine, coastal and freshwater environmental management since 1991, including management of fishery impacts on ecosystems and marine conservation biology, principally in European inshore waters. He was manager of Moody Marine operations within Moody International Certification from 1999 to 2011 with particular responsibility for the implementation of MSC Certification procedures and development of MSC methodologies. He has acted as lead assessor on a large proportion of MSC pre assessments and main assessments during this time, and subsequently as team member and/or lead auditor for various assessments. This has involved stock assessment analysis, evaluation of ecosystem effects and management effectiveness of groundfish, pelagic and shellfish fisheries in various administrations around the world. He now works as a freelance environmental/fishery management consultant and auditor; consultancy projects include certification-related policy advice to the Association of Sustainable Fisheries.

Expert team member: John Nichols

Primarily responsible for assessment under Principle 1

Mr John Nichols is a retired UK government fisheries biologist with 42 years' research experience in plankton ecosystems in the North Atlantic specializing in the taxonomy of North Atlantic & NW European plankton including phytoplankton, micro and meso-plankton, ichthyoplankton and young fish. 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 and directly involved in the assessment of pelagic and western demersal fish stocks from 1994 to 2000. He has been involved in the publication of over fifty scientific papers and reports more than half of which have been in peer reviewed journals, and the publication of two fish egg and larvae identification keys.

Since retirement from his government post he has participated in a total of 27 different fisheries MSC assessments as the Principle 1 expert plus the re-assessments of many of those fisheries. Those assessments include the Thames estuary herring, PFA North Sea Herring, NEA mackerel and Atlanto-Scandian herring, Hastings Fleet Dover sole, the north –east coast of England bass fishery, the SW mackerel hand line fishery, Portuguese sardine, a Newfoundland herring fishery, Canadian Pacific sablefish, various Norwegian and Swedish pelagic fisheries, Faroese and Norwegian saithe fisheries, Faroese, Russian and Norwegian Arctic cod and haddock fisheries and a North Sea plaice and sole fishery,. He has also been a peer reviewer for numerous MSC certification reports by various Certification bodies and has also carried out two MSC pre-assessments and numerous annual audits.

In 2010 he delivered a lecture on 'The Importance of a Fisheries Interaction with the Ecosystem in the MSC Certification Process' at an international Safe Seas conference in Portugal. In 2014 he successfully completed the four module MSC on line training course, passed the exam and was certified in the role of an MSC Fishery Assessment Team Leader. Elected as a Fellow of the Society of Biology in July 2014.

Expert team member: Crick Carleton

Primarily responsible for assessment under Principle 3

Crick Carleton has over thirty years' experience in fisheries management, policy and development, drawing on academic qualifications in both natural sciences and economics (zoology and technological economics), and work as a fishery officer and full-time fisheries consultant. He is the founder and Chief Executive of Nautilus Consultants. He has advised at senior levels in national government, has worked

with the senior management teams of public sector bodies, and advised corporate managers on various aspects of policy, reform, development and improved decision-making.

Crick has regularly contributed to the formulation of policy in the matter of fishery sector management, sustainable development, international trade, the rules governing public agency operation and support to private sector development, and the rules governing competition between public and private bodies. He balances an increasing workload within Europe with restructuring and privatisation work in emerging and transition economies in both temperate and tropical locations around the world. He is an experienced facilitator, works extensively with fishing communities and businesses, and regularly mediates in a range of sensitive management and development situations. He is based in the Scottish borders.

He has actively supported the evolution of the MSC standard, and participated in the Airlie House revision of the MSC's Principles and Criteria to the current standard. He has contributed to debate on the application of the MSC Ps & Cs to small-scale fisheries and aquaculture (including participation, at the invitation of WWF, as a consultant in its Seattle workshop on certification of small-scale fisheries).

2.1.1 Peer Reviewers

Peer reviewers used for this report were Stephen Lockwood and Mike Pawson.

Mike Pawson 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, 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, and trawl surveys in the North Sea and, from 1980 to 1990, 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. Between 1990 and 2002 Mike led the Cefas Western demersal team, providing analytical assessments and management advice for 12 finfish stocks including hake and, since 2002, directed and managed the assessment of salmon and eel stocks in England and Wales and provided scientific advice on their conservation.

During this time, he was co-ordinator of the Anglo-French English Channel Fisheries Study Group (1989-1997), and chaired the ICES Southern Shelf Demersal Stock Assessment Working Group (1996-98), Seabass Study Group (2000-04) and Elasmobranch Study Group (2001-02), and scientific and technical meetings for the EC's hake recovery plan (2000). He 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 and eels, and on marine recreational fishing. Since his retirement from Cefas in 2007, Mike has taken part in six Marine Stewardship Council fishery assessments.

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 scientific papers, project proposals, reports and manuscripts in preparation, and 35+ MSC assessments. All of Mike's work has been published in refereed Journals, in ICES and EC working group reports, and in contract reports.

Dr Stephen Lockwood is an independent marine environment consultant with over 40 years' 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 as a peer reviewer, assessment team member and annual surveillance auditor for numerous UK, European and North American fisheries seeking MSC certification.

2.1.2 RBF Training

Andrew Hough has been fully trained in the use of the MSC's Risk Based Framework (RBF).

RBF was not used for this fishery assessment.

3. Description of the Fishery

3.1 Unit(s) of Certification and scope of certification sought

Acoura Marine confirm that the fishery is within scope of the MSC certification sought for the assessment as defined.

Prior to providing a description of the fishery it is important to be clear about the precise extent of potential certification. 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) and / or individuals pursuing the fish of that stock)”**.

This clear definition is useful for both clients and assessors to categorically state what was included in the assessment, and what was not. This is also crucial for any repeat assessment visits, or if any additional vessels are wishing to join the certificate at a later date. The unit of certification for the fishery under consideration is as set out below.

The fishery assessed for MSC certification is defined as:

Species:	Herring (<i>Clupea harengus</i>)
Stock:	Autumn spawning stock in North Sea and Eastern Channel
Geographical area:	ICES divisions IV and VIId
Harvest method:	Mid-water Pelagic Trawl
Management System:	Cooperative management between EU member states and Norway, advised by ICES
Client Group:	NIPSG
Other Eligible fishers	Member of NIPSG and any other UK producer organisations, fisheries organisations, or individual fishers who have not yet signed the Certification sharing mechanism

Please note that whilst the Unit of Certification details the full extent of what is being assessed, it is the full and complete Public Certification Report that precisely defines the exact nature of certification for this fishery.

This Unit of Certification was used as it is compliant with client wishes for assessment coverage and in full conformity with MSC criteria for setting the Unit of Certification.

3.1.1 Scope of Assessment in Relation to Enhanced Fisheries

No enhancement activities take place in relation to the North Sea herring stock.

3.1.2 Scope of Assessment in Relation to Introduced Species Based Fisheries (ISBF)

Herring is native to the North Sea.

3.2 Overview of the fishery

3.2.1 NIPSG

Fishery Ownership

The Northern Ireland Pelagic Sustainability Group (NIPSG) is a group established to develop and promote sustainable practices within the Northern Ireland pelagic fleet. It is represented by the Anglo North Irish Fish Producers Organisation (ANIFPO), based in Kilkeel, Northern Ireland. The Northern Ireland fishing industry is based principally around the ports of Kilkeel, Ardglass and Portavogie along the eastern coast between Belfast and the border with the Irish Republic.

The fleet forming the UoC comprises the Voyager, a large (75m) RSW pelagic trawler, and a pair trawl team, the Havilah and the Stefanie-M (50m). These vessels are Northern Ireland owned and registered. Because of the size of these vessels in relation to available harbour and landing facilities, the Voyager is based at Lerwick in the Shetland Isles, and the pair team at Bangor, to the east of Belfast. The Voyager forms an integral component of the UK large vessel pelagic fleet operating primarily out of Lerwick and Fraserburgh. Its main ports of call are Lerwick (Scotland), Killybegs (Republic of Ireland), and Lissahally (by Londonderry, Northern Ireland), and ports in Denmark and Norway. The pair team operates more locally – in the Irish Sea, and to the north and west of Scotland and west of Ireland. Landings are made mostly to Northern Ireland through Bangor, Warren Point (Carlingford Lough) and Kilkeel.

This fleet typically participates in the third and fourth quarter North Sea herring fisheries around the Shetland Isles and to the east of Scotland.

The Anglo-North Irish Fish Producers Organisation (ANIFPO) was founded in 1984 as a non-profit making co-operative and has its headquarters located alongside the harbour in Kilkeel, Co. Down. ANIFPO provide a range of services to Northern Ireland fishermen, especially focused on the area of quota management and representation but increasingly also in relation to marketing. ANIFPO member vessels are based in Annalong, Ardglass, Kilkeel and Portavogie, the main fishing harbours along the County Down coast in Northern Ireland. Members vessels range in size from over 70 metres to under 10 metres in length and actively fish in waters all around the UK and Ireland, using a variety of fishing methods such as trawling and crab/lobster potting, to target a wide range of species. The most important catch for the majority of ANIFPO member vessels is Nephrops or Dublin Bay Prawns, which are landed on a daily basis into local ports. ANIFPO is committed to promoting sustainable fishing methods and is involved in a variety of projects including the Sea Fish Industry Authority's Responsible Fishing Scheme.

ANIFPO is managed by a Board consisting of eight Directors, who are elected on an annual basis by the membership of the PO. The Board is headed by a Chairman who serves a two-year term. The Board meets on a regular basis and is charged with making all policy and management decisions relating to both the day-to-day operations of the PO and the Organisation's Fish Sales Division. ANIFPO is a constituent organisation within the UK's National Federation of Fishermen's Organisations (NFFO) and holds two seats on the NFFO's Executive Committee. Through the NFFO, ANIFPO is involved in a range of national and European forums. Mr Alan McCulla is Chief Executive Officer with responsibility for overseeing and implementing the decisions of the ANIFPO board as well as for representing ANIFPO member's interests at National and European level. Further details about ANIFPO are available at <http://www.anifpo.com>.

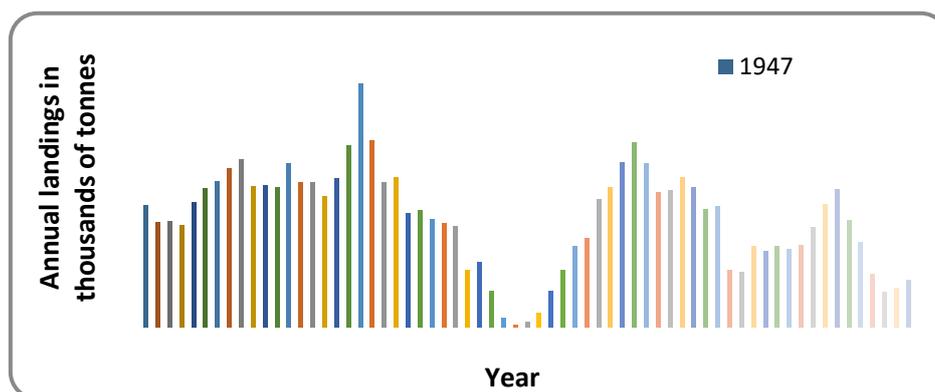
The Northern Ireland Fish Producers' Organisation Limited was formed in 1977. It currently has 120 members all of whom are active fishing vessel owners. Member vessels range in size from 60 metre purse seiners to under 10 metre vessels. The majority of the membership is based in County Down in Bangor, Portavogie, Ardglass and Kilkeel but individual members are also based in Cumbria, Scotland, Isle of Man and on the English East coast. Mr. Dick James is the Secretary/Chief Executive to the Organisation having been involved for some 40 years in fisheries. Mr James actively represents his members' interests in many committees and groups at EU, UK national and regional levels. In its role, NIFPO actively represents its members at national and European level and participates in fisheries management processes and initiatives that are of relevance to its members

History of the Fishery

The herring fishery in the North East Atlantic and North Sea has a long tradition, stretching back many centuries.

During the course of the 20th century the continued expansion and increasing industrialisation of the fleet eventually led to a decline in stock status in the 1960s and early 70s leading to the eventual collapse and closure of the North Sea herring fishery. Although the stock was able to recover, renewed excessive fishing pressure once again led to the decline of the stock and TACs were halved in 1996, bringing into sharp focus the need for good management and responsible exploitation. Since then the stock has had a generally upward trajectory, and management has been able to more effectively restrict landings to prevent a further collapse.

Historical fishing levels (landings) in the North Sea Herring Fishery (1947 – 2011)



Source: ICES 2012b

Today the NIPSG comprises a comparatively small fleet (certainly in a historical context) of large, highly specialized fishing vessels.

Some key milestones in the evolution of management of the North Sea Herring fishery are noted below:

- » 1947 – catch data and sampling begun to inform initial assessments – this same data is still incorporated into the historical time series used in today's stock assessments.
- » 1957 - Treaty of Rome, which created the European Communities (now EU), declares there should be a common agricultural policy that defined agriculture as including fisheries.
- » 1976 EU extends fishing waters from 12 miles to 200 miles – now encompassing the whole of the North Sea. At this same time the Common Fisheries Policy was created.
- » 1977 – North Sea Herring fishery closed
- » 1981 – North Sea Herring fishery re-opens alongside a system of total allowable catches (TACs) and species specific minimum mesh sizes.
- » 1983 – An explicit EU Common Fisheries Policy is formulated and ratified.
- » 1996 – 50% emergency cut in North Sea herring TAC in attempt to prevent a further closure of the fishery.
- » 1998 – Management agreement reached between EU and Norway to ensure a rationale exploitation pattern and provide stable and high yields.
- » 2003 - A revised CFP was introduced with increased emphasis on long term management plans, tackling fleet overcapacity, more robust and consistent monitoring, control & surveillance, greater stakeholder (fishermen) engagement in the management decision making process. All of these have had some subsequent influence on the shape of the North Sea herring fishery.
- » 2008 – EU Norway Management Plan for North Sea Herring revised.
- » 2014 – EU Norway Management Plan (Strategy) for North Sea herring revised

Quota management in the UK is co-managed by the Producer Organisations. For the UoC fleet, the Havilah is in membership of the Northern Ireland Fish Producers Organisation (NIFPO), and the Stefanie-M and Voyager in membership of the Anglo North Irish Fish Producer Organisation (ANIFPO). These are the only dedicated pelagic vessels in membership of these organisations. The tabulation below shows quota holdings, in-year swaps, and catches against quota for the Northern Ireland fleet for each of the last five years.

Northern Ireland quota holdings and take-up (tonnes)

	initial quota allocation	quota change in year	end of year quota allocation	total landings by UK vessels	
2010	2,324	893	3,216	3,354	104%
2011	2,754	-127	2,627	2,657	101%
2012	5,636	68	5,704	5,567	98%
2013	6,523	-608	5,915	5,849	99%
2014	6,581	317	6,898	6,621	96%

In Table below these landings are shown relative to total UK quota holdings and the agreed TAC

Northern Ireland landings as a proportion UK quota and TAC (tonnes)

	UK end of year quota holdings	landings as proportion of UK quota	annual TAC	landings as a proportion of TAC
2010	22,917	15%		
2011	27,687	10%	200,000	1%
2012	55,881	10%		
2013	58,841	10%		
2014	66,289	10%		

Area Under Evaluation

The fishery takes place entirely within EU waters within ICES area IV (North Sea). The diagram below (Fig.3.2) shows the extent of these ICES areas.



Source: ICES

3.2.2 Species and Fishing Practice

Species type/s

The target species for the fishery under certification is Atlantic herring (*Clupea harengus*). As indicated initially, this report does not intend to provide a scientifically comprehensive description of the species. Interested readers should refer to sources that have been useful in compiling the following summary description of the species.

These include:

Fishbase: <http://www.fishbase.org/Summary/SpeciesSummary.php?ID=24&AT=herring>

ICES: Herring Assessment Working Group (stock Annex) (ICES 2012b)

ICES Fishmap: <http://www.ices.dk/>

FAO Species Factsheet: <http://www.fao.org/fishery/species/2886/en>

Atlantic herring (*Clupea harengus*) is a pelagic species, with stocks widely distributed throughout the north-east Atlantic, ranging from the Arctic Ocean in the north to the English Channel in the south. Young herring are typically found close inshore, in estuaries or in sea lochs, whilst adult shoals generally occur further offshore. Herring often travel huge distances between spawning, nursery and feeding grounds – a significant factor when considering the management of the fishery.

During daytime, herring shoals remain close to the sea bottom or in deep water – though this is not so in all cases. At dusk they move toward the surface and disperse over a wide area. The herring is a very tender and fragile fish with large and delicate gill surfaces and scales. It has a low level of pollution tolerance and it has retreated from many heavily impacted estuaries worldwide. It is this characteristic that enables herring to serve as a bio-indicator of cleaner and more oxygenated waters.

Herring are demersal spawners. Shoals of herring gather on the spawning grounds and spawn more or less simultaneously - releasing eggs in a single batch. Eggs are laid on the sea bed, on stones, gravel or sand beds. A female herring may deposit from 20,000 up to 120,000 eggs, depending on age and size. The eggs sink to the bottom, where a mucous coat enables them to form layers or clumps. Incubation time varies between 10 to 40 days depending on temperature.

The larvae are between 5 and 6mm at the time of hatching, and early nutrition is provided by a small yolk sac. Only the eyes are well pigmented and the rest of the body is semi-transparent - virtually invisible underwater. The newly hatched larvae drift with oceanic currents. By the age of one-year, herring have a typical length of 10cm, and first spawning occurs at 3 years old. Adult herring have been reported as old as 20 years, but this is very uncommon.

Clupea harengus play an important role in the food chain, consuming zooplankton (copepods, larval snails, diatoms, mysids, euphausiids etc.) and juvenile sandeels. There are no marked differences between the diets of small and large herring; only the proportions of the different food items change with size. Young herring typically capture prey individually, but where prey concentrations reach very high levels, such as micro-layers that occur at fronts, herring are able to swim forwards with open mouth and expanded opercula.

Herring stocks can be categorised by their different spawning areas and times. Some different stocks are known to mix together for parts of the year but during the spawning season they migrate to their separate spawning areas. Although herring can be found spawning in almost any month, around Scotland the majority spawn in the autumn, between August and October.

There has been a reasonable understanding about the discrete locations of many of the North Sea spawning grounds for much of the 20th century. This has triggered widespread debate and research into the degree of separation in stock identities, and thus to determine if distinct stocks or races exist. This research, more recently coordinated by ICES, has been vital in determining management strategies for the North Sea. The work concluded that there are three main herring stocks in the North Sea, with distinct spawning grounds, migration routes and nursery grounds.

- Buchan Herring: Spawn July–September off Orkney, Shetland and Scottish east coast, with nursery grounds in the Skagerrak, Kattegat and Scottish east coast.
- Banks Herring: Spawn August–September off English east coast and historically on Dogger Bank, nursery grounds on the English east coast and west coast of Denmark.
- Downs Herring: Spawn December–February in Southern Bight of the North Sea and Eastern English Channel.

Fishing Practices

The vessels used are pelagic trawl, and are modern and technologically advanced with on-going investment in state of the art technology and modern electronic equipment such as sonar, net and catch monitors, which have greatly improved the precision of this method of fishing.

Pelagic trawls are towed at the appropriate level in the water column to intercept target shoals, with gear depth being controlled by altering towing speed and/or warp length. The horizontal opening is maintained by mid-water pelagic trawl doors (or by pair trawling) whilst the vertical opening is maintained by chain on the groundline and floats on the headline – although these are not always required – depending on the way the net is rigged. The trawl used is designed and rigged to fish in midwater, including in the surface water and is therefore not designed to come in contact with the seabed, and any inadvertent contact is extremely rare – and would risk causing expensive damage to the net. The large net (considerably larger than a demersal trawl net) consists of a cone shaped body, ending in a codend with lateral wings extending forward from the opening. Large mesh in the wings herd the fish before tapering to finer meshes in the square, belly and eventually the cod end.

Larger mesh near the start of the net is designed to facilitate the escape of small fish and also pelagic invertebrates such as jellyfish which have the potential to be impacted by pelagic fisheries.

Organisational Structure

Until recently Northern Ireland vessels in membership of the NIFPO and ANIFPO Producer Organisations formed a part of the Scottish Pelagic Sustainability Group (SPSG), and as such participated fully in the SPSG MSC assessments for North East Atlantic mackerel, North Sea herring and West of Scotland herring. These fisheries were certified respectively in January 2009, July 2013, April 2012. The Northern Ireland pelagic vessel owners have parted ways with SPSG, and have set up their own grouping, the NIPSG. Assessment for the Northern Ireland pelagic vessels is being taken forward by NIPSG.

The NIPSG fleet comprises pelagic trawlers, as shown in Table X. The Voyager operates as a single pelagic trawler. Havilah and Stefanie-M operate as a pair team.

Table 3.1: List of member vessels

Name	Vessel Reg. No.
Havilah	N200
Stephanie M	N718
Voyager	To be replaced August 2017

Source: client

An up to date vessel list can be obtained by contacting Acoura Marine using the following details:

MSC Fisheries Department

Contact Email: Fisheries@Acoura.com

Contact Tel: +44(0) 131 335 6662

Other Resource Attributes and Constraints

None

3.2.3 Administrative Framework

User Rights (Legal and Customary Framework)

There are no small scale, artisanal or indigenous fisheries affected by this fishery. The Northern Ireland fishing industry has traditionally been open access. Over the years fisheries management and fleet policy have gradually reduced the opportunities for anyone wishing to fish, with restricted licenses and restricted quotas now being a pre-requisite before fishing. Access to these has however been non-discriminatory and market economies have influenced the evolving shape of the industry. Although licenses and quotas are now expensive, those in possession of licenses and quota are most likely to be representatives of families that have fished the same waters for many generations, and have been able to take advantage of the opportunities to remain in the industry.

Aside from this, there are no groups given any special access to the fishery, nor is this needed or being called for.

Further details on the administrative framework are contained in section 3.5 of this report.

Legal / Administrative Status

The fishery under assessment is legal, legitimate and takes place within the context, restrictions and limitations of the Common Fisheries Policy and relevant national fishery management agreements, including that of Norway in whose waters some fishing activity is undertaken and to whose ports some landings are made.

Involvement of Other Entities

No other entities are involved with the NIPSG fishery. Management of the stock takes place under an agreement between the EU and Norway, as detailed in Section 3.5.

3.3 Principle One: Target Species Background

Principle 1 of the Marine Stewardship Council standard states that:

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.

In the following section the key factors which are relevant to Principle 1 are outlined.

a) Life history, stock distribution and stock structure.

The Atlantic herring (*Clupea harengus*) is a member of the Clupeidae family of pelagic fishes which includes sprats, pilchards, anchovies and shads. The herring is a pelagic species which is widespread in its distribution throughout the shelf sea areas of the temperate North Atlantic. It occurs off Norway, around Iceland, Greenland and off the east coast of the USA and Canada as well as in the North Sea. It is also found throughout the Baltic. The stocks in these different areas are quite distinct, have different migration routes and separate spawning areas. Some of those stocks spawn in the autumn and winter whilst others spawn in the spring. The herring in the North Sea are mainly autumn / winter spawners whilst off Norway and in the Baltic they spawn in the spring. The herring's unique habit, amongst commercial fish species, is that it produces benthic eggs which are attached to the seabed in suitable areas of gravelly substrate or on fjord edges off the Norway coast and even in shallow eel grass (*Zostera*) beds in the Baltic. This is a limiting factor in terms of the available spawning areas and increases the potential for detrimental anthropogenic effects on spawning success, such as bottom trawling, scallop dredging, sand and gravel dredging, seismic surveying and marine construction. There is scientific information in support of the advice that there should be no gravel extraction in areas of known spawning grounds (De Groot, 1980). In recent years there has been an increase in marine anthropogenic activity especially in the area of marine renewables (ICES, 2014a).

Both spring and autumn spawning herring do occur in the North Sea and Skagerrak but the major fisheries are carried out on the offshore autumn spawning fish. The spring spawners are found mainly as small discrete coastal groups in areas such as The Wash and the Thames estuary. Juveniles of the western Baltic spring-spawning stocks may also be found in the eastern North Sea as well as Norwegian coastal spring spawners. Individuals of spring and autumn spawning stocks can be identified by small differences in the vertebral count but more reliably by the analysis of the otolith microstructure. This skilful and time consuming process has to be carried out on small samples from the fisheries where autumn and spring spawners are taken together in the catches. The potential mix of different spawning groups, resulting in mixed catches in the fisheries, adds a complexity to the management of herring fisheries which is uncommon for most other species.

The main autumn spawning begins in the northern North Sea in August and progresses steadily southwards through September and October in the central North Sea to November and as late as January / February in the southern North Sea and eastern English Channel. The widespread but discrete location of the herring spawning grounds throughout the western North Sea has been well documented since the early part of the 20th Century. The disparate nature of the spawning grounds has generated considerable scientific debate and research on stock identity. The controversy centred on whether or not the separate spawning grounds represented discrete stocks or 'races' within the North Sea autumn spawning herring complex. Resolution of this issue became more urgent as the need for the introduction of management measures increased during the 1950's. The International Council for the Exploration of the Sea (ICES) encouraged tagging and other racial studies and a review of all the historic evidence to resolve this problem. The conclusions were reviewed by Harden Jones (1968) and formed the basis for establishing the working hypothesis that the North Sea autumn spawning herring comprise a complex of three separate components each with separate spawning grounds, migration routes and nursery areas (Zijlstra, 1969). The spawning areas, annual migration routes and larval drift are illustrated in Figure 3.3.2. Details of each of the three spawning components are as follows:

- **The Buchan or Scottish component**, which spawn from July to early September in the Orkney Shetland area and off the Scottish east coast. Nursery areas for fish up to two years old are found along the east coast of Scotland and also across the North Sea and into the Skagerrak and Kattegat.
- **The Banks or central North Sea component**, which derive their name from their former spawning grounds around the western edge of the Dogger Bank. These spawning grounds

have now all but disappeared and spawning is confined to small areas along the English east coast, from the Farne Islands to the Dowsing area, from August to October. The juveniles are found along the east coast of England, down to the Wash, and also off the west coast of Denmark and in the Skagerrak.

- **The Downs component**, which spawns in very late autumn through to February in the southern Bight of the North Sea and in the eastern English Channel. The drift of their larvae takes them north-eastwards to nursery areas along the Dutch coast and into the German Bight.

At certain times of the year, individuals from the three stock components may mix and are caught together as juveniles and adults. Because they are inseparable in the commercial catches they have to be managed as a single stock, the North Sea autumn spawning herring stock. The Downs group is however recognised as having different characteristics and, as a mainly spawning fishery, is in need of special protection measures. As a consequence, ICES provides management advice for a separate ring-fenced area sub-TAC for ICES Divisions IVc and VIId. As an additional protective measure up to 50%, of this ring-fenced TAC, can now be taken in ICES Division IVb.

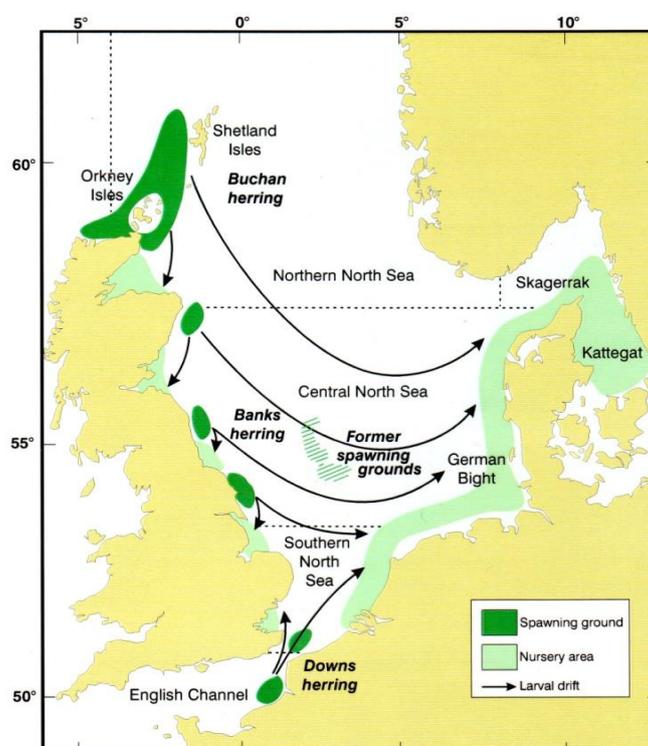


Figure 3.3.2. The Spawning areas, nursery areas and drift of the juvenile herring of the three North Sea spawning components: the Buchan, Banks and Downs spawners (Nichols,2001).

The fecundity of herring is length/weight related and over the whole of the North Sea varies generally between approximately 10,000 and 140,000 eggs per female although values as high as 175,000 have been recorded (Burd and Howlett, 1974). Herring eggs take from two to three weeks to hatch dependant on temperature. The larvae are planktonic and passively drift for around three to four months during which time they drift to various coastal nursery areas on both sides of the North Sea and into the Skagerrak and Kattegat (Figure 1).

In the past, herring age has been determined by using the annual rings on the scales. Since the late 1970's the growth rings on the otolith have proved more reliable for age determination. Herring age is expressed as number of winter rings on the otolith rather than age in years as for most other commercial teleost species where a nominal 1 January birth-date is applied. Autumn spawning herring do not lay down a winter ring during their first winter and therefore remain as '0' winter ringers until the following winter. Spring-spawners do lay down a ring in their first winter.

The age of first maturity in the North Sea is 3 years old (2 winter ringers, wrs) but the proportion mature at age may vary from year to year dependent on feeding conditions and year class strength. The proportion mature at age has a very direct impact on the estimate of SSB and can introduce an area of uncertainty. The percentages mature at age of North Sea autumn spawning herring is estimated annually from the North Sea acoustic survey. The method and justification for the use of values derived from a single year's data, in the stock assessment process, was described fully in ICES (1996). Maturity values over the past sixteen years, showing the percentage mature at age are shown in Table 1 below. The low proportion of the very large 2000-year class as 2 wrs in 2003 (43% mature) and as 3 wrs in 2004 (65% mature) clearly demonstrates the effect of year class strength on maturity. The proportion of two winter ringers mature in 2011 was above the average of recent years whilst the proportion of 2 and 3 winter ringers mature in 2012 was very high. This is almost certainly a reflection of the continuing below average recruitment to the stock since 2002. Maturity at age was slightly lower in 2013 for 2, 3 and 4-ringers compared to 2012 but still at the high end for the time series. In 2014 there was a small increase in the proportion mature as 2, 3 and 4 winter ringers compared with the previous year.

Table 1 The percentage of North Sea herring mature at age for the years 1999 to 2012 (Data source: ICES, 2015a).

Year/wr	2wr	3wr	4wr	5+wr
1999	81	91	100	100
2000	66	96	100	100
2001	77	92	100	100
2002	86	97	100	100
2003	43	93	100	100
2004	70	65	100	100
2005	76	97	96	100
2006	66	88	98	100
2007	71	92	93	100
2008	86	98	99	100
2009	89	100	100	100
2010	45	90	100	100
2011	87	84	99	100
2012	91	99	100	100
2013	83	96	98	100
2014	85	100	100	100

Herring feed mainly on planktonic animals throughout their life history although there are numerous records of them taking small fish, such as sprat and sandeels, on an opportunistic basis. Calanoid copepods, such as *Calanus*, *Pseudocalanus* and *Temora* and the Euphausiids, *Meganyctiphanes* and *Thysanoessa* form the major part of their diet during the spring and summer. Growth rates do vary generally linked to density dependent factors related to year class strength.

The mean weights at age of herring are recorded annually both from the acoustic survey and from the landings. Sampling is carried out in ICES Divisions IVa, IVb and IIIa, in the third quarter of the year, when most fish are approaching their peak weights prior to spawning. These data are used in the annual stock assessment process and subsequent predictions for the stock. In 2012 the mean weight at age in the stock was lower for age groups 2wrs and 4wrs and above but was higher for age groups 1wr and 3wr compared with the previous assessment. These patterns were reasonably consistent in both the catch and acoustic survey data. Variation in size at age can largely be explained by density

dependent mechanisms but is also influenced, to a degree, by environmental effects (Dickey-Collas, 2010). The strong 2000-year class (highlighted in 2) was competing with a large herring stock biomass and as a consequence was slow growing throughout its lifetime.

Table 3.3.2 Mean stock weights (gms) from sampling on the acoustic survey in ICES Divisions IVa, IVb and IIIa in the 3rd quarter of the year for 1-9+ winter ringers (wr) for the period 1996 to 2013. The highlighted values show the progression of the 2000-year class (Source: ICES 2014a).

wr's / Year	1	2	3	4	5	6	7	8	9+
1996	45	119	196	253	262	299	306	325	335
1997	45	120	168	233	256	245	265	269	329
1998	52	109	198	238	275	307	289	308	363
1999	52	118	171	207	236	267	272	230	260
2000	46	118	180	218	232	261	295	300	280
2001	50	127	162	204	228	237	255	286	294
2002	45	138	172	194	224	247	261	280	249
2003	46	104	185	209	214	243	281	290	307
2004	35	116	139	206	231	253	262	279	270
2005	43	135	171	181	229	248	253	274	295
2006	45	127	158	188	188	225	243	244	265
2007	66	123	155	171	204	198	218	247	233
2008	62	141	180	183	194	230	217	268	282
2009	56	148	208	236	232	240	266	249	261
2010	38	138	183	229	245	233	237	252	251
2011	35	151	171	210	242	258	249	252	275
2012	48	125	192	194	212	232	242	239	243
2013	38	131	161	221	210	236	257	249	252
2014	44	130	177	195	225	218	225	250	246

b) Stock assessment and status of the stock.

From 1972 to 1995 the assessment of the North Sea autumn spawning herring stock was done by means of a virtual population analysis (VPA) model with ad hoc tuning to a series of larvae production estimates, acoustic surveys and trawl surveys (Nichols, 2001). Problems with this assessment method led the assessment working group, in 1995, to change to an integrated catch analysis (ICA) method (Patterson, 1998). The ICA model was used for the North Sea herring assessment each year from 1995. Subsequently this model became widely used for most of the pelagic stocks assessed by ICES including the North East Atlantic mackerel stock. In spite of some computational difficulties it was generally accepted as an appropriate procedure for the assessment of pelagic stocks, indeed the assessment of the North Sea autumn spawning herring stock was recognised within the ICES community as one of the best and most consistent assessments. (Simmonds, 2009). However, during 2011 it became apparent that there were unresolved issues with the ICA model and it could no longer be supported within the ICES assessment framework. It was accepted that it would have to be replaced prior to the planned benchmark assessment for herring in 2012. In February 2012 ICES convened a Benchmark Workshop on Pelagic stocks, WKPELA, (ICES, 2012a). Its remit was to determine and review the appropriateness of current stock assessment methods for five pelagic stocks which included North Sea herring.

The Workshop carried out a thorough examination of all the input parameters for the North Sea herring assessment. They also explored the suitability of other modelling procedures and data selection. Their

deliberations and conclusions are comprehensively detailed in section 5 of the report (ICES, 2012a). These include the exploration of all the potential data sources not only those currently in use. Briefly the Workshop recommended a change to the state – space assessment model (SAM) as an ideal framework to replace the ICA model (Lewy and Vinther, 2004; Payne, 2010) Nielsen and Berg, 2014). This has also resulted in changes to the input data for the assessment including a return to using the whole time series of landings dating back to 1947.

The listed main features of the SAM model of importance are:

- SAM is a fully statistical model. All data are treated as observations and missing data are handled appropriately.
- SAM offers a fully statistical framework that can be used as the basis for model refinement and decision-making.
- Uncertainties are generated for all estimated parameters.
- SAM internally estimates the precision of each data source and uses this estimate to weight them appropriately in the optimized model.
- SAM is a framework rather than a model– it is highly flexible with a low number parameters and can readily be modified to the peculiarities of the given stock.
- SAM is open source and cross platform software. As a result, customisations of the source-code to deal with issues are feasible

All the changes to input data are described and explained in the assessment working group report (ICES, 2012b). Amongst the many improvements was the use of the whole time series of data back to 1947. The new model also provides 95% confidence intervals on the estimation of SSB, F and recruitment. Another improvement of note is the integration of fundamental links between the North Sea ecosystem and the stock dynamics of the autumn spawning herring. The assessment now includes variable estimates of natural mortality (M) at age derived directly from a multispecies stock assessment model, the SMS model, used in WGSAM (ICES, 2011a; Lewy and Vinther, 2004).

The basic biological data for the stock assessment comes from sampling the commercial landings. The required level of sampling is defined under an EU sampling Directive (Commission Regulation 1639/2001). The quality of the catch and biological data in support of the stock assessment is carefully monitored and reported by the ICES assessment working group each year (ICES, 2015b). The report addresses all relevant issues such as area misreporting, discarding, sampling of commercial catches and the spread of sampling across fleet / area metiers. Generally, the biological sampling levels for the North Sea stock are considered by ICES to be mainly satisfactory in support of the assessment. In the 2014 fishery 83% of the landings were covered by sampling, a small decrease (2%) on the previous year. (ICES, 2015b)

The annual stock assessment is supported by a number of fishery independent surveys which provide indices of the abundance of various year classes in the stock. These are termed ‘tuning indices’ and they provide independent evaluations of biomass which are used to modulate the assessment. There are two main surveys providing independent estimates of the abundance of age groups 0-6 winter ringers in the stock.

An acoustic survey in the summer was started in 1979 and extended to cover the Skagerrak and Kattegat in 1989. The 2014 survey of the North Sea covered most of the continental shelf area north of latitude 52°N. The resultant biomass estimate was 2.6 million tonnes, an increase of 0.3 million tonnes over the previous year. This was the result of an increase in the numbers of mature fish of 5,6, and 7 winter ringers but there was a significant drop in numbers of older fish (>8wrs). The overall increase was offset by a fall in the mean weight across all ages.

An international bottom trawl survey in the first quarter of the year was started in 1996 and has produced indices of 1 winter ring and 2-5 winter ring fish from the trawl hauls for tuning the stock assessment. The survey also generates an index of ‘0’ group fish from a concurrent fine meshed net survey which is used as a recruitment index for the stock.

During the latest benchmark of North Sea herring it was decided only to use the IBTS indices of 0-ringer and 1-ringer abundance in the assessment and to exclude the 2-5 winter ring index (ICES, 2012a).

The 2015 survey index of ‘0’ winter ringers (2014-year class), was very low at only 20.5% of the long term mean. This index was much lower than the 2014 estimate of the 2013-year class. The 2015 survey

index suggests that the 2014-year class is the lowest recruitment since the poor year class of 1977. The '0' group abundance was low over the whole surveyed area with the exception of a small area east of the northern English coast.

The 1 winter ring index for the 2013-year class, from the 2015 survey, was more than double the index for the 2012-year class from the 2014 survey. The index from the 2015 survey is at 270% of the long term mean and is the highest in the time series dating back to 1977.

The estimate of annual recruitment derived from the stock assessment in the past was based only on the '0' and '1' winter ringer indices from the International Bottom Trawl surveys. The new SAM assessment also provides estimates of the recruitment of herring in which information from the catch and from all fishery independent indices is incorporated. The annual recruitment at age '0' over the period 1947 to 2014, from the 2015 stock assessment, is shown in Figure 3.

The relationship between spawning stock size and recruitment as '0' winter ringers in the following year is shown in Figure 4 based on the whole time series back to 1947 from the new assessment model. This relationship remains basically unchanged from previous years. This relationship now includes the period in the 1970s when the whole North Sea stock collapsed and SSB was below 50,000t in 1977. With improved recruitment and the moratorium on directed fishing for herring the stock recovered to over 280,000t by 1982. The original lowest SSB estimate, from previous assessments was in 1977. The 1977 estimate was revised retrospectively in the 2013 and 2014 assessments to 125,116t. The lowest SSB in the new time series, from the 2015 assessment, is now 117,830t (+/- 143,588t / 96,693t (% CI) in 1975.

The other fishery independent survey index is the Multiplicative Larval Abundance index (MLAI) used up to 2012. This is derived from the larvae surveys covering the whole of the North Sea spawning areas at their various spawning times (Heath, 1993). The surveys provide an age aggregated index of spawning biomass and also provide valuable information on the development of the three spawning components. It is based on the abundance of early stage larvae (length<10-11mm) The surveys are carried out, over the spawning grounds, in September in the Orkney Shetland, Buchan and central North Sea areas and the southern North Sea and eastern English Channel in December and the following January.

The 2014/2015 surveys were badly affected by poor weather conditions and the survey coverage in terms of vessel days and number of samples was considerably reduced. The autumn surveys in the Orkney / Shetland area were reduced to 50% coverage and two of the three winter surveys in the southern North Sea and eastern English Channel were cancelled. As anticipated, newly hatched larvae spatial distributions varied between areas and time periods. Compared to the previous year, the total number of newly hatched larvae has decreased in those areas observed in September 2014*.

