Marine Stewardship Council Full Assessment

Public Comment Draft Report (PCDR)

For The

ISF Iceland Capelin Fishery

Facilitated By the

ISF, Iceland Sustainable Fisheries

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Glossary

ACOM	ICES Advisory Committee
AWI	Animal Welfare International
Bpa	Precautionary reference point for spawning stock biomass
Blim	Limit biomass reference point, below which recruitment is expected to be impaired.
BIOICE	Benthic Invertebrates of Icelandic Waters
CoC	Code of Conduct
CFP	Common Fisheries Policy
CR	Council Regulation
DoF	Directorate of Fisheries
EC	European Commission
EEZ	Exclusive Economic Zone
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
HCR	Harvest Control Rule
HS	Harvest Strategy
ICES	International Council for the Exploration of the Sea
ISF	Iceland Sustainable Fisheries
IGJM	Iceland -East Greenland- Jan Mayen Area
IWWA	Icelandic Whale Watching Association
ISF	Icelandic Sustainable Fishery
ITQ	Individual Transferable Quota
IUU	Illegal, Unregulated and Unreported fish catches
LS	Landssamband smábátaeigenda (Federation of Owners of Small Fishing Vessels, NASBO)
MII	Ministry of Industries and Innovation
MRI	Marine Research Institute
PCR	Public Client Report
MCS	Monitoring, Control and Surveillance
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NEAFC	North East Atlantic Fisheries Commission
NEA	North East Atlantic
OSPAR	Oslo-Paris Convention (Convention for the Protection of the Marine Environment of the North-East Atlantic)

P1	MSC Principle 1
P2	MSC Principle 2
P3	MSC Principle 3
PI	MSC Performance Indicator
PCDR	Public Comment Draft Report
RFMO	Regional Fisheries Management Organisation
SGBYC	ICES Study Group on Bycatch of Protected Species
SONAR	Sound navigation and ranging
SSB	Spawning Stock Biomass
TAC	Total Allowable Catch
TASACS	Toolbox for Age-structured Stock Assessment using Catch and Survey data
TISVPA	Triple Instantaneous separable virtual population analysis
UNCLOS	United Nations Convention on the Law of the Sea
VMS	Vessel Monitoring System
VPA	Virtual Population Analysis
WGMME ICES	Working Group on Marine Mammal Ecology
WGRED ICES	Working Group for Regional Ecosystem Description

1 MSC Fishery Assessment Report

Fishery Unit	This assessment report under the 'Unit of Certification' (UoC) covers one target species and two methods of capture and the resulting scores are for landings by registered licence holders. The fishery under assessment covers all Icelandic commercial vessels member of the Iceland Sustainable Fisheries that are entitled to fish capelin in ICES Division Va and est Greenland, FAO Fishing Area 27.	
Report Issue	**22nd September 2016**	• **Client Report**
	24th September 2016	• **Peer Review**
	1st December 2016	• **Public Comment Draft Report**
		• **Final Report and Determination**
		• **Public Certification Report**
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The aim of this assessment is to determine the degree of compliance of the fishery with the Marine Stewardship Council's (MSC) Principles and Criteria for Sustainable Fishing.
This Public Comment Draft Report is written for stakeholders after the site visit, scoring, client review and peer review and contains:

- The MSC Standard and Fisheries Certification Requirements (FCR) used, MSC Fishery Standard v2.0 and the MSC FCR v2.0.
- The scores, weighting and certification outcome (Section 7)
- All intended conditions set and the Client Action Plan in Appendix 1.3
  'Conditions provide for agreed further improvement in the fishery and provide one of the bases for subsequent audit. They are intended to improve performance against the MSC Principles'.
- The assessment team certification recommendation
- The stakeholders 'submissions and assessment team's responses in Appendix 3
- The peer reviewers'comments and assessment team's response in Appendix 2
- The assessment followed the current versions of MSC scheme requirements and these were implemented by SAI Global accredited MSC Procedures.
- Information sources used are provided throughout the report and full references for published, unpublished data and main websites accessed are documented at the end of this report in the reference section.

2 Authorship and Peer Reviewers

2.1 Assessment team

1. **Virginia Polonio Ph.D,** SAIG Staff Lead Assessor and P2 expert

She has a degree in Environmental Sciences (B.S.c. University of Cádiz). She has a Master degree (M.Sc. University of Cádiz) in Fisheries Management and Aquaculture. She obtained her PhD in Biodiversity and Natural resources at the University of Oviedo and during her PhD she gained experience in the field of research of fisheries and how protect the Vulnerable Marine Ecosystems (VMEs) as coral reefs versus fishing activities. She wrote several articles describing new species of corals under her thesis and she developed skills in the fields of benthic ecology and management of ecosystems.
Before her PhD, she was contracted as technician in the Spanish Oceanographic Institute where she realized work at sea and gained field experience to assessment fisheries stocks. She participated in the Spanish National Basic Plan of Data to collect and evaluate the fishing in the ICES and CECAF areas where Spanish fleets realize theirs activities. During this period, she carried out feeding habit and age/size studies of *Pagellus Bogaraveo* and others commercial species (hake, anchovy, sharks, mackerel, squid, etc.) to know how the trophic level and predation could affect the ecosystems and the distribution of the species in the Gulf of Cadiz and the Strait of Gibraltar.
She has worked on several full assessments such as Cantabrian Sardine, North Atlantic Albacore, Squat lobster, Blue sharks and Swordfish among others as team member and lead assessor. She has participated in Surveillances acquiring experience in the MSC certification. She has participated in several pre-assessments.
She is a full-time employee at SAI Global and she will be the ***lead assessor*** and P2 expert in this assessment,

2. **John Nichols,** team member expert on P1

Mr Nichols has 42 years' experience of plankton ecosystem research specialising in the taxonomy of North Atlantic & NW European plankton including phytoplankton, micro and meso-plankton, ichythoplankton and young fish. Involvement with plankton surveys for stock assessment from 1977 and direct involvement with the assessment of pelagic and western demersal fish stocks from 1994 to 2000.
In 1992 he set up the original CEFAS programme for monitoring phytoplankton in shellfish harvesting areas and was responsible for its compliance with the EU Directive. In that context he had to train staff in the identification of both diatoms and dinoflagellates.
Since retiring from CEFAS Mr. Nichols has been involved as an expert in the assessment of more than 20 separate fisheries for Marine Stewardship accreditation and subsequent surveillance visits to accredited fisheries.