The temporal and spatial coverage of the surveys has reduced considerably over the past sixteen years. These changes have led to changes in the way that the data is analysed. In the 1990's the working group changed from simple abundance indices by area to a multiple larval abundance index (MLAI). After the benchmark assessment in 2012 WKPELA (ICES, 2012a) the procedure was changed again to a spawning component abundance index (SCAI), which was developed to better represent the separate development and dynamics of the three spawning components of the North Sea stock (Payne, 2010). The most recent SCAI index from the 2014/15 surveys is in the same order of magnitude during the last three years.

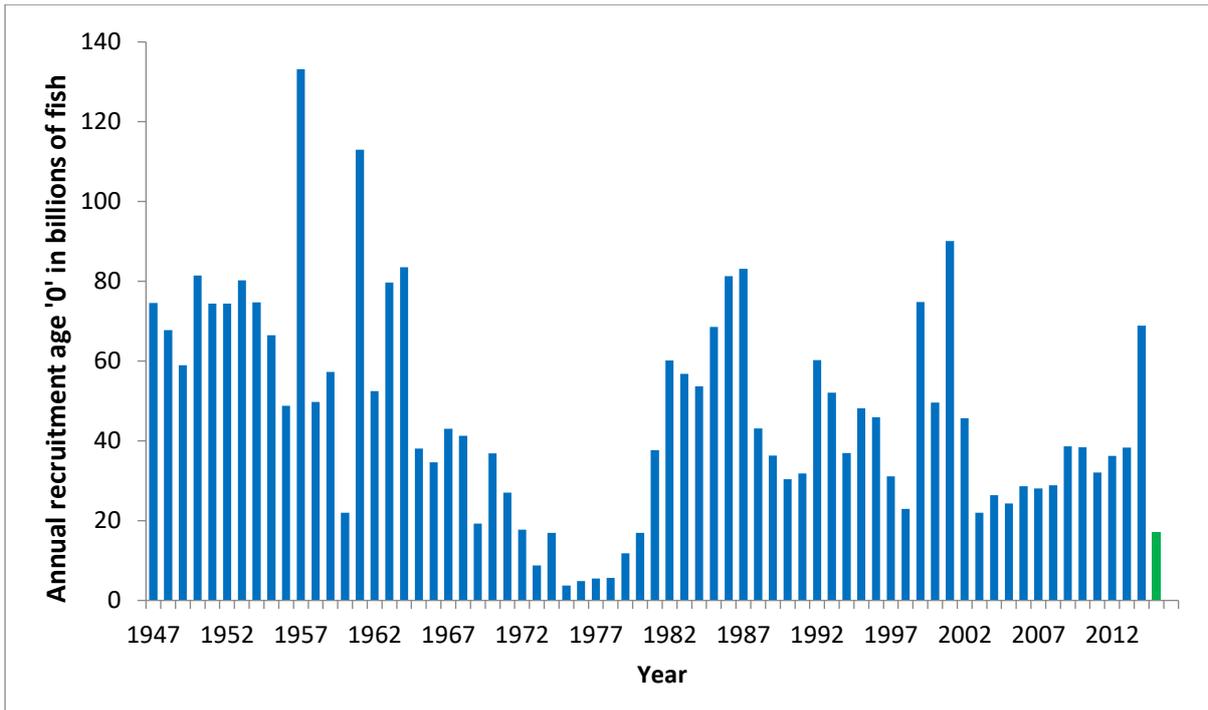


Figure 3. North Sea autumn spawning herring recruitment as billions of '0' winter ring fish in the survey year (ie not year class) over the period 1947 to 2015 The 2015 value (green) is a provisional estimate based on the '0' winter ringer abundance in the 2015 survey. (Data source: ICES, 2015a, b).

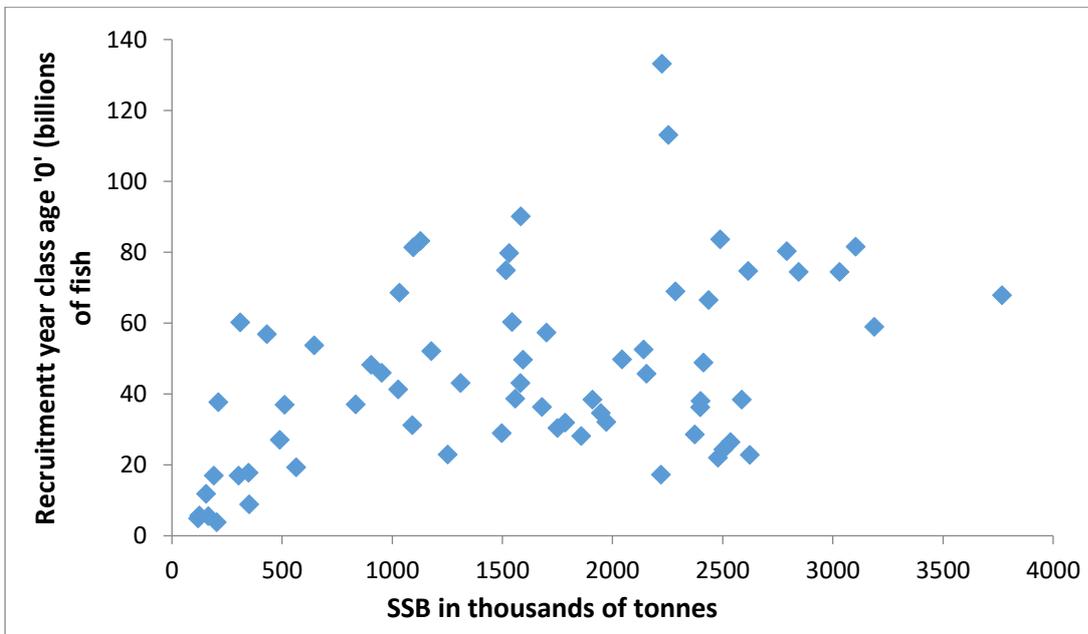


Figure 4 Spawning stock biomass / recruitment relationship from 1947 to 2014. The recruiting year class is plotted against the SSB in the year that they were spawned (Data source: ICES, 2015a)

As a result of a change in the assessment model used in 2012 (ICES, 2012b) there was a significant change in the perception of spawning stock biomass (SSB) and fishing mortality (F) over the past twenty years. The 2015 assessment (ICES, 2015b) was consistent with the previous year's assessment and the perception of SSB in the most recent years has only been marginally reduced compared with the 2014 assessment (ICES, 2014b). Figure 5 shows the difference in the perception of SSB in the 2015 assessment, compared with the 2011 assessment, for the time series dating back to 1960. The biomass limit reference point, Blim, the precautionary approach reference point, Bpa and the management plan reference point, SSBmp are also shown.

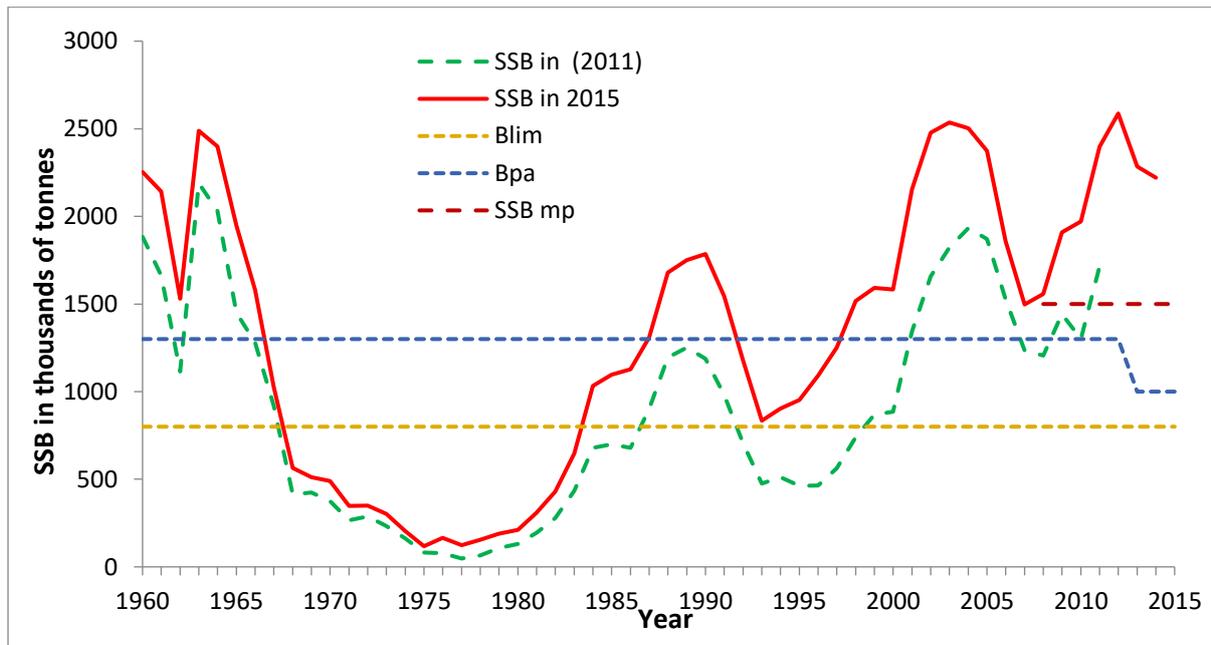


Figure 5. The annual spawning stock biomass over the period 1960 to 2014 as assessed in 2011(green) and 2014 (red). The biomass reference points Blim, Bpa and the management plan biomass SSBmp are also shown (Data source: ICES, 2011b, 2015a).

Figure 6 shows the difference in the perception of F from the 2011 and 2015 assessments over the same time series. There are some significant differences in the perception of fishing mortality on adults (ages 2-6wrs) mainly from the late 1980s through to the early 2000s, in line with the changed perception of SSB.

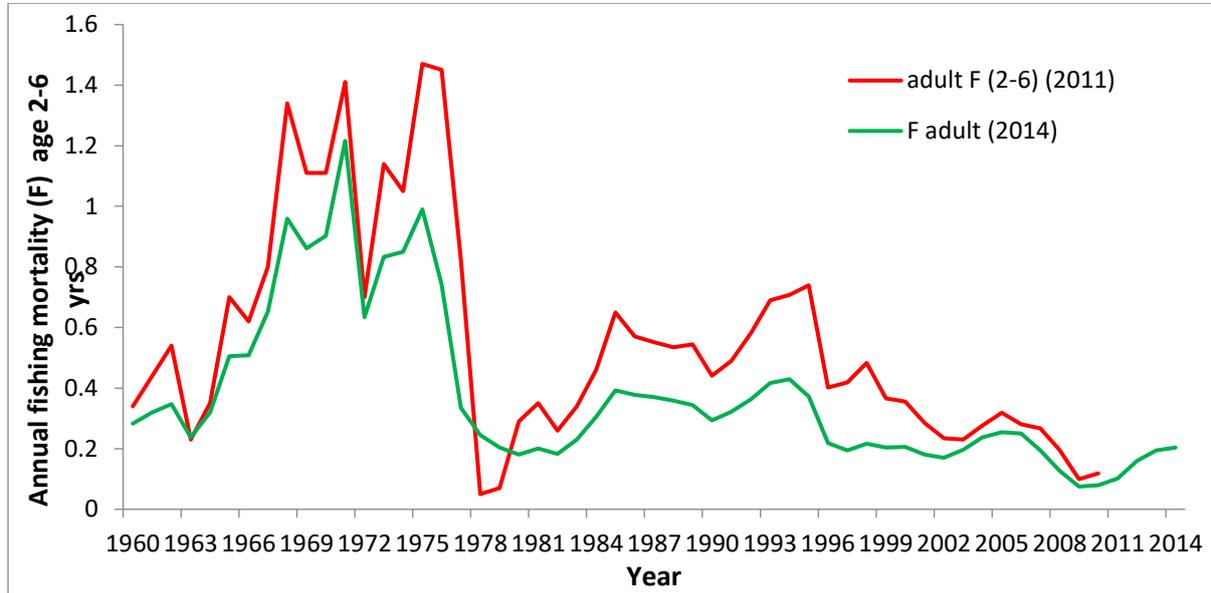


Figure 6. Annual fishing mortality on adults (ages 2-6 winter rings) over the period 1960 to 2012 as assessed in 2011 (red) and 2014 (green) (Data source: ICES, 2011b, 2015a).

Figure 7 shows the annual estimates of spawning stock biomass for the whole time series dating back to 1947. The assessment of the stock in March 2015 (ICES 2015b) indicated a SSB at spawning time in 2014 of 2.22 million tonnes [1.85, 2.66 million tonnes (95% CI)]. This is a reduction of 650,000t compared with the 2015 estimate of SSB in 2013 but marginally higher than the 2014 estimate of SSB in 2013. The ICES advice on the fishery in 2014 estimated an SSB at spawning time in 2014 of 1.8 million tonnes based on geometric mean recruitment and fishing mortality at the management plan level in 2014. The SSB at spawning time in 2015 is predicted to remain at about the same level as in 2014.

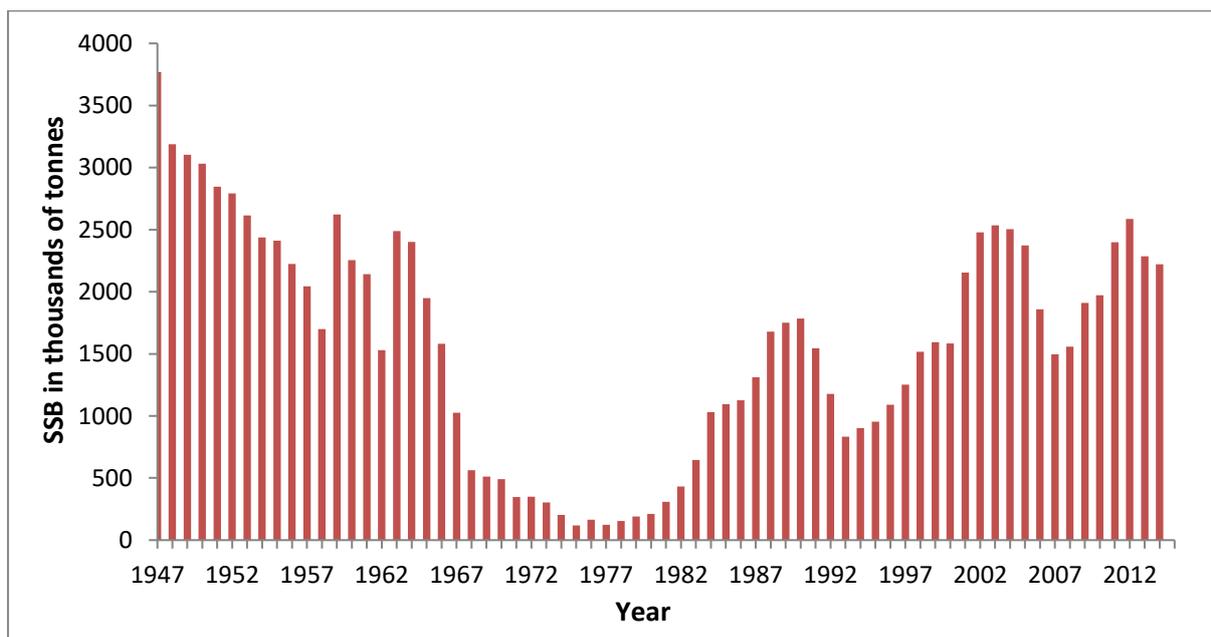


Figure 7. Spawning stock biomass of North Sea autumn spawning herring for the period 1947 to 2014. (Data source: ICES, 2015a).

Figure 8 shows the fishing mortality estimates, from the 2015 assessment, over the period 1960 to 2014. Fishing mortality on the adults is reliably estimated in the stock assessment and has been below Fmsy and Fpa target (F0.25) since 2006. Indeed, it has only been marginally above that level in one year, (F0.26) in 2005, over the period dating back to 1996. The perception of fishing mortality on the juveniles, aged 0 to 1 winter ringers has not shown such significant changes as a result of the new assessment model. Annual fishing mortality on this age group did increase to 0.035 in 2012 but continued to remain below the management plan target level (F0.05) and has only been above that level once, in 2005 (F0.076), since 1999. The 2015 ICES advice has not provided an estimate of juvenile fishing mortality for 2014 in the stock summary. However, the working group report does show that F on both the '0' and '1' winter ringers in 2014 was well below the management plan level.

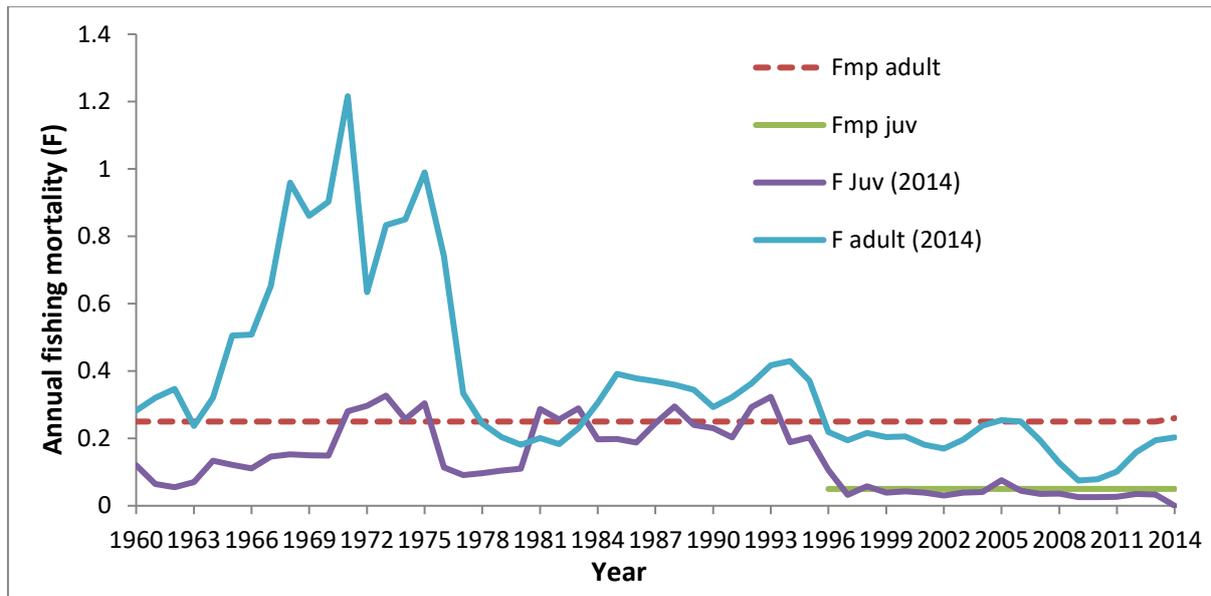


Figure 8. Fishing mortality on North Sea autumn spawners for adults (2-6wrs) and for juveniles (0-1wrs) over the period 1960 to 2014 (Data source: ICES, 2015a).

Figure 9 shows the age composition of the catch as numbers of North Sea autumn spawning herring, from all areas including ICES Division IIIa, in each of the years from 2010 to 2014. The age composition continues to show a reasonable spread of year classes present in the fishery up to 9+ winter ringers normally considered to be a positive sign. After a succession of below average year classes the 2013-year class is well above average and this positive sign is confirmed in the catch in numbers of '0' winter ringers in 2014.

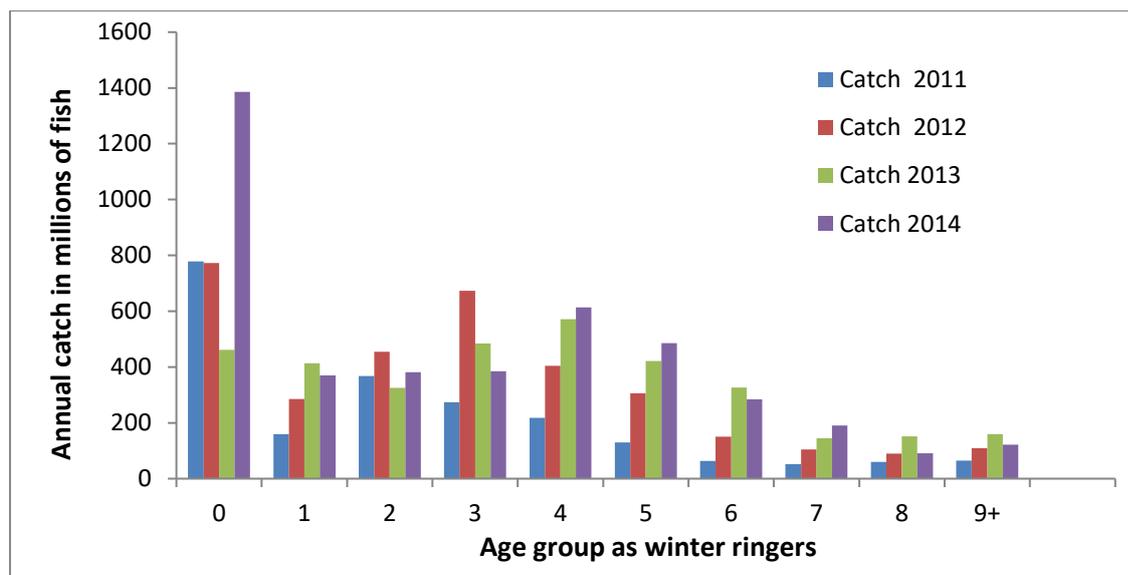


Figure 9. Catch of North autumn spawning herring in each of the years from 2011 to 2014 as millions of fish in each age group as winter ringers. (Data source: ICES, 2015b).

Based on the 2015 estimates of SSB and fishing mortality in 2014, ICES classifies the stock as being at full reproductive capacity and comfortably above the management plan trigger level of 1.5 million tonnes. Fishing mortality is below Fmsy targets for both adults and juveniles and in line with the long term management plan. ICES consider the stock to be harvested sustainably. The SSB at spawning time in 2014, 2.22 million tonnes, is well above the current biomass precautionary level which has now been reduced to 1 million tonnes and almost three times the biomass limit level (Figure 5). Fishing mortality on adults, based on 2-6 winter ring fish was estimated at F 0.203 in 2014 continuing the increasing trend over recent years but still remaining below the management plan target of F0.25.

Information on the development in North Sea herring recruitment comes from the International Bottom Trawl Surveys which produce indices of '0' and '1' winter ringer abundance. The assessment model then provides estimates of the recruitment of herring in which information from the catch and from all fishery independent indices is incorporated.

Recruitment at age 1 (0 winter ringers) over the period 1947 to 2015 is shown in Figure 3. The year classes from 2002 to 2012 are all below the long term geometric mean and are estimated to be among the weakest since the recovery of the stock following the collapse in the 1970s. Recruitment of '0' winter ringers in 2014 (2013-year class) is estimated to be very strong. They were recorded, on the 2014 survey as the largest '0' ringer abundance since 2001 with confirmation of that observation in 2015 with a similarly large abundance of '1' ringers. On a more cautious note the '0' winter ring abundance in the 2015 survey (2014-year class) was 63% below the long term geometric mean.

In spite of the one strong year class ICES still considers the stock to be in a period of low productivity, in terms of recruits per spawner and larval survival, over the ten-year period of poor recruitment. This scenario is probably related to environmental factors, but a plausible explanation remains elusive (Payne et al 2009).

3.3.1 Summary of the results of the assessment

As noted earlier the model change and changes to the input data have led to changes in the historic perception of both SSB and F. The absolute estimates of SSB are now generally higher throughout the time series, fishing mortality is lower but the trends remain similar. The retrospective estimates of recruitment have not changed significantly.

The 2015 estimate of SSB at spawning time in 2014 was 2.22 million tonnes. The 95% confidence interval on that estimate was 1.85 – 2.66 million tonnes. The estimate of '0' winter ring fish in 2014 (2013-year class) is estimated at approximately 68.9 million fish (95% CI 43.2 - 109.9 million) which is the strongest year class since the 2001-year class.

Fishing mortality on the adults, aged 2-6 winter ringers was estimated at $F_{0.203}$ (95% CI; 0.157 - 0.263) which is below the management plan target $F_{0.25}$). The fishing mortality on the juveniles was not detailed in the 2015 ICES advice stock summary.

3.3.2 History of the fishery, fishery management plans and annual management advice

Following the stock collapse in the mid 1970's (Figure 7) and the resultant moratorium on directed herring fisheries in the North Sea strict management measures were introduced before the fishery was re-opened in 1981. These included control of total landings by international quotas, a ban on the industrial fishery for juvenile herring and a limit on the proportion of juvenile herring in the small meshed sprat fisheries in the North Sea (Nichols, 2001). A minimum biologically acceptable level of spawning stock was set at 800,000t. After a subsequent near collapse of the stock in the early 1990's, when the SSB appeared to have fallen below 500,000t (now estimated at 827,000t in 1993) further strict management measures were introduced which included an unpopular halving of the TAC part of the way through the 1993 fishing season.

The current management plan is the result of a process that began in the mid-1990s as a result of the near collapse of the stock and stemmed from negotiations between the EU and Norway in 1997. The key elements in this plan were a fishing mortality set separately for adult and juvenile herring (at 0.25 and 0.12 respectively) and a trigger biomass (1.3 million tonnes) below which the fishing mortalities should be reduced. The target fishing mortalities were decided based on extensive simulations (Patterson et al., 1997) to find the level of sustainable exploitation of adults and juveniles that resulted in a low risk of bringing SSB below 800 000 tonnes, which was the minimum biological acceptable level (MBAL) at the time. That level was firmly based on a stock and recruitment relationship which clearly showed that there was a high risk of recruitment impairment when SSB fell below this level (Figure 4). When ICES introduced precautionary reference points in its advisory practice, the MBAL level was adopted as Blim and the trigger biomass of 1.3 million tonnes as the precautionary approach level, Bpa. The target fishing mortalities in the harvest rule were adopted as Fpa. The harvest rule was amended in 2004. The amendments included specific rules to apply when SSB fell below 1.3 million tonnes and a constraint on TAC change from year to year. Some revisions were made to the harvest control rule in 2005 (ICES, 2005) and again in 2008 in response to reduced recruitment.

In 2008 the ICES workshop on herring management plans met in February 2008 WKHMP (ICES, 2008) and carried out extensive investigations of the harvest control rule and the relevance of the reference points. The investigations, which involved extensive simulations, lead to a recommended change in the management plan which was endorsed and agreed by the EU and Norway in November 2008 to become the new management plan for North Sea autumn spawning herring which came into force on 1 January 2009. The revised management plan represented a new approach to management based on regulating fishing mortality in order to ensure a low risk (<5% probability) of SSB being below the point at which recruitment would be impaired (Blim). The previous management strategy was based on maintaining SSB above a precautionary level (Bpa) set to ensure that at that level there was a low risk of SSB actually being below Blim. These reference points no longer provide guidance to management actions according to the state of the stock. They are now solely used to classify the state of the stock and rate of exploitation according to precautionary limits. The new management plan also introduced a new biomass trigger point at 1.5 million tonnes. This point, together with the Blim trigger point, serves to provide three potential management scenarios, in the management plan, dependent on the state of the stock. Each management scenario has different target fishing mortalities (Fmp) for adults (ages 2-6wr) and juveniles (ages 0-1wrs) associated with the overall objectives of the harvest rule. One important point in the management plan is the limit on changes in the annual TAC of +/- 15% unless all parties agreed to invoke clause 6 which permits a reduction of >15%.

The agreed Management Plan and was evaluated by ICES who concluded that it is consistent with both the precautionary and MSY approaches. Although an MSY biomass has not been specifically defined, ICES have defined the MSY fishing mortality consistent with the management plan upper trigger biomass of 1.5 million tonnes. The plan implies a low risk of SSB being below Blim even if other reference points may be exceeded occasionally. It is important to note that the management plan has primacy over the ICES MSY framework when providing advice. ICES accept that this may lead to conflicting classification of the status of the stock, a discrepancy which currently remains unresolved.

Analysis carried out during the benchmark assessment in 2012 (ICES, WKPELA, 2012c) implied that the current reference points may have changed as a result of the changed perception of the stock

following the change in assessment model. As a result, the EU / Norway formulated a request to ICES to evaluate the precautionary and limit reference points as well as re-evaluating the precautionary management plan designs (ICES, WKHELP, 2012d). Briefly, the only changes made to the reference points to date are a reduction in the biomass precautionary approach point from 1.3Mt to 1.0Mt. Blim remained unchanged and the precautionary approach fishing mortality, Fpa is no longer considered relevant and is not defined.

Agreed Management Plan for North Sea herring

According to the EU–Norway agreement (November 2008):

- a. Every effort shall be made to maintain a minimum level of Spawning Stock Biomass (SSB) greater than 800,000 tonnes (Blim).
- b. Where the SSB is estimated to be above 1.5 million tonnes the Parties agree to set quotas for the directed fishery and for by-catches in other fisheries, reflecting a fishing mortality rate of no more than 0.25 for 2 ringers and older and no more than 0.05 for 0 - 1 ringers.
- c. Where the SSB is estimated to be below 1.5 million tonnes but above 800,000 tonnes, the Parties agree to set quotas for the direct fishery and for by-catches in other fisheries, reflecting a fishing mortality rate on 2 ringers and older equal to: $0.25 - (0.15 * (1,500,000 - \text{SSB}) / 700,000)$ for 2 ringers and older, and no more than 0.05 for 0 - 1 ringers.
- d. Where the SSB is estimated to be below 800,000 tonnes the Parties agree to set quotas for the directed fishery and for bycatches in other fisheries, reflecting a fishing mortality rate of less than 0.1 for 2 ringers and older and of less than 0.04 for 0-1 ringers.
- e. Where the rules in paragraphs 2 and 3 would lead to a TAC which deviates by more than 15 % from the TAC of the preceding year the parties shall fix a TAC that is no more than 15 % greater or 15 % less than the TAC of the preceding year.
- f. Notwithstanding paragraph 5 the Parties may, where considered appropriate, reduce the TAC by more than 15 % compared to the TAC of the preceding year.
- g. By catches of herring may only be landed in ports where adequate sampling schemes to effectively monitor the landings have been set up. All catches landed shall be deducted from the respective quotas set, and the fisheries shall be stopped immediately in the event that the quotas are exhausted.
- h. The allocation of the TAC for the directed fishery for herring shall be 29 % to Norway and 71 % to the Community. The by catch quota for herring shall be allocated to the Community.
- i. A review of this arrangement shall take place no later than 31 December 2011.
- j. This arrangement enters into force on 1 January 2009.

In response to the requirement to review the plan (i) ICES convened a Workshop in March 2011 (ICES, 2011c) to answer a specific request from the EU and Norway on the future of the long-term management plan for North Sea autumn spawning herring (ICES, 2011d). That Workshop concluded that the plan continued to be consistent with the MSY and precautionary approaches. The main weakness in the plan at that time appeared to be the 15% constraint on inter-annual variation in the TAC which was unnecessarily restrictive. The workshop firmly stated that the 'development of management plans' was the way forward to the rational exploitation of the North Sea herring resource. The Workshop recommended that a further review of the current plan should be carried out during 2011 prior to the EU/ Norway negotiations, in December 2011, on the management of North Sea herring in 2012. Formal discussions on a further revision of the 2008 management plan eventually began in September 2012. An ICES workshop, on the revision of long term management plans, WKHELP (ICES, 2012c) was convened. The Workshop involved not only a team of experts but also included the participation of industry representatives through the Pelagic Regional Advisory Council (Pelagic RAC).

For North Sea herring the Workshop accepted that a full revision of the current management plan was needed. This was particularly urgent because of the changed perception of the stock both in terms of SSB and F following the change of assessment model for the 2012 assessment of stock status in 2011. The Workshop re-evaluated the reference points and concluded that Blim should remain unchanged at 800,000t but Bpa should be revised to 1million tonnes. Fmsy (ages 2-6) should be within the range F0.24-0.30.

The Workshop explored a series of options all based on providing some stability in the annual TAC variability whilst maintaining a low risk (<5% probability) of the SSB being below Blim. The options

explored and the results and conclusions are described in detail in the Workshop report (ICES, 2012c) and in ICES advice on the special request for options to revise the long term management plan for North Sea herring (ICES, 2012c).

The report of the Workshop and the subsequent ICES advice was considered at the EU / Norway meeting in January 2013. They made a further detailed request to ICES that the long term management plan shall be evaluated with and without inter annual quota flexibility of +/- 15% when the SSB is above $B_{trigger}$, as described in Annex VIII of their Agreed Record. ICES was asked to evaluate two very specific alternative plans detailed in that Agreed Record. In response to this request ICES evaluated new options of the management plan in 2012 (ICES, 2012c). In March 2014 the EU / Norway agreed a revised plan which was due to become operative on 1 January 2015.

In September 2014 the European Commission and Norway asked ICES to evaluate the proposed Long-term Management Strategy for herring in the North Sea and Division IIIa TAC setting procedure. In response to that request ICES (2015c) concluded that the proposed Long-term Management Strategy (LTMS) for herring in the North Sea is precautionary. This LTMS now includes the introduction of an inter-annual quota flexibility of $\pm 10\%$ and a 10% constraint on the deviation from the fishing mortality target, provided that $SSB > Blim$. ICES advises that any choice of $B_{trigger}$ at or from 1.0 to 1.5 million tonnes in the proposed 2014 LTMS for herring in the North Sea is considered to be precautionary.

ICES also concluded that the proposed Division IIIa TAC-setting procedure is precautionary provided it includes a requirement to transfer at least 10% of the TAC from Division IIIa to the North Sea. With transfers of less than 10%, ICES considers that the procedure is not precautionary.

After the ICES evaluation in February 2015 the parties agreed to revise the existing (2008) Management Plan and the new LTMS became operative and was used for the provision of ICES advice on the management of the fishery in 2016. The revised plan is reproduced below with changes from the 2008 plan highlighted in bold text

Agreed Management Plan (2014) for North Sea herring according to the EU-Norway agreement (March 2014):

The Parties have agreed to revise the existing long-term management plan for herring in the North Sea as follows:

1. Every effort shall be made to maintain a minimum level of Spawning Stock Biomass (SSB) greater than 800,000 tonnes (*Blim*).

2. Where the SSB is estimated to be above 1.5 million tonnes the Parties agree to set quotas for the directed fishery and for by-catches in other fisheries, reflecting a fishing mortality rate of no more than **0.26 for 2 ringers and older** and no more than 0.05 for 0 - 1 ringers.

3. Where the SSB is estimated to be below 1.5 million tonnes but above 800,000 tonnes, the Parties agree to set quotas for the direct fishery and for by-catches in other fisheries, reflecting a fishing mortality rate on 2 ringers and older equal to:

$0.26 - (0.16 * (1,500,000 - SSB) / 700,000)$ for 2 ringers and older, and no more than 0.05 for 0 - 1 ringers

4. Where the SSB is estimated to be below 800,000 tonnes the Parties agree to set quotas for the directed fishery and for by-catches in other fisheries, reflecting a fishing mortality rate of less than 0.1 for 2 ringers and older and of less than 0.04 for 0-1 ringers.

5. Where the rules in paragraphs 2 and 3 would lead to a TAC which deviates by more than 15 % from the TAC of the preceding year the parties shall fix a TAC that is no more than 15 % greater or 15 % less than the TAC of the preceding year. **However, if the resulting fishing mortality rate would be more than 10% higher or more than 10% lower than that indicated by the rules in paragraphs 2 and 3, the TAC shall be fixed at a level corresponding to a fishing mortality that is respectively 10% higher or 10% lower than that indicated by the rules of paragraphs 2 and 3.**

6. Notwithstanding paragraph 5 the Parties may, where considered appropriate, reduce the TAC to a level that corresponds to a fishing mortality more than 10 % lower than that indicated by the rules of paragraphs 2 and 3.

7. By-catches of herring may only be landed in ports where adequate sampling schemes to effectively monitor the landings have been set up. All catches landed shall be deducted from the respective quotas set, and the fisheries shall be stopped immediately in the event that the quotas are exhausted.

8. The allocation of the TAC for the directed fishery for herring shall be 29% to Norway and 71% to the EU. The by-catch quota for herring shall be allocated to the EU.

9. A review of this arrangement shall take place no later than 31 December 2017.

10. This arrangement shall enter into force on 1 January 2015

3.3.3 Reference Points

Table 3. The origin, type, values and technical basis for the agreed reference points for North Sea autumn spawning herring in Sub-area IV and Divisions IIIa and VIId.

	Type	Value	Technical basis
Management plan		$F_{0-1} = 0.05$ $F_{2-6} = 0.26$	If SSB >SSBmp upper trigger of 1.5mt (based on simulations)
		$F_{0-1} = 0.05$ $F_{2-6} = 0.26 - (0.16 \cdot (1,500,000 - \text{SSB}) / 700,000)$	If SSB between SSB mp triggers 0.8 and 1.5 million t (based on simulations)
		$F_{0-1} = 0.04$ $F_{2-6} = 0.10$	If SSB < SSBmp lower trigger of 0.8 million t (based on simulations)
MSY Approach	MSY B trigger	Not defined	
	Fmsy	0.27 (0.24 – 0.3)	Stochastic simulations with Beverton and Holt and Ricker stock recruitment curve
Precautionary Approach	Blim	800,000t	Level below which poor recruitment has been experienced
	Bpa	1.0Mt	Based on a 5% risk of falling below Blim (CV from SAM assessment)
	Flim	Not defined	
	Fpa	Not defined	

The fishery in 2014

Figure 10 shows the total catch of North Sea autumn spawners over the period 1981 to 2014 together with the annual TAC. The total catch of herring in the North Sea and English Channel (ICES Sub-area

IV and Division VIId) in 2014 was 507,500t which includes 14,000t taken as a by catch by the 'B' fleet and 3,000t of western Baltic Spring spawners taken in the North Sea. The total catch of North Sea autumn spawners was 517,356t (Figure 1) which includes 12,800t of autumn spawners taken in ICES Division IIIa (C and D fleets). The total catch of the 'A' fleet against which the TAC is set was 490,500t. The TAC for 2014 was 470,000t indicating a TAC overshoot of 20,500t. However the regulations on the management of the herring fishery in ICES Division IIIa permit up to 50% of the TAC there to be taken in a designated transfer area in the eastern North Sea. The ICES advice for the herring in Division IIIa and sub-divisions 22-24 (ICES, 2015d) states that '*Information from the Pelagic Advisory Council (AC) showed an average 46% TAC transfer for the human consumption fishery of herring from Division IIIa to the North Sea in 2014*'. Although the actual transfer figures are not yet available the fleet 'A' catch appears to be in compliance with the TAC. The Text Table below shows the total catches of North Sea autumn spawners (NSAS) and Western Baltic Spring spawners (WBSS) in 2014 by fleet. The 2014 TACs for each fleet are also shown.

Fleet	Fishery	TAC 2014 (Kt)	Catch 2014 (Kt)	NSAS (Kt)	WBSS (Kt)
A	North Sea Directed	470	493	490	3
B	By-catch North Sea	13	14	14	0
C	IIIa Directed: fishery	46.8	28.9	9.5	15.4
D	IIIa By-catch	6.7		3.3	0.6
				517	19

The total catch of North Sea autumn spawners (NSAS) in ICES Sub-area IV, Division IIIa and Division VIId in 2014, of 517,356t, was an increase of 6,000t over the previous year (Table 4). The catch comprised 490,500t taken in the North Sea and Division VIId (fleet A), 14,000t as a by-catch in other fisheries in the North Sea (fleet B), 9,500t in Division IIIa (fleet C) and 3,300t as a by-catch in Division IIIa (fleet D). The fleet definitions are as follows:

- Fleet A: Directed herring fisheries with purse-seiners and trawlers (32 mm minimum mesh size) in the North Sea. By-catches in the Norwegian industrial fisheries are included.
- Fleet B: Herring taken as by-catch in the small-mesh fisheries in the North Sea under EU regulations (mesh size less than 32 mm).
- Fleet C: Directed herring fisheries in Skagerrak and Kattegat with purse-seiners and trawlers (32 mm minimum mesh size).
- Fleet D: By-catches of herring caught in the small-mesh fisheries (mesh size less than 32 mm) in Skagerrak and Kattegat.

The Northern Ireland fleet under consideration is a part of Fleet 'A'

Table 4. Total catch of all North Sea autumn spawning herring and all spring spawning herring taken in the North Sea in 2013 (data source ICES 2015a).