3. **Ásgeir Daníelsson Ph.D,** team member expert on P3

Dr. Ásgeir Daníelsson graduated in 1985 with Ph.D. in Economics from the University of Manchester. Currently holds the position of head of research and forecasting in the Economics department of the Central Bank of Iceland. He has lectured on microeconomics, statistics, macroeconomics and fisheries economics at the University of Iceland and University of Akureyri.

He has over 20 years´ experience of macroeconomic analysis of the Icelandic fisheries for the Central Bank of Iceland and previously the National Economic Institute. He has been involved in and advised numerous national and international task forces on the utilization of living marine resources and fisheries management.

From 1993-1994 and 2001-2004 he was a member of a committee, set up by the Icelandic Minister of Fisheries, formulating a long term policy on exploitation of fish stocks. He has worked with the "Nairobi group" set up by the UN´s UNEP and UNSD, and was later commissioned by the FAO to provide a guide on the incorporation of environmental factors into national accounting with special regard to fisheries and the living marine environment.

Dr. Daníelsson has written and co-authored several peer-reviewed publications, as well as research reports on the utilization of fish stocks in Icelandic waters, ITQ efficiency and environmental- and economic accounting of fisheries. During the last five years, Dr. Daníelsson has served as Principle 3 expert on several MSC fishery assessments, the first one was completed in 2011.
The fishery under assessment has enough data to evaluate it using default tree, therefore RBF has not been used even though the lead assessor Virginia Polonio has the training to use this technique.

2.2 Peer Reviewers

The list of potential reviewers was proposed by MSC's Peer Review College. It was published on MSC website on August 23th 2016. From the shortlist of reviewers proposed two of them were choosen to review the report. The peer-reviewers has been:

- Sten Munch-Petersen
- Tom Jagielo

3 Executive Summary

This report sets out the details of the MSC full assessment for the ISF capelin fishery against the MSC Principles and Criteria for Sustainable Fisheries. The report details the background, results and justification of the fishery, carried out by SAI Global.

The assessment process began on May 10, 2016.

The Conformity Assessment Body (CAB) who is in charge to evaluate the fishery is composed of: Virginia Polonio from SAI Global who is lead assessor and expert on P2, as external assessor; John Nichols is responsible of P1 and Asgeir Danielsson expert on P3.

The MSC guidance for FCR specifies that the Unit of Certification (UoC) is "The target stock or stocks (biologically distinct unit) combined with the fishing method/gear and practice (vessel(s) pursuing the stock and any fleets, groups of vessels, or individuals of other fishing operators".
The Unit of Assessment (UoA) defines the full scope of what is being assessed and includes other eligible fishers.

Consequently, the ISF capelin fishery under assessment is according to 2 UoC and 2 UoA.

UoA 1	
Target species	Capelin, *Mallotus villosus* (Muller, 1776)
Geographic area	The Iceland waters ICES Divisions Va and East Greenland, FAO Fishing Area 27 Division XIV
Stock	Capelin in the Iceland -East Greenland- Jan Mayen Area
Fishing gear	Pelagic trawl
Management system	European Union and The Ministry of Fisheries and Agriculture based on fisheries Management Act 1990 and the Icelandic Coast Guard who is the responsible for the inspection in the Iceland grounds
Client group and other eligible fishers	Iceland Sustainable Fisheries, Greenlandic and Faroes vessels targeting capelin with pelagic trawl in Icelandic waters.

UoA 2	
Target species	Capelin, *Mallotus villosus* (Muller, 1776)
Geographic area	The Iceland waters ICES Va and East Greenland, FAO Fishing Area 27 Division XIV
Stock	Capelin in the Iceland-East Greenland -Jan Mayen Area
Fishing gear	Purse- seine
Management system	European Union and The Ministry of Fisheries and Agriculture based on fisheries Management Act 1990 and the Icelandic Coast Guard who is the responsible for the inspection in the Iceland grounds.
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Target species	Capelin, *Mallotus villosus* (Muller, 1776)

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The fishery has not been previously assessed against the MSC Principles and Criteria for Sustainable Fishing under a previous certificate. The current assessment did require harmonization taking into account other assessments led by different CABs to ensure consistency of assessment outcomes as there are other Iceland fisheries certified (see section 5.1).

The ISF capelin fishery under assessment covers all Icelandic commercial vessels member of the Iceland Sustainable Fisheries that are entitled to fish capelin in ICES Division Va and est Greenland, FAO Fishing Area 27.

The client group is Iceland Sustainable Fisheries (ISF). The group was founded in 2012 by companies engaged in fishing, production and sales of Icelandic fish products. Only the company's shareholders have the right to sell their products as MSC certified. The ISF is formed by 44 partners who are involved in catching, processing and sales of pelagic catches, all the activities carry out by the client group may be consulted in the ISF website (www.icelandsustainable.is) with a clear report of how it develop them and information regarding each company involved.

The client group listing is provided in section 6.

As required by MSC FCR 7.4.12.2, a certificate sharing commitment must be made by the applicant fishery. The Client Sharing Letter can be seen at:

https://www.msc.org/track-a-fishery/fisheries-in-the-program/in-assessment/north-east-atlantic/ISF-iceland-capelin/assessment-downloads-1/20160510_ANMT_CAP577.pdf

3.1 Assessment process

The assessment followed set procedures as described in the MSC FCR V2.0. Key stages of the assessment were:

- **Stage 1: Fishery Announcement and Assessment Team Formation**
  - Stakeholder Notification: Fishery enters full assessment – 10-May-2016
  - Stakeholder Notification: Assessment team nominated – 10-May-2016
  - Stakeholder Notification: fishery name change - 16-May-2016

- **Stage 2: Information gathering, stakeholder meetings and scoring**
  - Stakeholder Notification: Site Visit scheduled – 21- June- 2016

The eligibility date should be defined following the MSC requirements and could be:

a. The date of the certification of the fishery; or
b. The date when the first Public Comment Draft Report is published.