Fishing Area	Catch in 2014
North Sea autumn spawners in the North Sea and VIId	504,500t

North Sea autumn spawners in the Division IIIa	12,800t
Total catch of North Sea Autumn spawners	517,300t
Western Baltic spring spawners in the North Sea	3,000t
Coastal type spring spawners in the North Sea	0t
Total catch in the North Sea & Eastern Channel (IV & VIId)	507,500t

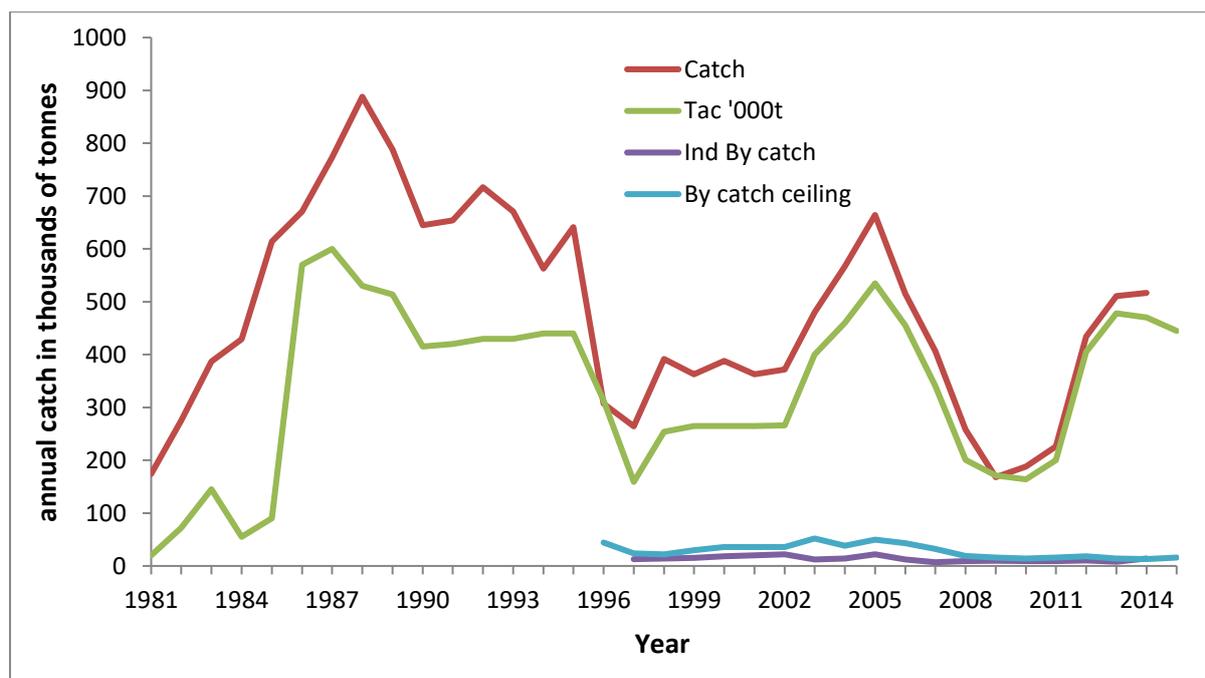


Figure 10. The total catch of North Sea autumn spawners over the period 1981 to 2014 together with the annual agreed TAC. The by-catch in fleet ‘B’ and the by-catch ceiling is also shown. (Data source; ICES, 2015a)

The total recorded landings of North Sea autumn spawning herring in all areas for the period 1947 to 2014 is shown in Figure 11. This shows the fluctuating fortunes of this fishery over that period which are described in more detail, up to 2000, by Nichols (2001). Briefly, after landings increased to over a million tonnes in 1965 there was a stock collapse resulting in a moratorium on all directed herring fisheries in the North Sea between 1977 and 1981. Landings subsequently increased as the stock improved but this was followed by a period, in the mid 1990’s, when management action had to be taken to prevent a further collapse. The most recent decline in landings is linked to the succession of below average recruitment to the stock.

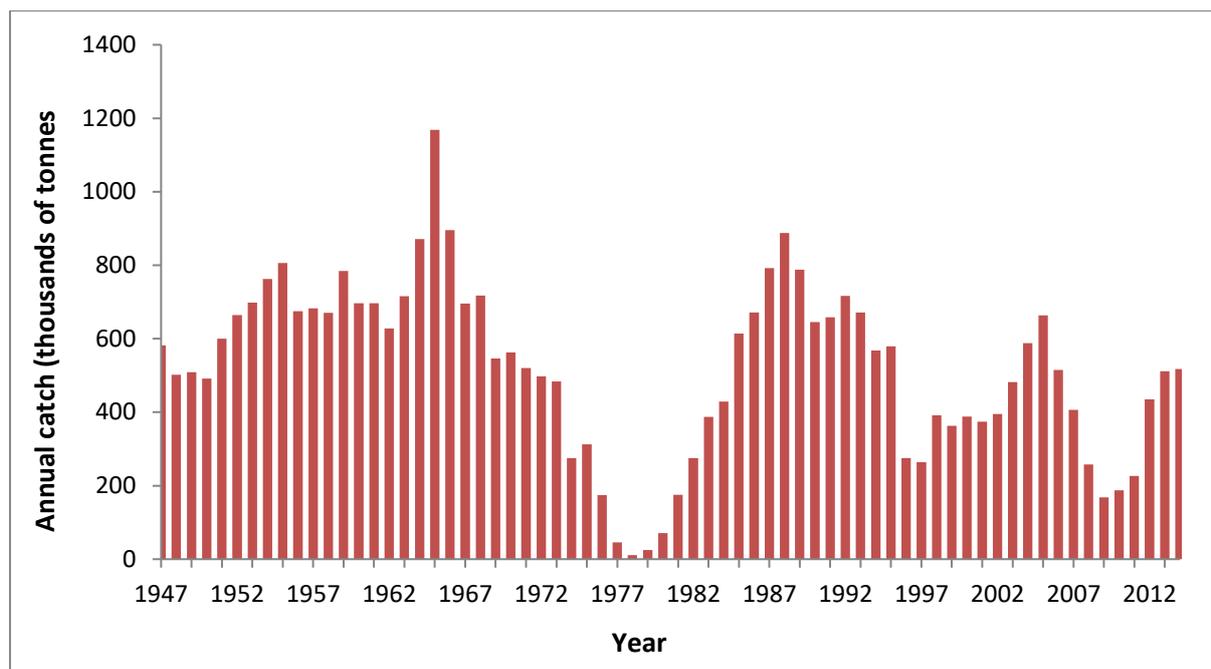


Figure 11. Annual landings of North Sea autumn spawning herring (all areas) for the period 1947 to 2014 (Data source: ICES, 2015a).

To calculate the total catch of North Sea autumn spawners in all areas the ICES Herring Assessment Working Group have to apportion the Western Baltic spring spawners, taken in the North Sea and the North Sea autumn spawners taken in Division IIIa. This results in a total catch of all North Sea autumn spawning herring in 2014 of 517,300t (Table 4). The annual occurrence of Western Baltic spring spawners in the catches from the eastern North Sea is dependent on the variable migration of 2+ winter ring fish into the North Sea to feed. The low catch rates of western Baltic spring spawners in the North Sea since 2006 is almost certainly a reflection of the continuing poor recruitments to that stock.

In the past the North Sea herring fishery has had a poor record of unaccounted mortality through area misreporting and under-reporting of catches and clandestine landings. Some unaccounted mortality may also occur through on board catch processing from, for example, the flushing of the refrigerated seawater tanks and net cleaning. Little information is currently available on this potential source of unaccounted mortality but it is not considered to be significant. There has been a substantial decline in area misreporting in most recent years and the ICES assessment working group now consider that most of the unaccounted mortality in the stock has been considerably reduced if not eliminated. This welcome change can be attributed to more rigorous enforcement, new regulations in force on discarding and also to a more enlightened attitude on the part of the industry as a whole. Slippage and high grading in the herring fisheries is now prohibited in EU waters (EC Council Reg. 43/2009) provided that the fish are above the legal minimum size (20cm Regions 1-5; 18cm Skagerrak and Kattegat) and that quota is available. There are also some seasonal and area closures to protect spawning areas which have a good record of compliance.

For the assessment in 2015 the Working Group's estimation of the actual catch was virtually the same as the official landings. Table 5 shows the record of compliance with the agreed TACs and by-catch ceiling over the period 2006 to 2014. This table shows the ICES assessment Working Groups' estimate of catch, which is based on confidential information obtained by Working Group members, and the Official record of landings.

Table 5 ICES assessment Working Groups' estimate of catch and the Official record of landings over the period 2006-2014.

	2006	2007	2008	2009	2010	2011	2012	2013	2014
TAC Fleet 'A' '000t HC	455	341	201	171	164	200	405	478	470

Official landings HC Fleet A '000t	478	354	219	157	166	209	412	490	490
Working group catch HC Fleet A '000t	498	381	236	156	166	209	412	490	493
Excess of landings over TAC (HC)	43	40	35	0	1	9	7	12	23
By-catch ceiling Fleet 'B' '000t	42	32	19	16	14	17	17.9	14.4	13
Reported by-catches Fleet 'B' '000t	12	7	9	10	9	9	10.6	8.1	14
Working group catch North Sea '000t	511	388	245	166	175	218	424.6	498.1	507
Divisions IVc/VIId Sub TAC '000t	50	37.5	26.7	23.6	15.3	26.5	44.6	50.3	51.7
Total catch divisions IVc/VIId '000t	56.6	39	29.6	21.9	26.5	26.7	40.4	44.7	38.2

Figure 12. shows the national pattern of landings of all herring from the North Sea and eastern English Channel in 2014 (i.e. not the total North Sea autumn spawners) This pattern has remained largely unchanged over recent years with Norway and Denmark dominating the landings with 28% and 25% respectively. The Netherlands and the UK took 15% and 14% respectively of the landings in 2014. Of the UK landings in 2014 19,287t were by English vessels, 45,119t by Scottish vessels and 6,612t by Northern Irish vessels

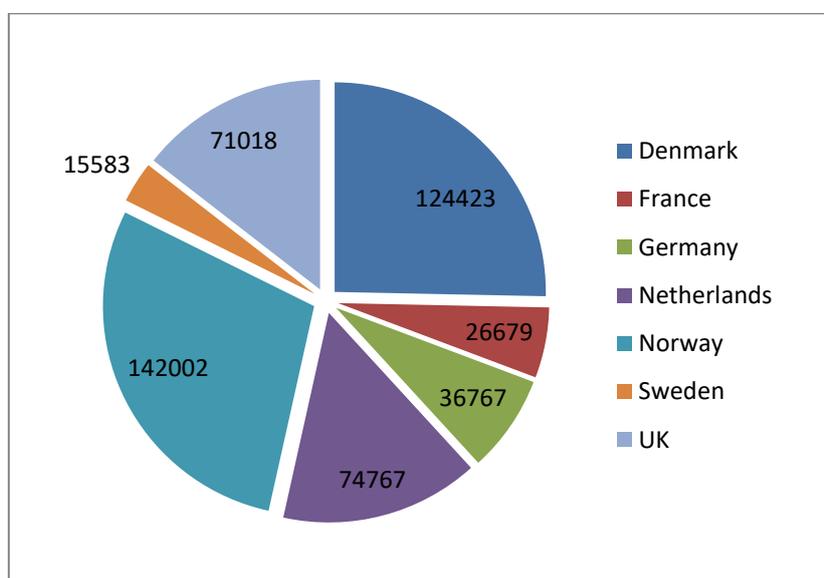


Figure 12. The landings in tonnes of herring from the North Sea and English Channel by each of the participating countries in 2014 (Data source; ICES, 2015a).

Advice for the fishery in 2015 (ICES, 2014a)

In providing advice for the 2015 fishery ICES have to estimate the likely catches in the 2014 fishery. They based that advice on a catch constraint for fleet A of 490,022t (TAC 470kt). The predicted fleet A catch included a transfer of 45% (21,000t) of the TAC in Division IIIa, in line with the transfer agreement, and 452t of the Norwegian quota, into sub-division IVa (east). The predictions also took into account the likelihood that only 7,400t of the 13kt by catch ceiling will be taken by the B fleet in 2014. This scenario would lead to an estimated SSB of 1.903Mt at spawning time in 2014.

For the advice for the 2015 fishery a seventh scenario was added to the options; the updated and agreed EU–Norway 2014 management plan which was due to come into force on 1 January 2015. The predicted catches for fleets ‘A’ and ‘B’ and the predicted SSBs in 2015 and 2016, for each of the seven scenarios are listed in Table 6 below. The predicted SSB in 2016 was based on the assumption that the fishing mortality in 2016 will be the same as in 2015.

- 1 No fishing;
2. The 2008 EU–Norway management plan (which invokes the 15% limit on TAC change).
3. A roll-over TAC from 2014 to 2015 of 470,037t for the A-fleet;
4. A 15% increase in the A fleet TAC in 2015
5. A 15% decrease in the A-fleet TAC in 2015.
6. MSY approach Fmsy
7. The updated and agreed EU-Norway 2014 management plan.

The main options available for management to consider were;

- Following the 2008 management plan (F0.25) implies a decrease in the 2015 TAC of 9% resulting in a TAC of 429,797t for the ‘A’ fleet leading to an SSB at spawning time in 2015 of around 1.9 million tonnes.
- Following the ICES MSY approach based on fishing mortality would lead to an increase in fishing mortality to F0.27 generating catches of 460,536t and an SSB at spawning time in 2015 of around 1.9 million tonnes.
- Following the revised 2014 management plan would generate a TAC of 445,000t, an increase of 5% leading to an SSB of around 1.9 million tonnes at spawning time in 2015.

Table 6. The predicted catches of North Sea autumn spawning herring for fleets ‘A’ and ‘B’ for each of the seven scenarios (weights in ‘000 t). The 2008 Management plan, option 2, and the 2014 Management plan, option 7, are highlighted.

Scenarios	1	2	3	4	5	6	7
F fleet A	0	0.24	0.27	0.32	0.22	0.26	.25
F fleet B	0	0.3	0.03	0.03	0.03	0.03	.029
Total F ₀₋₁ Fleets A-D	0	0.05	0.05	0.05	0.05	0.05	.05
Total F ₂₋₆ Fleets A-D	0	0.25	0.28	0.32	0.23	0.27	.026
Catch fleet A	0	430	470	541	400	461	445
Catch fleet B	0	16	16	16	16	16	16

SSB 2015	2196	1894	1867	1818	1915	1873	1884
SSB 2016	2412	1750	1699	1612	1789	1711	1731
% TAC change fleet A 2014	-100%	-9%	0%	15%	-15%	-2%	-5%

The eventual TAC for the 2015 fishery agreed between the EU and Norway in December 2014 was 445,329t for the 'A' fleet; This TAC includes a ring fenced quota of 48,986t for the southern North Sea south of 53° 30'N and in the eastern English Channel (ICES Divisions IVc and VIId). A by catch ceiling of 15,744 was agreed for the 'B' fleet. The UK share of the quota was 62,292t for the 'A' fleet and 286t for the 'B' fleet. A derogation for the ring fenced quota in Divisions IVc and VIId allows up to 50% to be taken in ICES Division IVb.

Advice for the fishery in 2016 (ICES, 2015a)

In providing advice for the 2016 fishery ICES have to estimate the likely catches of North Sea autumn spawners in the 2015 fishery. They based that advice on a catch constraint fishing mortality of F 0.21 and a total catch 492,073t comprised of 462,434t for fleet A (TAC 445kt) 15,744t for fleet B (TAC 15,700) and 13,900t for fleets C and D. The predicted fleet A catch included a transfer of 45% of the TAC in Division IIIa, in line with the transfer agreement, and 2953t of the Norwegian quota, into sub-division IVa (east). This scenario would lead to an estimated SSB of 2.194Mt at spawning time in 2015.

ICES always provide a series of catch options for managers to consider including agreed management plan. Those options are provided in detail in their advice for the 2016 fishery (ICES, 2015a) specifying the outcome for each of the fleets. Table 7 summarises the main options for the 2016 fishery based on the 6 scenarios listed below.

1. Management plan
2. F MSY
3. No fishing
4. No change in the TAC
5. TAC increase of 15%
6. TAC reduction of 15%

Scenarios	1	2	3	4	5	6
F fleet A	0.23	0.26	0.	0..19	0.22	0.16
F fleet B	0.034	0.034	0	0.034	0.034	0.034
Total F ₀₋₁ Fleets A-D	0.05	0.05	0	0.05	0.05	0.05
Total F ₂₋₆ Fleets A-D	0.24	0.27	0	0.2	0.23	0.17
Catch fleet A	518,241t	589,630t	0	445,329t	512,128t	378,530t
Catch fleet B	12,498t	12,498t	0	12,498t	12,498t	12,498t
SSB 2016	2,680,652t	2,632,220t	3,039,767t	2,731,622t	2,685,034t	2,777,841t
SSB 2017	2,303,753t	2,167,987t	3,060,322t	2,362,605t	2,269,797t	2,457,599t

% TAC change fleet A 2014	+16%	+32%	-100%	0%	-15%	-15%
% SSB change from 2015	+22%	+32%	+39%	+25%	+22%	+27%

The eventual TAC for the 2016 fishery agreed between the EU and Norway in December 2015 was published in the Official Journal of the European Union in January 2016. The agreed TAC for the 'A' fleet was 518,242t which includes a ring fenced quota of 57,007t for the southern North Sea south of 53° 30'N and in the eastern English Channel (ICES Divisions IVc and VIId). A by catch ceiling of 13,282t was agreed for the 'B' fleet. The UK share of the quota was 70,348t for the 'A' fleet and 239t for the 'B' fleet. A derogation for the ring fenced quota in Divisions IVc and VIId allows up to 50% to be taken in ICES Division IVb.

Additional protective measures in place

Figure 13 shows the wide range of additional measures in place for herring and sprat, under EU legislation, to help to ensure the sustainable exploitation of the North Sea herring stock (ICES, 2014a, Annexe 3). The legislation includes the special measures in place to conserve the spawning aggregation of the Downs component. Because of the uncertainties concerning the status of, and recruitment to, this component of the North Sea herring stock in future years, the HAWG has recommended that the IVc-VIId TAC should be maintained at 11% of the total North Sea TAC, which is an average of the share over the period 1989 to 2002. The perception of the current status of the Downs component has been impacted by an anomalously low larval abundance index on a 2013 survey.

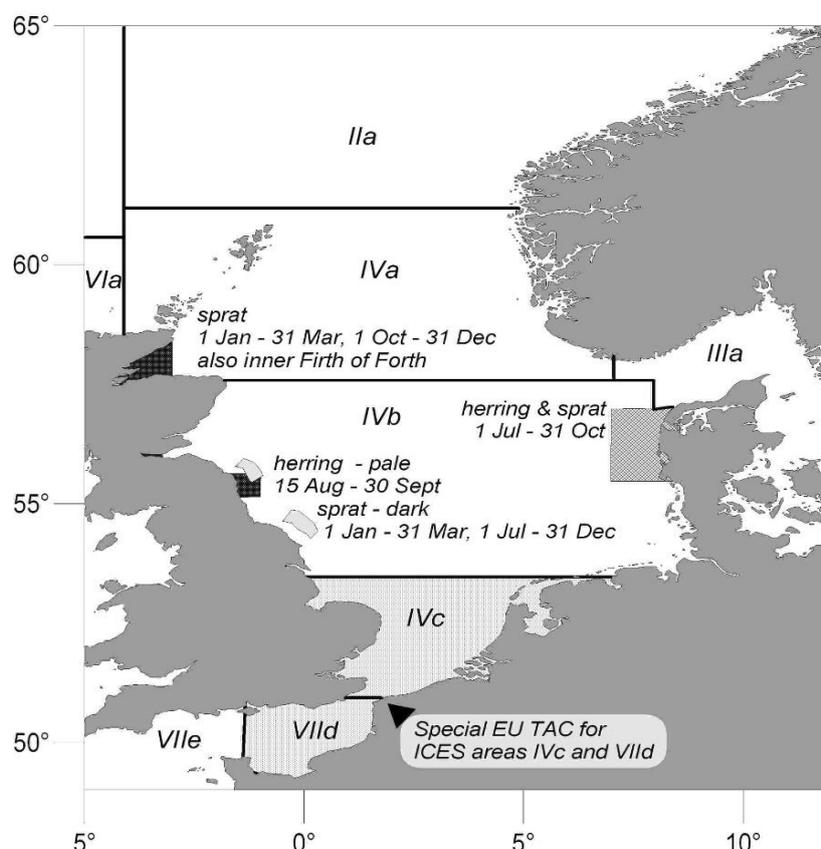


Figure 13. ICES areas and areas closed to fishing on herring and sprat under EU legislation. Black areas denote three small sprat closures to protect juvenile herring. Pale areas denote two closures on the herring fisheries to protect spawning herring around the Banks spawning ground. The shaded area

to the west of Denmark is closed to the juvenile herring and the sprat fishery, although there is no targeted juvenile herring fishery. (Source: ICES, 2014a annexe 3)

Trophic level status

Herring is considered by ICES as an important prey item for fish, birds and sea mammals and is also considered to compete with other North Sea stocks as a zooplankton and ichthyoplankton predator. These trophic interactions were taken into account for the first time in the assessment modelling process in 2012 through the adoption of time varying estimates of natural mortality. These estimates are based on state of the art multi-species modelling which shows that natural mortality of herring in the North Sea is dominated by cod and saithe and that natural mortality is greater than fishing mortality. In that context it is deemed necessary for the assessment working group to keep the dynamics of these two species under careful review as both natural and anthropogenic changes can have an impact on the population dynamics of herring. There is clear evidence that herring in the North Sea and Skagerrak are a lower trophic level (LTL) species. However, it is not considered to be a key LTL species because it does not meet at least two of the following three sub- criteria in CB2.3.13 in MSC Certification requirements v1.3.

- i) *A large proportion of the trophic connections in the ecosystem involve this stock, leading to significant predator dependency.*

Ecosystem modelling of the North Sea (Mackinson and Daskalov, 2007) has shown that there are numerous other species which form important sources of prey for piscivorous fish. They are mackerel, horse mackerel, sprat, poor cod, Norway pout, sandeels blue whiting, Maurolicus and juvenile saithe and cod. According to Essington and Pláganyi, (2013) the connectance level between this herring population and others in the ecosystem would be around 3.5%. This is lower than the required 4% threshold level defined in the MSC certification requirements. In addition, the SURF index for this stock is 0.003, which again is lower than the 0.005 threshold as defined to indicate a KEY-LTL stock as defined in in the MSC CR v1.3.

- ii) *A large volume of energy passing between lower and higher trophic levels passes through this stock.*

There are numerous other species of planktivores, most of which are listed above, through which energy passes from primary production through zooplankton to fish. According to the assessment made by Essington and Pláganyi (2013) the % of energy passing through this species to both higher and lower trophic layers, consumer biomass, was 0.47%. This is below the required 5% threshold level for a KEY-LTL stock as defined in MSC CR v1.3

- iii) *There are few other species at this trophic level through which energy can be transmitted from lower to higher trophic levels, such that a high proportion of the total energy passing between lower and higher trophic levels passes through this stock (ie the ecosystem is 'wasp waisted')*

As noted above there are numerous other prey species of planktivores which are abundant in the North Sea through which energy is passed to the top predators. Quite clearly the North Sea ecosystem is not 'wasp waisted'

Further, historical, evidence for herring not meeting the requisite criteria for a key LTL species can be seen when the herring stock was close to extinction in the mid-1970s, there was no evidence of other species being adversely affected. Indeed, it can be argued that the trophic role of herring was simply replaced by other species, not the least of which was the concurrent expansion of the sprat and gadoid stocks and the 'gadoid outburst'.

Whereas it appears that some bird populations may have an obligate dependence on juvenile sandeels, no comparable dependence has been identified for North Sea or Skagerrak / Kattegat herring.

3.4 Principle Two: Ecosystem Background

Principle 2 of the Marine Stewardship Council standard states that:

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

The following section of the report highlights some of the key characteristics of the fishery under assessment with regard to its wider impact on the ecosystem.

3.4.1 Retained catch

Because of the tendency of herring to move in shoals and to form dense aggregations, pelagic fishing vessels are able to identify suitable shoals prior to deploying fishing gear. This assures a degree of control over the resulting catch and it is rare for vessels to end up with catches that have a significant proportion of unmarketable or undersize fish mixed in with the catch.

All catches must be recorded in log books and there is a high degree of inspection of vessels when landing in port. There are also mechanisms whereby landings declarations by vessels can be cross checked by compliance personnel. In addition to herring quotas, the vessels involved in the fishery all have quota entitlement for mackerel and horse mackerel (the most likely non-target catches) and additional quota can be obtained through conducting quota swaps should there be a shortage of quota in order to legally record landings of other species.

Data from DARD (2015) on catches and bycatches (000 t) in vessels apparently targeting North Sea herring is as follows:

	2012	2013	2014	% Total
North Sea Herring	2076	2093	2271	
Mackerel	0	0	0	0.00
Horse mackerel	133	0	4.8	2.14

Species that may be retained in the fishery are therefore mackerel and horse mackerel, both of which are pelagic species that may be mixed in with herring shoals at extremely low (negligible) levels. The status of both species/stocks is as follows.

Mackerel: No records of mackerel as a bycatch have been presented, but anecdotally, this is a possibility. The estimate of SSB in 2014 from the 2014 update assessment was 4.42mt. This is well above both the biomass limit level, Blim, and the biomass precautionary approach, Bpa, reference point (2.36mt). This Bpa reference point is set at a level with a high probability of the stock being above Blim. The lower variance estimate (95% CI) of SSB in 2014 was 3.22mt. (NIPSG mackerel fishery assessment). Mackerel is not included in the scoring as it is not recorded, but the information above is presented to provide assurance that scoring would not be adversely affected if it were to be included in future bycatches.

Horse mackerel: the species is subject of an international fishery in the North Sea and southern Norwegian Sea, although most catches have been Danish. No reference levels have been specified for the stock affected, but ICES qualitative estimation is that fishing pressure is likely to be above an Fmsy target and the stock size is likely to be below a Bmsy target. Latest advice is for a catch of 99 304 mt (<http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/hom-nsea.pdf>).

Overall, the NIPSG North Sea pelagic trawl herring fishery is considered to be generally monospecific, with limited quantities of horse mackerel and possibly mackerel being the only routinely retained catch. All landings are reported by species and there is effective monitoring, control and surveillance. The management response is considered effective and appropriate to the nature and scale of the retained catch component. There is accurate and on-going collection of information in relation to levels of retained catch and there is effective management of retained stocks. There are mechanisms whereby vessels can obtain additional quota in order to legally land retained catch.

It is also noted that the EU landings obligation is in process of implementation for pelagic fisheries. Given levels of bycatches and quotas, however, the effect of this is yet to be evaluated; it may have effects on levels of slippage if this is indeed a problem.

Concerns exist in relation to the possibility of slippage (whereby entire catches may be dumped at sea) in some European pelagic fisheries. However, there are few economic incentives for slipping fish in this fishery. While it is thought that this most likely does occur, indications are that it is a very infrequent event and is more likely to result from technical problems with machinery and on-board equipment than for any other reason.

There are few incentives for slipping herring – catches can be graded at factory and vessels normally have sufficient quota held back in order to accommodate bycatch of mackerel. There is no price advantage for larger herring unlike some other pelagic fisheries and slipping of catches in the North Sea is illegal under European legislation.

Despite the low level of discarding through slippage that is believed to occur in the North Sea herring fisheries, there remains some uncertainty as to the precise level of slippage of North Sea herring. From the point of view of scientific assessment of stocks, a figure of 5% appears to be the estimate that is used as working figure for unaccounted fishing mortality.

3.4.2 Bycatch species

There is no apparent bycatch in the NIPSG North Sea herring fishery. All catches are retained and landed. There are no mechanisms or installations on board vessels which would facilitate size or species grading and the bulk nature of the fishery means that all catches are handled using automated pumping techniques. As such, the time that would be needed in order to grade catches and discard unwanted fish would slow down the process of taking fish on-board, resulting in damage and significant loss of quality. Catches are pumped directly into RSW tanks and there is no further handling of catches until they are landed in port.

Overall, the management response to the bycatch issue in the herring fishery is considered appropriate to the species involved and the scale of the issue. There is sufficient on-going data collection to identify increased risks of bycatch in the fishery and current fishery management arrangements facilitate introduction of new in response to new and changing circumstances.

3.4.3 Endangered, Threatened and Protected species interactions (ETP)

ETP species are those protected under nature conservation legislation of UK, EU or other relevant state (e.g. Norway) nature conservation legislation or listed in Appendix 1 of CITES.. As described above, the stock and the fishery are pelagic and so no protected benthic species would therefore be affected. Protected species potentially affected may therefore be of fish (notably basking shark), marine mammals (most north Atlantic species would occur throughout the area of the fishery) or seabirds at sea (again, large numbers of all North East Atlantic species would be present throughout the area of the fishery, including nesting colonies along the coast).

Harbour porpoise and bottlenose dolphin are also listed under Annex II of the Habitats Directive, requiring the designation of Special Areas of Conservation (SAC) to protect a representative range of their habitats. For cetaceans, there are permissible thresholds, or sustainable take levels, in use, based on criteria defined by international agreements: ASCOBANS (Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas) advises for example that the maximum annual bycatch of Harbour porpoises should not exceed 1.7% of the population in that year; the IWC (International Whaling Commission) states that if the number of small cetaceans captured is greater than 1% of their total population size, then this should cause concern. The ASCOBANS limit is increasingly accepted as being most relevant for most small cetaceans, although ASCOBANS is moving towards a more precautionary approach to reduce the bycatch to less than 1% of the best available abundance estimate. No such limits have been proposed for some other ETP species including Basking shark, which may occasionally interact with the fishery.

In general, populations of endangered, threatened and protected (ETP) species are highly studied and well understood in the North Sea, with considerable work undertaken in relation to the regular monitoring of fishing activity through the deployment of on-board scientific observers, capture of anecdotal information, and a wide range of monitoring activity associated with the planning and management. The Sea Mammal Research Unit (SMRU) at St. Andrews has undertaken extensive

surveys to determine the level of bycatch of sea mammals in UK pelagic fisheries. Cetacean or seal bycatch has not been seen by observers on-board NIPSG vessels in the pelagic herring trawl fishery (confirmed by all stakeholders consulted).

The level of interaction between this herring fishery and the relevant ETP species is considered not to be significant. All indications are that instances of capture of cetacean in the pelagic trawl fishery are rare or very rare. This is largely based on the interpretation of data from monitoring of pelagic trawl fisheries under Council Regulation 812/2004, and from information provided by NIPSG, DARD and consultations with other fisheries for small pelagic species in the North East Atlantic. There have been no recordings of any cetacean capture while vessels have been engaged in pelagic trawling.

3.4.4 Habitat impacts

A broad range of sedimentary and hard seabed substrates are found in the North Sea. Several indicative maps are available that indicate the nature, distribution and extent of seabed habitats. In addition, there are a multitude of more focused and detailed studies that confirm seabed type in a number of different areas. Other freely available data (E.g. OSPAR) indicate the locations of known sensitive seabed communities in the North Sea and adjacent waters.

There is good information in relation to the operation of the fishery and the location of the main sensitive seabed habitat types in the North Sea. All NIPSG vessels carry Vessel Monitoring System equipment, meaning that data is collected on an on-going basis in relation to the spatial and temporal operation of the fleet while engaged in the NS herring fishery.

Specific knowledge of pelagic fisheries and the manner in which this one operates has led the team to conclude that significant seabed habitat impacts are highly unlikely as vessels target shoals of herring in mid water and fishing gear used is not designed to withstand interactions with the seabed.

The frequency of on-going data collection in relation to the operation of the fishery is considered sufficient to allow for regular monitoring and detection of changes in risk to seabed types from fishing gear interaction in this fishery.

3.4.5 Ecosystem impacts

There is considerable knowledge of the habitats and ecosystem of the North Sea, drawing on more than one hundred years of regular monitoring and research, the intensity of which has accelerated in recent decades. The food web of the North Sea has been extensively studied over many years and is well understood, including ecosystem modelling of trophic interactions (Ecopath and Ecosim), which has included herring as a key species.

Despite significant fluctuations in population level, there has been no evidence that the pelagic herring fishery causes serious harm to the biological diversity, community structure or productivity of the North Sea ecosystem. In the North Sea the herring diet is mainly made up of copepods (*Calanus* spp. & *Temora* spp.), euphausiids, and small fish. Fish eggs and are unlikely to represent an important food resource for herring, however there are clear suggestions that increased predation on larval and juvenile gadoid fish by North Sea herring may account for some of the slower than expected recovery of some stocks. In contrast, herring represent an important prey species for many predators, such as cod and large gadoids, sea birds, marine mammals, sharks and dogfish.

3.5 Principle Three: Management System Background

Principle 3 of the Marine Stewardship Council standard states that:

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.

In the following section of the report a brief description is made of the key characteristics of the management system in place to ensure the sustainable exploitation of the fishery under assessment.

3.5.1 Governance & Policy

Legal & Customary Framework

As a result of its widely dispersed and migratory nature, the North Sea herring fishery is managed via agreements between the EU (representing the individual EU Member States) and other coastal states that are contracting parties of the NEAFC¹. NEAFC contributes to the general fisheries management framework, but the management of key fisheries such as North Sea herring are determined by the coastal states through multi-lateral and bi-lateral agreements.

The UK is a Member State of the European Union and its fisheries are therefore subject to the principles and practices of the Common Fisheries Policy (CFP) of the EU. The North Sea Herring fishery is managed through the CFP in accordance with the basic fisheries regulation.

The first EU common measures in the fishing sector date from 1970, when it was agreed that, in principle, EU fishermen should have equal access to Member States' waters. However, in order to ensure that smaller vessels could continue to fish close to their home ports, a coastal band was reserved for local fishermen who have traditionally fished these areas. It was also decided that the EU was best placed to manage fisheries in the waters under their jurisdiction and to defend their interests in international negotiations. The CFP came into being in the form we recognise today in 1983. It was reviewed thoroughly in 2002 and again in 2013. The current basic fisheries regulation (No.1380/2013) was adopted by the Council of Ministers on 30th December 2013.

The scope of the CFP extends to conservation, management and exploitation of living aquatic resources and aquaculture, as well as processing and marketing of fishery products, covering related activities, both within EU waters and by any member state vessel or national – with due regard to the UN Convention on the Law of the Sea (UNCLOS) and without prejudice to the primary responsibility of the flag State.

The CFP regulation is a 'chapeau' regulation setting out the strategic aims of the CFP and enabling the Council of Ministers, or in certain cases the Commission, to make more detailed Regulations. In total there are in excess of 600 related regulations broadly divided into 4 categories (Structural measures, State Aid, Management of Resources, Market Organisation). Included within these are regulations dealing with almost all fisheries management related aspects from control requirements, to fleet structure, technical conservation, marketing, annual total allowable catches (TAC) and species management and recovery plans.

Outside the CFP framework other EU legislation dealing with habitats and species protection and is also relevant to fisheries management and to fishermen. **Consultation, Roles & Responsibilities**

There are several relevant organisations and bodies which take an active role in the fishery under assessment. Their roles are explicitly defined and well understood, and the interaction between them works effectively.

Industry Representation

¹ EU, Norway, Iceland, Russian Federation; Denmark is a signatory in respect of the Faroe Islands and Greenland

There are several tiers of industry representation, which form a crucial role in providing the industry with an effective voice in both management and science. They also play an important role in lobbying at both national and EU level for the interests of fishermen.

The main industry representation role is undertaken by the UK national fishermen's federations, the NFFO (National Federation of Fishermen's Organisations) and the SFF (the Scottish Fishermen's Federation). Focused representation of the pelagic sector is through the Scottish Pelagic Fishermen's Association (SFPFA), which forms a part of the SFF. Almost all the UK RSW vessels are members of this body - for example, the Havilah and Stefanie-M are members of this association. T; the Voyager was formerly a member of this organisation, but is no longer. It is, however, represented through its Producer Organisation, the ANIFPO, which is affiliated to the NFFO.

The SPFA liaises closely with all the pelagic Producer Organisations in all matters of fishing policy. SPFA and the PO's form a vital conduit for information, communicating new management measures to the fleet and making managers and scientists aware of changes experienced on the fishing grounds. The POs (including NIFPO and ANIFPO) are represented on the Pelagic Advisory Committee, and the Scottish Fishermen's Organisation (SFO), the largest of the UK POs (which also includes a fair proportion of the pelagic fleet in its membership) also maintains a presence at all UK pelagic meetings.

The creation of Regional Advisory Councils (now Advisory Councils) was one of the pillars of the 2002 reform of the Common Fisheries Policy in response to the EU and stakeholders' desire to increase the latter's participation in the CFP process. The ACs are made up of representatives of the fisheries sector and other groups affected by the CFP while scientists are invited to participate in the meetings of the ACs as experts. The Commission and regional and national representatives of Member States may be present at the meetings as observers. The Pelagic AC has greatly improved effective communication links between industry, managers and scientists.

Scientific Advice

The core backdrop to the management of this fishery is the advice 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 responsible for North Sea herring advice is the ICES Herring Assessment Working Group for the Area South of 62° N (HAWG).

The assessment of the working group is reviewed and evaluated by the ICES Advisory Committee which then provides advice on the status of target and non-target stocks to the international fishery commissions (NEAFC and Baltic Sea FC) and their member states or representatives (i.e. the EC for EU member states).

In Northern Ireland, the main scientific body working in the area of fisheries science is the DARD Agri-Food and Biosciences Institute based in Belfast. Their scientists are closely involved in the stock assessment and egg survey work of ICES. Northern Ireland scientists are key members of the ICES HAWG and have played a lead role in key herring assessment projects.

National Management Bodies

The UK Government's Department of Environment, Food and Rural Affairs (Defra) is the main fisheries management body in UK and is the representative at fishery negotiations at an EU level. However, some fisheries responsibility is also devolved to the Northern Ireland Government, which plays an increasingly active role at an EU level. The Northern Ireland Government is fully responsible for inshore fisheries out to 12 miles, and between 12 to 200 miles is responsible for managing quota, controlling effort and determining fleet policy. Outside NI jurisdiction other agencies hold these MCS responsibilities – for example the Scottish Fishery Protection Agency (SFPFA) around Scotland, the Norwegian authorities around Norway, etc.

Control & Enforcement

DARD Fisheries Inspectorate is responsible for all monitoring, control and surveillance (MCS) within Northern Ireland waters, and is responsible for collating information for NI registered vessels derived from the MCS activities of other agencies. Harmonisation of systems, standards, and data sharing protocols between jurisdictions are negotiated and facilitated through the international fisheries commissions, and through the European Commission in respect of EU Member States. These are

cemented through regular management meetings between MCS parties, and through reciprocal, bilateral and joint MCS exercises.

There is a high degree of enforcement and control in the UK North Sea herring fishery (in accordance with commission regulation (EC) No 1542/2007 on landing and weighing procedures for herring, mackerel and horse mackerel) – primarily executed by the Royal Navy and the Scottish Fishery Protection Agency – meaning almost 100% inspection of landings, regular inspections at sea, and fleet activity is monitored by aerial surveillance and through a satellite mediated VMS (Vessel Monitoring System). Where considered appropriate, more detailed and focused inspections and investigations are undertaken, combining information already collected with direct observation (off-loading and weighing of all catch) and inspection of further documentation.

Landings from this fishery are made primarily to plants in Scotland, Denmark and Norway. At processing plants, all landings must pass into the plant via weighbridges which have been calibrated, sealed and certified. The fish pass via a de-waterer and limited tolerance is allowed for water. In Scotland pelagic landings are typically pumped directly from ships into processing plants alongside the quay. This secure weighing of all pelagics entering processing plants allows inspectors the opportunity to undertake mass-balance exercises (a complete audit of a product from one vessel going into a plant, and product coming out of a plant). This is typically done to each vessel at least once a year, and each plant several times a year.

Such activity forms the backbone of the CFP Monitoring Control and Surveillance (MCS) system, and performance of this system against national and CFP targets, including details of infringements and prosecutions, is reported on an annual basis. These activities are coordinated through the EU Fisheries Control Agency based now based in Vigo, Spain.

The new EU registration of buyers and sellers legislation, although not directly targeted at the pelagic sector, has also contributed to a major cultural shift within the industry, and there is now a sense of confidence on the part of DARD Fisheries Inspectorate that strong systems, checks and balances are now in place to quickly identify and punish any illegal activity. As a result, there is a widespread belief that non-compliance is no longer a problem in the UK pelagic industry.

Record keeping

There are detailed requirements for the regular and accurate generation and transmission of data on fishing activity and fishing outcomes as captured in vessel and fishing logs, and captured through automated VMS. Vessels also voluntarily participate in the NI science observer programme. In addition, skippers and crew operate according to the Code of Conduct adopted by the POs, which includes recording of any and all interactions with ETP species and where fish is slipped or otherwise discarded.

All pelagic landings are subject to inspection and weighing, and are available for scientific sampling.

Insofar as the UK fleet, and the NISPG fleet, may land fish to Norwegian ports and undertakes some fishing activity in Norwegian waters, it is required to comply with both NEAFC Port State Controls measures and Norwegian fishery management rules². These include compliance with the Norwegian “no discards” rules (in place since 1987), move-on rules, and specific reporting and inspections rules (which are equivalent to and sometimes exceed EU requirements).

Decision making

As North Sea herring is a shared stock, reaching beyond the boundaries of EU waters, the major decisions over the exploitation levels in the fishery are taken at an international bilateral level between the European Union and Norway.