Therefore for this fishery, the **Target Eligibility Date** is December ***2016*** when is scheduled that the Public Draft Report will be published.

3.2 ISF Capelin fishery key strengths and weaknesses

Strengths

The Capelin Stock is well managed, it complies with the 3 principles of the FCR.

Principle 1: In the context of management objectives the Capelin stock has a precautionary long-term management plan in place. This implements appropriate reference points to manage the exploitation rate in the fishery.

The fishery management plan takes into account the uncertainty in the assessment model and the remaining 400,000 tonnes of spawner, in order for this to be a well-defined plan.

Principle 2: The fishery is not a risk to the habitat or ecosystem. Pelagic fisheries of Capelin, purse seine and midwater trawl are under evaluation and they operate without any contact with the seabed – thus reducing any likelihood of negative impact on benthic habitats. Non-target species are monitored by obligations to land all catches and can be regulated in any trawl and purse-seine vessel.

Principle 3: The management systems is clear and transparent, no conditions were opened regarding P3, the fisheries management process and system are appropriate to the fishery, these are accomplished to govern the level of fisheries exploitation in an informed and transparent manner, employing clearly defined decision-making process, which take account of the precautionary principle.

There is an appropriate level of enforcement and control in this fishery, the right level of confidence on the part of the authorities in the degree of compliance of the fleet with the fisheries regulations.

Iceland operates a highly transparent catch reporting system that is subject to verification by the Fisheries Directorate. All catches for all vessels are individually reported and catch data for all trips are publicly available on the Fiskistiofa (Fisheries Directorate) website where any stakeholder can consult the data by species, gears, years, etc. Therefore, the data is accessible, transparent and the regulation system is precise. The fishery management is supported by a well-resourced and strong scientific capacity, which helps to enable management to make informed decisions.

Weaknesses

Overall, very few weaknesses have been identified in the fishery assessment and scores are generally high for all PIs.

For Icelandic Capelin, a weakness relating to Principle 1 was identified. The CAB recommended that predation by whale on capelin is included in the model to estimate the natural mortality and eliminating uncertainties in the predictive models.

Under Principle 2, the fishery scored adequately under all performance indicators. However, the fishery should be more proactive to obtain quantitative data of ETPs species and the interactions with the whales to meet SG 100. Although the interactions with humpback whales are known, the fishery should have more measures to report and identify the position of these interactions to collaborate with different research projects which are going on.

The only weakness the CAB identified in P3was that management processes are not easily shared with all the stakeholders, although the systems are transparent, more effort needs to be made to allow stakeholders to access to the management system .

3.3 Assessment results

A rigorous assessment against the MSC Principles and Criteria was undertaken by the assessment team and detailed, fully referenced scoring rationale is provided in Appendix 1 of this report.

The UoCs achieved the minimum required score of 80 or above on each of the three MSC Principles independently and did not score less than 60 against any Performance Indicator (PI).
Final Principles scores are shown in the table below.

Principle	Score	PASS/FAIL
Principle 1 – Target Species	90.8	PASS
Principle 2 – Ecosystem	94.7	PASS
Principle 3 – Management System	92.9	PASS

3.4 Conditions for continued certification and Recommendation

No condition has been raised by the assessment team.

Recommendations

Recommendation 1:
1.2.1. – Harvest Control Rules and tools
There is a potential element of natural mortality which is not fully accounted in the stock assessment and management process. Marine mammal abundance and its coincidence with the seasonal migration and distribution of capelin should be further investigated in particular during the winter spawning migration of capelin. Those investigations should include a thorough investigation of the level of dependence by whales on capelin as a source of food.

If appropriate the results should be incorporated into the existing predation model which currently only includes predation by cod, saithe and haddock.

This investigation should provide a precautionary estimation of natural mortality and help to eliminate areas of uncertainty in the predictive models.

Recommendation 2:

2.3.3. – ETP species information

The CAB found that the fishery does not have a **comprehensive strategy** to manage impacts, minimize mortality and injury of ETP species. While there are no reports of direct mortality of whales due to the Capelin fleet, injuries by the gear are reported and several studies are carried out to know more about this (Barscan, 2014). Personal communications with Dr. Gísli A. Víkingsson, head of Whale research in the MRI, confirm to the CAB that these injuries are very common in the whales population around Icelandic waters. Therefore, the fishery should be more proactive in reporting all interactions with ETPs.

3.5 Certification Recommendation

On completion of the scoring process, the assessment team has ***provisionally*** recommended that the ISF capelin fishery is eligible to be certified according to the MSC Principles and Criteria for Sustainable Fishing.

To conclude the summary of this report, the final decision will be taken by the Certification Committee at the Final Report Stage

4 Description of the Fishery

4.1 Unit(s) of Assessment (UoA) and Scope of Certification Sought

4.1.1 Eligibility for Certification against MSC Standard

The fishery is eligible for certification and able to be assessed within the scope of the MSC Principles and Criteria for Sustainable Fishing as:

- The target species is not an amphibian, reptile, bird or mammal.
- The fishery does not use explosive or poisons
- The fishery under assessment is not an enhanced fishery.
- The fishery under assessment is not an Introduced Species Based Fishery (ISBF)
- The fishery is not conducted under controversial unilateral exemption to an international agreement
- The client is not prosecute for violations of laws on forced labour
- There is a mechanism to resolve possible disputes
- No pre-assessment reports and other information regarding the certification
- Other fisheries certified in the area to harmonize with Capelin assessment
- Capelin is considered as "Key LTL species" following the criteria defined in the box SA1 of the FCR 2.0. The target species has been evaluated as LTL. The table 1.1.1A has been applied to score the P1 and more details regarding its role in the ecosystems as key LTL species are given herein (4.3.4-Key Lower Trophic Level Status)

4.1.2 Unit of Assessment and Unit of Certification

The MSC guidance for FCR specifies that the Unit of Certification (UoC) is "The target stock or stocks (biologically distinct unit) combined with the fishing method/gear and practice (vessel(s) pursuing the stock and any fleets, groups of vessels, or individuals of other fishing operators".
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UoA 2	
Target species	Capelin, *Mallotus villosus* (Muller, 1776)
Geographic area	The Iceland waters ICES Va and East Greenland, FAO Fishing Area 27 Division XIV (Figure 2)

Stock	Capelin in the Iceland-East Greenland -Jan Mayen Area
Fishing gear	Purse- seine
Management system	European Union and The Ministry of Fisheries and Agriculture based on fisheries Management Act 1990 and the Icelandic Coast Guard who is the responsible for the inspection in the Iceland grounds.
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4.1.3 Total Allowable Catch (TAC) and Catch Data

The total allowable catches defined in this report are expressed in tonnes and the last recent report was published on May 19th 2016 for the season 2016/2017. The report where the TAC for 2015/2016 season was established was published one year before on May 19th 2015. The client group facilitated the data but these catches may be consulted in the Directorate of Fisheries (DoF) website by vessel and ICES reports on ICES Advice 2015 and 2016, books 2 in both of them. The general catches of the last two years are shown in the table 1.

Table 1. TAC and Catch Data

TAC	**Year**	**2016**	**Amount**	**580,000 tonnes**
UoA share of TAC	**Year**	**2016**	**Amount**	**580,000 tonnes**
UoC share of total TAC	**Year**	**2016**	**Amount**	**354,000 tonnes**
Total green weight catch by UoC	**Year (most recent)**	**2016**	**Total amount**	**105,736 tonnes**
			Purse seine	**84,449 tonnes**
			Pelagic trawl	**21,287 tonnes**
	Year (second most recent)	**2015**	**Total amount**	**353,713 tonnes**
			Purse seine	**307,410 tonnes**

			Pelagic trawl	**46,303 tonnes**

4.2 Overview of the fishery

To describe the fishery under evaluation, the assessment team described the main aspects of the target species, the history of the fishery and the main characteristics of the fishing operations.

4.2.1 Biology of the target species

The common name of the target species is Capelin in English and Loðna in Icelandic. From here on out the CAB will refer it as Capelin (Figure 1).

Capelin was original described by Muller in 1776 and was called *Mallotus villosus*. Two subspecies were described after the first description but nowadays both are accepted as *M. villosus* (World register of Marine Species) .

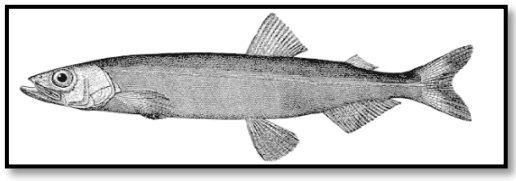


Figure 1. Capelin (*Mallotus villosus*, Muller 1776). Source http://www.fao.org/fishery/species/2126/en

The capelin has the body elongate, somewhat compressed. Snout a little pointed, upper jaw reaching to about eye centre, lower jaw projecting; teeth on jaws small, vomerine teeth minute. Gillrakers 33-44 (48). Dorsal fin (with 10-14 rays) origin behind midpoint of body and about over pelvic fin bases, a low adipose fin behind it; pectoral finrays 16-21. Scales very small, cycloid, 170-220, lateral line complete and reaching to caudal peduncle; males develop a midlateral ridge of elongate scales along flanks at spawning time. Colour on the back, transparent olive to bottle green; below, the sides are silvery and the belly is silvery-white. The edges of the scales have dusky specks.
M. villosus, is easily distinguished from other osmerids by the high number of scales along the lateral line, 170 to 220, from all other except Thaleichthys by the numerous pectoral rays (16) 17 to 21, from all other except hypomesus olidus by the long adipose base, 1.5 or more times orbit; from all other by the small ninth pelvic ray. Other species (*Osmerus eperlanus* and *Osmerus mordax*) because these have the incomplete lateral line. The capelin is rare to exceedingly abundant with strong seasonal and annual fluctuations and it is vital to many food-chains in the Arctic (FAO-Species).

The capelin is possibly the most ecologically important fish in Icelandic waters. It is a small pelagic fish, usually between 15 and 18 cm in catches and has a very short life cycle. Capelin size is normally up to maximum size of 23 cm. Males are slightly larger than females in each year class.
It spawns in late winter along the south and southwest coast of Iceland at ocean temperatures of 4°-7°C. The eggs and larvae drift north to the continental shelf of North Iceland or Greenland. It gradually migrates further north as it grows and spends the time before maturity feeding in the Iceland Sea on zooplankton, mainly copepods. Maturity is usually reached at the age of 3, but some become mature one year earlier or later. At this time they condense into large schools and migrate around Iceland, usually clockwise to the spawning grounds in the south. During these migrations the capelin becomes the main food of many species in Icelandic waters, most importantly the cod. Spawning takes place in very shallow waters and is a very intense behaviour. After spawning all the males and most of the females die. The capelins rarely live longer than five years.

Its distribution is mainly in cold waters (Figure 2). Except for the need to spawn in relatively warm waters. It is found in the North Atlantic from Newfoundland and Greenland in the west to the Barents Sea and along northern Russia in the east. It also occurs in the North Pacific.