In other aspects of the fishery management system including licensing and regulations governing operational practices, the primary forum for decision making for the North Sea Herring takes place in Brussels, within a typical framework of European Decision making on pressure stocks. At the heart of the European Union legislative / decision-making process is The European Commission; the politically

² Described in Chapter 5 of the NEAFC Scheme of Control and Enforcement 2015 (July to December) - Port State Control of Foreign Fishing Vessels;
<http://www.neafc.org/scheme/2015/julytodecember/Chapter5> (accessed Sept 2016)

independent, civil service. The Directorate-General for Maritime Affairs and Fisheries (DG Mare), is the administrative department of the Commission with responsibility for fisheries. The Commission is responsible for the preparation of proposals for new laws, which, once adopted by the Commissioners, are sent to The Council of the European Union, where elected national representatives, review the proposals of the commission makes Community laws, after reviewing proposals of the commission, and depending on their nature, after consulting with various committees and The European Parliament.

In drafting legislative proposals DG Mare consults widely, including with, relevant groups, third countries and regional fisheries organizations including advisory committees – notably the Scientific, Technical and Economic Committee on Fisheries (STECF). STECF is a specialist technical institution of the European Commission which provides advice to the European Commission on request, drawing on specialist expertise available from institutions and academics with Member States, the opinion of STECF is crucial in the process of setting annual Total Allowable Catches TACs and quotas.

Once enacted the European Commission (DG Mare) then has responsibility for implementation, management and control of community law in Member States. Where appropriate, European legislation is enacted at the national level through relevant primary and secondary legislation.

The annual decision on quota allocations for the forthcoming fishing season provides an indication of how the European decision-making process works. The ICES working groups with responsibility of stock assessment, submit annual assessments to ICES ACOM, which in turn reviews and disseminates to the European Commission (DG Mare). The advice will be reviewed by STECF before preparing recommendation for the commissioners. In doing so, every effort is made to consider and assess the implications of decisions in view of pragmatic solutions at stakeholder (Catching Sector) level. This process is facilitated by the Advisory Council structure (area based issues), bodies that will typically also contribute to this consultation process. The Commissioners then pass recommendations to the Council of the European Union, who take the final decision at the annual December council negotiations.

Although decisions on the setting of overall TAC and the share of that TAC between member states rests with the EU (in accordance with the principle of relative stability), decisions on how national quota allocation is divided among the fleet is taken by the member state (albeit in accordance with some overarching rules). National decision-making over how the UK share of the North Sea Herring TAC is divided between UK devolved administrations is a matter internal to the UK.

3.5.2 Management Objectives

EU level

As stated in the preamble to the reformed Common Fisheries Policy of 2014, a core tenet of the CFP is that

“At the World Summit on Sustainable Development at Johannesburg in 2002, the Union and its Member States committed themselves to act against the continued decline of many fish stocks. Therefore, the Union should improve the CFP by adapting exploitation rates so as to ensure that, within a reasonable time-frame, the exploitation of marine biological resources restores and maintains populations of harvested stocks above levels that can produce the maximum sustainable yield. The exploitation rates should be achieved by 2015.”

In June 2008, the Marine Strategy Directive (MSD) was adopted and Member States and the European Parliament have committed themselves to further foster the integration of environmental concerns into other relevant policies, among them the CFP. The Marine Strategy Directive aims to achieve ‘good environmental status’ in the EU marine environment by 2021 at the latest. This is to be achieved through the development, by the Member States, of marine strategies for their territorial waters (or territorial seas) as defined in the 1982 United Nations Convention on the Law of the Sea. The marine strategies are to include implementation measures that should be based on an ecosystem approach, and may include any of a number of approaches set out in an annex to the Directive. These include ‘spatial and temporal distribution controls’, i.e. management measures that influence where and when an activity is to occur; as well as co-ordination measures to ensure that different sectoral measures at different institutional levels are coordinated. In general, the aim is to meet the following targets by 2020:

- populations of all commercially exploited fish and shellfish must be within Sustainable Biological Limits (SBL), exhibiting an age and size distribution that is indicative of a healthy stock;
- all elements of the marine food web must occur at normal abundance and diversity and at levels capable of ensuring the long-term abundance of the species.
- biological diversity must be maintained as well as the quality and occurrence of habitats, and the distribution and abundance of species are to be kept in line with prevailing conditions;
- sea floor integrity is maintained at a level that ensures the safeguarding of structures and functioning of the ecosystems.

The Commission in 2007 published the details of an EU Integrated Maritime Policy (IMP). One of the five 'action areas' for policy development concerns fisheries. The IMP includes both that fisheries management 'must take more into account the welfare of coastal communities' and that 'recovery of fish stocks will be energetically pursued'. Specifically, the Commission will take action to eliminate discards, destructive fishing practices and Illegal, unreported and unregulated fisheries (IUU). These aspects are given greater weight and support in the reformed CFP which entered into force at the beginning of 2014 (Reg No.1380/2013).

Fishery Specific

Nationally, the objectives of the fishery are very much bound by the stated objectives of both the CFP and the National Strategy Plan. These over-arching objectives will always serve as a guide to fishery specific management decisions. However, there are more fishery specific related objectives, which give a more detailed definition of the policy direction for this particular fishery. For North Sea Herring the language of the Agreed Management Plan between the EU and Norway provides a key indication of fishery specific objectives – although arguably the focus of this on TAC level and Inter-annual variation is more focused on tools to meet the objectives rather than objectives per se. This management plan is currently (2014) under review.

4. Evaluation Procedure

4.1 Harmonised Fishery Assessment

At the time of writing, 7 MSC fishery client assessments have been undertaken on North Sea herring; the most recent being the French FROM NORD assessment, with the PCDR published in February 2015. Another appropriate assessment is the SPSG North Sea herring fishery, of which NIPSG members were formerly a part. This most recent, and most similar, assessments have therefore formed the basis of harmonisation activities.

These formed an important background resource for the assessment team - collating and reporting on available stock and fishery information, as well as highlighting areas of stakeholder and assessment team concerns.

4.1.1 Harmonisation Details

Harmonisation meeting/s

A brief discussion was held with team members of the MEP assessment team carrying out the FROM NORD assessment. As the PCDR was published prior to completing scoring of the NIPSG fishery, this was referred to by the present assessment team wherever appropriate.

Meeting Outcomes

Results of the NIPSG assessment have been harmonised, in terms of outcome, with the FROM NORD assessment.

4.2 Previous assessments

This is the first assessment of the NIPSG North Sea herring fishery.

4.3 Assessment Methodologies

This fishery was assessed using version 1.3 of the MSC Certification Requirements and version 1.3 of the MSC Full Assessment Reporting Template.

4.3.1 Assessment Tree

The Default Assessment tree was used without any adjustments.

4.4 Evaluation Processes and Techniques

4.4.1 Site Visits

During week commencing 2 February 2015, all 3 members of the assessment team undertook a site visit to Belfast, Northern Ireland. This enabled a scheduled programme of consultations to take place with key stakeholders in the fishery and fishery managers. Prior notification of this site visit was issued on the MSC website and in Irish Skipper, December 2014 in order that all relevant stakeholders were aware of the opportunity to meet with the assessment team.

Itinerary of field activities

Day 1 – 3 February 2015 - Belfast

On day 1, the assessment team held an opening meeting with NIPSG to discuss the fishery under assessment and provide an opportunity for the client to submit comments, additional information or ask questions of the assessment team.

Day 2 – 5 February 2015 - Belfast

- » On day 2, the assessment team met with officers of the Sea Fisheries Inspectorate, Department of Agriculture and Rural Development to discuss the fishery under assessment and provide an

opportunity for interested parties to submit comments, additional information or ask questions of the assessment team.

Day 3 – 7 February 2015 - Belfast

- » On day 3, the assessment team held a closing meeting with NIPSG. This was to provide further detail on the fishing methods and practice in use under this fishery assessment and to give the client an opportunity to provide any feedback or comments they wished in an open and transparent manner.

4.4.2 Consultations

Stakeholder issues

Written and verbal representations were provided to the assessment team expressing a range of views, opinions and concerns. The team is of the view that matters raised have been adequately debated and addressed as a part of the scoring process for this fishery, and that none of the issues raised, therefore, require separate attention beyond that represented in this report.

Interview Programme

Following the collation of general information on the fishery, a number of meetings with key stakeholders were scheduled by the team to fill in information gaps and to explore and discuss areas of concern.

Meetings were held as follows:

Table 4.1: Interview Programme

Name	Organisation
Alan McCulla	ANIFPO
P Campbell	DARD
G Griffiths	DARD
S McComiskey	DARD
J Campbell	DARD
Pieter Jan Schoen	Marine Fisheries Section, AFBI

Source: Acoura Marine assessment team

Summary of Information Obtained

Short summary of important points raised and information gathered during interviews are presented as an annex to this report. Discussions centred on the operation of the fishery, information on catches, landing inspections and scientific information relating to the fishery. Information gathered is referenced in the scoring table where appropriate.

4.4.3 Evaluation Techniques

Public Consultation

A total of 292 stakeholder individuals and organisations having relevant interest in the assessment were identified and consulted during this assessment. The interest of others not appearing on this list was solicited through the postings on the MSC website, and by advertising in The Skipper. These were felt to be the most appropriate media for making these public announcements as The Skipper has significant readership / uptake in the primary stakeholder locations for this fishery and the processes used on the MSC website for tracking and announcing the various stages of the assessment as it progresses - from Full Announcement through to Certification - form an ideal tool through which to channel stakeholder interest and keep them abreast of the important stages of the assessment as a whole.

Initial approaches were made by email and followed up by phone. Issues raised during correspondence were investigated during research and information gathering activities, and during interviews.

Most stakeholders contacted during this exercise either indicated that they had no direct interest in this fishery assessment, or that they had no particular cause for concern with regard to its assessment to the MSC standard.

Process

The MSC is dedicated to promoting “well-managed” and “sustainable” fisheries, and the MSC initiative focuses on identifying such fisheries through means of independent third-party assessments and certification. Once certified, fisheries are awarded the opportunity to utilise an MSC promoted eco-label to gain economic advantages in the marketplace. Through certification and eco-labelling the MSC works to promote and encourage better management of world fisheries, many of which have been suggested to suffer from poor management.

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:

- » **MSC Principle 1** - Resource Sustainability
- » **MSC Principle 2** - Ecosystem Sustainability
- » **MSC Principle 3** - Management Systems

A fuller description of the MSC Principles and Criteria and a graphical representation of the assessment tree is presented as **Appendix 1a** to this report.

The MSC Principles and Criteria provide the overall requirements necessary for certification of a sustainably managed fishery. To facilitate assessment of any given fishery against this standard, these Criteria are further split into Sub-criteria. Sub-criteria represent separate areas of important information (e.g. Sub-criterion 1.1.1. requires a sufficient level of information on the target species and stock, 1.1.2 requires information on the effects of the fishery on the stock and so on). These Sub-criteria, therefore, provide a detailed checklist of factors necessary to meet the MSC Criteria in the same way as the Criteria provide the factors necessary to meet each Principle.

Below each Sub-criterion, individual ‘Performance Indicators’ (PIs) are identified. It is at this level that the performance of the fishery is measured. Altogether, assessment of this fishery against the MSC standard is achieved through measurement of 31 Performance Indicators. The Principles and their supporting Criteria, Sub-criteria and Performance Indicators that have been used by the assessment team to assess this fishery are incorporated into the scoring sheets (**Appendix 1.1**).

Scoring of the attributes of this fishery against the MSC Principles and Criteria involves the following process:

- » Decision to use the MSC Default Assessment Tree contained within the MSC Certification Requirements (Annex CB)
- » Description of the justification as to why a particular score has been given to each sub-criterion
- » Allocation of a score (out of 100) to each Performance Indicator

In order to make the assessment process as clear and transparent as possible, the Scoring Guideposts are presented in the scoring table and describe the level of performance necessary to achieve **100** (represents the level of performance for a Performance Indicator that would be expected in a theoretically ‘perfect’ fishery), **80** (defines the unconditional pass mark for a Performance Indicator for that type of fishery), and **60** (defines the minimum, conditional pass mark for each Performance Indicator for that type of fishery). The Assessment Tree and Scoring Guideposts for the Northern Ireland Pelagic Sustainability Group (NIPSG) Irish Sea Atlantic Mackerel, WOS & NS Herring Fishery (North Sea Herring component) fishery are shown as **Appendix 1.1** to this report.

Scoring outcomes

There are two, coupled, scoring requirements that constitute the Marine Stewardship Council’s minimum threshold for a sustainable fishery:

- » The fishery must obtain a score of 80 or more for each of the MSC’s three Principles, based on the weighted average score for all Criteria and Sub-criteria under each Principle.
- » The fishery must obtain a score of 60 or more for each Performance Indicator.

A score below 80 at the Principle level or 60 for any individual Performance Indicator would represent a level of performance that causes the fishery to automatically fail the assessment. A score of 80 or above for all three Principles results in a pass.

Table 4.2 Scoring elements

Component	Scoring elements	Main/not main	Data-deficient or not
North Sea herring	1.1.1	Main	Not data deficient
Mackerel	2.1.1	Not main	Not data deficient
Horse mackerel	2.1.1	Not main	Not data deficient

5. Traceability

5.1 Eligibility Date

The **Eligibility Date** for this fishery will be the certification date.

5.2 Traceability within the Fishery

5.2.1 Description of Tracking, Tracing and Segregation Systems within the Fishery and Management systems in place relating to Traceability

Traceability up to the point of first landing has been scrutinised as part of this assessment and the positive results reflect that the systems in place are deemed adequate to ensure fish is caught in a legal manner and is accurately recorded. The report and assessment trees describe these systems in more detail, but briefly traceability can be verified by:

- » no transshipment;
- » the fishery is highly restricted spatially and seasonally
- » accurate reporting – log books and sales notes (regularly inspected and cross-checked);
- » verified landings data (including data on other retained species) are used for official monitoring of quota up-take and national statistics;
- » a high level and sophisticated system of at-sea monitoring, control and surveillance, including boarding and inspection, surveillance aircraft planes, VMS; and electronic logbooks.
- » Good cooperation between EU and Norwegian regulatory and enforcement authorities
- » reporting prior to landing with limited tolerance;
- » an appropriate level of inspection of landings prior to unloading. Officially calibrated weighing systems of landing. Periodic inspection of the entire unloading process.

It is noted that the above requirements apply, as a minimum, to landings in Northern Ireland, other EU states and Norway. The above is considered sufficient to ensure fish and fish products invoiced as such by the fishery originate from within the evaluated fishery and no specific risk factors have been identified.

5.2.2 Evaluation of Risk of Vessels Fishing Outside of UoC

There is no significant risk of vessels fishing outside the UoC. The fishery is spatially restricted and occurs in a restricted season, according to the controls discussed above. There is the possibility of area misreporting between Areas IV and VI, but both NIPSG fisheries are undergoing MSC assessment and adjustments are made for estimated misreporting in the stock assessment process. If it occurred, this would not compromise traceability.

5.2.3 Risk of Substitution of Mixing Certified / Non-Certified Catch prior to point of landing

There is a low risk of substitution of mixing of certified and non-certified catch. Other herring fisheries such as Celtic Sea herring are also already certified. Vessels may have small entitlements to herring in the nearby Clyde fishery. However, the area of capture for all landed fish can be verified through VMS. Landing controls are such that the veracity of the stated species and origin of the landed catch can be assured. The Chain of Custody audit and surveillance process will address risks of substitution taking place later in the supply chain.

5.2.4 At-Sea Processing

No at sea processing takes place in this fishery.

5.2.5 Trans-Shipments

No transshipment takes place in this fishery.

5.2.6 Robustness of management systems relating to traceability

The management system supporting traceability comprises:

- » mandatory use of tamper proof VMS on all vessels that can be queried retrospectively
- » use of electronic log books for reporting
- » in port verification of volumes of fish held in RSW tanks prior to switching to any other fishery
- » mandatory use of sales notes to verify purchase of catch
- » mandatory factory recording allows for cross checking of delivery intake and declared landings
- » prior notification of landings
- » well-developed MCS in Northern Ireland, other EU and Norwegian waters

The systems in place are comprehensive and mandatory. They are subject to periodic scrutiny and have been found to be enforced consistently leading to robust system that supports full traceability for landed product.

5.3 Eligibility to Enter Further Chains of Custody

Only North Sea herring caught in the manner defined in the Unit of Certification (**Section 3.1**) under restrictions detailed throughout the body of the final Public Certification Report for this fishery shall be eligible to enter the Chain of Custody. Chain of Custody should commence following the first point of landing, at which point the product shall be eligible to carry the MSC logo (under restrictions imposed by the MSC Chain of Custody standard). There are no restrictions on the fully certified product entering further chains of custody. NIFPO members do not require their own chain of custody certificate.

5.3.1 Eligible points of landing

Although landings are typically into Northern Irish ports, vessels covered by this assessment are entitled to land catches from this fishery into registered ports in other EU countries and Norway. All landings made to other EU and Norwegian ports are subject to the same scrutiny and reporting procedures and there is a well-established mechanism to enable port-of-landing authorities to report the landing to the relevant authorities in a timely fashion.

There are no further restrictions defining port of landing, over and above those stated in national fishing regulations (for example vessels must land to registered ports). There are no specific risk factors after the point of landing which need to be highlighted or that may influence chain of custody assessments.

5.3.2 Parties eligible to use the fishery certificate

Only UK registered pelagic RSW trawlers who are members of NIPSG, or which have direct authorisation from NIPSG, may use this certificate

6. Evaluation Results

6.1 Principle Level Scores

Final Principle Scores

Principle	Score
Principle 1 – Target Species	96.3
Principle 2 - Ecosystem	95.7
Principle 3 – Management System	88.9

Source: Acoura Marine assessment team

6.2 Summary of Scores

Prin- ciple	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle	Score		
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	100		
				1.1.2	Reference points	0.5	0.25	100		
				1.1.3	Stock rebuilding					
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125	100		
				1.2.2	Harvest control rules & tools	0.25	0.125	80		
				1.2.3	Information & monitoring	0.25	0.125	90		
				1.2.4	Assessment of stock status	0.25	0.125	100		
		Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667	80
2.1.2	Management					0.333	0.0667	100		
2.1.3	Information					0.333	0.0667	100		
Bycatch species	0.2			2.2.1	Outcome	0.333	0.0667	100		
				2.2.2	Management	0.333	0.0667	100		
				2.2.3	Information	0.333	0.0667	100		
ETP species	0.2			2.3.1	Outcome	0.333	0.0667	100		
				2.3.2	Management	0.333	0.0667	90		
				2.3.3	Information	0.333	0.0667	95		
Habitats	0.2			2.4.1	Outcome	0.333	0.0667	100		
				2.4.2	Management	0.333	0.0667	80		
				2.4.3	Information	0.333	0.0667	95		
Ecosystem	0.2			2.5.1	Outcome	0.333	0.0667	100		
				2.5.2	Management	0.333	0.0667	100		
				2.5.3	Information	0.333	0.0667	95		
Three	1			Governance and policy	0.5	3.1.1	Legal & customary framework	0.25	0.125	85
						3.1.2	Consultation, roles & responsibilities	0.25	0.125	90
						3.1.3	Long term objectives	0.25	0.125	100
		3.1.4	Incentives for sustainable fishing			0.25	0.125	80		
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1	90		
				3.2.2	Decision making processes	0.2	0.1	85		
				3.2.3	Compliance & enforcement	0.2	0.1	100		
				3.2.4	Research plan	0.2	0.1	80		
				3.2.5	Management performance evaluation	0.2	0.1	90		

6.3 Summary of Conditions

There are no conditions for this fishery.

6.3.1 Recommendations

There are no recommendations for this fishery.

6.4 Determination, Formal Conclusion and Agreement

The fishery attained a score of 80 or more against each of the MSC Principles and did not score less than 60 against any MSC Criteria.

It is therefore determined that the **NIPSG North Sea Herring Fishery should be certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries.**

Following this decision by the assessment team, and review by stakeholders and peer-reviewers, the determination will be presented to Acoura Marine's decision making entity that this fishery has passed its assessment and should be certified.

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Appendix 1. Scoring & Rationale

Appendix 1a – MSC Principles & Criteria

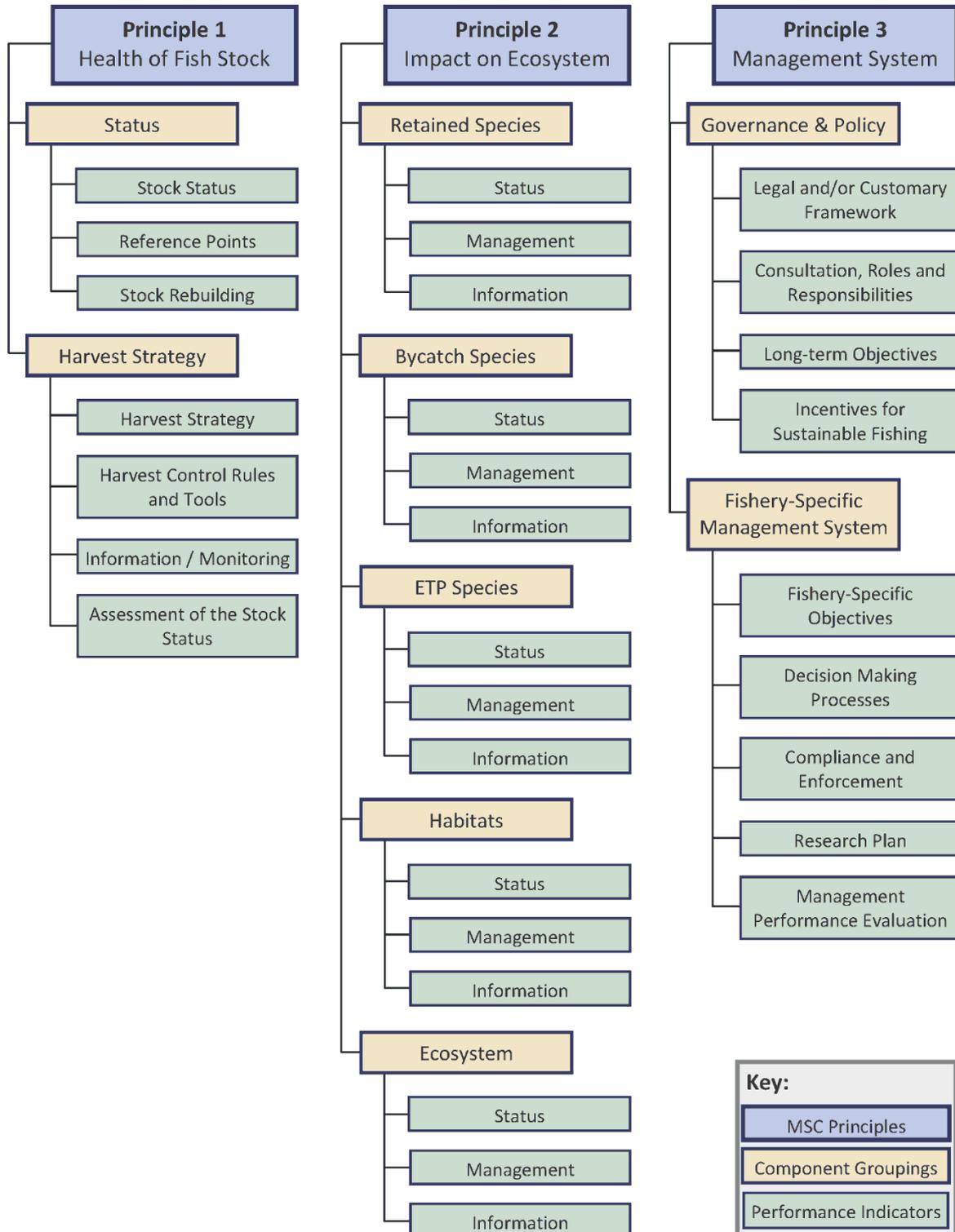


Figure A1 – Graphic of MSC Principles and Criteria

Below is a much-simplified summary of the MSC Principles and Criteria, to be used for over-view purposes only. For a fuller description, including scoring guideposts under each Performance Indicator, reference should be made to the full assessment tree, complete with scores and justification, contained in **Appendix 1.1** of this report. Alternately a fuller description of the MSC Principles and Criteria can be obtained from the MSC website (www.msc.org).

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.

Intent:

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.

Status

- » The stock is at a level that maintains high productivity and has a low probability of recruitment overfishing.
- » Limit and target reference points are appropriate for the stock (or some measure or surrogate with similar intent or outcome).
- » Where the stock is depleted, there is evidence of stock rebuilding and rebuilding strategies are in place with reasonable expectation that they will succeed.

Harvest strategy / management

- » There is a robust and precautionary harvest strategy in place, which is responsive to the state of the stock and is designed to achieve stock management objectives.
- » There are well defined and effective harvest control rules in place that endeavour to maintain stocks at target levels.
- » Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.
- » The stock assessment is appropriate for the stock and for the harvest control rule, takes into account uncertainty, and is evaluating stock status relative to reference points.

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

Intent:

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.

Retained species / Bycatch / ETP species

- » Main species are highly likely to be within biologically based limits or if outside the limits there is a full strategy of demonstrably effective management measures.
- » There is a strategy in place for managing these species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species.
- » Information is sufficient to quantitatively estimate outcome status and support a full strategy to manage main retained / bycatch and ETP species.

Habitat & Ecosystem

- » The fishery does not cause serious or irreversible harm to habitat or ecosystem structure and function, considered on a regional or bioregional basis.
- » There is a strategy and measures in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types.
- » The nature, distribution and vulnerability of all main habitat types and ecosystem functions in the fishery area are known at a level of detail relevant to the scale and intensity of the fishery and there is reliable information on the spatial extent, timing and location of use of the fishing gear.

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.

Intent:

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.

Governance and policy

- » The management system exists within an appropriate and effective legal and/or customary framework that is capable of delivering sustainable fisheries and observes the legal & customary rights of people and incorporates an appropriate dispute resolution framework.
- » Functions, roles and responsibilities of organisations and individuals involved in the management process are explicitly defined and well understood. The management system includes consultation processes.
- » The management policy has clear long-term objectives, incorporates the precautionary approach and does not operate with subsidies that contribute to unsustainable fishing.

Fishery specific management system

- » Short and long term objectives are explicit within the fishery's management system.
- » Decision-making processes respond to relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner.
- » A monitoring, control and surveillance system has been implemented. Sanctions to deal with non-compliance exist and there is no evidence of systematic non-compliance.
- » A research plan provides the management system with reliable and timely information and results are disseminated to all interested parties in a timely fashion.

Appendix 1.1 Performance Indicator Scores and Rationale

The scoring below for Principle 1 is the scoring undertaken following a review of new information in January 2016. For reference, the original scoring for the fishery can be found in Appendix 6.

Evaluation Table for PI 1.1.1

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	It is likely that the stock is above the point where recruitment would be impaired.	It is highly likely that the stock is above the point where recruitment would be impaired.	There is a high degree of certainty that the stock is above the point where recruitment would be impaired.
	Met?	(Y)	(Y)	(Y)
	Justification	The North Sea autumn spawning herring stock is currently over two and a half times the biomass limit reference point (Blim) which was defined in 1997 as the minimum biologically acceptable level and redefined in 2008 as the level below which poor recruitment has been observed and can be expected. The spawning stock is predicted to remain the same by spawning time in 2015 but following the revised management plan should increase by over 400,000t by spawning time in 2016. The stock is also currently well above the biomass precautionary reference point which is based on a 5% risk of SSB falling below the limit reference point. This difference affords a high degree of certainty, 95% probability, that the stock is currently above the point where recruitment would be impaired.		
b	Guidepost		The stock is at or fluctuating around its target reference point.	There is a high degree of certainty that the stock has been fluctuating around its target reference point, or has been above its target reference point, over recent years.
	Met?		(Y)	(Y)
	Justification	The North Sea autumn spawning herring stock is currently over two and a half times the biomass precautionary trigger reference point and also well above the management plan upper trigger level. The SSB has been above that management plan target level since 2008 and only fell marginally below it in 2007 for the first time since 1997. The stock has therefore been at or fluctuating around its target reference point for the past 15 years. Changes to the assessment model in 2012 changed the perception of stock status and increased the estimates of SSB dating back over the whole time series. The new model does provide 95% confidence intervals on the estimates of SSB. The estimates of SSB at the lower confidence interval have been above the management plan trigger level since 2009 providing confidence, and a high degree of certainty, that the stock has been fluctuating around its target reference point or been above it in recent years		
References		Patterson et al, 1997; ICES, 2005, 2008, 2012a, 2012c, 2013b, 2014a, 2014b, 2015a, 2015b.		

PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Stock Status relative to Reference Points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Target reference point	Management plan upper SSB trigger. Bpa F Management plan Fmsy	1.5 million tonnes 1.0 million tonnes F juv 0.05 F adult 0.26 F0.27 (0.24-0.3)	2.22 million tonnes [2.66/1.85 95% CI] F juv 0.033 (2013) 2014 value not recorded in ICES advice F adult 0.203 [0.2631/0.157 95%CI]
Limit reference point	Bpa Blim and Management plan lower trigger point	1.0 million tonnes 800,000 tonnes	2.22 million tonnes [2.66/1.85 95% CI]
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			

Evaluation Table for PI 1.1.2

PI 1.1.2		Limit and target reference points are appropriate for the stock		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.	Reference points are appropriate for the stock and can be estimated.	
	Met?	(Y)	(Y)	
	Justification	<p>Biological reference points, for biomass and fishing mortality have been defined and agreed since 1997 and are now embedded in a revised 2014 management plan endorsed by ICES. As a consequence of a new stock assessment model first used in 2013 for the assessment of stock status in 2012, and the resultant changed perception of SSB, it was considered necessary to revisit the biological reference points. This was done by an ICES Workshop (WKHELP) in 2012. The Workshop recommended some changes which were subsequently endorsed by ICES in 2013.</p> <p>The reference points meet internationally agreed standards and have been endorsed by ICES as consistent with both the precautionary and MSY approaches to managing the stock</p>		
b	Guidepost		The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of precautionary issues.
	Met?		(Y)	(Y)
	Justification	<p>The biomass limit point was set originally at the minimum biologically acceptable level (MBAL) defined in 1998 at 800,000 tonnes. This was based on the stock and recruitment relationship which shows that at SSB levels below this point poor recruitment can be expected. This reference point has been subject to thorough re-examination on a number of occasions, by ICES, the most recent in 2012. Each time the conclusion has been that the level is appropriate, precautionary and robust to uncertainty.</p> <p>It should be noted that the recent period of below average recruitment has been experienced at a time of relatively high SSB. The biomass limit point forms an integral part of the EU / Norway management plan updated in 2008, and endorsed by ICES as being consistent with the precautionary approach. Some statistical re-examinations of the stock and recruitment relationship, excluding observations before the collapse of the stock in the 1970s, have suggested that the limit reference point could be lowered to 500,000 tonnes. In consideration of precautionary issues the limit has remained at 800,000 tonnes. In response to the commitment to review the management plan a revised plan was agreed by the EU / Norway in March 2014. As a result of a request from the EU and Norway in early 2015 to evaluate the proposed new Long Term Management Strategy the Strategy was endorsed by ICES as consistent with the precautionary approach. This revised Management Plan (Strategy) came into force in 2015 and was the basis of the ICES advice for the fishery in 2016. The plan continues to use the current biomass limit point of 800,000t as a trigger point for stock recovery action.</p>		

PI 1.1.2		Limit and target reference points are appropriate for the stock		
c	Guidepost		The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome.	The target reference point is such that the stock is maintained at a level consistent with B_{MSY} 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.
	Met?		(Y)	(Y)
	Justification	<p>As a result of the re-examination of the reference points at an ICES Workshop in 2012 new reference points were put forward and endorsed by ICES in 2013.</p> <p>As an integral part of the EU / Norway management plan the stock is managed on fishing mortality targets as a surrogate for biomass targets. There are three levels of defined F within the management plan. Each level is related to the current state of the SSB in relation to the biomass limit level, 800,000t, and a management plan upper trigger level of 1.5 million tonnes. ICES notes that this biomass trigger point is a management point within the harvest control rule and not a biological reference point by which stock status can be judged. Fishing mortality is defined separately for juveniles (age 0-1 ringers) and adults (2-6 ringers) and reduces linearly as the biomass limit level is approached down to effectively zero if SSB falls below Blim. ($F < 0.04$ for juvs and < 0.1 for adults)</p> <p>The fishing mortality MSY reference point based on stochastic simulations with the stock and recruitment relationship is set at $F_{0.27}$ which is the mid-point of the calculated range from $F_{0.24}$ - $F_{0.3}$. This is marginally higher than the 2014 revised management plan F of 0.26 for adults when the SSB is above the management plan upper trigger level of 1.5 million tonnes. The management plan also addresses the fishing mortality on juveniles which is reduced in line with the reduction in fishing mortality on the adults. In this way the mortality on juveniles has been considerably reduced in recent years which clearly addresses the ecological role of the stock as a prey species. In the revised management plan, agreed by the EU and Norway in March 2014, the management plan fishing mortality level was increased to $F_{0.26}$. This revised Management Plan (Strategy) came into force in 2015 and was the basis of the ICES advice for the fishery in 2016, The new stock assessment model takes into account fundamental links between the North Sea ecosystem and the autumn spawning herring stock dynamics. The model now includes variable estimates of natural mortality derived from a multi species stock assessment model.</p>		
d	Guidepost		For key low trophic level stocks, the target reference point takes into account the ecological role of the stock.	
	Met?		(Not relevant)	

PI 1.1.2	Limit and target reference points are appropriate for the stock
Justification	<p>Herring is considered by ICES as an important prey item for fish, birds and sea mammals and is also considered to compete with other North Sea stocks as a zooplankton and ichthyoplankton predator. These trophic interactions were taken into account for the first time in the assessment modelling process in 2012 through the adoption of time varying estimates of natural mortality. These estimates are based on state of the art multi species modelling which shows that natural mortality of herring in the North Sea is dominated by cod and saithe and that natural mortality is greater than fishing mortality. In that context it is deemed necessary for the assessment working group to keep the dynamics of these two species under careful review as both natural and anthropogenic changes can have an impact on the population dynamics of herring. There is clear evidence that herring in the North Sea and Skagerrak are a lower trophic level (LTL) species. However, it is not considered to be a key LTL species because it does not meet at least two of the three sub- criteria in CB2.3.13 in Certification requirements v1.3.</p> <p>i) <i>A large proportion of the trophic connections in the ecosystem involve this stock, leading to significant predator dependency.</i></p> <p>Ecosystem modelling of the North Sea (Mackinson and Daskalov, 2007) has shown that there are numerous other species which form important sources of prey for piscivorous fish. They are mackerel, horse mackerel, sprat, poor cod, Norway pout, sandeels blue whiting, Maurolicus and juvenile saithe and cod. According to Essington and Pláganyi, (2013) the connectance level between this herring population and others in the ecosystem would be around 3.5%. This is lower than the required 4% threshold level defined in the MSC certification requirements. In addition, the SURF index for this stock is 0.0030, which again is lower than the 0.005 threshold as defined to indicate a KEY-LTL stock as defined in in the MSC CR v1.3.</p> <p>ii) <i>A large volume of energy passing between lower and higher trophic levels passes through this stock.</i></p> <p>There are numerous other species of planktivores, most of which are listed above, through which energy passes from primary production through zooplankton to fish. According to the assessment made by Essington and Pláganyi (2013) the % of energy passing through this species to both higher and lower trophic layers, consumer biomass, was 0.47%. This is below the required 5% threshold level for a KEY-LTL stock as defined in MSC CR v1.3</p> <p>iii) <i>There are few other species at this trophic level through which energy can be transmitted from lower to higher trophic levels, such that a high proportion of the total energy passing between lower and higher trophic levels passes through this stock (ie the ecosystem is 'wasp waisted')</i></p> <p>As noted above there are numerous other prey species of planktivores which are abundant in the North Sea through which energy is passed to the top predators. Quite clearly the North Sea ecosystem is not 'wasp waisted'</p> <p>Further, historical, evidence for herring not meeting the requisite criteria for a key LTL species can be seen when the herring stock was close to extinction in the mid-1970s, there was no evidence of another species being adversely affected. Indeed, it can be argued that the trophic role of herring was simply replaced by other species, not the least of which was the concurrent expansion of the sprat and gadoid stocks and the 'gadoid outburst'.</p> <p>Whereas it appears that some bird populations may have an obligate dependence on juvenile sandeels, no comparable dependence has been identified for North Sea or Skagerrak / Kattegat herring.</p>

PI 1.1.2	Limit and target reference points are appropriate for the stock	
References	Essington and Plaganyi, 2013, Lewy and Vinther, 2004; Mackinson and Daskalov, 2007; ICES, 2005, 2008, 2011a, 2011c, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b, 2015a. 2015b. 2015c.	
OVERALL PERFORMANCE INDICATOR SCORE:		100
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 1.1.3

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Where stocks are depleted rebuilding strategies, which have a reasonable expectation of success, are in place.		Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the specified timeframe.
	Met?	(Y/N)		(Y/N)
	Justification	PI 1.1.1 shows that the stock is not depleted and therefore this Performance Indicator (1.1.3) does not have to be addressed. CR v 1.3 CB2.4.1		
b	Guidepost	A rebuilding timeframe is specified for the depleted stock that is the shorter of 30 years or 3 times its generation time. For cases where 3 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	A rebuilding timeframe is specified for the depleted stock that is the shorter of 20 years or 2 times its generation time. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the depleted stock.
	Met?	(Y/N)	(Y/N)	(Y/N)
	Justification			
c	Guidepost	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within a specified timeframe.	There is evidence 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 specified timeframe.	
	Met?	(Y/N)	(Y/N)	

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe	
	Justification		
References			
OVERALL PERFORMANCE INDICATOR SCORE:			NA
CONDITION NUMBER (if relevant):			

Evaluation Table for PI 1.2.1

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The harvest strategy is expected to achieve stock management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.	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.
	Met?	(Y)	(Y)	(Y)
	Justification	<p>The long term management plan in force up to the 2015 fishery was agreed by the EU Norway in 2008. The plan has been used as the basis for the provision of advice by ICES and setting an annual TAC, via the annual EU / Norway negotiations since then. The plan has remained unchanged, and is clearly achieving its objectives as evidenced by the current levels of SSB and F.</p> <p>That management plan is clearly designed to be responsive to the current status of the stock and to maintain fishing mortality and SSB at levels which constrain harvesting within safe biological limits and support the maximum sustainable yield in the long term. The plan has worked well in maintaining a relatively stable yield from fishery and maintaining SSB well above the biomass limit point and above the management plan trigger level. This has been achieved during a period of sustained poor recruitment since 2002 providing ample evidence that the plan is responsive to the state of the stock.</p> <p>The design of the management plan, based on controlling fishing mortality separately on juveniles and adults, ensures that there is a low probability that SSB will fall below the biomass limit level.</p> <p>The current levels of fishing mortality on both juveniles and adults are below the management plan levels.</p> <p>The Management Plan was revised by the EU Norway in 2014 but the revised plan did not become operative until 2015 after endorsement by ICES.</p>		
b	Guidepost	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	(Y)	(Y)	(Y)

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
	Justification	<p>A management plan, which underpins the harvest strategy, was first in place in 1998 and was revised in 2008. The plan remained unchanged since 2008 and is clearly achieving its objectives with fishing mortality defined as 'below limit', SSB above the management plan and MSY trigger levels since 2008 and the stock maintains full reproductive capacity.</p> <p>The current harvest strategy is subject to annual evaluation in the context of discussions at the assessment working group (HAWG), by the ICES advisory committee (ACOM) and during the annual EU / Norway negotiations.</p> <p>Following the change in the assessment model in 2012 there was a marked change in the historical perception of SSB. In the light of this change ICES were requested to review the reference points which underpin the harvest strategy. The reference points were re-examined by an ICES Workshop in 2012. After thorough investigation the only change recommended was a lowering of the biomass precautionary reference point, Bpa, from 1.3 million tonnes to 1 million tonnes. The biomass limit reference point remains unchanged at 800,000 tonnes.</p> <p>The levels of SSB and F, since the management plan was reviewed and revised in 2008 clearly show that the strategy is achieving its objectives in terms of maintaining both maximum sustainable yields and full reproductive capacity. This has been achieved during a period of sustained poor recruitment, since 2002 and which appears likely to continue.</p> <p>The management plan was revised in 2014 and became operative in 2015 for the management of the fishery in 2016. The revised plan has been commented on under PI 1.1.2. and also under scoring issue (d) of this Performance Indicator.</p>		
c	Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	(Y)		
	Justification	<p>There is a comprehensive stock monitoring and assessment programme in place leading to an annual evaluation of the success of the harvest strategy. This is based on accurate catch statistics and an appropriate level of biological sampling of catches and landings in accordance with the requirements of EC Directive 1639/2001. There have been major problems of unaccounted mortality in the past. These were related to misreporting and under reporting of landings, area misreporting, discarding, high grading and slippage. Most of these problems have now been addressed through regulations and more rigorous monitoring and surveillance. High grading and slippage has been banned in EU waters since 2009 and there is a total discards ban within the Norwegian EEZ. The assessment working group accepts that there may still be some unaccounted mortality but consider that the quantities involved are very low and do not affect the annual assessment of the stock on which the harvest strategy is based.</p>		
d	Guidepost		The harvest strategy is periodically reviewed and improved as necessary.	