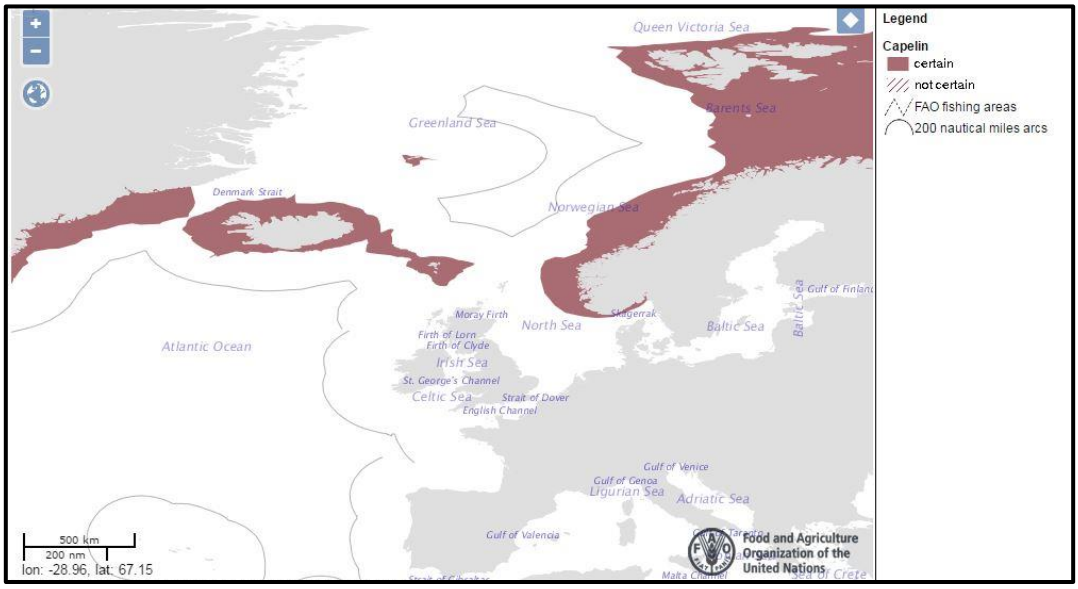


Figure 2. Distribution of Capelin. Different colours show the abundance in the different areas of Iceland. (Source: FAO)

Capelin has a key role in the food chain between animal plankton and larger fish. Most groundfish species, feed on capelin at some stage in their life and it is estimated that capelin may be 40% of the total food of cod. As the stock of capelin migrates to the southwest coast of Iceland in March for spawning it meets a large number of cod, ready for the feast.

Capelin habitat is considered marine, littoral to neritic and epibenthicon fishing banks down to 300 m. They feed almost exclusively on small planktonic crustaceans (euphausiid shrimps as well as various isopod, gammarid and copepod).

4.2.2 Fishing area

The fishing areas are defined by the hydrography of the waters surrounding Iceland and of those between Iceland, East Greenland, and the island of Jan Mayen. These characteristics have been described by many authors (Stefánsson 1962; Stefánsson and Ólafsson 1991; Malmberg 1972, 1984). Atlantic water (Irminger Current branching from the Gulf Stream) of relatively high temperature and salinity predominates off the south and west coasts. Off Northwest Iceland, the Irminger Current splits into two branches; the larger branch flowing west towards Greenland, while the smaller branch, the North Icelandic Irminger Current, flows eastwards onto the shelf north and east of Iceland. A coastal current, essentially driven by gravity forces resulting from land run-off, runs clockwise round Iceland (Vilhjálmsson et al. 2010)
The oceanographic conditions and currents around Iceland provide the basis for the principal stock characteristics of the Icelandic capelin, including the distinctive migratory pattern. The Icelandic capelin spawn in March/early April in the warm Atlantic waters off South and West Iceland, mostly within a depth range of 10-150 m. After spawning, the larvae hatch in about three weeks, where after they drift with the surface currents in a clockwise direction to the shelf area north and east of

Iceland, and to a varying extent across the northern Irminger Sea and the southern Denmark Strait to the East Greenland plateau. The map (Figure 3) below shows the patterns of the currents and their relation with the capelin migrations.

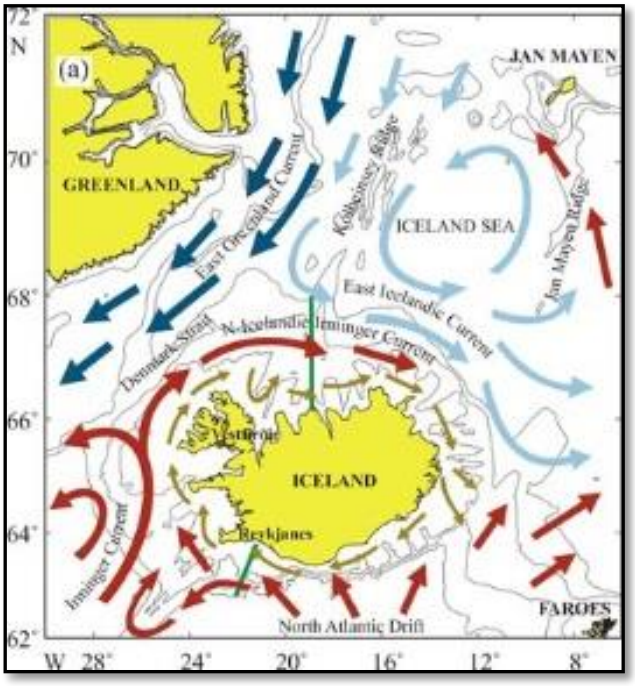


Figure 3. Distribution and currents patterns in the study area. Red arrows-spawing areas; soft blue-feeding migration and juveline distribution; dark blue-return of migration. Source: Vilhjalmsson 2002

Maturing capelin aged two and three (spawning at ages three and four during the following year) usually undertake extensive northward feeding migrations into the Iceland Sea in spring and summer as shown in the figure 3. The return migration takes place in September-November. By late November/early December, this capelin have usually assembled near the shelf edge off Northwest, North, and Northeast Iceland, from where the spawning migration starts in December/January. In most years, the spawners follow a clockwise direction along the warm/cold water boundary near the shelf break north and east of Iceland, entering the warm Atlantic waters off the eastern south coast. The first spawning migration then continues west along the coast to the main spawning grounds off Southwest Iceland. Late arrivals usually spawn off the central and eastern south coast (Vilhjálmsson et al. 2010).

These migrations define the fishing grounds and which area must be protected due to the presence of juvenile specimens. Some of the measures established to keep the stock status above the Blim are relational with these migrations, for example in areas of Northwest and Northeast, the vessels targeting Capelin have on board inspections to control the population of juveniles. Then, the studies regarding the biology of the target species and how is affected by environmental conditions are relevant to manage the fishing grounds (Figure 4).