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
	Met?			(Y)
	Justification	<p>The original management plan was in place in 1998 and reviewed and revised in 2008. The harvest strategy is underpinned by this long term management plan which is firmly based on well-established precautionary reference points. There was a commitment in the plan for review by 31 December 2011 which was carried out by ICES in 2011. ICES concluded that the plan was consistent with both the precautionary and MSY approaches. Following the change to the assessment model in 2012 the ICES benchmarking workshop noted that reference points could have changed under the changed perception of the stock assessment. As a result an ICES workshop (WKHERMP) carried out a review of the reference points and a re-evaluation of the management plan in 2012. The Workshop re-evaluated the reference points and concluded that Blim should remain unchanged at 800,000t but Bpa should be revised to 1 million tonnes. Fmsy (ages 2-6) should be within the range F0.24-0.30. The workshop also concluded that the plan appears to operate well in relation to the objectives of consistency and a precautionary approach but not in relation to maintaining a stable high yield. They considered the main weakness in the plan to be the constraint on annual variation of the TAC to 15%. This has led to restrictive TACs when the stock has been improving</p> <p>The report of the Workshop and the subsequent ICES advice was considered at the EU / Norway meeting in January 2013. They made a further detailed request to ICES that the long term management plan shall be evaluated with and without inter annual quota flexibility of +/- 15% when the SSB is above B_{trigger}. In response to this request ICES evaluated new options of the management plan in 2012. On this basis the EU – Norway agreed a revised plan in March 2014 and asked ICES to evaluate the plan. In response to that request ICES concluded that the proposed Long-term Management Strategy (LTMS) for herring in the North Sea is precautionary This LTMS now includes the introduction of an inter-annual quota flexibility of ±10% and a 10% constraint on the deviation from the fishing mortality target, provided that SSB > Blim. ICES also advised that any choice of B_{trigger} at or from 1.0 to 1.5 million tonnes in the proposed 2014 LTMS for herring in the North Sea is considered to be precautionary.</p> <p>The details presented above provide ample evidence of periodic review and improvement of the harvest strategy as necessary, with active involvement of all interested parties.</p>		
e	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	(Not relevant)	(Not relevant)	(Not relevant)
	Justification	[Scoring issue need not be scored if sharks are not a target species].		
References		ICES,2005, 2008, 2011a, 2011c, 2011d, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b. 2014a, 2015b, 2015c. 2014b.Patterson, 1997.		
OVERALL PERFORMANCE INDICATOR SCORE:				100

PI 1.2.1	There is a robust and precautionary harvest strategy in place
CONDITION NUMBER (if relevant):	

Evaluation Table for PI 1.2.2

PI 1.2.2		There are well defined and effective harvest control rules in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Generally understood harvest 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.	Well defined 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.	
	Met?	(Y)	(Y)	
	Justification	<p>The current strategy is to set an annual TAC, based on managing the stock in accordance with the agreed management plan. The annual TAC is firmly based on the predicted catch corresponding to the ICES advice for adult and juvenile mortality. This is firmly based on managing the stock according to the agreed fishing mortality reference points and the stock status in relation to the management plan upper biomass trigger level and the biomass limit level. The strategy is supported by a raft of technical and conservation measures applied to both the adult fishery and fisheries which take juvenile herring. These include minimum landing size, discarding and slippage bans, a regulation permitting a proportion of TAC to be moved from one area to another, some seasonal area closures and a restriction on the by-catch levels of herring in all other fisheries.</p> <p>These well-defined rules have been well tried and tested in the past and have been seen to be effective in recovering the stock from low levels historically. In recent years the rules have helped maintain the stock at levels above the Management plan trigger and fishing mortalities below precautionary and management plan levels for both adults and juveniles.</p> <p>The harvest strategy has clear rules which effectively reduce the annual TAC by reducing the fishing mortality, on adults and juveniles, if the SSB falls below the management plan upper biomass trigger level of 1.5 million tonnes. The reduction in fishing mortality is linearly linked to the estimate of SSB and is designed to recover the stock to above the management plan trigger level. If the SSB falls below the biomass limit point then fishing mortality on adults and juveniles is reduced to near zero. The revised biomass precautionary approach reference point of 1.0 million tonnes is based on a less than 5% risk of SSB falling below Blim.</p>		
b	Guidepost		The selection of the harvest control rules takes into account the main uncertainties.	The design of the harvest control rules takes into account a wide range of uncertainties.
	Met?		(Y)	(N)

PI 1.2.2		There are well defined and effective harvest control rules in place		
	Justification	<p>The main uncertainty affecting the harvest control rule is the reliability of the annual stock assessment in estimating current SSB and fishing mortality. These estimates underpin all the advice provided by the ICES advisory committee on managing the stock. That stock assessment is heavily dependent on the reliability of the input data. In that context the major uncertainty is the reliability of the landings data in relation to the actual catch taken at sea.</p> <p>The major uncertainty in the fishery in the past has been the regular overshooting of the TAC related to area misreporting and underreporting of landings, discarding, high grading and slippage. As recently as 2008 the ICES working group's estimate of landings exceeded the official estimate by 16% and exceeded the TAC by 17%. Through better enforcement and monitoring the problem has been dramatically reduced since 2008 to the point where the assessment working group now consider it to be a minor issue relative to current stock status and total catch levels. The assessment working group accepts that there may still be some unaccounted mortality through, for example shipboard operations, but this uncertainty is not considered to affect the reliability of the assessment of stock status. The assessment working group keeps all these issues under regular review and where verifiable information is available from observer trips and reference fleets then the most reliable data is used for the stock assessment. For the 2013 assessment the working group considered the input data to be of good quality and the resultant estimates of SSB and F were reliable. However, ICES did express some concern about the lack of information on unallocated removals from all herring fisheries and noted that observer coverage across the main fleets should be maintained or improved. They also commented that the introduction of the EU landings obligation may change the situation.</p> <p>The basic biological data for the stock assessment comes from sampling the commercial landings. The required level of sampling is defined under an EU sampling Directive (Commission Regulation 1639/2001). The quality of the catch and biological data in support of the stock assessment is carefully monitored and reported by the ICES assessment working group each year. The report addresses all relevant issues such as area misreporting, discarding, sampling of commercial catches and the spread of sampling across fleet / area metiers. Generally, the biological sampling levels for the North Sea stock are considered by ICES to be mainly satisfactory in support of the assessment. In the 2014 fishery 83% of the landings were covered by sampling, a small decrease (2%) on the previous year.</p> <p>There are also areas of uncertainty in relation to the mix of North Sea autumn spawners and western Baltic spring spawners in the North Sea and in the Skagerrak and Kattegat and the precision of the methods for differentiating between them. These issues are more appropriately addressed under scoring issue c.</p> <p>From the evidence presented the Team have concluded that, whilst the harvest control rules do take into account the main uncertainties, the range of uncertainty considered cannot be regarded as 'wide' and the more rigorous requirements at SG 100 are therefore not met.</p>		
c	Guidepost	There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.
	Met?	(Y)	(Y)	(N)

PI 1.2.2	There are well defined and effective harvest control rules in place	
	Justification	<p>Monitoring of the catches and landings has been working effectively in this fishery for many years. This has been achieved not only via the official records but also by the vigilance and local knowledge of the working group members. In that way the assessment working group has been able to use their own estimates of actual catches. In recent years the problem of slippage, discarding and underreporting of landings is no longer considered to be a problem in relation to the annual stock assessment and subsequent advice. Since 2009 the working group's estimate of landings has been very close to the official landings. Accurate landings data are vital in the stock assessment process on which the annual ICES advice on the TAC is based. In spite of the areas of uncertainty the annual assessment of stock status is considered to be robust and is now presented with 95% confidence intervals to take account of uncertainty. There is strong evidence that the resultant TACs over recent years, coupled with the technical measures, have been effective tools in achieving the levels of exploitation required under the harvest control rule (management plan). The evidence is based on the current status of the stock in relation to both fishing mortality and SSB targets within the management plan. It is worth noting that this success has been achieved against a sustained period of low productivity and poor recruitment</p> <p>However, whilst the tools in use are very effective in controlling the exploitation rate on the North Sea autumn spawning stock there is no clear evidence that they achieve an effective exploitation rate on the vulnerable Western Baltic spring spawning component. Management of this component is strongly linked to the management of the autumn spawners in ICES Division IIIa and the eastern North Sea. There are serious concerns about the effect that catches of Western Baltic spring spawning herring in the targeted autumn spawning fishery has on the state of that stock. The western Baltic spring spawning stock is currently in a period of low productivity and there is no management plan for the entire stock. Although SSB has increased slightly since reaching an historic low in 2011 it is still below the precautionary approach and MSY trigger levels. Fishing mortality is also well above Fmsy, these concerns have been partially addressed in the harvest control rules by permitting part of the TAC for Division IIIa to be taken in a transfer area in the eastern North Sea in an attempt to protect the more vulnerable Western Baltic spring spawners. However, there is little evidence that the regulation is effective. This topic is subject to frequent scientific and administrative review, e.g. EU / Norway working group meeting of managers and scientists June 2013, who were asked to develop and recommend alternative methods to set a TAC for herring in ICES division IIIa. This issue was addressed by the EU Norway during their revision of a revised management strategy for North Sea herring. Their request to ICES to evaluate their 2014 revised plan included a request to evaluate a new TAC setting procedure for herring in Division IIIa. In response to that request ICES concluded that the proposed Division IIIa TAC-setting procedure is precautionary provided it includes a requirement to transfer at least 10% of the TAC from Division IIIa to the North Sea. With transfers of less than 10%, ICES considers that the procedure is not precautionary.</p>
References	ICES, 2005, 2008, 2011b, 2011c, 2012a, 2012c, 2012d, 2013a,.2014a, 2014b, 2015b, 2015c.2015d	
OVERALL PERFORMANCE INDICATOR SCORE:		80
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 1.2.3

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A comprehensive range 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 related to the current harvest strategy, is available.
	Met?	(Y)	(Y)	(Y)

PI 1.2.3		Relevant information is collected to support the harvest strategy		
	Justification	<p>The basic biology, stock structure and dynamics of the North Sea autumn spawning herring has been the subject of considerable research for well over one hundred years. As a result, the seasonal distribution, spawning areas and geographic range is very well known and described in the scientific literature. The stock clearly consists of three spawning components based on their geographically separate spawning areas although there is no genetic basis for separating them. Because the components mix at certain times of the year and cannot be separated in the catches they are treated as one stock for management purposes. The only exception to that is the component which spawns in the southern North Sea and eastern English Channel (the Downs component) which has a ring fenced quota to protect it from over exploitation.</p> <p>The raft of fundamental knowledge on the North Sea herring is used in support of the harvest strategy through, for example, minimum landing size, some closed areas at spawning times and restrictions on the catches of juvenile herring. The research has also led to refined methods of separating North Sea autumn spawners from various spring spawning components which occur in the North Sea. This is particularly important in separating the autumn spawners from the Western Baltic spring spawners (identified by post hoc biological sampling) when they occur together both in the Skagerrak and in the north eastern North Sea. In the past this separation was done on the basis of small differences in vertebral counts but is now done, more reliably, on the basis of differences in the otolith microstructure.</p> <p>Information on maturity and growth rates and sex ratio is routinely collected as part of the biological sampling process on the landings and also as a part of the fishery independent acoustic surveys. The stock/recruitment relationship is well described over a period dating back to 1947 and forms an integral part of the harvest control rule as the basis for the biomass limit level. There are no recent studies on fecundity but extensive studies in the past established the relationship between fish weight and fecundity. Fecundity data are not a part of the current stock assessment process.</p> <p>Natural mortality in the stock is now estimated annually through the North Sea multi species assessment model. Maturity data are updated annually based on sampling on the acoustic surveys.</p> <p>Environmental data related to temperature changes on the spawning grounds, changes over time in the plankton community and the effect of herring as a predator on, for example cod recruitment, are all subject to research not directly related to the harvest strategy. There is also research related to the potential effects on herring spawning of anthropogenic activities such as gravel extraction and windfarms.</p> <p>Vessel types, vessel size and gear types are well known and described for this fishery and updated annually by members of the ICES assessment working group who have a thorough knowledge of the composition of their own national fleets.</p>		
b	Guidepost	<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>Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.</p>	<p>All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.</p>

PI 1.2.3		Relevant information is collected to support the harvest strategy		
	Met?	(Y)	(Y)	(N)
	Justification	<p>The total landings data are adequately monitored and most uncertainty related to their validity is removed through national monitoring and surveillance programmes. These include observers at sea, enforcement inspections at sea and more stringent and effective EU regulations. In these ways earlier concerns of the assessment working group regarding discarding at sea, slippage and underreporting have been satisfactorily addressed. Whilst they accept that there is still likely to be an element of unrecorded mortality the assessment working group are satisfied that the quantities involved are negligible in terms of the reliability of the stock assessment. ICES does however comment on the need to maintain or improve the current level of observer coverage.</p> <p>Basic biological data on the landings from North Sea and Skagerrak herring fisheries are routinely collected by all countries participating in the fishery. This is now a statutory requirement of all member states through EU sampling directives issued in 2008 (Comm. Regs. 2008/949EC, 2008/199, 2008/665), or complementary Norwegian regulations. Under these regulations all fleets must comply with minimum sampling levels for numbers of fish measured and aged. The biological sampling programme covered 83% of the landings in 2014. This level of sampling provides strong support for the age based analytical stock assessment process and is considered appropriate by ICES.</p> <p>The annual stock assessment which underpins the harvest control rule is further supported by a number of fishery independent surveys which provide indices of the abundance of various year classes in the stock There are two main surveys providing independent estimates of the abundance of age groups 0-6 winter ringers in the stock. An acoustic survey in the summer was started in 1979 and extended to cover the Skagerrak and Kattegat in 1989. An international bottom trawl survey in the first quarter of the year was started in 1996 and provides indices of 1 ringers and 2-5 ringers from the trawl hauls and an index of 'o' group fish from fine meshed net hauls carried out at night. In addition, there is a series of larvae surveys covering the spawning areas of all three spawning components which provide a larval abundance index used to estimate potential recruitment. The larvae surveys also provide a valuable insight into the state of the Downs stock component.</p> <p>Thus all the relevant information required for carrying out an annual stock assessment, which provides the basic information on the status of the stock on which the harvest control rules are based is, appropriately monitored. Monitoring of landings in support of the TAC control is carried out contemporaneously with the fishery and enforcement action can be introduced quickly.</p> <p>Whilst there are some residual uncertainties in the data sources which are not serious enough to affect the robustness of the North Sea stock assessment, ICES does accept that there is still an unknown level of unaccounted mortality. Furthermore, there is uncertainty regarding the potential effects of this fishery on the Western Baltic spring spawning herring stock. These two factors mean that the assessment falls short of the robustness and high degree of certainty required for SG 100.</p>		
c	Guidepost		There is good information on all other fishery removals from the stock.	
	Met?		(Y)	

PI 1.2.3		Relevant information is collected to support the harvest strategy	
	Justification	The by-catches of herring from other fisheries are landed and adequately monitored where quota is available ('B' fleet quota) and post hoc sampling ensures adequate recognition of removals of North Sea autumn spawners from the Skagerrak and Kattegat.	
References		Burd and Howlett, 1974; Corten, 1999; Groot de, 1979, 1980, 1996; Harden Jones, 1968; Heath, 1993; ICES, 2012b; 2013a; ICES, 2014a; ICES, 2015a, ICES 2015b. Maravelias et al 2000; Nichols, 2001; Payne et al, 2009; Simmonds, 2009; Weijerman, 2005; Zijlstra, 1969.	
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			

Evaluation Table for PI 1.2.4

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost		The assessment is appropriate for the stock and for the harvest control rule.	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.
	Met?		(Y)	(Y)

PI 1.2.4	There is an adequate assessment of the stock status
Justification	<p>From 1972 to 1995 the assessment of the North Sea autumn spawning herring stock was done by means of a virtual population analysis (VPA) model with ad hoc tuning to a series of larvae production estimates, acoustic surveys and trawl surveys. During the early 1990s there was increasing uncertainty about the assessment which led to the exploration of other assessment models. The uncertainty was generated by serious differences in the perception of stock size between the various survey indices. In 1995 the assessment working group decided to change to an integrated catch analysis (ICA) method for the assessment of the stock in 1994. The ICA model was used for the North Sea herring assessment each year since 1995. Subsequently this model became widely used for most of the pelagic stocks assessed by ICES. In spite of some computational difficulties it was generally accepted as an appropriate procedure for the assessment of pelagic stocks, indeed the assessment of the North Sea autumn spawning herring stock has been recognised inside ICES as one of the best and most consistent assessments.</p> <p>In 2011 it became apparent that there were unresolved issues with the ICA model and it could no longer be supported within the ICES assessment framework. It was accepted that it would have to be replaced prior to the planned benchmark assessment for herring in 2012. In February 2012 ICES convened a Benchmark Workshop on Pelagic stocks, WKPELA, (ICES, 2012a). Its remit was to determine and review the appropriate stock assessment methods for five pelagic stocks which included North Sea herring. After a thorough investigation and exploration of potential models the Workshop recommended a change to the state – space assessment model (SAM) as an ideal framework to replace the ICA model. This has also resulted in changes to the input data including a return to using the whole time series of landing information dating back to 1947.</p> <p>The listed the main features of the SAM model of importance are:</p> <ul style="list-style-type: none"> • SAM is a fully statistical model. All data are treated as observations and missing data are handled gracefully. • SAM offers a fully statistical framework that can be used as the basis for model refinement and decision-making. • Uncertainties are generated for all estimated parameters. • SAM internally estimates the precision of each data source and uses this estimate to weight them appropriately in the optimized model. • SAM is a framework rather than a model– it is highly flexible with a low number parameters and can readily be modified to the peculiarities of the given stock. • SAM is open source and cross platform software. As a result, customisations of the source-code to deal with issues are feasible <p>The ICES Herring Assessment Working Group meeting in March 2012 accepted the recommendations of the benchmark workshop on pelagic stocks for the benchmark assessment of North Sea herring in 2012. As a result, the tool used for the assessment was the FLSAM, an implementation of the State-space assessment model (www.stockassessment.org), embedded inside the FLR library (Kell et al 2007).</p> <p>A major improvement of note was the integration of fundamental links between the North Sea ecosystem and the stock dynamics of the autumn spawning herring The assessment now includes variable estimates of natural mortality (M) at age derived directly from a multispecies stock assessment model, the SMS model, used in WGSAM (ICES, 2011b; Lewy and Vinther 2004)</p>

PI 1.2.4		There is an adequate assessment of the stock status		
b	Guidepost	The assessment estimates stock status relative to reference points.		
	Met?	(Y)		
	Justification	An annual assessment of stock status is carried out by the ICES assessment working group HAWG. The results of the assessment of stock status are reviewed by the ICES advisory committee. The ICES advisory committee (ACOM) provides their annual advice on the basis of the stock status in relation to SSB and F reference points. These reference points are kept under regular review.		
c	Guidepost	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	(Y)	(Y)	(Y)
	Justification	<p>The main uncertainties in relation to the assessment are addressed under 1.2.2 and 1.2.3. They are the potential for unaccounted mortality, consistency and reliability of the survey data, recruitment predictions, and changes in catchability at age. These sources of uncertainty are clearly identified by the assessment working group and their potential effect, on the estimation of stock status, evaluated annually.</p> <p>The new (SAM) assessment model now clearly identifies uncertainties in the data and these are generated within the model for all estimated parameters. The model also estimates the precision of each data source and uses this estimate to weight them appropriately in the optimized model.</p> <p>This assessment benefits from a range of fishery independent surveys which include acoustic surveys, a bottom trawl survey, a fine meshed ring net survey and larvae surveys. Analysis of these survey data provides indices of the abundance of various age groups.</p> <p>All the potential sources of uncertainty together with the survey indices are carefully considered during the exploratory phases of the annual assessment and taken into account before a final assessment is produced.</p> <p>The important parameters, in relation to the evaluation of stock status relative to reference points are the estimates of spawning stock biomass and fishing mortality. A major feature of the outputs from the new assessment modelling procedure is that these output parameters are now expressed in terms of an estimated value with the 95% confidence intervals of those estimates included. The model also provides 95% confidence intervals on the estimates of recruitment and total stock biomass. This fully meets the requirements at SG 100 that stock status is estimated relative to reference points in a probabilistic way.</p>		
d	Guidepost			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			(Y)

PI 1.2.4		There is an adequate assessment of the stock status	
	Justification	<p>The explanation of the process of model exploration and change dating back to 1972 is comprehensively covered under a) above. The process has culminated in a radical change to a completely different modelling procedure for this stock. Before this change was made various alternatives were rigorously explored by a group of experts convened by ICES to examine the assessment of pelagic stocks. The group also rigorously explored the input data to the assessment and made recommendations in that respect to a subsequent benchmark assessment workshop. These recommendations were further explored at the benchmark workshop and where considered appropriate were accepted and used in the 2012, 2013 and 2014 assessments. The new model is now being widely used for the assessment of other pelagic stocks including other herring stocks in the ICES area.</p> <p>It is an established and routine element of ICES assessment working group procedures that all the assessment input data are carefully checked and examined for potential problems before being accepted into the assessment process. After validation numerous runs of the assessment model are made. These separate runs explore potential data defects and their impact on the assessment. This is a well-established rigorous process of all ICES stock assessment working groups with the ultimate aim of providing managers with the most dependable estimate of the status of a stock. As a part of this annual process it is routine to explore other assessment models, where time permits, and compare the results with the established modelling procedure. Because of the major change to the new model in 2012, and the rigorous exploration of potential alternatives leading up to that change, no exploratory assessment runs were made during as a part of either the 2013 or 2014 assessments</p>	
e	Guidepost		<p>The assessment of stock status is subject to peer review.</p> <p>The assessment has been internally and externally peer reviewed.</p>
	Met?	(Y)	(Y)
	Justification	<p>The assessment is subject to peer review within EU / Norway agreement, by the HAWG and the ICES advisory committee, ACOM. Any one of these bodies can comment on the assessment and request either further explanation or ask for changes to be explored.</p> <p>The assessment of the stock is also subject to rigorous annual review at a number of levels. The EU / Norway annual meeting reviews the results of the assessment independently of ICES, as does the EU advisory committee on fisheries and aquaculture, even though some of the scientists involved in both these groups also participate in the HAWG meetings. Within ICES, the stock assessments are subject to internal peer review by the ICES advisory committee ACOM before advice is provided to the EU / Norway management body. ICES also commissions occasional periodic reviews of specific stock assessments and its overall assessment methodology. This is strongly evidenced in relation to the current assessment and the major changes recommended to the modelling procedure.</p> <p>Assessments methods and management procedures and advice are also subject to frequent scrutiny by a range of third parties in particular from the fishing industry, through the Pelagic Regional Advisory Council (Pelagic RAC) and to a variety of environmental NGOs such as The North Sea Foundation, Greenpeace, and the WWF.</p>	
References		ICES, 1996; ICES, 2005; ICES, 2011a; ICES, 2011c; ICES, 2011d; ICES, 2012a; ICES, 2012c; ICES, 2012d; ICES, 2013a, 2013b; ICES, 2014b; ICES 2015a; ICES 2015b; Kell et	

PI 1.2.4	There is an adequate assessment of the stock status		
	al, 2007; Lewy and Vinther, 2004; Nielsen and Berg, 2014; Patterson, 1998; Payne, 2010; Simmonds, 2009.		
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			

Evaluation Table for PI 2.1.1

PI 2.1.1		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		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Main retained species are likely to be within biologically based limits (if not, go to scoring issue c below).	Main retained species are highly likely to be within biologically based limits (if not, go to scoring issue c below).	There is a high degree of certainty that retained species are within biologically based limits and fluctuating around their target reference points.
	Met?	Y	Y	N
	Justification	<p>The fishery is highly selective with low levels of bycatch, and catch levels of non-target species which are extremely low in relation to total catches of each species concerned. None of the retained species/stocks which may be affected by the fishery is of high value or vulnerability and all are significantly less than 5% of the total catch. There are, therefore, no main species and so SG60 and SG80 are met.</p> <p>The only retained species recorded is horse mackerel taken as a bycatch in the herring directed fishery. This only amounts to (at most) 2.14% of the total catch over the period 2012-2014. Horse mackerel is considered by ICES likely to be below its target reference point and so the fishery scores at 80 for this Scoring Issue (SI). Mackerel may occur as a retained bycatch species, although it has not been recorded in the data provided. Should mackerel occur, this would lead to an increase in scores under current mackerel stock conditions.</p>		
b	Guidepost			Target reference points are defined for retained species.
	Met?			N
	Justification	For horse mackerel, the ICES qualitative estimation is the only available assessment and does not include reference points. Accordingly, SG100 is not met.		

PI 2.1.1		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		
c	Guidepost	If main retained species are outside the limits there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.	If main retained species are outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.	
	Met?	Y	Y	
	Justification	There are no main retained species in any of the fisheries.		
d	Guidepost	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.		
	Met?	Y		
	Justification	<p>The only species for which the status may be poorly known is horse mackerel; this is subject to qualitative only assessment by ICES. Nevertheless, ICES specify a TAC of 99 304 mt. The highest retained species bycatch in the NIPSG fisheries is around 26 mt in the purse-seine fishery, due to the high (and improving) selectivity of the fisheries.</p> <p>Operational practices within all of the fisheries are therefore sufficient to prevent the fisheries causing this species to be outside any appropriate biologically based limits, nor to hinder recovery.</p>		
References	Meeting NIPSG Meeting DARD DARD 2015. NIPSG landing figures http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/hom-nsea.pdf			
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				-

Evaluation Table for PI 2.1.2

PI 2.1.2		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		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures 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.	There is a partial strategy 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.	There is a strategy in place for managing retained species.
	Met?	Y	Y	Y
	Justification	Operationally, fishing is undertaken such that bycatches are minimised, this represents the key strategy for managing retained species in this fishery and meets SG100.		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	Y
	Justification	Most importantly, the low levels of non-target catch show the effectiveness of the operational measures to minimise bycatches. In addition, qualitative evaluation is undertaken for horse mackerel. Information on the effectiveness of strategies is therefore based on both the fishery and the species involved. SG100 is therefore considered to be met.		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	Y

PI 2.1.2		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		
	Justification	Evidence of recording of bycatches in the NIPSG fishery is provided by the comprehensive data available and the inspections of landings. The low levels of non-target species demonstrate the selectivity of the fisheries.		
d	Guidepost			There is some evidence that the strategy is achieving its overall objective.
	Met?			Y
	Justification	The low levels of non-target species demonstrate the selectivity of the fisheries.		
e	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	Sharks are not caught in this fishery.		
References	Meeting client Meeting DARD DARD 2015. Landings by NIPSG vessels. http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/hom-nsea.pdf			
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				-

Evaluation Table for PI 2.1.3

PI 2.1.3		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		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Qualitative information is available on the amount of main retained species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
	Met?	Y	Y	N
	Justification	With the exception of slippages for safety reasons etc (which are reported to be uncommon in the NIPSG fleet, but the scale of slippage/discarding is not quantified), it is understood that all catches are landed. Accurate data is available on landings of all retained species from electronic logbooks and landing reports, verified by inspections (including on exiting the Norwegian zone if fishing is undertaken there).. The consequence of catches for the status of affected populations is determined through ICES assessments for all species.		
b	Guidepost	Information is adequate to qualitatively assess outcome status with respect to biologically based limits.	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.
	Met?	Y	Y	Y
	Justification	Accurate data is available on landings. This is entirely sufficient to quantitatively determine, with a high degree of certainty, the effect of catches on the status of all affected stocks.		
c	Guidepost	Information is adequate to support measures to manage main retained species.	Information is adequate to support a partial strategy to manage main retained species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	Y
	Justification	Information is comprehensive and fully quantified. There is a significant time-series of data for comparison. Information is therefore fully adequate to (in a small way) support a strategy to manage each of the retained species and to determine the efficacy of such strategies.		

PI 2.1.3		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		
d	Guidepost		Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
	Met?		Y	Y
	Justification	The current recording and monitoring programmes, considered sufficient to quantitatively evaluate effects of the fishery on stock status are ongoing. Recording of landings is more than sufficient to assess ongoing mortalities of all retained species.		
References		Meeting NIPSG Meeting DARD DARD 2015. NIPSG landing figures		
OVERALL PERFORMANCE INDICATOR SCORE:				95
CONDITION NUMBER (if relevant):				-

Evaluation Table for PI 2.2.1

PI 2.2.1		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		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Main bycatch species are likely to be within biologically based limits (if not, go to scoring issue b below).	Main bycatch species are highly likely to be within biologically based limits (if not, go to scoring issue b below).	There is a high degree of certainty that bycatch species are within biologically based limits.
	Met?	Y	Y	Y
	Justification	Other than those retained species discussed above, there are no bycatch species taken in the fishery (or if there were the occasional incidental catch, this would be exceptionally rare and negligible in its impact). The fishery therefore meets SG100.		
b	Guidepost	If main bycatch species are outside biologically based limits there are mitigation measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding.	If main bycatch species are outside biologically based limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery and rebuilding.	
	Met?	Y	Y	
	Justification	There are no main bycatch species in this fishery.		
c	Guidepost	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the bycatch species to be outside biologically based limits or hindering recovery.		
	Met?	Y		

PI 2.2.1		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
	Justification	The extremely high selectivity of the NIPSG fishery, akin to other small pelagic fisheries, avoids capture of non-retained bycatch species; the fishery would not, therefore, cause any bycatch species to be outside biologically based limits nor hinder their recovery.
References	Meeting NIPSG Meeting DARD DARD 2015. NIPSG landing figures	
OVERALL PERFORMANCE INDICATOR SCORE:		100
CONDITION NUMBER (if relevant):		-

Evaluation Table for PI 2.2.2

PI 2.2.2		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		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary, that are expected to maintain the main bycatch 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.	There is a partial strategy in place, if necessary, that is expected to maintain the main bycatch 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.	There is a strategy in place for managing and minimizing bycatch.
	Met?	Y	Y	Y
	Justification	The strategies described above relating to retained species, most particularly the operational strategy to minimise non-target catches through selective fishing apply also to bycatch species. This is extremely effective in minimising bycatch such that additional management is not required.		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	Y
	Justification	Recording of catches is undertaken on vessels, and can be verified by at-sea inspections. Studies have been undertaken on other similar vessels, such as the Scottish fleet, with results supporting the conclusions here.		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	Y

PI 2.2.2		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		
	Justification	All evidence from the client, DARD, and other similar small pelagic fisheries support there being a high level of selectivity.		
d	Guidepost			There is some evidence that the strategy is achieving its overall objective.
	Met?			Y
	Justification	All evidence from the client, DARD, and other similar small pelagic fisheries corroborate the success of the objective to avoid bycatch within the fishery.		
References	Meeting NIPSG Meeting DARD DARD 2015. NIPSG landing figures			
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				-

Evaluation Table for PI 2.2.3

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Qualitative information is available on the amount of main bycatch species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main bycatch species taken by the fishery.	Accurate and verifiable information is available on the catch of all bycatch species and the consequences for the status of affected populations.
	Met?	Y	Y	Y
	Justification	Accurate data on catches is obtained from electronic logbooks and landing reports. Landings are verified by DARD inspections, and inspections of landings into other ports outside Northern Ireland by national authorities. Catches of non-commercial (retained) species have consistently been shown to be zero or de minimis and so consequences for any affected populations will be clear. Scientific observations support this.		
b	Guidepost	Information is adequate to broadly understand outcome status with respect to biologically based limits	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty.
	Met?	Y	Y	Y
	Justification	As described above, information on catches is quantitative. This is more than adequate to confirm that the consequence of the <i>de minimis</i> catches of bycatch will be negligible.		
c	Guidepost	Information is adequate to support measures to manage bycatch.	Information is adequate to support a partial strategy to manage main bycatch species.	Information is adequate to support a strategy to manage bycatch species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	Y
	Justification	Current and historical information on the fisheries is considered adequate to support any strategies considered appropriate to manage bycatches (although the requirement for such strategies appears very remote).		

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch		
d	Guidepost		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).	Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.
	Met?		Y	Y
	Justification	There is considered sufficient ongoing surveillance of the fisheries through recording of catches, inspections and other scientific programmes, to determine any increase in risk – should a species reach such levels of catch that it approaches being a 'main' species.		
References	Meeting NIPSG Meeting DARD DARD 2015. NIPSG landing figures			
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				-

Evaluation Table for PI 2.3.1

PI 2.3.1		<p>The fishery meets national and international requirements for the 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>		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species.	The effects of the fishery are known and are highly likely to be within limits of national and international requirements for protection of ETP species.	There is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species.
	Met?	Y	Y	Y
	Justification	<p>Probabilistically, a high degree of certainty means a 90% chance that the effects of the fishery are within relevant protection requirements. There is no indication from any source of direct harm to ETP species.</p> <p>Although statistical data on interactions is not available, all evidence (catch composition data and consultations with fishers, scientists and managers) suggests, with a high degree of certainty that the effects of the fishery on ETP species are within any national or international requirements and that there are negligible mortalities arising. SG100 is therefore met.</p>		
b	Guidepost	Known direct effects are unlikely to create unacceptable impacts to ETP species.	Direct effects are highly unlikely to create unacceptable impacts to ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the fishery on ETP species.
	Met?	Y	Y	Y
	Justification	As detailed above, all evidence suggests, with a high degree of certainty, that there are no significant detrimental direct effects of the fishery on any ETP species.		
c	Guidepost		Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?		Y	Y

PI 2.3.1		<p>The fishery meets national and international requirements for the 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>	
	Justification	<p>As herring, and the fisheries, are pelagic (avoiding indirect impacts through habitat disturbance), and as discussed earlier, bycatches are extremely low and are taken from relatively abundant stocks (so removal of this additional biomass will have negligible effects) indirect effects would arise from trophic disturbances caused by the removal of herring biomass.</p> <p>Trophic models have been produced in the North Sea (Ecopath with Ecosim, Mackinson and Daskalov, 2007) including herring; trophic linkages are therefore understood. As described in Section 3.3, the North Sea herring population has varied widely over recent decades without any apparent effect on associated ETP species.</p> <p>The indirect effect of the fisheries then, in removing herring from the North Sea within the current managed framework, can be considered with a high degree of confidence not to significantly detrimentally affect ETP species. SG100 is therefore met.</p>	
References		<p>Meeting NIPSG</p> <p>Meeting DARD</p> <p>Mackinson and Daskalov, 2007</p>	
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			

Evaluation Table for PI 2.3.2

PI 2.3.2		<p>The fishery has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species. 		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place that minimise mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	Y	Y	N

<p>PI 2.3.2</p>	<p>The fishery has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species. 			
	<p>Justification</p>	<p>The fishery is subject to the national legislation of the UK, EU (Norway if fishing in Norwegian waters) and International legislations and Conventions. The UK (and EU states and Norway) has ratified CITES and implemented relevant EU Directives have been ratified (namely Habitat Directive 92/43/EEC, and the Bird Directive 2009/147/EC). Council Regulation (EC) 1380/2013 on the Common Fisheries Policy is to ensure exploitation of living aquatic resources in such a way so as to provide sustainable economic, environmental and social conditions. To this end, the Community should, among other things, minimise the impact of fishing activities on marine ecosystems, and the Common Fisheries Policy should be consistent with other Community policies, in particular with environmental policy. Council Regulation No. 812/2004 adopted on 26 April 2004 obliged Member States to use acoustic deterrent devices or ADDs (notably pingers) in particular gillnet fisheries, and to implement at-sea observer schemes with annual reports of incidental catch estimates. This regulation has been transposed into relevant national fisheries regulations. Under Article 6, Member States are required to report annually on the implementation of the Regulation, and the annual report must include estimates of the overall incidental catches of cetaceans in each of the fisheries concerned.</p> <p>There is sufficient knowledge in relation to the fishery and the ETP species affected by it. Reported levels of marine mammal interaction are very low, and therefore do not present a threat to affected populations. Accordingly, the management response to the potential issue of ETP bycatch is appropriate both in scope and in the measures that it implements in order to avoid impacts. Based on knowledge on ETPs that may be affected by this fishery, as well as the low level of interaction and comparisons with other pelagic trawl fisheries, there is an objective basis for stating that the measures in place are likely to avoid unacceptable impacts to ETPs. The fishery is achieving national and international requirements for the protection of ETPs</p> <p>These comprise a strategy for managing the impact of all fisheries on ETP species, with measures to minimise mortality where appropriate. These are considered likely to achieve, but not necessarily exceed, national and international requirements for protection of ETP species. SG80 is therefore met, but not SG100.</p>		
<p>b</p>	<p>Guidepost</p>	<p>The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).</p>	<p>There is an objective basis for confidence that the strategy will work, based on information directly about the fishery and/or the species involved.</p>	<p>The strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.</p>
<p>Met?</p>		<p>Y</p>	<p>Y</p>	<p>N</p>

PI 2.3.2		<p>The fishery has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species. 		
	Justification	<p>Ongoing information on bycatches is collected under EC 812/2004, which supports measures to manage potential impacts on ETP species. Stakeholder comments and information on compliance confirms that herring quota are carefully monitored and enforced. Fishing practices will naturally avoid ETP interactions. All available information on both the fishery and the species involved points to an operational and legislative strategy producing a low risk of the fishery affecting ETPs. SG80 is met, but the lack of a quantitative assessment means that SG100 is not met.</p>		
c	Guidepost		There is evidence that the strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	Y
	Justification	<p>All available information, on the development and implementation of regulations, the compliance with regulations, fishing practices etc all provide clear evidence that the ETP conservation strategy is implemented successfully in relation to the herring fishery.</p>		
d	Guidepost			There is evidence that the strategy is achieving its objective.
	Met?			Y
	Justification	<p>As above, the management strategy is clearly successful with regard to the North Sea herring fishery as all available evidence suggests interactions with ETP species to be minimal, and to be no threat to populations of ETP species in the area of the fisheries.</p>		
References		<p>Stakeholder meetings ICES 2014i; ICES. 2014j. EC 812/2004; Habitat Directive 92/43/EEC; Bird Directive 2009/147/EC http://www.scotland.gov.uk/Topics/marine/seamanagement/national http://www.irishseamaritimeforum.org/wp-content/uploads/2013/06/North-Ireland-ISMF-Conference-Glasgow.pdf http://www.marine.ie/Home/site-area/areas-activity/marine-environment</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				90

PI 2.3.2	The fishery has in place precautionary management strategies designed to: <ul style="list-style-type: none">• Meet national and international requirements;• Ensure the fishery does not pose a risk of serious harm to ETP species;• Ensure the fishery does not hinder recovery of ETP species; and• Minimise mortality of ETP species.
CONDITION NUMBER (if relevant):	-

Evaluation Table for PI 2.3.3

PI 2.3.3		Relevant information is collected to support the management of fishery impacts on ETP species, including: <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species. 		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.	Sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.	Information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty.
	Met?	Y	Y	Y
	Justification	<p>Good and quantitative information on seabird populations is collected by national agencies across Europe, including, for UK waters, by the JNCC seabirds at sea team. Similar information on marine mammals and other aquatic species is collected and collated. The Sea Mammal Research Unit, based in Scotland, also collates information on marine mammals as well as conducts specific surveys. These feed into international programmes, for example those initiated by ratifying the OSPAR convention. Information is sufficient to estimate outcome status of all affected species with a relatively high degree of certainty.</p> <p>There are several recent large scale abundance estimates for small cetaceans and pinnipeds for the NE Atlantic: a study conducted in 1996 (e.g. Hammond et al 2002 - SCANS) covered the waters to the East and SW of England, plus Skagerrak and Western Baltic, with a further study in 2005 including the NE Atlantic (SCANS-II; Evans and Hintner 2010). The number of seals in Division VIaN is thought to have increased over the last 10 years (ICES 2011). The level of risk that this fishery presents to potentially affect ETP species populations in the region is low.</p>		
b	Guidepost	Information is adequate to broadly understand the impact of the fishery on ETP species.	Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species.	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	Y	Y	N
	Justification	<p>All information on the fishery (e.g. ICES 2014 and other information sources such as gear types used) is sufficient to determine that the fishery is not a threat to protection or recovery of populations of ETP species in the area of the fishery.</p> <p>There is not, however, sufficient information to determine the magnitude of all impacts on such species.</p>		

PI 2.3.3		Relevant information is collected to support the management of fishery impacts on ETP species, including: <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species. 		
c	Guidepost	Information is adequate to support measures to manage the impacts on ETP species.	Information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy 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.
	Met?	Y	Y	Y
	Justification	<p>The key elements of the ecosystem (those features most crucial to giving, in this case, the pelagic ecosystem its characteristic nature and dynamics) are relatively well understood: primary and secondary productivity and the predator-prey relationships of zooplankton – small pelagic fish - larger predators (fish, birds and mammals). Information is available to reasonably well understand each of these and the linkages between them – most notably through Ecopath-Ecosim models in the North Sea.</p> <p>In relation to the North Sea herring fishery, there is, therefore:</p> <ol style="list-style-type: none"> Reliable information available from all stakeholders consulted, and from general ecosystem studies, on the nature and extent of interactions of the fishery with ETP species, this includes direct and indirect linkages. Good information available on the status and trends of ETP species which may be affected combined with ongoing monitoring. <p>This is considered sufficient to support a comprehensive strategy to manage impacts on ETP species, and evaluate with a high degree of certainty whether such a strategy is achieving its objectives.</p>		
References	<p>https://www.gov.uk/government/publications/protected-marine-species http://www.smru.st-andrews.ac.uk/ ICES 2014d Hammond, PS, etal, 2002 Evans, PGH, Hintner, K, 2010 Meeting AFBI Mackinson and Daskalov, 2007 http://www.ncof.co.uk/Ecosystem-Modelling.html SCANS - II– see www.smru.st-andrews.ac.uk and biology.st-andrews.ac.uk/scans2/documents/issue9_Dec06.pdf Council Regulation No. 812/2004.</p>			
OVERALL PERFORMANCE INDICATOR SCORE:				95
CONDITION NUMBER (if relevant):				-

Evaluation Table for PI 2.4.1

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	There is evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
	Met?	Y	Y	Y
	Justification	<p>The fishery takes place predominantly in the northern North Sea (Area IVa rather than in the shallower waters of IVc VIId) and only pelagic gear is used. All informed viewpoints, including assessment teams and stakeholders engaged in this and other MSC assessments for North Sea herring and other pelagic fisheries are clear that such gear would not normally come into contact with the seabed –pelagic gear being prone to substantial damage from such contact.</p> <p>It is therefore highly unlikely that the fishery would significantly encounter, let alone affect, benthic habitat. The fisheries considered here occur in open oceanic waters, the effect on oceanic waters would be negligible. The pelagic habitat is further monitored through remote sensing and oceanographic studies of currents and water temperatures.</p> <p>Because there is evidence that this fishery is limited to open waters and the impact of fishing on this habitat is negligible, SG100 is met.</p>		
References		Meeting DARD Meeting NIPSG		
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				-

Evaluation Table for PI 2.4.2

PI 2.4.2		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		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of the fishery on habitat types.
	Met?	Y	Y	N
	Justification	<p>A strategy would be designed to specifically manage the effects of the fishery on habitats and contain mechanisms to modify fishing practice in light of unacceptable effects. Such measures are adopted for demersal fisheries, such as for the protection of sensitive habitats, but do not include pelagic fisheries.</p> <p>Nevertheless, there is a partial strategy in that targeted fishing for herring is only conducted with pelagic gear: fishermen using pelagic gear then utilise an operational strategy to target herring shoals in the water column and avoid contact with the seabed. Sufficient monitoring and surveillance is in place to detect any significant change in this fishing pattern.</p>		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).	There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or habitats involved.
	Met?	Y	Y	N
	Justification	There is sufficient objective information on the operation of the fishery to provide a high level of confidence that the partial strategy described above will work. There is not a strategy and so it cannot be tested – SG100 is not met.		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	N

PI 2.4.2		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	
	Justification	All evidence is that compliance with fishing regulations is good. Only pelagic gear is used. Again, all evidence is that fishers using pelagic gear will avoid contact with the seabed. SG80 is therefore met but the absence of a strategy means that SG100 is not met.	
d	Guidepost		There is some evidence that the strategy is achieving its objective.
	Met?		N
	Justification	There is not a strategy, <i>per se</i> , in place.	
References	Meeting DARD Meeting NIPSG		
OVERALL PERFORMANCE INDICATOR SCORE:			80
CONDITION NUMBER (if relevant):			-

Evaluation Table for PI 2.4.3

PI 2.4.3		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		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There is basic understanding of the types and distribution of main habitats in the area of the fishery.	The nature, distribution and vulnerability of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.
	Met?	Y	Y	Y
	Justification	For the pelagic habitat, the general circulation patterns, water temperatures, nutrient levels, plankton blooms etc. are known throughout the NE Atlantic and North Sea. This is of principal concern for herring. Benthic habitats are also well known over the North Sea, particularly in relation to vulnerable habitats.		
b	Guidepost	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.	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.	The physical impacts of the gear on the habitat types have been quantified fully.
	Met?	Y	Y	N
	Justification	Sufficient information is available to a) determine the effect on pelagic habitat, which will be negligible and b) to determine that the gear used will not come into contact with benthic habitats to any significant extent. There is excellent information on the timing and location of fishing activities through electronic logbook and VMS records. Impacts of gear on habitat types have not been quantified however – resources being directed towards more important investigations.		
c	Guidepost		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).	Changes in habitat distributions over time are measured.

PI 2.4.3		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		
	Met?		Y	Y
	Justification	<p>The principal concern in relation to effects on benthic habitat would be a change in the operation of the fishery. This is closely monitored by DARD and POs. SG80 is therefore met.</p> <p>The principal habitat change of concern for herring would be massive changes in spawning habitats and changes in water chemistry affecting secondary production. Habitat types are monitored in the North Sea and long-term data sets are available on various oceanic parameters in the North East Atlantic and these continue to be monitored, along with zooplankton and herring distributions. SG100 is therefore met.</p>		
References	<p>MESH, at www.searchmesh.net</p> <p>OSPAR Commission 2010. Quality Status Report 2010. OSPAR Commission, London. 108 + vii pp. At www.ospar.org</p> <p>Scotland's Marine Atlas www.scotland.gov.uk/Publications</p> <p>UK Sea Map 2010 http://jncc.defra.gov.uk/page-2117</p> <p>MAREANO habitat maps at http://mareano.no/en/maps/mareano_en.html</p>			
OVERALL PERFORMANCE INDICATOR SCORE:				95
CONDITION NUMBER (if relevant):				-

Evaluation Table for PI 2.5.1

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	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.	There is evidence 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.
	Met?	Y	Y	Y
	Justification	<p>The most significant potential ecosystem impact of the North Sea herring fishery is the removal of herring biomass; both as juveniles and as adults, herring are an important source of food for some demersal fish, birds and for sea mammals (Dickey-Collas et al., 2010). Historically, spawning stock biomass has fluctuated from estimated highs of around 4.5 million tonnes in the late 1940s to lows of less than 100 000 tonnes in the late 1970s.</p> <p>Given that the current SSB is approximately half of the estimated all-time high for the stock with predictions for little change in the immediate future if the current management regime is continued, it is highly unlikely that the North Sea herring fisheries (all fisheries combined) are being conducted at a level which will not deplete the stock to a point where there would be serious or irreversible harm. As the NIPSG fishery is a small part of total fishing pressure, there is sufficient evidence that the fishery will not disrupt key elements underlying ecosystem structure and function to a significant degree such as might be indicated by trophic cascade, severely truncated size composition, depletion of top predators, gross changes in biodiversity or genetic diversity.</p>		
References		Meeting DARD Meeting NIPSG ICES, 2008. Dickey-Collas, M., Nash, R.D.M., Brunel, T., Damme, C.J.G. van, Marshall, C.T., Payne, M.R., Corten, A., Geffen, A.J., Peck, M.A., Hatfield, E.M.C, Hintzen, N.T., Enberg, K., Kell, L.T., and Simmonds, E.J. 2010. Lessons learned from stock collapse and recovery of North Sea herring: a review. - ICES J. mar. Sci., 67: 1875-1886.		
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				-

Evaluation Table for PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary.	There is a partial strategy in place, if necessary.	There is a strategy that consists of a plan, in place.
	Met?	Y	Y	Y
	Justification	Regulatory measures are in place which limit adverse effects of fishing on the marine ecosystem include EC2371/2002, EC92/43/EEC, EC2008/56/EC and EC1380/2013 Under the ICES Strategic Plan for ongoing research and provision of advice (and as described under Principle 1), there is a single-species assessment and management plan for herring and assessments of the other retained species considered above, together with consideration of wider ecosystem effects. Other ecosystem risks that may be associated with this fishery, such as bycatch (retained and discards) and habitat impacts, are managed effectively by a range of measures (see under 2.2, 2.3 and 2.4 above). The fishery is subject to effective MCS (monitoring, control and surveillance) to ensure all landings are recorded and there is good compliance in the fishery.		
b	Guidepost	The measures take into account potential impacts of the fishery on key elements of the ecosystem.	The partial strategy 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.	The strategy, which consists of a plan, contains 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. 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.
	Met?	Y	Y	Y

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
	Justification	<p>The key strategy to address the impacts of the fishery on the ecosystem is the management of the total fishing effort on North Sea herring, specifically keeping the stock fluctuating around its target reference point and above its limit reference point.</p> <p>In addition, the UK is a signatory to the OSPAR Convention and has thus ratified and adopted agreements which are designed to, amongst other things, assess the quality of the marine environment. This information feeds into fisheries management and advice.</p> <p>A long term management plan for the North Sea was outlined in 2005, addressing such issues as interactions between fisheries and ecosystem components. An ecosystem assessment of the Western European shelf seas and the North Sea was conducted by ICES, the results of which inform management advice via the relevant ICES fisheries for example. Management plans for the Norwegian sector of the North Sea is addressed in the Norwegian management plans which include for measures to address all main impacts of the fisheries on the ecosystem, including primary and secondary production, seabed habitats, fish stocks, sea birds and marine mammals.</p> <p>The aim of the plans is to ensure human activities, including the pelagic fishery, do not cause serious or irreversible harm.</p>		
c	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved.
	Met?	Y	Y	Y
	Justification	The most relevant measures are the stock assessments and management in place for the target species and retained bycatch species. While management of some species, such as mackerel and Atlanto-Scandian herring may currently face some problems, the measures overall are considered entirely appropriate to avoid serious or irreversible harm to ecosystem structure and function. Appropriate measures are also in place to deal with other ecosystem components such as protection of ETP species and areas of sensitive habitat. Information on efficacy of measures derived directly from the fishery and ecosystem concerned.		
d	Guidepost		There is some evidence that the measures comprising the partial strategy are being implemented successfully.	There is evidence that the measures are being implemented successfully.
	Met?		Y	Y

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
	Justification	There is evidence that quotas for commercial species are successfully implemented, enforcement is effective and all stocks are above limit reference points.	
	References	ICES, 2013b; ICES. 2013f; ICES 2014h; ICES 2014k; EC (1992) Council Directive (EC) 92/43/EEC Council Regulation (EC) 2371/2002 Council Directive (EC) 2008/56/EC Council Regulation EC1380/2013 http://assets.panda.org/downloads/longtermmanagementplan2005.pdf OSPAR 1992 The Convention for the Protection of the marine Environment of the North-East Atlantic; Annex IV http://qsr2010.ospar.org/en/index.html ICES horse mackerel stock assessment, at: http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/hom-nsea.pdf	
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			

Evaluation Table for PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	The key elements of the ecosystem (those features most crucial to giving, in this case, the pelagic ecosystem its characteristic nature and dynamics) are primary and secondary productivity and the predator-prey relationships of zooplankton – small pelagic fish - larger predators (fish, birds and mammals). Information is available to reasonably well understand each of these and the linkages between them – most notably through Ecopath-Ecosim models in the North Sea.		
b	Guidepost	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and have not been investigated in detail.	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and some have been investigated in detail.	Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated in detail.
	Met?	Y	Y	N
	Justification	The main interactions between the fishery and populations of herring and other pelagic species taken as retained bycatch have been investigated in detail (i.e. the extent and consequence of catches). It is not apparent that the interactions of the herring fisheries and top predators have been investigated in detail, although sufficient information is available to support a conclusion of no significant effect.		
c	Guidepost		The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.	The impacts of the fishery on target, Bycatch, Retained and ETP species are identified and the main functions of these Components in the ecosystem are understood.
	Met?		Y	Y
	Justification	The impacts of the fishery on target and retained species are fully quantified and evaluated in annual stock assessments. The impacts on bycatch and ETP species have been identified and some quantification of the level of impacts is available through the reference fleet programme. The main functions of each component, and the main element within, are understood and are again quantified through Ecopath-Ecosim models in the North Sea.		

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
d	Guidepost		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.	Sufficient information is available on the impacts of the fishery on the Components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		Y	Y
	Justification	As outlined above, information on target and retained species is adequate to allow consequences to be determined. Information on bycatch and ETP species is sufficient to allow consequences for populations to be determined, albeit with a lesser degree of accuracy. No effects on habitat are anticipated. Wider ecosystem effects may be determined or inferred through ecosystem modelling outputs and historical variability in herring populations.		
e	Guidepost		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 measures).	Information is sufficient to support the development of strategies to manage ecosystem impacts.
	Met?		Y	Y
	Justification	The level of information available, as outlined above, is sufficient to support the development of strategies to manage ecosystem effects. This is currently demonstrated through the development of management plans.		
References		ICES. 2014 Mackinson and Daskalov, 2007 http://www.ncof.co.uk/Ecosystem-Modelling.html		
OVERALL PERFORMANCE INDICATOR SCORE:				95
CONDITION NUMBER (if relevant):				-

Evaluation Table for PI 3.1.1

PI 3.1.1		<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework. 		
		Scoring Issue	SG 60	SG 80
a	Guidepost	<p>There is an effective national legal system and <u>a framework for cooperation</u> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2</p>	<p>There is an effective national legal system and <u>organised and effective cooperation</u> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.</p>	<p>There is an effective national legal system and <u>binding procedures governing cooperation with other parties</u> which delivers management outcomes consistent with MSC Principles 1 and 2.</p>
	Met?	(Y)	(Y)	(N)
	Justification	<p>The Northern Ireland administration interprets its fisheries management obligations in binding Statutory Instruments, which are aligned with UK legislation, and with CFP and other EU Regulations. The UK and Northern Ireland national legislations implement all aspects of the reformed EU Common Fisheries Policy and establish licensing, MCS and penalty procedures and as such aim at achieving sustainable fisheries in accordance to MSC P1 and P2. On the basis of the above SG60 is met.</p> <p>The management of North Sea herring is in line with best scientific advice as provided through ICES (the International Council on the Exploration of the Seas), and exercised through the setting of an annual TAC (Total Allowable Catch). The TAC is allocated between fishing nations via the EU-Norway Coastal States Agreement.</p> <p>The quota allocation to the EU is then sub-divided between Member States according to the binding EU principle of “relative stability”, meaning that the quota is consistently shared between member states according to a fixed ratio informed by historical track record in the fishery. There are also clear and binding rules governing the allocation of quota within the UK between the devolved administrations of England, Wales, Scotland and Northern Ireland. SG80 is met.</p> <p>The EU-Norway Coastal States Agreement is a bilateral arrangement, and whilst it provides an effective management plan for this fishery it does not include effective binding procedure governing cooperation between the parties. On this basis SG80 is met, but SG 100 is not.</p>		

PI 3.1.1		<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework. 		
b	Guidepost	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.	The management system incorporates or subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.
	Met?	(Y)	(Y)	(N)
	Justification	<p>As a member state of the European Union, mechanisms exist through the Council of Ministers (Fishery Council), and the European Commission for the airing, debate and settlement of disputes. At an international level, relevant bilateral and multi-lateral negotiations are undertaken between those coastal states engaged in any particular fishery, including the EU. In this context bilateral meetings regularly take place between the EU and Norway on exploitation of North Sea stocks. The current long term management plan for North Sea herring was agreed by the EU and Norway in 2008. The plan has been used as the basis for the provision of advice by ICES and the setting of an annual TAC, via the annual EU / Norway negotiations since then.</p> <p>All parties exploiting fisheries in the North East Atlantic recognise the work undertaken by national marine science institutions consolidated through ICES (the International Council for the Exploration of the Seas). ICES facilitates formal assessment of stocks, establishment of stock management levels, and provides advice on what might constitute appropriate and precautionary Total Allowable Catches (TAC). These recommended TACs are increasingly recognised by management authorities as upper exploitation levels.</p> <p>The management system applying to the exploitation of North Sea herring has a good record of facilitating and ensuring effective resolution of legal disputes at an appropriate level, and it is recognised that the management systems in place do include appropriate and transparent dispute resolution procedures that are and have been tested and proven to be effective. Amongst EU Member States negotiation outcomes are supported in law through the CFP. Negotiations with non-EU coastal states are not specifically supported in law, but are subject to political and economic sanction. Fishing in non-EU waters is subject to the laws and controls of the relevant coastal state(s).</p> <p>All the above mechanisms are transparent, and outcomes made available to the public through institution websites and publications. But because there is no legally binding basis to the EU-Norway agreement on management of the North Sea herring fishery, these systems cannot be "considered to be effective in dealing with most issues and that is appropriate to the context of the fishery". On the above basis SG80 is met, but SG100 is not met.</p>		

<p>PI 3.1.1</p>	<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and Incorporates an appropriate dispute resolution framework. 			
<p>d</p>	<p>Guidepost</p>	<p>The management system has a mechanism to generally respect 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 has a mechanism to observe 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 has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>
	<p>Met?</p>	<p>(Y)</p>	<p>(Y)</p>	<p>(Y)</p>
<p>Justification</p>	<p>The EU CFP sets out a formal commitment to the legal and customary rights of people dependent on fishing, through a commitment to relative stability (meaning Member States are consistently allocated the same proportion of particular stocks) - <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></p> <p>How the allocation is divided within member states is then laid out at national level in the National Strategic Plan (in accordance with EC no 1198/2006). The UK National Strategic Plan for the European Marine and Fisheries Fund (2014-2020) explicitly considers fishing communities and includes a number of socio-economic objectives, which can be achieved whilst remaining consistent with P1 & 2 (stock management & ecosystem) objectives. These are primarily included under Axis 4, where <i>“The sustainable development of fisheries communities is an important element of the UK’s overarching objectives to be achieved within the context of the EFF and the delivery of the national fisheries policy; support under this axis will target these communities as a priority.”</i></p> <p>In the context of UK and NI fisheries the management system clearly recognises the interests of the inshore sector, including ring fencing some quota for smaller vessels, and provision of development assistance to strengthen fishery dependent communities through improved operation and/or diversification within or out of fisheries. This national strategy was developed by both UK and devolved administrations. Further detail on how these broad objectives will be achieved is contained within the UK Operational Programme for the EMFF (2014-2020). Commitments under the CFP, supported at UK and NI levels, provide a formal commitment to the legal rights of people dependent on fishing for food and livelihood consistent with the objectives of MSC Principles 1 & 2, and are appropriate to the context and circumstances found in the UK and Northern Ireland. SG100 is met.</p>			
<p>References</p>	<p>North East Atlantic Fisheries Commission “New” Convention, 2007 Regulation (EU) No 1380/2013 on the Common Fisheries Policy</p>			

<p>PI 3.1.1</p>	<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework. 	
	<p>Regulation (EU) No 508/2014 on the European Maritime and Fisheries Fund (EMFF). http://www.pelagic-rac.org/ Securing the Benefits (All Administrations), Fisheries 2027 – a long term vision for sustainable fisheries (Defra);</p>	
<p>OVERALL PERFORMANCE INDICATOR SCORE:</p>		<p>85</p>
<p>CONDITION NUMBER (if relevant):</p>		<p>none</p>

Evaluation Table for PI 3.1.2

PI 3.1.2		<p>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>		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	(Y)	(Y)	(Y)
	Justification	<p>Vessels under assessment operate under a flag of an EU Member State within which the organisations and roles associated with the fisheries management process are well defined and understood. Exploitation of this stock by these and other vessels takes place within the EU-Norway Coastal States Agreement.</p> <p>Control ultimately remains at the national level (incorporating devolved administrations), with co-ordination between EU Member State authorities when vessels fish in the waters of other MS, and between the EU and other jurisdictions when vessels fish in waters outside, in compliance with UNCLOS. SG60 is met.</p> <p>The relationship between the contracting parties to the EU-Norway Coastal States Agreement is explicitly defined within that agreement, and, for EU Member States, is underpinned by the CFP well understood for all areas of responsibility and interaction. SG80 is met.</p> <p>The provision of scientific information by ICES and the involvement of industry and wider stakeholders (such as NGOs and post-harvest operators) via the non-governmental Pelagic Advisory Council are well understood within the management process.</p> <p>SG 100 is met.</p>		
b	Guidepost	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
	Met?	(Y)	(Y)	(N)

PI 3.1.2		<p>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>		
	Justification	<p>The Pelagic Advisory Council (PAC) is the main consultation mechanism through which industry engages with management authorities. It includes European industry and NGO representatives ensuring local knowledge is considered within the management system. PAC Working Groups meet at least four times a year to canvas views and draft recommendations. The PAC actively develops policy and advises the European Commission, and is considered as part of the EC's management system.</p> <p>The industry is also permitted some involvement as observers at NEAFC meetings and Coastal State meetings – held several times a year. SG 80 is met.</p> <p>In the case of EU consideration of PAC proposals and the work of the NI / UK Government / industry consultation, there is not always a clear explanation provided (minuted outputs or summaries) of how the information is used or not used. On this basis SG 100 is not met.</p>		
c	Guidepost		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
	Met?		(Y)	(Y)
	Justification	<p>The management system in EU and other coastal state waters does provide the opportunity for all interested parties to be involved in management. This also includes participation in the Pelagic Advisory Committee. Consultations with stakeholders revealed satisfaction with the opportunities for engagement and this is encouraged, even though these opportunities may not always be taken up.</p> <p>Member States regularly undertake wide consultation on proposed policy and legislative changes, including those at EU and regional levels. Regular and wide consultation is undertaken at both UK and Northern Ireland levels.</p> <p>A good recent example of the consultation process has been on the reform of the Common Fisheries Policy (which itself closely mirrors the consultation process that preceded the drafting of the reformed CFP in 2002). The 2009 Green paper on the reform of the CFP expressly states that its purpose is “<i>to trigger and encourage public debate and to elicit views on the future CFP. The Commission invites all interested parties to comment on the questions set out in this Green Paper</i>”. Clear guidelines were provided on how, where and when to respond. The UK Government, industry interests and other interested parties have actively taken up the opportunity to respond, as has the Pelagic RAC (now Advisory Council). These have all gone towards formulation of the reformed CFP which entered into effect on 1st January 2014.</p> <p>SG100 is met.</p>		
References		<p>Pelagic Advisory Council: http://www.pelagic-ac.org</p> <p>http://cfca.europa.eu/pages/home/home.htm</p> <p>http://www.ices.dk/</p>		

<p>PI 3.1.2</p>	<p>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>OVERALL PERFORMANCE INDICATOR SCORE:</p>	<p>90</p>
<p>CONDITION NUMBER (if relevant):</p>	

Evaluation Table for PI 3.1.3

PI 3.1.3		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		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are implicit within management policy	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy.
	Met?	(Y)	(Y)	(Y)
	Justification	<p>Each EU Member State operates under the CFP, which has clear long-term objectives that guide decision-making and are consistent with MSC Principles and Criteria (EC Reg 1308/2013). The EU's Marine Strategy Framework Directive (MSFD) adopted in 2008 sets clear objectives for the marine environment, i.e. Good Environmental Status for the marine environment by 2020.</p> <p>The United Kingdom Operational Programme for the European Marine and Fisheries Fund (2014-2020) (currently in draft form, awaiting ratification by the EC) sets out clear long term objectives to guide decision making [<i>The overarching aim of fisheries management in the UK is a fisheries industry that is sustainable, profitable, well managed, internationally competitive and helps support thriving, diverse, and sustainable local communities, managed effectively as an integral part of coherent policies for the marine and freshwater environment.</i>] This long term objective is supported by detailed explanation, instruments and targets. These commitments also cover the devolved administrations of the UK (including Northern Ireland).</p> <p>These objectives are explicit and are consistent with the MSC Principles and Criteria and clearly stipulate the precautionary approach. These are required by overarching EU management policy (Council Regulation (EC) No 508/2014).</p> <p>SG 100 is met.</p>		
References		<p>Regulation (EU) No 1380/2013 on the Common Fisheries Policy</p> <p>Regulation (EU) No 508/2014 on the European Maritime and Fisheries Fund (EMFF).</p> <p>Marine Strategy Framework Directive: http://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/marine-strategy-framework-directive/index_en.htm</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 3.1.4

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	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 perverse 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 explicitly considers incentives in a regular review of management policy or procedures to ensure they do not contribute to unsustainable fishing practices.
	Met?	(Y)	(Y)	(N)
	Justification	<p>The CFP seeks to ensure perverse incentives do not arise (was a key element of the 2002 reform of the CFP, and has been developed further in the more radical reform of the CFP that entered into force on 1st January 2014). The introduction of the Landing Obligation under the reformed CFP (from January 2015 in pelagic fisheries such as for herring and mackerel) takes a results-based approach requiring vessel operators to find ways to avoid or minimise by-catch for which they have no quota. There are also within the reformed CFP increased incentives to better balance fishing capacity and resources, and harvests with market requirements.</p> <p>At the national level, the allocation of fixed quota allocations per vessel, often under an Individual Transferrable Quota (ITQ) system, has defined fishing rights to enable longer term planning by vessel operators, which is consistent with better ensuring sustainable outcomes. This is further supported by a tight and comprehensive inspection and data capture and integration regime. There is therefore a clear incentive for operators to fish sustainably.</p> <p>Many aspects of the CFP and national management aim for sustainable behaviour, and this has been supported by more market-based instruments and incentives introduced within the reformed CFP. These are also evident in the management systems of relevant countries outside the EU (such as Norway, which has operated a “no discards” policy since 1987).</p> <p>On the above basis, SG80 is met.</p> <p>The main area of concern remains the issue of slippage. Incidences of slippage are the exception – but nevertheless they are known to occur. More could be done to demonstrate compliance. Plus, it is early days in the application of the 2014 reformed CFP and implementation of the landing obligation, which provide greater incentive to demonstration of compliance. In this context it is considered that SG100 is not met.</p>		
References		Regulation (EU) No 1380/2013 on the Common Fisheries Policy Regulation (EU) No 508/2014 on the European Maritime and Fisheries Fund (EMFF).		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 3.2.1

PI 3.2.1		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit 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 explicit 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 explicit within the fishery's management system.
	Met?	(Y)	(Y)	(partial)
	Justification	<p>This is a shared stock, and as such falls within the ambit of NEAFC. At a practical level it is subject to management via international agreement through the EU-Norway Coastal States Agreement, and within the EU via the CFP.</p> <p>Scientific advice is provided by ICES drawing on the combined professional input and data provided by the scientific research centres and laboratories of EU member countries, and countries exploiting this stock. This includes clear objectives and management plan for this stock.</p> <p>The scientific advice is used as the basis for negotiation between the principal coastal states exploiting this stock – the EU and Norway. The Coastal States Agreement process provides the core basis for management of this stock, adopting the advice provided by ICES, including the stock management system advocated by ICES, and utilising the annual Total Allowable Catch (TAC) levels set by ICES which are apportioned between fishing nations as quota.</p> <p>National and EU systems have well-defined and measurable objectives consistent with achieving P1 and P2 outcomes. For the EU this is encapsulated within the principal objective of the CFP that it “should ensure that fishing and aquaculture activities contribute to long-term environmental, economic, and social sustainability” – which is interpreted in EU, national and regional legislation. The reformed CFP, which entered into force on 1st January 2014, requires that the practice of discarding is eliminated over time. A landing obligation has been introduced for all EU small pelagic fisheries as from 1st January 2015, which prohibits the slippage of herring, and requires the recording and landing of all herring catches against quota (with very few exemptions). This new obligation is compliant with many of the requirements of P1 and P2. SG80 is met.</p> <p>The Coastal States Agreement 2014 seeks management to be “in a sustainable manner” and proposes clear short and long-term objectives for the North Sea herring stock component, which is explicit within the management system. A new Management Plan for North Sea herring embracing these requirements was agreed by ICES in March 2014. The precautionary SSB at spawning level has been reduced to 1 million tonnes; 2014 SSB at spawning time was estimated at 2.22 million tonnes - well above this level. The management plan target for fishing mortality is F0.25; estimated fishing mortality for 2014 was well below this.</p> <p>Objectives relating to P2 are higher-level objectives (e.g. “favourable conservation status” under the Habitats Directive), and are not directly (or easily) measurable, and more specific objectives relating to P2 are not explicit. Accordingly, SG100 is only partially met.</p>		
References		Regulation (EU) No 1380/2013		

PI 3.2.1	The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2	
	<p>ICES (2012). Herring in Subarea IV and Divisions IIIa and VIIId (North Sea autumn spawners). 6.4.16 Advice May 2012.</p> <p>Joint EU–Norway request on interim advice on the North Sea herring management plan. 6.3.3.4 Special request Advice November 2011. http://www.ices.dk/</p> <p>Joint EU-Norway request on management plan for North Sea herring. 6.3.3.1 Special request Advice April 2011. http://www.ices.dk/</p> <p>Joint EU-Norway request to ICES on options to revise the long-term management plan for herring in the North Sea. 6.3.3.6 Special request, Advice November 2012. http://www.ices.dk/</p>	
OVERALL PERFORMANCE INDICATOR SCORE:		90
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 3.2.2

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	(Y)	(Y)	
	Justification	<p>The EU-Norway Coastal States Agreement on North Sea herring shows that decision-making processes are in place that result in measures and strategies to achieve fishery-specific objectives.</p> <p>Independent scientific advice is sought each year and there is a commitment given within the CSA to adhere to the ICES advice provided. These decision-making processes are now well-established.</p> <p>SG80 is met</p>		
b	Guidepost	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues 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 respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	(Y)	(Y)	(N)
	Justification	<p>ICES advice and the HCR agreed by the main fishing nations exploiting this stock respond to catches and stock status.</p> <p>Management systems (MCS, etc.) respond to most issues, and authorities have been shown to respond to issues raised by the Pelagic AC. Thus SG80 is met.</p> <p>Many but not all issues are taken into account in ICES assessments, and management responses, and as such matters are not always recognised and responded to in a timely and adaptive way by the Coastal States. Therefore, SG100 is not met.</p>		
c	Guidepost		Decision-making processes use the precautionary approach and are based on best available information.	

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.		
	Met?		(Y)	
	Justification	The management plan has been reviewed by ICES and is consistent with the precautionary principle. The CSA for North Sea herring establishes that ICES advice should form the basis for decisions. Relative to most fisheries, information systems are strong in this fishery as well as in other fisheries on the same stock. SG80 is met.		
d	Guidepost	Some information on fishery performance and management action is generally available on request to stakeholders.	Information on fishery performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on fishery performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	(Y)	(Y)	(N)
	Justification	Information on fishery performance is available from ICES and NEAFC. Control agencies have provided information on fishing activities and compliance. Management Authorities provide explanations in feedback to the Pelagic AC, along with minutes of meetings being available. SG80 is met. Formal reporting on all these matters is, however, not available to all interested stakeholders and so SG100 is not met.		
e	Guidepost	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.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	(Y)	(Y)	(Y)

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.	
	Justification	EU and National systems do not permit parties to disrespect or defy the law with repeated violation of laws. Management of this fishery is by consensus and there are not disputes relating to this fishery. Overall the level of consultation and engagement of stakeholders in decision-making for this fishery is high. SG100 is met.	
References		NEAFC (2007) North East Atlantic Fisheries Commission New Convention, 2007 CFP Basic Regulation	
OVERALL PERFORMANCE INDICATOR SCORE:			85
CONDITION NUMBER (if relevant):			

Evaluation Table for PI 3.2.3

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Monitoring, control and surveillance mechanisms exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive 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.
	Met?	(Y)	(Y)	(Y)
	Justification	A comprehensive MCS system is applied across the UoC fleet in compliance with the legal requirements encapsulated within the CFP (and, as appropriate, under Norwegian and other no-EU coastal states regulations). . The various Member State control agencies involved (with international co-ordination by the European Fisheries Control Agency, EFCA) have demonstrated a consistent ability to enforce the management measures and rules applied to the fleet as has that of Norway (where UoC vessels occasionally land, and in whose waters occasional fishing is undertaken). SG100 is met.		
b	Guidepost	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	(Y)	(Y)	(Y)

<p>PI 3.2.3</p>	<p>Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with</p>			
	<p>Justification</p>	<p>Sanctions are consistently applied across the UoC fleet and are thought by control agencies consulted to provide effective deterrence. SG80 is met.</p> <p>The reformed CFP, which entered into force on 1st January 2014, requires that the practice of discarding is eliminated over time – a requirement that also extends to slippage. A landing obligation has been introduced for all EU small pelagic fisheries as from 1st January 2015, which prohibits the discarding and slippage of herring, and requires the recording and landing of all herring catches against quota (with very few exemptions). This is compliant with many of the requirements of P1 and P2.</p> <p>Scientific observer programmes are operated by the fishery laboratories of each of the UK devolved administrations and those of other relevant nations (EU member states, and others such as Norway).</p> <p>At-sea, on-landing, and supply chain monitoring is routinely undertaken by all countries participating in this fishery, providing a clear and transparent picture of fishing and post-harvest operations.</p> <p>There have been major problems of unaccounted mortality in the past. These were related to misreporting and under reporting of landings, area misreporting, discarding, high grading and slippage. Most of these problems have now been addressed through regulations and more rigorous monitoring and surveillance. High grading and slippage has been banned in EU waters since 2009 and there is a total discards ban within the Norwegian EEZ. The assessment working group accepts that there may still be some unaccounted mortality but consider that the quantities involved are very low and do not affect the annual assessment of the stock on which the harvest strategy is based. This remains the case under the new legislation. SG100 is met.</p>		
<p>c</p>	<p>Guidepost</p>	<p>Fishers are generally thought 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>Some evidence exists 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 a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.</p>
	<p>Met?</p>	<p>(Y)</p>	<p>(Y)</p>	<p>(Y)</p>
	<p>Justification</p>	<p>An extensive system of position and catch reporting is in place for all UoC vessels operating in the fishery, including e-logbooks and real-time activity through VMS data, supported by a coherent data chain including landing and on-shore inspections. Therefore, extensive evidence is available to control agencies (within the EU, and of other coastal states in whose waters fishing is undertaken and/or landings made) and this is used to inform the management of the fishery, SG80 is met.</p> <p>The assessment working group accepts that there may still be some unaccounted mortality but consider that the quantities involved are very low and do not affect the annual assessment of the stock on which the harvest strategy is based. SG100 is met.</p>		

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
d	Guidepost		There is no evidence of systematic non-compliance.
	Met?		(Y)
	Justification	No concerns have been raised in relation to the UoC vessels, and overall the considerable control systems applied to these pelagic fisheries and these vessels provides no evidence of systematic non-compliance and SG80 is met.	
References		<p>Complete archive of the ICES journal is available at: http://icesjms.oxfordjournals.org/content/by/year</p> <p>MMO (2016) Statutory Guidance on fishing in Norwegian Waters – presented by the UK Marine Management Organisation - https://www.gov.uk/government/organisations/marine-management-organisation (accessed Sept 2016)</p> <p>Government of Norway (2009) note on Norwegian support for implementation of EU Council Regulation (EC) No 1005/2008 of 29 September 2008 on IUU fishing and Norwegian catch reporting requirements - https://www.regjeringen.no/globalassets/upload/fkd/vedlegg/diverse/2009/fangstsertifikat/09-12-22-pm-fangstsertifikat.pdf (accessed Sept 2016)</p> <p>Gullestad Peter (2015) The “Discard Ban Package” – Norwegian experiences in efforts to improve fisheries exploitation patterns - http://www.fiskeridir.no/English/Fisheries/Reports/Norwegian-efforts-to-improve-fisheries-exploitation-patterns (accessed Sept 2016)</p>	
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			

Evaluation Table for PI 3.2.4

PI 3.2.4		The fishery has a research plan that addresses the information needs of management		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.	A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
	Met?	(Y)	(Y)	(N)
	Justification	<p>ICES has a well-developed study programme to review this stock and fishery, and associated research needs. Input is provided by research laboratories, industry and government, including the Pelagic Advisory Council. The annual meetings of the ICES Council ensure that members' research programmes are coordinated to meet strategic aims of robust and relevant stock assessments. The Key working group in relation to this fishery is the Herring Assessment Working Group (HAWG).</p> <p>Research / investigation are undertaken in relation to specific requirements, which generally come from the recommendations of the Stock Assessment Working Group. Members of the ICES community keep abreast of developments within the scientific community of relevance to the fishery under consideration.</p> <p>This ICES community is wider than Europe and includes relevant research elsewhere. Research contracts are left to other organisations, including Universities, (e.g. through the EC) to supplement scientific understanding relevant to the fishery and related ecosystem. All protocols for data collection and analysis of fisheries data to support fishery management decision-making are clearly laid out in Annex 5 of the HAWG working group report and this provides a clear guide and plan for routine on-going targeted fisheries research. Where specific need arises, HAWG will also highlight recommendations for research (e.g. recently for work on the recruitment index), and there is evidence that this is followed up on by research institutions.</p> <p>The research plan may not, however, be considered comprehensive with a coherent approach to research as it is delivered via several mechanisms. SG80 is met.</p>		
b	Guidepost	Research results are available to interested parties.	Research results are disseminated to all interested parties in a timely fashion.	Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.
	Met?	(Y)	(Y)	(N)
	Justification	<p>ICES advice is publicly available and other materials are published either in peer review journals or by the management authorities and research institutes themselves. SG80 is met.</p> <p>As the 'research plan' is derived from several different sources (industry and government requests to ICES, and research planning from ICES working groups, coastal states, STECF and the Pelagic AC) it cannot be stated the research plan and results are widely and publicly available. Accordingly, SG 100 is not met.</p>		

PI 3.2.4	The fishery has a research plan that addresses the information needs of management	
References	Group Blomeyer & Snaz SL and Evalutility Ltd (2011). Community Fisheries Control Agency; Five-year independent external evaluation report. http://cfca.europa.eu/pages/docs/basic%20docs/5%20year%20independent%20external%20evaluation%20of%20EFCA.pdf	
OVERALL PERFORMANCE INDICATOR SCORE:		80
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 3.2.5

PI 3.2.5		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives		
		There is effective and timely review of the fishery-specific management system		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The fishery has in place mechanisms to evaluate some parts of the management system.	The fishery has in place mechanisms to evaluate key parts of the management system	The fishery has in place mechanisms to evaluate all parts of the management system.
	Met?	(Y)	(Y)	(Y)
	Justification	<p>All parts of the management system are regularly evaluated through established mechanisms. The CFP and its component parts are reviewed internally and externally by independent evaluators via a statutory system of impact assessments and evaluations. On occasion, specific aspects of the CFP are independently evaluated by the European Court of Auditors (ECA).</p> <p>The scientific component is delivered by ICES. Its outputs are subject to peer review and assessments subject to periodic benchmarking. ICES itself has been subject to evaluation and recently restructured to better ensure management needs could be addressed.</p> <p>The member states also evaluate their own management systems on a regular basis internally and with occasional external independent evaluation.</p> <p>Each devolved administration of the UK prepares an annual report on its fishery management activities (available publicly), and these are subjected to annual scrutiny by the UK Parliament through the annual fisheries debate in the House of Commons.</p> <p>All parts of the EC and national fisheries management systems (policy, management and enforcement) are therefore subject to evaluation and SG 100 is met.</p>		
b	Guidepost	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	(Y)	(Y)	(N)
	Justification	<p>ICES advice and the EU-Norway Agreement are regularly evaluated internally with occasional external review. ICES advice is subject to regular external review (e.g. by STECF on behalf of the EU or directly by the Coastal States). SG 80 is therefore met.</p> <p>Whilst the majority of the evaluations undertaken are 'internal' either within ICES or the EC, ICES brings together a wide range of national scientists, and in so doing builds external perspectives into the assessments. Additionally, this work is periodically externally reviewed. One way in which this is done is by inviting visiting scientists (from outside of the Europe) to attend benchmarking evaluation exercises. SG80 is met.</p> <p>As such external review is <i>ad hoc</i>, it is interpreted that SG100 is not met.</p>		

<p>PI 3.2.5</p>	<p>There is a system of 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>References</p>	<p>ECA (2011) Assessment of EU Fishing Fleet Capacity. Available via: http://ec.europa.eu/fisheries/news_and_events/press_releases/2011/20111212/index_en.htm</p> <p>NEAFC (2014) Final Report of Performance Review Panel, 2014. Available at: http://www.neafc.org/node/11708</p>	
<p>OVERALL PERFORMANCE INDICATOR SCORE:</p>		<p>90</p>
<p>CONDITION NUMBER (if relevant):</p>		<p></p>

Appendix 1.2 Risk Based Framework (RBF) Outputs

The RBF was not used in this assessment.

Appendix 1.3 Conditions

There are no conditions for this fishery.

Appendix 2. Peer Review Reports

Peer Review 1 undertook a second Peer Review following the Review Of information done by the team in January 2016. The only new information for review was Principle 1. Comments have been incorporated below. Original Principle 1 scoring can be found in appendix 6.