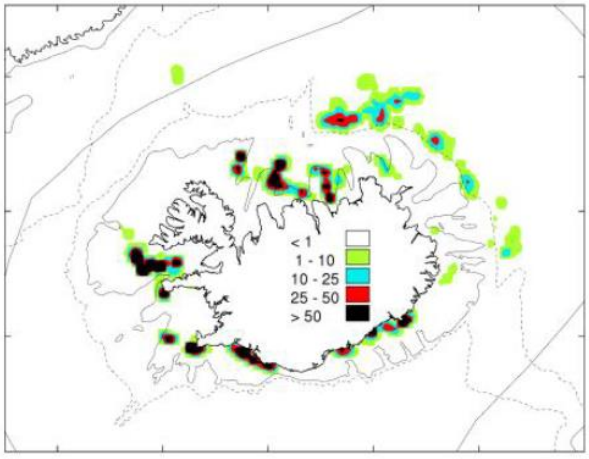


Figure 4. Fishing grounds in the season of 2014/15. Data expressed in tonnes/nm^2. Dark areas indicate highest catches. Source: Marine Research Institute (MRI).

4.2.3 History of the fishery

In the mid-1960s, the Icelandic capelin stock became the target of a purse-seine fishery that quickly developed into a large-scale operation. During its first eight years, this fishery was conducted in February and March on schools of pre-spawning fish, on or close to the spawning grounds nearshore south and west of Iceland, and the catch gradually increased from about 10,000 t in 1964 to 275,000 t in 1972. Then, in January 1973, a successful capelin fishery was initiated in deep water near the shelf break east of Iceland. This brought the total winter catch to some 450,000 t, i.e. close to the processing capacity of the land-based reduction plants at that time.

In July 1976, a summer capelin fishery began in the southern Iceland Sea. This fishery soon became multinational, with participation by Icelandic, Norwegian, Faroese, and Danish vessels. The seasonal (July–March) catch increased rapidly and reached almost 1,200,000 t in the 1978/1979 season. Since then, the seasonal catch has varied between about 700,000 and 1,600,000 t, depending on the success of the summer/autumn fishery. Exceptions are periods of low stock size, when the winter catch has been restricted or the fishery closed altogether. The total catch of Icelandic capelin is distributed over fishing season (summer/autumn and following winter until spawning). The catches of the fishery will be explained later.

Nowadays the fishery is carried out by purse seine and pelagic trawl. Most of the newest boats in the pelagic fleet are within the categories of vessels between 501 – 1,000 GT and 1,001 GT and larger. These use, in roughly equal amounts, purse seines and midwater trawls, depending on the species and season. These boats are much more powerful than the older purse seiners and have the advantage that they can also target blue whiting, Atlanto-Scandian herring and mackerel with midwater trawl. These newer boats are also equipped with cooling equipment that keeps the catch fresh for longer. This development towards larger and more powerful pelagic vessels began in the 1990´s and is ongoing. The category of vessels 501 – 1999 GT also contains some new, very large deepwater longliners. As opposed to the intermediate sized boats, the main operators of these very large vessels are from north-eastern and eastern Iceland. This has historical and biological roots, as the intermediate boats are best suited for the spawning fisheries for cod, mostly conducted off the southwest coats, whereas the larger vessels are best suited to fish the pelagic species, herring and capelin. The main fishing grounds for these are off the north and east coast.

Purse seines are used by large decked vessels, some of which are of similar size to large trawlers. The current two main types of purse seines are the herring and capelin seines. The main difference is the mesh size, which is 31, 4 mm in herring seines and 21, 0 mm in capelin seines.
The effort to fish Capelin with purse-seine in Iceland is shown in the Figure 5.

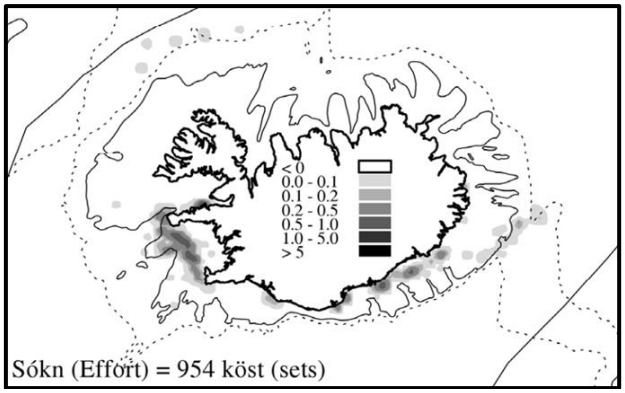


Figure 5. Location of effort with purse seines dark areas indicate highest effort. Source: MRI

Midwater or Pelagic trawls are the principal fishing gear used in oceanic redfish and blue whiting fisheries, but in the last years, they are also increasingly used alongside purse seines for capelin. It operates without touching the bottom and is frequently trawled at depths of a few hundred metres. The trawls used for capelin are of the same construction but have a smaller mesh size, 21 mm for capelin.

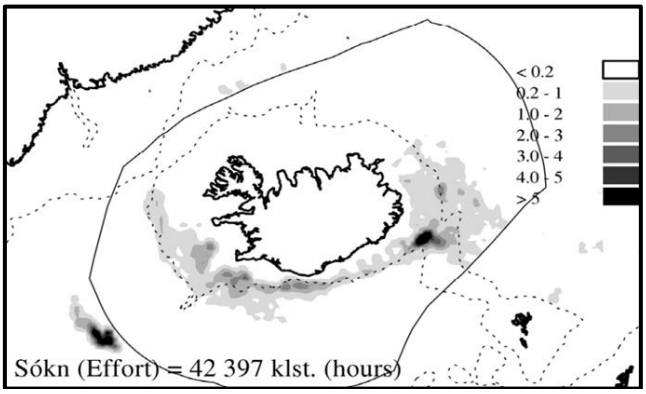


Figure 6. Location of effort with midwater trawl in 2011 (hours trawling), dark areas indicate highest effort. Source: MRI

Currently the fishery is managed by Individual Transferable Quotas (ITQs). An individual vessel-quota system was introduced in the capelin fishery in 1980. In 1986, the quotas were made transferable. In 1990, the capelin management system was incorporated in the fleet. IQs were issued for this fishery in 1996. The Ministry of Fisheries has declared open access for all licensed vessels in this fishery in 1997, a decision that the Association of Vessel owners has protested, since they prefer ITQs. The capelin is a short-lived species and the fishery is very volatile. Since the introduction of the vessel-quota system in 1980 there has been no trend in catch levels, though mean catches have remained roughly unchanged. The capelin fleet, on the other hand, has been substantially reduced: the number of vessels has declined from 68 in 1979 to 44 in 1996, or by more than 30 percent, and the number of vessels is expected to decrease further this year.