Peer Reviewer 1

Overall Opinion

<i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i>	No	Certification Body Response
<p><u>Justification:</u> It is likely that the conclusions arrived at by the assessment team are justified by the information that is available, and the evidence presented for P1 and P3 is adequate for this purpose. However, the evidence presented for P2 is either too general or lacking in detail specific to the UoC to justify the scores given. The report also lacks an executive summary, and harmonization with other similar fisheries is superficial and insufficiently rigorous for MSC's purpose. As it stands, therefore, this assessment report has a number of shortcomings that have to be addressed before it can be considered suitable for public consultation.</p> <p>Following 2nd Peer Review specifically of P1:</p> <p>With respect to Principle 1, the conclusions arrived at by the assessment team are justified by the information that is available and the evidence presented is adequate for this purpose. However, harmonization with other similar fisheries is superficial and insufficiently rigorous for MSC's purpose (specifically in relation to conditions on other certified NS Herring fisheries).</p>		<p>Additional text and comments have been included in the report in response to specific points raised. A summary is included and harmonisation concentrated on the latest assessment to ensure consistency with current information.</p>

<i>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</i>	Yes/No	Certification Body Response
<p><u>Justification:</u> There are no conditions</p>		

If included:

<i>Do you think the client action plan is sufficient to close the conditions raised?</i>	Yes/No	Certification Body Response
<p><u>Justification:</u> No action plan is required</p>		

For reports using the Risk-Based Framework please follow [the link](#).

For reports assessing enhanced fisheries please follow [the link](#).

General Comments on the Assessment Report (optional)

It is apparent that there will need to be a substantial editing of this assessment report before it is submitted for public consultation, and I have indicated below where it is currently deficient with respect to information and evidence required for scoring. Overall, however, it is highly likely that the evidence necessary to support the scores is available.

Executive Summary – there is a note that this is to be completed for peer review, which it clearly has not been. The team members listed are not those used in the assessment.

Acoura: Included

3.1 Unit(s) of Certification and scope of certification sought – you mention Food Certification International Ltd here, is that correct?

In **3.2 Overview of the fishery** you suggest that the three vessels participate in the UoC fishery in the third and fourth quarter around the Shetland Isles and to the east of Scotland. At **Area Under Evaluation**, you state that the fishery takes place within ICES area IV (North Sea), but is it necessary to account for Divisions IVb and IVc in P2, for example.

Under **History of the Fishery**, a coloured bar chart entitled Historical fishing levels (sic) in the North Sea Herring Fishery (1947 – 2011) has no timeline and it is unclear what it is meant to portray. Which stock are we talking about, and why is the NIPSG fleet mentioned here? There must be a better history of NSAS landings available through ICES (see Fig. 11, for example).

In discussing quota management, and pelagic vessels in POs, are the Northern Ireland quota holdings and take-up for all pelagic species or just NSAS Herring? What is the purpose of the two text tables? They make little sense and was 2011 the only year with a TAC?

Under **Species (3.2.2)**, you note that there are three main herring stocks in the North Sea, with distinct spawning grounds, migration routes and nursery grounds, but do not state which of these components is prosecuted by the NIPSG fishery (presumably the Buchan Herring; or all three when they mix?). You also state that this report does not intend to provide a scientifically comprehensive description of the species (referring interested readers to useful sources), but then in **3.3 Principle One: Target Species Background**, repeat all of the foregoing and add a much more comprehensive description of the species than is necessary in an MSC assessment report. Do the special protection measures for the Downs stock in Divisions IVc and VIIId have any bearing on this assessment?

Acoura: We consider it important to address all the relevant issues related to the complexities of the North Sea herring management.

Under **The fishery in 2013**, do the vessels in the UoC come under fleet A (Directed herring fisheries with purse-seiners and trawlers (32 mm minimum mesh size) in the North Sea)?

Despite (or because of) the copious information provided with respect to P1, it is still difficult to know where the UoC fishery is actually operating, and whether, for example, there is a chance of taking WBSS herring, in which case IPI species issues arise. This needs to be clarified.

We have also made it clear in the report where and when the NIPSG vessels fish for North Sea herring. They typically fish in quarters 3 and 4 around the Shetland Isles and to the east of Scotland. They may encounter herring from all three stocks because of mixing but will not encounter WBSS herring.

In relation to lower trophic species, you mention “connectance” and the SURF index, neither of which is defined. For less well informed readers an explanation is required if the NSAS herring is not to be considered a Key-LTL stock. It might be useful here to harmonise with other NSAS herring assessments.

There are adequate references in this section for those readers wanting to explore this issue further. The same conclusions have been drawn for other North Sea herring assessments

Principle Two: Ecosystem Background - 3.4.1 Retained catch: you cite data from DARD (2015) on catches and by catches in vessels apparently targeting North Sea herring, but do not say how representative the data are (e.g. number of hauls sampled) of catches taken by the UoC. Presumably, since the UoC vessels do not sort or grade at sea and use RSW to preserve the catch until landing, this is due to market sampling/landings records. Why is mackerel included here? There is no recorded catch and it is not mentioned in scoring 1.2.1.

Acoura: Yes, all landings are analysed for composition and data recorded.

3.4.3 ETP species interactions: since this fishery is not conducted within the Celtic Sea eco-region, but in the North Sea, an appropriate list of ETP species potentially encountered by the UoC should be presented. What is the scale of coverage by independent observers in the pelagic herring trawl fishery, and is it sufficient to demonstrate the significance of the level of interaction between this herring fishery and the relevant ETP species? Is there any requirement to report incidents in logbooks?

Acoura: As there is no information from any source indicating an ETP interaction, listing all protected species in the North Sea is considered excessive.

It is particularly important that we have information on where the UoC fishery operates for **3.4.4 Habitat impacts**. At PI 2.4.3 you say “There is excellent information on the timing and location of fishing activities through electronic logbook and VMS records”, so provide VMS plots against known sensitive habitats and any protected areas (MPAs etc).

Acoura: As above, if the fishery does not impact the sea bed, presenting plots of fishing above SACs etc is not considered useful information.

Under 3.4.5 Ecosystem impacts, it would be useful to discuss the impact of excessive exploitation on herring in the past and the state of the herring stock in relation to the “gadoid outburst” (and provide sources of evidence), if only to support your assertion that that fluctuations in herring population level due to the fishery have not caused serious harm to biological diversity, community structure or productivity of the North Sea ecosystem. The present well-managed situation might well ameliorate any such effects, of course.

Acoura: it is actually considered sufficient here to note that there have been extremely large fluctuations without obvious serious consequences for the ecosystem; the point that there is currently a much more well-managed situation is noted.

3.5.2 Management Objectives: you mention that one of the aims of the EU’s marine strategies is to meet the target of populations of all commercially exploited fish and shellfish being within Sustainable Biological Limits (SBL), exhibiting an age and size distribution that is indicative of a healthy stock, by 2020. Does this replace the MSY objective and, if so, are there implications for this fishery?

It has become the norm in MSC fishery assessment reports to have a section on **Harmonisation**, detailing those fisheries that have features in common (usually the target P1 species, or gear/ecosystem effects), providing a table for comparison of relevant scores and a discussion of and justification for any substantive differences for the fishery under assessment. This has not been done here, and there is no explicit evidence that the results of the NIPSG assessment have been harmonised, in terms of outcome, with any other MSC assessment.

Comments from the repeated Principle 1 Peer Review after a review of information:

This peer review supplements that provided in September 2015, which covered the original assessment report, and deals with amendments to that report in response to the latest ICES stock assessment and advice. Specifically, it covers only the text and scoring comments (and scores) relating to Principle 1, which has now been updated to 2014 following the latest ICES assessment Working Group report prepared in March 2015). Previous comments on Principles 2 and 3 remain as before, and it is assumed that the assessment team have taken note of the general comments on the assessment report, especially where information and evidence required for scoring was considered to be deficient, and of the review of performance indicators for P2 and P3, and amended the report accordingly (as necessary).

With respect to P1, the assessment team notes that ICES’ 2015 NS Herring stock assessment is consistent with the 2014 assessment (used in the original assessment report) and that the perception

of SSB in the most recent years has only been marginally reduced compared with the 2014 assessment. However, there is confusion in the text concerning the final year of the assessments and the year they took place, and in comparisons between year estimates of SSB from different assessments, which are irrelevant if the latest assessment (March 2015) is considered to be consistent. Does Fig. 8 add anything? This needs sorting.

Given the above, why is there no comparison of F trends between the 2014 and 2015 stock assessments? It is unclear why Fig. 6 is included, which is not helped by having two captions.

It appears that the stock reference points remained unchanged in 2015, but this is not explicitly stated.

Acoura comment: The comments above have been considered by the authors in the general report text.

Performance Indicator Review

Please complete the table below for each Performance Indicator which are listed in the Certification Body's Public Certification Draft Report.

The Principle 1 review below is from the repeated Principle 1 Peer Review after a review of information

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.1.1	Yes	Yes	Yes	The evidence supports the score	
1.1.2	Yes	Yes	Yes	The evidence supports the score	
1.1.3	Yes	Yes	Yes	The evidence supports the score	
1.2.1	Yes	Yes	Yes	The evidence supports the score	
1.2.2	Yes	Yes	Yes	The evidence supports the score	
1.2.3	Yes	Yes	NA		
1.2.4	Yes	Yes	NA		
2.1.1	No	Yes	NA	The reason that SG80b is not met is that ICES has not specified reference levels for the horse mackerel stock.	Text amended.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.1.2	Yes	No	NA	SG100b is unlikely to be met because stock status for horse mackerel is only qualitatively evaluated against biomass and fishing reference levels, and is considered 'likely' to be below Bmsy. This does not support high confidence.	Text amended – primarily to emphasise that it is the operational strategy of highly selective fishing that provides the main strategy in relation to retained species.
2.1.3	Yes	Yes	NA		
2.2.1	Yes	Yes	NA		
2.2.2	Yes	Yes	NA		
2.2.3	Yes	Yes	NA		
2.3.1	No	Yes	NA	Whilst there it is highly likely that the effects of the fishery are within limits of national and international requirements for protection of ETP species, it would be useful to know that any such incidents are recorded in	Text has been amended to reflect sources of information. As this does not include a quantified evaluation, this is indeed the reason that SG100 is not met for PI 2.3.2.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
				logbooks, which may not be the case. Is this why PI 2.2. SG100a&b are not met?	
2.3.2	Yes	Yes	NA		
2.3.3	Yes	Yes	NA		
2.4.1	No	No	NA	Where is the evidence that this fishery is limited to open waters (no VMS plots) and that skippers do not fish close to the sea bed for herring during daylight? SG100 is probably met, but not on the evidence provided.	Discussions with fishers and managers included fishing locations (principally Iva) and their avoidance of bottom-contact with the pelagic gear used. The team is assured that habitat impact is not a consideration for this fishery.
2.4.2	No	Yes	NA	Though fishermen using pelagic gear utilise an operational strategy to target mackerel shoals in the water column and avoid contact with the seabed, do they do the same for herring?	Yes they do! Text amended.
2.4.3	Yes	Yes	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.5.1	Yes	Yes	NA		
2.5.2	Yes	Yes	NA		
2.5.3	Yes	Yes	NA		
3.1.1	Yes	Yes	NA		
3.1.2	Yes	Yes	NA		
3.1.3	Yes	Yes	NA		
3.1.4	Yes	Yes	NA		
3.2.1	Yes	Yes	NA	Some mention of the management targets for the herring fishery (MSY?) would be useful here	Information added

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
3.2.2	Yes	Yes	NA		
3.2.3	Yes	Yes	NA		
3.2.4	Yes	Yes	NA		
3.2.5	Yes	Yes	NA		

Peer Reviewer 2

Overall Opinion

<i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i>	Yes	Certification Body Response
<p><u>Justification:</u></p> <p>This report leaves a great deal to be desired in terms of quality of presentation and scientific content. For example, there is confusion over which ecoregion the North Sea is found, five different names are presented as members of a three-man team, more references are cited than appear in the reference list and significant background information and evidence are omitted.</p> <p>The report would undoubtedly be enhanced with a specific section on the current science programme(s) underpinning this assessment. We are told that there is a (satisfactory – Who says?) biological sampling programme but given no specific details on who, what, where and when. Similarly, for observer and RV surveys; when, where and what coverage do the trawl and acoustic surveys cover? Similarly, a specific section providing clearer detail of the MSC regime (who, what, where, when and how) would provide a firmer foundation for the scoring comments for P3.</p> <p>Of the three principles, P1 is most detailed (arguably, too detailed in some respects) but fails to make clear where this fleet fishes and how it may affect uncertainties with respect to western Baltic or Downs stock herring. (Is there an IPI issue affecting this fishery?) P3 would be improved with further detail of the MCS procedures and referencing. Of the three component parts, P2 is the least satisfactory in that it has relied too much on unsubstantiated bland reassurances. While the statements may be fundamentally correct there is a need to present specific evidence and appropriate references for the</p>		<p>The inaccuracies present in the early draft have been addressed. The other comments are dealt with in more detail in the responses below.</p> <p>Regarding a “satisfactory biological sampling programme” this is a direct quote from the ICES assessment working group (referenced). If they consider it to be satisfactory then we are not going to question their judgement.</p> <p>Similarly, all the information on observer coverage and RV surveys is in the referenced reports.</p> <p>It is very clear in the report exactly when and where the fleet fishes. In case you missed it they fish typically in quarters 3 and 4 around the Shetland Isles and to the east of Scotland. Thus they do not encounter WBSS herring.</p>

benefit of anyone who is not familiar with the North Sea herring fishery or the environment in which it takes place.	
--	--

<i>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</i>	Yes	Certification Body Response
<u>Justification:</u> No conditions have been raised.		
<i>Do you think the client action plan is sufficient to close the conditions raised?</i>	Yes	Certification Body Response
<u>Justification:</u> In the absence of conditions, there is no client action plan.		

For reports using the Risk-Based Framework please follow [the link](#).

For reports assessing enhanced fisheries please follow [the link](#).

General Comments on the Assessment Report (optional)

General

1. MSC guidelines say that the scientific name (of fish) should be given on first mention. This guidance has not been followed
 - »
 - » Acoura: OK we have put it on the Title page
2. P 13: is it certain that the trawl is never rigged for fishing close to the seabed? If the bottom corner weights are put on long legs the trawl can scrape the seabed when shoals are tight down in daylight. When this happens, the weights can have an adverse effect on hard substrata.

Acoura: Addressed in text

P1

3. Para 3.1 identifies the unit of certification as including ICES Div VIIId but “Area Under Evaluation” states that: “The fishery takes place entirely within EU waters within ICES area IV (North Sea). The diagram below (Fig.3.2) shows the extent of these ICES areas”. i.e. no mention of Div VIIId.

4. This discrepancy must be clarified.
5. "--anthropogenic activity especially in the area of marine renewable". 'Marine renewables' is short-hand jargon that should be explained fully for the benefit of those unfamiliar with the phrase.
6. "---from the Farne Islands to the Dowsing area". The Farne Islands can be found in an atlas but without it being identified in Fig 3.3.2, will the average reader know where 'the Dowsing area' is?
7. At times (e.g. pp23-26) the tenses suggest that this text has been cut-and-pasted from an earlier report; e.g. "the ICES workshop on herring management plans met in February 2008", "This arrangement enters into force on 1 January 2009", "After evaluation it is due to come into force on 1 January 2015."
8. P 36: what is 'SURF'? It is not in the list of acronyms and abbreviations.

P2

9. Under P1 reference has been made to mixed catches of North Sea and western Baltic Sea herring. In other assessments of this stock, this issue has been dealt with under P2 as retained catch of non-target fish of the same species. It may be that these vessels do not fish in the mixing area, but for harmonisation with other MSC reports the topic must be covered, not just ignored.
[Acoura: These vessels do not encounter WBSS herring in the areas where they fish.](#)
[WBSS herring only stray into the far eastern North Sea \(Division IVc\) south of Norway and off the Danish coast.](#)
10. DARD is not in the list of acronyms and abbreviations.
11. P 38: "This fishery is conducted within the Celtic Sea eco-region". Can this be true? Normally one thinks of the North Sea as being an ecoregion in its own right, well separated from the North Sea.
12. P 39: "no cetacean or seal bycatch has been seen by independent observers in the pelagic herring trawl fishery." Is there a reference to support this statement?
13. "The level of interaction between this herring fishery and the relevant ETP species is considered not to be significant." Is this simply the (unsubstantiated) view of this assessment team or is the view of a recognised assessment group, in which case a reference should be given here?
14. "---including ecosystem modelling of trophic interactions (Ecopath and Ecosim), which has included herring as a key species". This statement should be supported with appropriate references.
15. Ecosystem Impacts: There is no discussion of wasp-waistedness here. Are there the same alternative prey species to herring that are found in the North Sea or are the Celtic seas a more wasp-waisted ecosystem?
16. Whilst the text covering P2 may provide an accurate reflection of the role these vessels play, it is very superficial, not least because of the lack of references in support of the statements made and conclusions drawn.

Acoura: These points have been addressed in the body of the report, scoring comments or responses below. Wasp-waistedness is addressed in P1 as part of the rationale for this not being a key LTL species.

P3

17. "The main industry representation role is undertaken by the Scottish Pelagic Fishermen's Association". As the paragraph stands, this is incorrect as 'the main [fishing] industry representational role' is taken by the NFFO and SFF (of which the SFFA is part). I think it would be helpful if this paragraph was expanded to put the SFFA's pelagic fishery role more explicitly into a wider context. As the paragraph stands, the *Voyager* has no

- representation, but this is not the case, not least because ANIFPO is a member of the NFFO. Also, I think there should be reference to the Scottish Fishermen's Organisation. The SFO has always been present at any UK pelagic meeting I have attended.
18. "--the ICES Advisory Committee which then provides advice on the status of target and non-target stocks to the European Commission." This reads as if the EC is the only recipient of ICES advice. Strictly speaking, ICES provides advice to the international fishery commissions (NEAFC and Baltic Sea FC) and their member states or representatives (i.e. the EC for EU member states).
 19. National Management Bodies: It is true that Defra is the lead body with respect to international fisheries management and it is also true that DARD has some devolved responsibilities for NI registered vessels and vessels fishing in NI waters. This fishery, however, takes place around Scotland (and possibly even in Norwegian waters), which also has devolved responsibilities, but there is no mention of Scotland's (or Norway's) role.
 20. P 41; "Landings from this fishery are made primarily to plants in Scotland, Denmark and Norway". This being the case, what role does DARD have in monitoring and compliance? They are dependent on the enforcement authority in the receiving port but there is no mention of what and how liaison takes place.
 21. The role of STEFC is not explained, nor does it appear in the list of acronyms and abbreviations.
 22. "This process is facilitated by the Advisory Council structure and ACFA". What is ACFA and what is its role?
 23. "---) *including achievement of the Maximum Yield in Fisheries by 2015*". Is it maximum yield or maximum sustainable yield? There is a very real difference.
 24. "---the development, by the Member States, of marine strategies for their territorial waters." I think that the requirement extends beyond just territorial waters, where territorial waters, or a territorial sea, is defined by the 1982 United Nations Convention on the Law of the Sea, as a belt of coastal waters extending at most 12 nautical miles (22.2 km; 13.8 mi) from the baseline (usually the mean low-water mark) of a coastal state.
 25. Nowhere in P3 text is there an explicit account of log book recording (including whether or not ETP species are recorded), frequency of reporting fishing activity and catch levels nor timescales for arranging quota swaps and balancing the books etc. The information given is all very general and superficial.
 26. EMFF (PI 3.1.1) does not appear in the list of acronyms and abbreviations.
 27. NI, MS, PAC (PI 3.1.2) do not appear in the list of acronyms and abbreviations
 28. CSA (PI 3.2.2) does not appear in the list of acronyms and abbreviations

Acoura: Comments above have been considered in the main report.

Performance Indicator Review

Please complete the table below for each Performance Indicator which are listed in the Certification Body's Public Certification Draft Report.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.1.1	Yes	Yes	NA	Agreed	
1.1.2	Yes	Yes	NA	Agreed, but note: "This revised management plan, which <u>is</u> due to come into force in January 2015". Either change tense or explain why it has not happened.(Ditto 1.2.1d)	This revised Management Plan (Strategy) came into force in 2015 and was the basis of the ICES advice for the fishery in 2016, The plan continues to use the current biomass limit point of 800,000t as a trigger point for stock recovery action. This is clearly written in the scoring comments.
1.1.3	NA	NA	NA	NA	
1.2.1	No	No	NA	All is well and agreed except for 1.2.1c. We are told that there is "an appropriate level of biological sampling", but no detail is given here or in the main text, of what biological sampling of the commercial landings is carried out and where. Are landings from the client fleet sampled, if so by whom and where? What (level of) sampling is achieved across the international fleet and is ICES satisfied that it is adequate?	In the context of biological sampling the report is appropriately referenced and specific details are not considered necessary in the report
1.2.2	Yes	Yes	NA	Agreed	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.2.3	Yes	Yes	NA	Agreed, but wrt (a): "biological sampling process on the landings". See comments above; more detail should be given sooner than the minimal information given in (b).	<p>We do not consider that the information provided in the report and scoring comments as 'minimal' indeed we consider it to be comprehensive in terms of the requirements of this PI. As an example I have extracted two relevant pieces from the scoring comments which together with the references for even more detail are more than adequate in support of our score.</p> <p>Information on maturity and growth rates and sex ratio is routinely collected as part of the biological sampling process on the landings and also as a part of the fishery independent acoustic surveys.</p> <p><i>Basic biological data on the landings from North Sea and Skagerrak herring fisheries are routinely collected by all countries participating in the fishery. This is now a statutory requirement of all member states through EU sampling directives issued in 2008 (Comm. Regs. 2008/949EC, 2008/199, 2008/665), or complementary Norwegian regulations. Under these regulations all fleets must comply with minimum sampling levels for numbers of fish measured and aged. The biological sampling programme covered 83% of the landings in 2014. This level of sampling provides strong support for the age based analytical stock assessment process and is considered appropriate by ICES.</i></p>

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
1.2.4	Yes	Yes	NA	Agreed	
2.1.1	No	No	NA	On balance, I am prepared to accept that what has been presented is correct and that the score is appropriate. However, under P1 there is reference to mixing of NS herring with western Baltic herring, which suggests that there is possibly an IPI problem. For consistency with other MSC assessment of NS herring fisheries the IPI question should be addressed, even if it is only to explain why it is not an issue with this particular fleet.	These vessels do not encounter WBSS herring in the areas where they fish. WBSS herring only stray into the far eastern North Sea (Division IVc) south of Norway and off the Danish coast.
2.1.2	yes	No	NA	The ICES horse mackerel assessment is not robust, indeed, the words 'qualitatively' and 'likely' are used in the scoring comments. This being the case, I am far from convinced that 'high confidence' is achieved under	We agree with the reviewer on this, but the key part of the strategy is the operational strategy involving highly selective targetting of shoals. This has been well tested and shown to be very effective – hence the score awarded.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
				(b). This should be a 'N' with concomitant reduction in overall score.	
2.1.3	yes	No	NA	SG(a) "With the exception of slippages for safety reasons etc---". If there is any possibility of slippage (particularly the 'etc' element), there is not an accurate record of " <u>catch</u> ", even if there is an accurate record of landings. The fishery falls short of SG100. SG(b) For the same fundamental reason, the fishery does not meet the "high degree of certainty" standard for SG100. SG(c) As there is still uncertainty wrt slipping, information is neither comprehensive nor fully quantified. Overall score 85	Given the extremely small amounts of bycatch involved, and the extremely low levels of slippage reported by fishers and confirmed by managers and scientists, the reviewers reaction seems a little out of proportion. On balance, we feel the original score is representative of this fishery.
2.2.1	Yes	Yes	NA	Agreed	
2.2.2	Yes	Yes	NA	Agreed	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.2.3	Yes	Yes	NA	Agreed	
2.3.1	No	No	NA	I have little doubt that the conclusion is correct but I am not convinced that best use of all available information has been made. There is a paucity of referenced material to support the conclusions reached. The effects of pelagic fisheries on marine mammal and bird populations has been subject to regular review by the appropriate ICES working groups for many years. Reference to their work and conclusions should be cited.	Additional comment has been provided to justify the original score.
2.3.2	No	No	NA	As before, the score is probably appropriate but there is a paucity of supporting information. "implement at-sea observer schemes with annual reports of incidental catch estimates", "Reported levels of marine mammal interaction are very low". There has been no mention of what observer work has been undertaken with this fishery, let alone with this fleet. From what is written here, it	Various measures are in place, or being implemented, to record interactions. The most significant factor, however, is that there is unanimity among stakeholders that ETP interactions are not an issue for this fishery. Additional references have been added to this. Score unchanged

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
				might be inferred that observers have been deployed and that they have reported low levels of marine mammal interactions. This information should be presented explicitly rather than as bland reassurances. Also, it is not just about marine mammals; seabirds are also vulnerable, particularly during hauling.	
2.3.3	No	No	NA	Again, the score is probably justified but there is a paucity of supporting information. "Good and quantitative information on seabird populations is collected by Marine Management Organisation MMO." First question: what is the MMO, what is its role? It is the first time it has been mentioned in the report. Second and more pertinent question here, how, when, where and why does the MMO collect this information? I thought that it was the JNCC Seabirds at Sea team that monitored seabird populations.	This has been corrected in text.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.4.1	No	No	NA	<p>“Because there is evidence that this fishery is limited to open waters---”. We have not been shown such evidence; eg distribution of fishing activity, typical shoal distribution in water column when fishing. Also, the description of the fishing gear was fairly minimal. The bottom corners of the net must be weighted to keep the footrope down. Were these weights on the footrope or on legs? If on legs, how long were they? Longer legs are used when the gear is fished near the seabed, eg to catch herring in daytime. If the footrope weights come into contact with the seabed, they can have an effect, particularly in (biogenic) reef areas – including herring spawning substrata.</p> <p>Reduce score to 80</p>	Additional text has been included that the fishery takes place in the deeper waters of the northern North Sea. All information is that the fishery does not contact the seabed to any significant extent and so the score is not adjusted.
2.4.2	Yes	yes	NA	Agreed	
2.4.3	Yes	yes	NA	Agreed	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
2.5.1	Yes	yes	NA	Agreed	
2.5.2	No	No	NA	<p>(a) As ICES is an advisory body, how can it have an “Strategic Plan” affecting third parties? No details have been provided of this plan, what its status is and who supports it.</p> <p>(b) “A long term management plan for the North Sea was outlined in 2005,---”. This is the first mention of such a plan and it is neither referenced here nor mentioned in the text report. It is so fundamental to this PI that it should not be presented in such a superficial manner. Also, if the Norwegian seas management plans are relevant here, other aspects of the Norwegian management are relevant, as highlighted by comments elsewhere in this review.</p> <p>(c) “Information on efficacy of measures derived directly from the fishery and ecosystem concerned.” Syntax – what does it mean?</p>	<p>The ICES plan sets out future research and assessment directions, this has been added to the comments. This confirms a single species assessment and management plan going forward. The other plans mentioned are actually far less important in managing ‘this fishery’ than management measures applied to the herring stock, as outlined under PI 2.5.1. This has been clarified and additional information and references on ‘supporting plans’ included. The score is not altered as a result of these clarifications.</p>

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
				<p>(d) We are aware that quota management is well managed but this PI is dealing with an ecosystem strategy and the fisheries role within it, not just the fishery management strategy. Assuming that there is an ecosystem strategy, is there "evidence" that its measures are being "implemented successfully"?</p> <p>The comments need beefing up and rescored considered.</p>	
2.5.3	Yes	yes	NA	Agreed	
3.1.1	Yes	yes	NA	Agreed	
3.1.2	Yes	yes	NA	Agreed, but the background information wrt the PAC is rather sketchy for any reader who is not familiar with the EU RAC framework.	
3.1.3	Yes	yes	NA	Agreed	

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
3.1.4	Yes	yes	NA	Agreed, but note: "The main area of concern remains the issue of slippage. Incidences of slippage are the exception – but nevertheless they are known to occur. <u>More could be done to demonstrate compliance.</u> " This comment by the P3 author has particular relevance wrt comments at 2.1.3 above.	
3.2.1	Yes	yes	NA	Agreed	
3.2.2	Yes	yes	NA	Agreed	
3.2.3	No	No	NA	I do not dispute the final score but the information on MCS procedures presented here and in the text report is somewhat minimal. We are told little more than there is VMS on all vessels and that landings are monitored. What about surveillance at sea? What is done, by whom and with what frequency, random inspection or risk-based?	Additional information provided.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Certification Body Response
3.2.4	Yes	yes	NA	Agreed	
3.2.5	No	no	NA	What is written is true as far as it goes but there is no reference to the (devolved) UK national laboratories and enforcement agencies having to prepare annual reports (publicly available – ref 3.2.4b) for parliament (i.e. external review) of their performance or the review that is implicit (if not explicit) in the annual fisheries debate in the House of Commons.	Additional material added.

Any Other Comments

Comments	Certification Body Response
<p>Many references cited are not listed.</p> <p>Many abbreviations and acronyms used are not given in the glossary.</p>	Amended

Appendix 3. Stakeholder submissions

Meeting Record – Northern Ireland Pelagic Sustainability Group (NIPSG) Atlantic Mackerel & WOS Herring/ NS Herring

Attendees: Pieter-Jan Shoen (Head of Marine Fisheries- AFBINI) - PJS
Andy Hough (T/L & P2) – AH John Nichols (P1) – JN
Crick Carleton (P3) – CC – Carol Leiper - Note taker

Date: Friday 30th January 2015

Time / Location: 10.15 to 11.05 - Conference Call

Subjects Discussed:

- » Stakeholder Statement - Introductions
- » WoS LTL Species
- » Scientific Survey of Landings

AH - Read through the Stakeholder statement and introduced the team. He then asked PJH what his position was in AFBINI.

PJS – Head of Marine Fisheries Section

JN - Advised that there are 3 stock species

- Atlantic Mackerel
- West of Scotland Herring
- Autumn spawning stock in North Sea & Eastern Chanel Herring

PJS confirmed that the client fishery on North Sea herring was entirely in ICES Division IVa

Discussion took place between JN and PJS and clarification was sought as to the specific West of Scotland Stock PJS confirmed that it was a North Stock. AH confirmed the UoC was 6a North (6b 5b very little fishing in these areas)

PJS confirmed that this has been an issue for a while Costal 2000 ICES PJS confirmed that there would be an ICES benchmark meeting next week and he would be involved in the fringes and attending part of the meeting. 6a North and 6a south benchmark ICES historical work – study group between 2009-10 – discussion took place about using the SAM model.

JN posed the question to PJS if he considered the Herring in this area as low trophic. It was agreed that this question would be easier to answer via email and JN would email the definitions listed below to PJS.

WoS LTL Species

- i) A large proportion of the trophic connections in the ecosystem involve this stock, leading to significant predator dependency.
- ii) A large volume of energy passing between lower and higher trophic levels passes through this stock.
- iii) There are few other species at this trophic level through which energy can be transmitted from lower to higher trophic levels, such that a high proportion of the total energy passing between lower and higher trophic levels passes through this stock (ie the ecosystem is 'wasp waisted')

Scientific Survey of Landings

JN commented that there only seems to be information (scientific sampling) on landings from England, Wales and Germany, southern Ireland up to a point but nothing from France, Northern Ireland or Netherlands. PJS said he could comment on Northern Ireland but was surprised about the Dutch. JN

commented that Germany puts in a lot of effort for only 4000 tonnes but PJS advised there may be an agreement in place as Germany has a lot of heavy landings.

Management Plan

JN noted that the 2005 Management Plan is in place but modified in 2008 that the one we will be using, biomass limit 50,000 tones and an SSB management plan level of 75,000t which does not leave much of a margin for error.

Discussion took place about the area misreporting in 1990 west of the 4-degree line with catches taken in Iva and misreported to 6a PJS confirmed that the Scottish Enforcement Agency was gathering information on misreporting

JN commented on the reliability of the catch data – ICES stock assessment is noisy but SSB and F retrospective changes are down. PJS The retrospective up and down not all information of survey, there is a stock mixing issue as well.

JN commented that this would mean scoring down on the robustness of that assessment

- Misreporting
- Stock identity
- Mixing from other areas

JN confirmed he would email further questions to PJS.

Discussion took place on the landing areas of the 3 vessels. It was confirmed that the two smaller pair vessels are based in Kilkeel but landings are made in Bangor

- Havilah
- Western Viking (to join fleet April/May 2015 currently the Stephanie M)

The 3rd vessel of the fleet is the much larger Voyager which although registered in Kinkeel docks in the Shetlands.

Observer Coverage

CC discussed the controls and observer coverage that takes place on the Irish vessels. DARD are the control agency involved in Northern Ireland also VMS monitoring by other agencies. Discussion took place about the trial CCTV on-board Scottish vessels, PJS confirmed that DARD has not gone down that route. CC mentioned that the Port Inspectors in Ardglass had limited information on the 3 vessels FQA hauls 10% of them PJS asked Cc what areas he was looking at. CC confirmed he was just looking for an average. PJS confirmed that 10% of the UK quota goes to the Voyager PJS indicated there is some species swaps go on WOS – Horse Mackerel. The Pair trawl trade in rather than lease 1/3 of Irish Quota and lease another 1/3 they are always looking for more quota.

CC asked why NIPSG was “going it alone” PJS commented that they had broken away from SPSG but was not sure of the reasons for this

Landings Obligations

AH commented that Landings information was often short of verifiable information on by-catch ETP species, Mammals, Birds, basking sharks. AH asked if PJS was aware of any particular studies to provide data. He could not comment off the top of his head but would check whilst attending the ICES benchmark meeting about any Observer programmes and EU data collection programmes. AH commented for example grey seals were a natural predator for herring. AH asked when the results of benchmark study would be released. The team confirmed that they would email details of the LTL

criteria and then follow up with an email of detailed questions that may arise from information gained at the site visit.

The discussion was closed at 11.05

Meeting Record – NIPSG

Attendees: Alan McCulla

Team – John Nichols, Andy Hough

ASI – Colin Brannon

Date: 3 Feb 2015

Time / Location: 09:30 to 12:30

1. Unit of Certification

It was confirmed that the Client shall be referred to in reports etc as NIPSG. NIPSG being composed of ANIFPO and NIFPO and member vessels.

Other eligible fishers shall be restricted to other UK vessels only.

2. Information on the fishery

Confirmed that the pattern of operation of NIPSG vessels is essentially the same as SPSG vessels.

Havilah and Western Viking (replacement for Stephanie M) work as pair-trawlers.

Data on catches (and bycatches), quota allocations and swaps and areas of operation to be sourced from DARD.

NIPSG vessels operate electronic logbooks. Slippage not allowed and known to be rare (unless for safety reasons etc), Incidences of slippage recorded in logbooks.

No known interactions with ETP species, despite cetaceans being common in vicinity of vessels.

3. Management

SPSG have code of conduct. This is available to NIPSG, but not instigated as yet.

NIPSG vessels available to carry observers, as and when requests received.

Not aware of any ongoing research into increased gear selectivity etc, but vessels willing to accommodate studies (e.g. scientists carried, formally and informally on a number of trips).

Not aware of any recent developments in terms of Coastal States agreement

At-sea inspections may be carried out by Scottish Marine Protection Agency, Norwegian coastguard, Royal Navy, Irish Navy. VMS is universal. Spotter planes are still used.

Relationships with DARD and AFNI are good, particularly in identifying shared concerns re UK and EU negotiations.

Ministerial decisions are well explained, there are regular formal and informal meetings with managers, including through the Pelagic AC.

4. Traceability

All sales are direct to processors, unless through Norwegian sales organisation. No transshipment at sea takes place. No at sea processing takes place.

Actions called for:

1. Assessment team to follow up further questions with DARD and follow up remaining questions at closing meeting on 6 Feb.
-

Meeting Record – NIPSG

Attendees: P Campbell, G Griffiths, S McComiskey, J Campbell. Sea Fisheries Inspectorate DARD

Team – John Nichols, Andy Hough, Crick Carlton

ASI – Colin Brannon

Date: 4 Feb 2015

Time / Location: 10:00 to 13:00.

Subjects Discussed:

1. DARD organisation, roles and interactions with other relevant bodies

Roles and responsibilities were discussed in relation to pelagic fisheries – licensing, VMS tracking, inspections of landings etc. An organisation chart of DARD was provided. DARD holds enforcement meetings with other UK agencies at 4 monthly intervals.

2. DARD had any specific information on the area of operation of the fleets and in particular the geographical distribution of their catches.

Areas of operation are monitored via VMS. Information to be provided to team. Catches are recorded on electronic logbooks and subject to at-sea inspection.

3. Licensing procedures

Licenses are issued biennially. A copy of a current licence was provided. License variations (e.g. changes to quotas) are now issued by SMS/email.

4. Information held on vessels

Information on vessel specifications is held electronically and available to inspectors etc on request.

5. Consultation process with internal and external stakeholders

Issues of concern with industry are consulted directly. Wider consultation is organized and facilitated over issues of wider (e.g. environmental) concern. Consultation responses may be reviewed by committees of the NI Assembly.

6. Objectives and policy development

DARD strategy and internal review processes to be provided.

7. Internal and external reviews of DARD

EC audits are conducted at regular (approx.2-3 year) intervals. Internal DARD reviews on governance, performance and financial management are undertaken regularly. Performance measures are reported within the NI government on sub-annual intervals.

8. Quota allocation procedures

Quotas are determined on past track record, modified by FQAs. EU quotas are devolved to UK, thence to devolved governments and thence to POs and vessels.

9. Landing records and inspections

Landing data provided. Inspections are carried out according to EU regulations – 15% by weight, 10% by number of landings. DARD receive prior notification of all landings. Inspections can cover landings from vessels, discharge control, weighings, tanker identification and inspection of factory records

10. Monitoring, control and surveillance procedures, number of inspections, compliance issues

Information provided on inspections. No issues or concerns over compliance in this fleet. Boats and harbours may be subject to spot checks. EU landings obligation regulations to include CCTV on vessels and observer coverage. CCTV to be implemented expect mid-2015.

11. Sanctions

May extend from warnings, fixed penalties, EU penalty points or prosecution.

12. Incentives for good practice, subsidies

Access to EMFF inadmissible for vessels with penalty points.

13. Bycatches and discards – species, quantities

Landing information, including all species, to be provided.

14. Contact with seabed, particularly with sensitive habitats

No knowledge of any incidences of contact with seabed or lost gear. There is an obligation to report lost gear.

15. Interactions with Endangered, threatened and protected species

No records of any interactions with ETP species. An annual report of interactions is made to ASCOBANS, this has been requested from AFBI

16. Maps of relevant activities for these vessels for 2014 (VMS, or plot of catches by ICES rectangle - relevant activities the three fisheries), and details of what ports landings are made to.

Information to be provided.

17. DARD – information on any participation in an observer programme?

None at present.

18. Are there any relevant / related research programmes in hand – bycatch reduction?

None relevant to these pelagic fisheries.

19. What procedures are being put in place to apply / monitor the pelagic landings obligation?

Pelagic Discard Plans to be provided.

Meeting Record – NIPSG

Attendees: Alan McCulla

Team – John Nichols, Andy Hough, Crick Carleton

Date: 6 Feb 2015

Time / Location: 09:30 to 11:00

Subjects Discussed:

1. Fishery operation

Confirmed no Scottish vessels currently in NI POs

Confirmed 'Other Eligible Fishers' to include other UK vessels

CCTV implementation – no indication at present when this may be implemented in Ni vessels.

Arrangement of POs and vessel operation confirmed.

Stephanie M quota, crew and other arrangements to be transferred to replacement vessel, Western Viking

Repeated that catches may be taken from areas IV and VI, but no other herring fisheries would be prosecuted on same trips. Vessels entering Clyde fishery inspected prior to start of fishing.

2. MSC Process

Confirmed that Mackerel assessment fundamentally affected by outcome of Coastal States negotiations on quota allocation. Expect this to be reported shortly.

Initial scoring indicates no immediate issues with herring fisheries. However, scoring to be completed and report yet to be subject to Client Review, Peer review and Stakeholder Review.

Assuming all data delivered promptly, then expect scoring completed end Feb and report completed by late March. Excepting possibility of objections, assessments expected to be completed within assessment timescale (by September 2015).

To check eligibility date requirements not affected by forthcoming changes in MSC chain of custody requirements.

Appendix 3.1 Amendments made to the PCDR following stakeholder consultation

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	Pi	CAB Comment
17979	20651	118-119	Major	CR-27.10.6.1 v1.3	PI 3.1.2 scoring issue b - The rationale presented does not provide evidence of the regularity that management seeks relevant information. This is required at the SG80 level for this PI.	3.1.2	Text on the regularity of PAC and relevant NEAFC meetings has been added. The note referring to the meetings of the Advisory Committee on Fisheries and Aquaculture (ACFA) has been removed, as this structure was disbanded ahead of adoption of the reformed CFP at the beginning of 2014 (and four new Advisory Councils were added – one, of relevance here, focused on market issues).

Main ID	Subl D	PageR eferen ce	Grade	Require mentVer sion	OversightD escription	Pi	CABComment
17979	20684	6, 51	Minor	CR-27.6.1.2 v1.3	In the Executive Summary on page 6, the report states the Eligibility Date is the certification date. However in section 5.1 on page 51, the report states the Eligibility Date is 31st January 2015, which is not compliant with 27.6.1.2. Please provide a compliant Eligibility Date, including rationale and traceability assessment as required by 27.6.2.3, and ensure the date is consistent throughout the report.		For both North Sea herring and mackerel, the eligibility date is the date of certification; this has been confirmed in the report.