Part of the capelin stock migrates seasonally into the jurisdiction of the Greenland and Norwegian fisheries. The capelin is therefore a shared stock, but, through an agreement with these two countries, Iceland determines the annual TAC to be shared between the three countries. There are strong indications that the efficiency of the capelin fishery has increased substantially since the introduction of the vessel-quota system. Catches and fishing season
After the collapse of the herring stocks, the Icelandic pelagic fleet switch to capelin, which had been virtually ignored before. The capelin fishery was the most important pelagic fishery until 2004 when the value of herring catches again surpassed the capelin. However, these are mostly the same boats fishing all the pelagic species with purse seines or more recently pelagic trawls.

The capelin stock has often sustained a catch of more than 1 million t annually since 1978, often as much catch as all other species combined. The highest catches were in 1996 and 1997, about 1.5 million tonnes. The stock migrates to Greenlandic and Norwegian waters close to Jan Mayen, and therefore it is managed by agreement between these nations. Commonly there are two fishing seasons; the main winter season in January-April, fishing mainly 3-4 year old capelin and the summer season in the second half of the year for 2-3 year old capelin. The majority of the catch has been from the winter season in the past few years.

The trends in capelin catches are shown in the Figure 11. It shows the catches decreased sequentially until in 2009 the lowest catches were registered. A better management of the fishery and rebuilding plan made that the stock increased. Last year 2016 the TAC was 173,000, lowest quota since 2009 when the fishing was closed. It was due to the precautionary approach followed by ICES and Icelandic fisheries regulations. In last report carried by ICES in 2016 an initial quota of zero was established for the fishing season 2016/2017. The next survey in autumn or winter will establish the final TAC for next fishing season in 2017.

4.2.4 Market information

Historically the uses of Capelin fish were fish oil or fishmeal. ISF Iceland Fisheries who is under assessment in this report has different uses for capelin but normally is exported to several countries where the applications of this pelagic fish are different and are listed below in the table 2.

In 2013 most of the countries used up the Capelin to process it in fishmeal. Normally, the catches are exported being the most imported country in 2013 in fishmeal Morocco and Denmark and Frozen WR Portugal and Taiwan, respectively. In 2014 Morocco and Portugal kept their imported products.

When the quota is low the market is focused on production of roe and whole frozen, for better utilization of this product and sell to the most important market in Japan and get as much as possible economic benefit of the total catches per year.

Table 2. Exported products from ISF Iceland Fishery

Export of seafood products from capelin			2014	2013
Country	Product		Quantity	Quantity
United States	Frozen roe	Capelin	879	819
	Seafrosen WR	Capelin	268	445
Belgium	Frozen roe	Capelin	1	8
Britain	Frozen roe	Capelin	..	769
	Seafrosen WR	Capelin	..	49
	Fishmeal	Capelin	1010	5164
	Fish oil	Capelin	1526	3097
Denmark	Frozen roe	Capelin	24	105
	Fishmeal	Capelin	3709	14634
	Fish oil	Capelin	1452	6083
Finland	Fishmeal	Capelin	1261	3325
	Fish oil	Capelin	4	58
France	Fishmeal	Capelin	..	1224
	Fish oil	Capelin	463	4594
Greece	Frozen roe	Capelin	534	1641
	Frozen WR	Capelin	1056	2099
	Seafrosen WR	Capelin	..	373
	Fishmeal	Capelin	1483	1400
Netherlands	Frozen roe	Capelin	646	337
	Frozen WR	Capelin	1499	40
Belarus	Frozen WR	Capelin	349	..
Ireland	Frozen roe	Capelin	899	1427
	Frozen WR	Capelin	2161	3191
	Seafrosen WR	Capelin	588	670
Italy	Frozen roe	Capelin	94	247
Japan	Frozen roe	Capelin	899	1427
	Frozen WR	Capelin	2161	3191
	Seafrosen WR	Capelin	588	670
Canada	Frozen roe	Capelin	45	115
	Frozen WR	Capelin	1587	7857
	Seafrosen WR	Capelin	1123	2319
Cuba	Frozen roe	Capelin	2156	2144
	Frozen WR	Capelin	3399	9086
	Seafrosen WR	Capelin	1236	4216
Morocco	Fishmeal	Capelin	11530	25418
	Fish oil	Capelin	4437	7842
New Zealand	Frozen roe	Capelin	1	..

Portugal	**Frozen roe**	**Capelin**	1643	2724
	Frozen WR	**Capelin**	15592	17167
	Seafrosen WR	**Capelin**	6935	4651
Serbia	**Frozen roe**	**Capelin**	1	..
	Fishmeal	**Capelin**	..	1687
Slovakia	**Frozen roe**	**Capelin**	286	1410
	Frozen WR	**Capelin**	66	42
	Seafrosen WR	**Capelin**	20	..
South Africa	**Frozen roe**	**Capelin**	100	65
South Korea	**Frozen roe**	**Capelin**	24	281
	Frozen WR	**Capelin**	151	..
	Seafrosen WR	**Capelin**	22	..
Sudan	**Frozen roe**	**Capelin**	209	392
	Frozen WR	**Capelin**	65	133
Switzerland	**Frozen roe**	**Capelin**	..	21
Thailand	**Seafrosen WR**	**Capelin**	76	73
	Frozen roe	**Capelin**	1	1
Taiwan	**Fryst hrogn**	**Capelin**	..	952
	Frozen WR	**Capelin**	4182	17358
	Seafrosen WR	**Capelin**	1336	9954
Czech Republic	**Frozen roe**	**Capelin**	2	..
	Frozen WR	**Capelin**		
Tunisia	**Frozen roe**	**Capelin**		
	Fishmeal	**Capelin**		

4.3 Principle One: Target Species Background

Under P1 the CAB has described some aspects of the fishery that are divided into several sections (Figure 7). The chart below shows the PIs evaluated in the fishery under P1 and makes easier the understanding of this principle.