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	Pi	CAB Comment
17979	20694	39-41;88-101	Major	CR-27.10.6.1 v1.3	<p>Insufficient evidence is provided in sections 3.4.1-3.4.3 and within scoring justification for retained, bycatch and ETP information PIs to justify scores provided.</p> <p>PI2.1.3 scoring issue c states that: "The information is therefore adequate (in a small way) to support a strategy to manage each of the retained species and to determine the efficacy of such strategies." The comment 'in a small way' does not provide confidence that evidence presented meets the</p>	2.1.3, 2.2.3, 2.3.3	<p>The score for PI 2.1.3 a) has been changed to reflect the uncertainty surrounding slippage (Although of course the slippage mentioned in the report is of the target species mackerel, the selectivity of fishing means that bycatch is such a minor proportion of the catch that any slippage of bycatches will be extremely small). The wording of SI c has been clarified to more clearly reflect the intent of the team. PI 2.1.3 now scores 95. Again, it should be remembered that references of uncertainty of slippages relate to the target species, mackerel. PI 2.2.3 relates to bycatches other than the main non-target pelagic species. All evidence, including from AFBI which is now also referenced, has been that direct catches of 'bycatch species' are de minimis. The effects of slippage on such catches (i.e. a small proportion of a de minimis amount) have been considered negligible. Scores are unchanged. For PI 2.3.3, additional information has been added to the scoring commentary further clarifying the information available on linkages of the fishery with ETP species.</p>

Main ID	Subl D	PageR eferen ce	Grade	Require mentVer sion	OversightD escription	Pi	CABComment
					<p>SG100 level.</p> <p>PI2.1.3 scoring issue a - No evidence of level of slippage that may occur "(for safety reasons, etc.)" (page 88).</p> <p>PI2.2.3 - ACB3.1.2 requires evidence of observed and unobserved mortality of bycatch species. Slippage and discarding is reported as occurring (pages 35, 73, 78 and 88) but no evidence is provided within P2 to demonstrate that this would not impact potential bycatch species.</p> <p>PI2.3.3 scoring issue c states that: "Reliable</p>		

Main ID	Subl D	PageR eferen ce	Grade	Require mentVer sion	OversightD escription	Pi	CABComment
					information is available on nature and extent of interactions of the fishery with ETP species, this includes direct and indirect linkages". Evidence is not provided to support this statement (e.g observer records, logbooks)?		
17979	20696	9	Guidance	*N/A v1.3	On page 9 under section 3.1 reference is made to Food Certification International Ltd.		Text amended

Main ID	Subl D	PageR eferen ce	Grade	Require mentVer sion	OversightD escription	Pi	CABComment
17979	20697	50	Major	CR-27.10.6.1 v1.3	PI2.1.x - Mackerel is identified as a minor retained species in table 4.2, but is not included as a scoring element when scoring the retained species Pls.	2.1.1, 2.1.2, 2.1.3	Mackerel is not included in the scoring as it has not been recorded in catches, but it is considered in the report (although not in current scoring comments) to provide assurance that scoring would not be adversely affected if it were to be included in future bycatches. Scoring comments have been amended to make this clear.

Appendix 4. Surveillance Frequency

Table 4.1 : Surveillance level rationale

Year	Surveillance activity	Number of auditors	Rationale
1 and subsequent	Level 1, minimum surveillance: Yr 1 – review of information Yr 2 – off-site audit Yr 3 – review of information Yr 4 - On-site surveillance audit & re-certification site visit	This is the initial certification period for these UoCs and so 2 auditors are required. This will be the team leader and P1 expert.	All information required can be provided electronically to the assessment team, and electronic communications are easily and reliably available. The management system is very transparent. The Year 2 off-site audit is expected to coincide with Brexit negotiations. If the conclusions of such negotiations are released in Yr. 3, this may require a further off-site audit. There are no conditions and all Principles score over 85.

Table 4.2: Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
1 and subsequent	October	October 2017	Anniversary date of certification will allow for inclusion of recent scientific advice.

Table 4.3: Fishery Surveillance Program

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 1	Review of Information	Off-site audit	Review of Information	On-site surveillance audit & re-certification site visit

Appendix 5. Client Agreement

Acoura Marine confirm that the client has reviewed the Public Certification Report and is in full agreement with the terms of certification detailed therein.

Appendix 5.1 Objections Process

Box below for guidance - please delete, along with this note.

The report shall include all written decisions arising from an objection.

(Reference: CR 27.19.1)

Appendix 6. Original Scoring Tables for Principle 1

Due to the time elapsed between site visit and the completion of this Public Comment Draft Report, a consultation period was opened for submission of new relevant information from stakeholders (as per CR2.0 7.3.4). No new information was submitted. The team reviewed the various elements of the fishery and changes were made to the report in regards to Principle 1 while Principles 2 and 3 remained unaffected.

Following a variation approved by the MSC, Principle 1 was rescored using the CR1.3 assessment tree. The new scoring for Principle 1 is contained within the report while the original scoring and a side by side showing the changes in scoring can be found here, in Appendix 6

Evaluation Table for PI 1.1.1

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	It is likely that the stock is above the point where recruitment would be impaired.	It is highly likely that the stock is above the point where recruitment would be impaired.	There is a high degree of certainty that the stock is above the point where recruitment would be impaired.
	Met?	(Y)	(Y)	(Y)
	Justification	The North Sea autumn spawning herring stock is currently over two and a half times the biomass limit reference point (Blim) which was defined in 1997 as the minimum biologically acceptable level and redefined in 2008 as the level below which poor recruitment has been observed and can be expected. The spawning stock is predicted to have fallen slightly by spawning time in 2014 but will still be more than two times Blim. The stock is also currently well above the biomass precautionary reference point which is based on a 5% risk of SSB falling below the limit reference point. This difference affords a high degree of certainty, 95% probability, that the stock is currently above the point where recruitment would be impaired.		
b	Guidepost		The stock is at or fluctuating around its target reference point.	There is a high degree of certainty that the stock has been fluctuating around its target reference point, or has been above its target reference point, over recent years.
	Met?		(Y)	(Y)

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing	
	Justification	<p>The North Sea autumn spawning herring stock is currently two times the biomass precautionary trigger reference point and also well above the management plan upper trigger level. The SSB has been above that management plan target level since 2008 and only fell marginally below it in 2007 for the first time since 1997. The stock has therefore been at or fluctuating around its target reference point for the past 15 years.</p> <p>Changes to the assessment model in 2012 changed the perception of stock status and increased the estimates of SSB dating back over the whole time series. The new model does provide 95% confidence intervals on the estimates of SSB. The estimates of SSB at the lower confidence interval have been above the management plan trigger level since 2009 providing confidence, and a high degree of certainty, that the stock has been fluctuating around its target reference point or been above it in recent years</p>	
References		Patterson et al, 1997; ICES, 2005, 2008, 2012a, 2012c, 2013b, 2014a, 2014b	
Stock Status relative to Reference Points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Target reference point	Management plan SSB trigger.	1.5 million tonnes	2.12 million tonnes [2.54/1.76 95% CI]
	Bpa	1.0 million tonnes	
	F Management plan	F juv 0.05	F juv 0.033
	Fmsy	F adult 0.25 F0.27 (0.24-0.3)	F adult 0.214 [0.281/0.163 95%CI]
Limit reference point	Bpa	1.0 million tonnes	2.12 million tonnes [2.54/1.76 95% CI]
	Blim	800,000 tonnes	
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			

Evaluation Table for PI 1.1.2

PI 1.1.2		Limit and target reference points are appropriate for the stock		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.	Reference points are appropriate for the stock and can be estimated.	
	Met?	(Y)	(Y)	
	Justification	<p>Biological reference points, for biomass and fishing mortality have been defined and agreed since 1997 and are now embedded in a management plan endorsed by ICES. As a consequence of a new stock assessment model first used in 2013 for the assessment of stock status in 2012, and the resultant changed perception of SSB, it was considered necessary to revisit the biological reference points. This was done by an ICES Workshop (WKHELP) in 2012. The Workshop recommended some changes which were subsequently endorsed by ICES in 2013.</p> <p>The reference points meet internationally agreed standards and have been endorsed by ICES as consistent with both the precautionary and MSY approaches to managing the stock</p>		
b	Guidepost		The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of precautionary issues.
	Met?		(Y)	(Y)
	Justification	<p>The biomass limit point was set originally at the minimum biologically acceptable level (MBAL) defined in 1998 at 800,000 tonnes. This was based on the stock and recruitment relationship which shows that at SSB levels below this point poor recruitment can be expected. This reference point has been subject to thorough re-examination on a number of occasions, by ICES, the most recent in 2012. Each time the conclusion has been that the level is appropriate, precautionary and robust to uncertainty.</p> <p>It should be noted that the recent period of below average recruitment has been experienced at a time of relatively high SSB. The biomass limit point forms an integral part of the EU / Norway management plan updated in 2008, and endorsed by ICES as being consistent with the precautionary approach. Some statistical re-examinations of the stock and recruitment relationship, excluding observations before the collapse of the stock in the 1970s, have suggested that the limit reference point could be lowered to 500,000 tonnes. In consideration of precautionary issues the limit has remained at 800,000 tonnes. In response to the commitment to review the management plan a revised plan was agreed by the EU / Norway in March 2014. This revised management plan, which is due to come into force in January 2015, continues to use the current biomass limit point of 800,000t as a trigger point for stock recovery action.</p>		

PI 1.1.2		Limit and target reference points are appropriate for the stock		
c	Guidepost		The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome.	The target reference point is such that the stock is maintained at a level consistent with B_{MSY} 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.
	Met?		(Y)	(Y)
	Justification	<p>As a result of the re-examination of the reference points at an ICES Workshop in 2012 new reference points were put forward and endorsed by ICES in 2013.</p> <p>As an integral part of the EU / Norway management plan the stock is managed on fishing mortality targets as a surrogate for biomass targets. There are three levels of defined F within the management plan. Each level is related to the current state of the SSB in relation to the biomass limit level, 800,000t, and a management plan upper trigger level of 1.5 million tonnes. ICES notes that this biomass trigger point is a management point within the harvest control rule and not a biological reference point by which stock status can be judged. Fishing mortality is defined separately for juveniles (age 0-1 ringers) and adults (2-6 ringers) and reduces linearly as the biomass limit level is approached down to effectively zero if SSB falls below Blim. ($F < 0.04$ for juvs and < 0.1 for adults)</p> <p>The fishing mortality MSY reference point based on stochastic simulations with the stock and recruitment relationship is set at $F_{0.27}$ which is the mid-point of the calculated range from $F_{0.24}$ - $F_{0.3}$. This is marginally higher than the management plan F of 0.25 for adults when the SSB is above the management plan upper trigger level of 1.5 million tonnes. The management plan also addresses the fishing mortality on juveniles which is reduced in line with the reduction in fishing mortality on the adults. In this way the mortality on juveniles has been considerably reduced in recent years which clearly addresses the ecological role of the stock as a prey species. In the revised management plan, agreed by the EU and Norway in March 2014, the management plan fishing mortality level has been increased to $F_{0.26}$. This plan has not yet been fully evaluated by ICES but is due to come into force in January 2015. Changes proposed in the new management plan will be addressed in more detail under PI 1.2.1.</p> <p>The new stock assessment model takes into account fundamental links between the North Sea ecosystem and the autumn spawning herring stock dynamics. The model now includes variable estimates of natural mortality derived from a multi species stock assessment model.</p>		
Guidepost		For key low trophic level stocks, the target reference point takes into account the ecological role of the stock.		
Met?		(Not relevant)		

PI 1.1.2	Limit and target reference points are appropriate for the stock
Justification	<p>Herring is considered by ICES as an important prey item for fish, birds and sea mammals and is also considered to compete with other North Sea stocks as a zooplankton and ichthyoplankton predator. These trophic interactions were taken into account for the first time in the assessment modelling process in 2012 through the adoption of time varying estimates of natural mortality. These estimates are based on state of the art multi species modelling which shows that natural mortality of herring in the North Sea is dominated by cod and saithe and that natural mortality is greater than fishing mortality. In that context it is deemed necessary for the assessment working group to keep the dynamics of these two species under careful review as both natural and anthropogenic changes can have an impact on the population dynamics of herring. There is clear evidence that herring in the North Sea and Skagerrak are a lower trophic level (LTL) species. However it is not considered to be a key LTL species because it does not meet at least two of the three sub- criteria in CB2.3.13 in Certification requirements v1.3.</p> <p><i>i) A large proportion of the trophic connections in the ecosystem involve this stock, leading to significant predator dependency.</i></p> <p>Ecosystem modelling of the North Sea (Mackinson and Daskalov, 2007) has shown that there are numerous other species which form important sources of prey for piscivorous fish. They are mackerel, horse mackerel, sprat, poor cod, Norway pout, sandeels blue whiting, Maurolicus and juvenile saithe and cod. . According to Essington and Pláganyi, (2013) the connectance level between this herring population and others in the ecosystem would be around 3.5%. This is lower than the required 4% threshold level defined in the MSC certification requirements. In addition, the SURF index for this stock is 0.0030, which again is lower than the 0.005 threshold as defined to indicate a KEY-LTL stock as defined in in the MSC CR v1.3.</p> <p><i>ii) A large volume of energy passing between lower and higher trophic levels passes through this stock.</i></p> <p>There are numerous other species of planktivores, most of which are listed above, through which energy passes from primary production through zooplankton to fish. . According to the assessment made by Essington and Pláganyi (2013) the % of energy passing through this species to both higher and lower trophic layers, consumer biomass, was 0.47%. This is below the required 5% threshold level for a KEY-LTL stock as defined in MSC CR v1.3</p> <p><i>iii) There are few other species at this trophic level through which energy can be transmitted from lower to higher trophic levels, such that a high proportion of the total energy passing between lower and higher trophic levels passes through this stock (ie the ecosystem is ‘wasp waisted’</i></p> <p>As noted above there are numerous other prey species of planktivores which are abundant in the North Sea through which energy is passed to the top predators. Quite clearly the North Sea ecosystem is not ‘wasp waisted’</p> <p>Further, historical, evidence for herring not meeting the requisite criteria for a key LTL species can be seen when the herring stock was close to extinction in the mid-1970s, there was no evidence of other species being adversely affected. Indeed, it can be argued that the trophic role of herring was simply replaced by other species, not the least of which was the concurrent expansion of the sprat and gadoid stocks and the ‘gadoid outburst’.</p> <p>Whereas it appears that some bird populations may have an obligate dependence on juvenile sandeels, no comparable dependence has been identified for North Sea or Skagerrak / Kattegat herring.</p>

PI 1.1.2	Limit and target reference points are appropriate for the stock	
References	Essington and Plaganyi, 2013, Lewy and Vinther, 2004; Mackinson and Daskalov, 2007; ICES, 2005, 2008, 2011a, 2011c, 2012c, 2012d, 2013a, 2013b, 2014a, 2014b	
OVERALL PERFORMANCE INDICATOR SCORE:		100
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 1.1.3

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Where stocks are depleted rebuilding strategies, which have a reasonable expectation of success, are in place.		Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the specified timeframe.
	Met?	(Y/N)		(Y/N)
	Justification			
b	Guidepost	A rebuilding timeframe is specified for the depleted stock that is the shorter of 30 years or 3 times its generation time. For cases where 3 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	A rebuilding timeframe is specified for the depleted stock that is the shorter of 20 years or 2 times its generation time. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the depleted stock.
	Met?	(Y/N)	(Y/N)	(Y/N)
	Justification			
c	Guidepost	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within a specified timeframe.	There is evidence 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 specified timeframe.	
	Met?	(Y/N)	(Y/N)	

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe	
	Justification		
References			
OVERALL PERFORMANCE INDICATOR SCORE:			NA
CONDITION NUMBER (if relevant):			

Evaluation Table for PI 1.2.1

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The harvest strategy is expected to achieve stock management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.	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.
	Met?	(Y)	(Y)	(Y)
	Justification	<p>The current long term management plan was agreed by the EU Norway in 2008. The plan has been used as the basis for the provision of advice by ICES and setting an annual TAC, via the annual EU / Norway negotiations since then. The plan has remained unchanged, and is clearly achieving its objectives as evidenced by the current levels of SSB and F.</p> <p>The management plan is clearly designed to be responsive to the current status of the stock and to maintain fishing mortality and SSB at levels which constrain harvesting within safe biological limits and support the maximum sustainable yield in the long term. The plan has worked well in maintaining a relatively stable yield from fishery and maintaining SSB well above the biomass limit point and above the management plan trigger level. This has been achieved during a period of sustained poor recruitment since 2002 providing ample evidence that the plan is responsive to the state of the stock.</p> <p>The design of the management plan, based on controlling fishing mortality separately on juveniles and adults, ensures that there is a low probability that SSB will fall below the biomass limit level.</p> <p>The current levels of fishing mortality on both juveniles and adults are below the management plan levels.</p>		
b	Guidepost	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	(Y)	(Y)	(Y)

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
	Justification	<p>A management plan, which underpins the harvest strategy, was first in place in 1998 and was revised in 2008. The plan has remained unchanged since 2008 and is clearly achieving its objectives with fishing mortality defined as 'below limit', SSB above the management plan and MSY trigger levels since 2008 and the stock maintains full reproductive capacity.</p> <p>The current harvest strategy is subject to annual evaluation in the context of discussions at the assessment working group (HAWG), by the ICES advisory committee (ACOM) and during the annual EU / Norway negotiations.</p> <p>Following the change in the assessment model in 2012 there was a marked change in the historical perception of SSB. In the light of this change ICES were requested to review the reference points which underpin the harvest strategy. The reference points were re-examined by an ICES Workshop in 2012. After thorough investigation the only change recommended was a lowering of the biomass precautionary reference point, Bpa, from 1.3 million tonnes to 1 million tonnes. The biomass limit reference point remains unchanged at 800,000 tonnes.</p> <p>The levels of SSB and F, since the management plan was reviewed and revised in 2008 clearly show that the strategy is achieving its objectives in terms of maintaining both maximum sustainable yields and full reproductive capacity. This has been achieved during a period of sustained poor recruitment, since 2002 and which appears likely to continue.</p>		
c	Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	(Y)		
	Justification	<p>There is a comprehensive stock monitoring and assessment programme in place leading to an annual evaluation of the success of the harvest strategy. This is based on accurate catch statistics and an appropriate level of biological sampling of catches and landings. There have been major problems of unaccounted mortality in the past. These were related to misreporting and under reporting of landings, area misreporting, discarding, high grading and slippage. Most of these problems have now been addressed through regulations and more rigorous monitoring and surveillance. High grading and slippage has been banned in EU waters since 2009 and there is a total discards ban within the Norwegian EEZ. The assessment working group accepts that there may still be some unaccounted mortality but consider that the quantities involved are very low and do not affect the annual assessment of the stock on which the harvest strategy is based.</p>		
d	Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			(Y)

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
	Justification	<p>The original management plan was in place in 1998 and reviewed and revised in 2008. The harvest strategy is underpinned by this long term management plan which is firmly based on well-established precautionary reference points. There was a commitment in the plan for review by 31 December 2011 which was carried out by ICES in 2011. ICES concluded that the plan was consistent with both the precautionary and MSY approaches. Following the change to the assessment model in 2012 the ICES benchmarking workshop noted that reference points could have changed under the changed perception of the stock assessment. As a result an ICES workshop (WKHERMP) carried out a review of the reference points and a re-evaluation of the management plan in 2012. The Workshop re-evaluated the reference points and concluded that Blim should remain unchanged at 800,000t but Bpa should be revised to 1 million tonnes. Fmsy (ages 2-6) should be within the range F0.24-0.30. The workshop also concluded that the plan appears to operate well in relation to the objectives of consistency and a precautionary approach but not in relation to maintaining a stable high yield. They considered the main weakness in the plan to be the constraint on annual variation of the TAC to 15%. This has led to restrictive TACs when the stock has been improving</p> <p>The report of the Workshop and the subsequent ICES advice was considered at the EU / Norway meeting in January 2013. They made a further detailed request to ICES that the long term management plan shall be evaluated with and without inter annual quota flexibility of +/- 15% when the SSB is above $B_{trigger}$. In response to this request ICES evaluated new options of the management plan in 2012. On this basis the EU – Norway agreed a revised plan in March 2014 which has not yet been finally evaluated by ICES. After evaluation it is due to come into force on 1 January 2015:</p> <p>The details presented above provide ample evidence of periodic review and improvement of the harvest strategy as necessary, with active involvement of all interested parties.</p>		
e	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	(Not relevant)	(Not relevant)	(Not relevant)
	Justification	[Scoring issue need not be scored if sharks are not a target species].		
References		ICES,2005, 2008, 2011a, 2011c, 2011d, 2012a, 2012b, 2012c, 2012d, 2013a, 2013b. 2014a, 2014b.Patterson, 1997.		
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 1.2.2

PI 1.2.2		There are well defined and effective harvest control rules in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Generally understood harvest 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.	Well defined 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.	
	Met?	(Y)	(Y)	
	Justification	<p>The current strategy is to set an annual TAC, based on managing the stock in accordance with the agreed management plan. The annual TAC is firmly based on the predicted catch corresponding to the ICES advice for adult and juvenile mortality. This is firmly based on managing the stock according to the agreed fishing mortality reference points and the stock status in relation to the management plan upper biomass trigger level and the biomass limit level. The strategy is supported by a raft of technical and conservation measures applied to both the adult fishery and fisheries which take juvenile herring. These include minimum landing size, discarding and slippage bans, a regulation permitting a proportion of TAC to be moved from one area to another, some seasonal area closures and a restriction on the by-catch levels of herring in all other fisheries.</p> <p>These well-defined rules have been well tried and tested in the past and have been seen to be effective in recovering the stock from low levels historically. In recent years the rules have helped maintain the stock at levels above the Management plan trigger and fishing mortalities below precautionary and management plan levels for both adults and juveniles.</p> <p>The harvest strategy has clear rules which effectively reduce the annual TAC by reducing the fishing mortality, on adults and juveniles, if the SSB falls below the management plan upper biomass trigger level of 1.5 million tonnes. The reduction in fishing mortality is linearly linked to the estimate of SSB and is designed to recover the stock to above the management plan trigger level. If the SSB falls below the biomass limit point then fishing mortality on adults and juveniles is reduced to near zero. The revised biomass precautionary approach reference point of 1.0 million tonnes is based on a less than 5% risk of SSB falling below Blim.</p>		
b	Guidepost		The selection of the harvest control rules takes into account the main uncertainties.	The design of the harvest control rules takes into account a wide range of uncertainties.
	Met?		(Y)	(N)

PI 1.2.2		There are well defined and effective harvest control rules in place		
	Justification	<p>The main uncertainty affecting the harvest control rule is the reliability of the annual stock assessment in estimating current SSB and fishing mortality. These estimates underpin all the advice provided by the ICES advisory committee on managing the stock. That stock assessment is heavily dependent on the reliability of the input data. In that context the major uncertainty is the reliability of the landings data in relation to the actual catch taken at sea.</p> <p>The major uncertainty in the fishery in the past has been the regular overshooting of the TAC related to area misreporting and underreporting of landings, discarding, high grading and slippage. As recently as 2008 the ICES working group's estimate of landings exceeded the official estimate by 16% and exceeded the TAC by 17%. Through better enforcement and monitoring the problem has been dramatically reduced since 2008 to the point where the assessment working group now consider it to be a minor issue relative to current stock status and total catch levels. The assessment working group accepts that there may still be some unaccounted mortality through, for example shipboard operations, but this uncertainty is not considered to affect the reliability of the assessment of stock status. The assessment working group keeps all these issues under regular review and where verifiable information is available from observer trips and reference fleets then the most reliable data is used for the stock assessment. For the 2013 assessment the working group considered the input data to be of good quality and the resultant estimates of SSB and F were reliable. However ICES did express some concern about the lack of information on unallocated removals from all herring fisheries and noted that observer coverage across the main fleets should be maintained or improved. They also commented that the introduction of the EU landings obligation may change the situation.</p> <p>The sampling of commercial landings increased slightly in 2013 and covers 85% of the total landings (2012: 80%). However, the number of herring aged is lower than in 2012 (-17%), while those measured have increased by roughly 60%. This level of sampling coverage by area and gear type was considered adequate by ICES in support of the stock assessment and harvest control rules which are based on it.</p> <p>There are also areas of uncertainty in relation to the mix of North Sea autumn spawners and western Baltic spring spawners in the North Sea and in the Skagerrak and Kattegat and the precision of the methods for differentiating between them. These issues are more appropriately addressed under scoring issue c.</p> <p>From the evidence presented the Team have concluded that, whilst the harvest control rules do take into account the main uncertainties, the range of uncertainty considered cannot be regarded as 'wide'.</p>		
c	Guidepost	There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.
	Met?	(Y)	(Y)	(N)

PI 1.2.2	There are well defined and effective harvest control rules in place	
	Justification	<p>Monitoring of the catches and landings has been working effectively in this fishery for many years. This has been achieved not only via the official records but also by the vigilance and local knowledge of the working group members. In that way the assessment working group has been able to use their own estimates of actual catches. In recent years the problem of slippage, discarding and underreporting of landings is no longer considered to be a problem in relation to the annual stock assessment and subsequent advice. Since 2009 the working group's estimate of landings has been very close to the official landings. Accurate landings data are vital in the stock assessment process on which the annual ICES advice on the TAC is based. In spite of the areas of uncertainty the annual assessment of stock status is considered to be robust and is now presented with 95% confidence intervals to take account of uncertainty. There is strong evidence that the resultant TACs over recent years, coupled with the technical measures, have been effective tools in achieving the levels of exploitation required under the harvest control rule (management plan). The evidence is based on the current status of the stock in relation to both fishing mortality and SSB targets within the management plan. It is worth noting that this success has been achieved against a sustained period of low productivity and poor recruitment</p> <p>However whilst the tools in use are very effective in controlling the exploitation rate on the North Sea autumn spawning stock there is no clear evidence that they achieve an effective exploitation rate on the vulnerable Western Baltic spring spawning component. Management of this component is strongly linked to the management of the autumn spawners in ICES Division IIIa and the eastern North Sea. There are serious concerns about the effect that catches of Western Baltic spring spawning herring in the targeted autumn spawning fishery has on the state of that stock. The western Baltic spring spawning stock is currently in a period of low productivity and there is no management plan for the entire stock. Although SSB has increased slightly since reaching an historic low in 2011 it is still below the precautionary approach and MSY trigger levels. Fishing mortality is also well above Fmsy, These concerns have been partially addressed in the harvest control rules by permitting part of the TAC for Division IIIa to be taken in a transfer area in the eastern North Sea in an attempt to protect the more vulnerable Western Baltic spring spawners. However there is little evidence that the regulation is effective. This topic is subject to frequent scientific and administrative review, e.g. EU / Norway working group meeting of managers and scientists June 2013, who were asked to develop and recommend alternative methods to set a TAC for herring in ICES division IIIa.</p>
References	ICES, 2005, 2008, 2011b, 2011c, 2012a, 2012c, 2012d, 2013a,.2014a, 2014b.	
OVERALL PERFORMANCE INDICATOR SCORE:		80
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 1.2.3

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A comprehensive range 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 related to the current harvest strategy, is available.
	Met?	(Y)	(Y)	(Y)

PI 1.2.3		Relevant information is collected to support the harvest strategy		
	Justification	<p>The basic biology, stock structure and dynamics of the North Sea autumn spawning herring has been the subject of considerable research for well over one hundred years. As a result the seasonal distribution, spawning areas and geographic range is very well known and described in the scientific literature. The stock clearly consists of three spawning components based on their geographically separate spawning areas although there is no genetic basis for separating them. Because the components mix at certain times of the year and cannot be separated in the catches they are treated as one stock for management purposes. The only exception to that is the component which spawns in the southern North Sea and eastern English Channel (the Downs component) which has a ring fenced quota to protect it from over exploitation.</p> <p>The raft of fundamental knowledge on the North Sea herring is used in support of the harvest strategy through, for example, minimum landing size, some closed areas at spawning times and restrictions on the catches of juvenile herring. The research has also led to refined methods of separating North Sea autumn spawners from various spring spawning components which occur in the North Sea. This is particularly important in separating the autumn spawners from the Western Baltic spring spawners (identified by post hoc biological sampling) when they occur together both in the Skagerrak and in the north eastern North Sea. In the past this separation was done on the basis of small differences in vertebral counts but is now done, more reliably, on the basis of differences in the otolith microstructure.</p> <p>Information on maturity and growth rates and sex ratio is routinely collected as part of the biological sampling process on the landings and also as a part of the fishery independent acoustic surveys. The stock/recruitment relationship is well described over a period dating back to 1947 and forms an integral part of the harvest control rule as the basis for the biomass limit level. There are no recent studies on fecundity but extensive studies in the past established the relationship between fish weight and fecundity. Fecundity data are not a part of the current stock assessment process.</p> <p>Natural mortality in the stock is now estimated annually through the North Sea multi species assessment model .Maturity data are updated annually based on sampling on the acoustic surveys.</p> <p>Environmental data related to temperature changes on the spawning grounds, changes over time in the plankton community and the effect of herring as a predator on, for example cod recruitment, are all subject to research not directly related to the harvest strategy. There is also research related to the potential effects on herring spawning of anthropogenic activities such as gravel extraction and windfarms.</p> <p>Vessel types, vessel size and gear types are well known and described for this fishery and updated annually by members of the ICES assessment working group who have a thorough knowledge of the composition of their own national fleets.</p>		
b	Guidepost	<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>Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.</p>	<p>All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.</p>

PI 1.2.3		Relevant information is collected to support the harvest strategy		
	Met?	(Y)	(Y)	(N)
	Justification	<p>The total landings data are adequately monitored and most uncertainty related to their validity is removed through national monitoring and surveillance programmes. These include observers at sea, enforcement inspections at sea and more stringent and effective EU regulations.. In these ways earlier concerns of the assessment working group regarding discarding at sea, slippage and underreporting have been satisfactorily addressed. Whilst they accept that there is still likely to be an element of unrecorded mortality the assessment working group are satisfied that the quantities involved are negligible in terms of the reliability of the stock assessment. ICES does however comment on the need to maintain or improve the current level of observer coverage.</p> <p>Basic biological data on the landings from North Sea and Skagerrak herring fisheries are routinely collected by all countries participating in the fishery. This is now a statutory requirement of all member states through EU sampling directives issued in 2008 (Comm. Regs. 2008/949EC, 2008/199, 2008/665), or complementary Norwegian regulations. Under these regulations all fleets must comply with minimum sampling levels for numbers of fish measured and aged. The biological sampling programme covered 85% of the landings in 2013 although there was a reduction of 17% in the number of fish aged compared with the previous year. This level of sampling provides strong support for the age based analytical stock assessment process.</p> <p>The annual stock assessment which underpins the harvest control rule is further supported by a number of fishery independent surveys which provide indices of the abundance of various year classes in the stock There are two main surveys providing independent estimates of the abundance of age groups 0-6 winter ringers in the stock. An acoustic survey in the summer was started in 1979 and extended to cover the Skagerrak and Kattegat in 1989. An international bottom trawl survey in the first quarter of the year was started in 1996 and provides indices of 1 ringers and 2-5 ringers from the trawl hauls and an index of 'o' group fish from fine meshed net hauls carried out at night. In addition there is a series of larvae surveys covering the spawning areas of all three spawning components which provide a larval abundance index used to estimate potential recruitment. The larvae surveys also provide a valuable insight into the state of the Downs stock component.</p> <p>Thus all the relevant information required for carrying out an annual stock assessment, which provides the basic information on the status of the stock on which the harvest control rules are based is, appropriately monitored. Monitoring of landings in support of the TAC control is carried out contemporaneously with the fishery and enforcement action can be introduced quickly.</p> <p>Whilst there are some residual uncertainties in the data sources which are not serious enough to affect the robustness of the North Sea stock assessment, ICES does accept that there is still an unknown level of unaccounted mortality. Furthermore there is uncertainty regarding the potential effects of this fishery on the Western Baltic spring spawning herring stock. These two factors mean that the assessment falls short of the robustness and high degree of certainty required for SG 100.</p>		
c	Guidepost		There is good information on all other fishery removals from the stock.	
	Met?		(Y)	

PI 1.2.3		Relevant information is collected to support the harvest strategy	
	Justification	The by-catches of herring from other fisheries are landed and adequately monitored where quota is available ('B' fleet quota) and post hoc sampling ensures adequate recognition of removals of North Sea autumn spawners from the Skagerrak and Kattegat..	
	References	Burd and Howlett, 1974; Corten, 1999; Groot de, 1979, 1980, 1996; Harden Jones, 1968; Heath, 1993; ICES, 2012b; 2013a; ICES, 2014a; Maravelias et al 2000; Nichols, 2001; Payne et al, 2009; Simmonds, 2009; Weijerman, 2005; Zijlstra, 1969. .	
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			

Evaluation Table for PI 1.2.4

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost		The assessment is appropriate for the stock and for the harvest control rule.	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.
	Met?		(Y)	(Y)

PI 1.2.4	There is an adequate assessment of the stock status
Justification	<p>From 1972 to 1995 the assessment of the North Sea autumn spawning herring stock was done by means of a virtual population analysis (VPA) model with ad hoc tuning to a series of larvae production estimates, acoustic surveys and trawl surveys. During the early 1990s there was increasing uncertainty about the assessment which led to the exploration of other assessment models. The uncertainty was generated by serious differences in the perception of stock size between the various survey indices. In 1995 the assessment working group decided to change to an integrated catch analysis (ICA) method for the assessment of the stock in 1994. The ICA model was used for the North Sea herring assessment each year since 1995. Subsequently this model became widely used for most of the pelagic stocks assessed by ICES. In spite of some computational difficulties it was generally accepted as an appropriate procedure for the assessment of pelagic stocks, indeed the assessment of the North Sea autumn spawning herring stock has been recognised inside ICES as one of the best and most consistent assessments.</p> <p>In 2011 it became apparent that there were unresolved issues with the ICA model and it could no longer be supported within the ICES assessment framework. It was accepted that it would have to be replaced prior to the planned benchmark assessment for herring in 2012. In February 2012 ICES convened a Benchmark Workshop on Pelagic stocks, WKPELA, (ICES, 2012a). Its remit was to determine and review the appropriate stock assessment methods for five pelagic stocks which included North Sea herring. After a thorough investigation and exploration of potential models the Workshop recommended a change to the state – space assessment model (SAM) as an ideal framework to replace the ICA model. This has also resulted in changes to the input data including a return to using the whole time series of landing information dating back to 1947.</p> <p>The listed the main features of the SAM model of importance are:</p> <ul style="list-style-type: none"> • SAM is a fully statistical model. All data are treated as observations and missing data are handled gracefully. • SAM offers a fully statistical framework that can be used as the basis for model refinement and decision-making. • Uncertainties are generated for all estimated parameters. • SAM internally estimates the precision of each data source and uses this estimate to weight them appropriately in the optimized model. • SAM is a framework rather than a model– it is highly flexible with a low number parameters and can readily be modified to the peculiarities of the given stock. • SAM is open source and cross platform software. As a result, customisations of the source-code to deal with issues are feasible <p>The ICES Herring Assessment Working Group meeting in March 2012 accepted the recommendations of the benchmark workshop on pelagic stocks for the benchmark assessment of North Sea herring in 2012. As a result the tool used for the assessment was the FLSAM, an implementation of the State-space assessment model (www.stockassessment.org), embedded inside the FLR library (Kell et al 2007).</p> <p>A major improvement of note was the integration of fundamental links between the North Sea ecosystem and the stock dynamics of the autumn spawning herring The assessment now includes variable estimates of natural mortality (M) at age derived directly from a multispecies stock assessment model, the SMS model, used in WGSAM (ICES, 2011b; Lewy and Vinther 2004)</p>

PI 1.2.4		There is an adequate assessment of the stock status		
b	Guidepost	The assessment estimates stock status relative to reference points.		
	Met?	(Y)		
	Justification	An annual assessment of stock status is carried out by the ICES assessment working group HAWG. The results of the assessment of stock status are reviewed by the ICES advisory committee. The ICES advisory committee (ACOM) provides their annual advice on the basis of the stock status in relation to SSB and F reference points. These reference points are kept under regular review.		
c	Guidepost	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	(Y)	(Y)	(Y)
	Justification	<p>The main uncertainties in relation to the assessment are addressed under 1.2.2 and 1.2.3. They are the potential for unaccounted mortality, consistency and reliability of the survey data, recruitment predictions, and changes in catchability at age. These sources of uncertainty are clearly identified by the assessment working group and their potential effect, on the estimation of stock status, evaluated annually.</p> <p>The new (SAM) assessment model now clearly identifies uncertainties in the data and these are generated within the model for all estimated parameters. The model also estimates the precision of each data source and uses this estimate to weight them appropriately in the optimized model.</p> <p>This assessment benefits from a range of fishery independent surveys which include acoustic surveys, a bottom trawl survey, a fine meshed ring net survey and larvae surveys. Analysis of these survey data provides indices of the abundance of various age groups.</p> <p>All the potential sources of uncertainty together with the survey indices are carefully considered during the exploratory phases of the annual assessment and taken into account before a final assessment is produced.</p> <p>The important parameters, in relation to the evaluation of stock status relative to reference points are the estimates of spawning stock biomass and fishing mortality. A major feature of the outputs from the new assessment modelling procedure is that these output parameters are now expressed in terms of an estimated value with the 95% confidence intervals of those estimates included. The model also provides 95% confidence intervals on the estimates of recruitment and total stock biomass. This fully meets the requirements at SG 100 that stock status is estimated relative to reference points in a probabilistic way.</p>		
d	Guidepost			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			(Y)

PI 1.2.4		There is an adequate assessment of the stock status	
	Justification	<p>The explanation of the process of model exploration and change dating back to 1972 is comprehensively covered under a) above. The process has culminated in a radical change to a completely different modelling procedure for this stock. Before this change was made various alternatives were rigorously explored by a group of experts convened by ICES to examine the assessment of pelagic stocks. The group also rigorously explored the input data to the assessment and made recommendations in that respect to a subsequent benchmark assessment workshop. These recommendations were further explored at the benchmark workshop and where considered appropriate were accepted and used in the 2012, 2013 and 2014 assessments. The new model is now being widely used for the assessment of other pelagic stocks including other herring stocks in the ICES area.</p> <p>It is an established and routine element of ICES assessment working group procedures that all the assessment input data are carefully checked and examined for potential problems before being accepted into the assessment process. After validation numerous runs of the assessment model are made. These separate runs explore potential data defects and their impact on the assessment. This is a well-established rigorous process of all ICES stock assessment working groups with the ultimate aim of providing managers with the most dependable estimate of the status of a stock. As a part of this annual process it is routine to explore other assessment models, where time permits, and compare the results with the established modelling procedure. Because of the major change to the new model in 2012, and the rigorous exploration of potential alternatives leading up to that change, no exploratory assessment runs were made during as a part of either the 2013 or 2014 assessments</p>	
e	Guidepost		<p>The assessment of stock status is subject to peer review.</p> <p>The assessment has been internally and externally peer reviewed.</p>
	Met?		<p>(Y)</p> <p>(Y)</p>
	Justification	<p>The assessment is subject to peer review within EU / Norway agreement, by the HAWG and the ICES advisory committee, ACOM. Any one of these bodies can comment on the assessment and request either further explanation or ask for changes to be explored.</p> <p>The assessment of the stock is also subject to rigorous annual review at a number of levels. The EU / Norway annual meeting reviews the results of the assessment independently of ICES, as does the EU advisory committee on fisheries and aquaculture, even though some of the scientists involved in both these groups also participate in the HAWG meetings. Within ICES, the stock assessments are subject to internal peer review by the ICES advisory committee ACOM before advice is provided to the EU / Norway management body. ICES also commissions occasional periodic reviews of specific stock assessments and its overall assessment methodology. This is strongly evidenced in relation to the current assessment and the major changes recommended to the modelling procedure.</p> <p>Assessments methods and management procedures and advice are also subject to frequent scrutiny by a range of third parties in particular from the fishing industry, through the Pelagic Regional Advisory Council (Pelagic RAC) and to a variety of environmental NGOs such as The North Sea Foundation, Greenpeace, and the WWF.</p>	

PI 1.2.4	There is an adequate assessment of the stock status	
References	ICES, 1996; ICES, 2005; ICES, 2011a; ICES, 2011c; ICES, 2011d; ICES, 2012a; ICES, 2012c; ICES, 2012d; ICES, 2013a, 2013b; ICES, 2014b; Kell et al, 2007; Lewy and Vinther, 2004; Nielsen and Berg, 2014; Patterson, 1998; Payne, 2010; Simmonds, 2009.	
OVERALL PERFORMANCE INDICATOR SCORE:		100
CONDITION NUMBER (if relevant):		