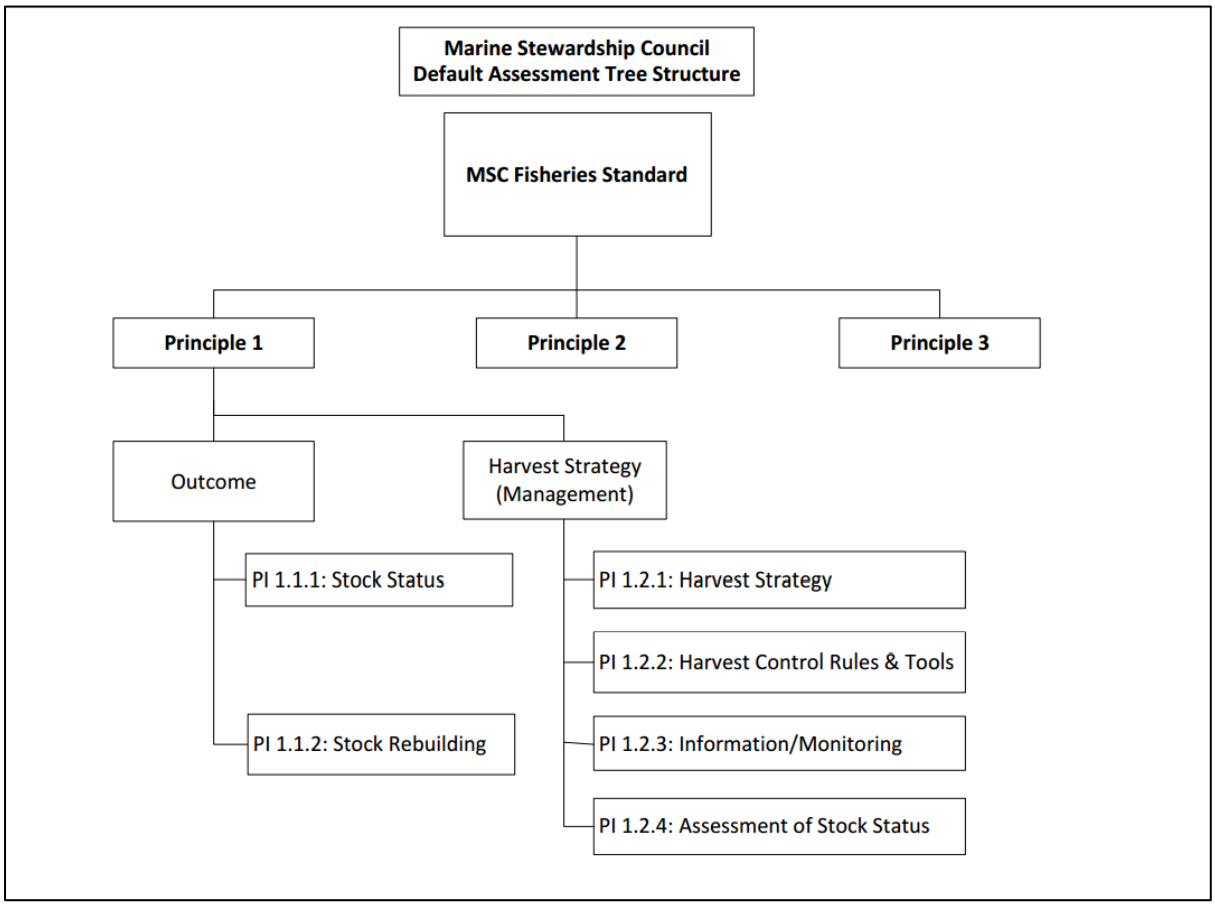


Figure 7. Principle 1 Default Tree Structre. Performance indicators to evaluate under this principle

To evaluate the PIs regarding P1 with the default tree is relevant to access to the stock assessment data. The stock status of Capelin is carried out by WKICE (ICES). The capelin stock in Iceland-East Greenland-Jan Mayen area has been assessed by acoustics annually since 1978. The surveys have taken place in autumn (September-December) and in winter (January–February).

In the last stock assessment the methodology was as it is described in the NWWG Report 2016. Two autumn surveys were conducted in 2015 with the aim of assessing both the immature and the maturing part of the stock. Since 2010 the autumn surveys have started in September, a month earlier than in previous years.

The survey area was on and along the shelf edge off East Greenland from about 73°30´N to about 65°30´N and between 16°and 30°W including the Greenland Strait and the slope off western and north Iceland to about 16°W (Bardarson and Jonsson, 2016a). Weather conditions during the survey were adverse but for the first few days and the survey had to be discontinued several times because of storms. Furthermore, drift ice in the northern part of the surveyed area (north of 72°N) restricted

the coverage in that region. Both the drift ice and storms delayed the progress of the cruise. Immature capelin was found in unusually small numbers (6.2 billion) mainly in the southwestern part of the surveyed area. Further north along the Greenland shelf up to 73°N older, maturing capelin predominated. No capelin was recorded off N-Iceland east of 21° W. The distribution of the capelin was very westerly both for the 1-group and older capelin as it was in recent years (2010–2014) while unlike 2014 now no capelin was recorded in the more traditional areas north of Iceland. In this survey around 550 thousand tonnes of mature capelin were estimated. The estimates of both mature and immature capelin are considered to be minimum estimates (likely underestimates) because the survey did not reach the edge of their respective distributions. The edge of the mature capelin stock was not reached towards north and west, and the edge of the immature part of the stock was not reached towards west and south. On the basis of the estimate of the maturing part of the stock the Marine Research Institute recommended an intermediate TAC of 44 thousand t for the fishing season 2015/2016. This recommendation was in accordance with existing HCR and management plan between Iceland, Norway and Greenland.
The second survey in autumn was not used for TAC advice, given the limitations of coverage due to weather and ice conditions this survey estimate.
In the winter survey, as the autumn survey used for calculating the intermediate TAC had limited coverage of the maturing stock the final TAC was based only on this winter survey. On the basis of this estimate of the mature stock and catch taken between autumn and winter survey the Marine Research Institute recommended a TAC of 173,300t for the fishing season 2015/2016. This recommendation was in accordance with existing HCR established by WKICE (ICES, 2015). As it happened in autumn the second survey in winter was not used for TAC advice due to limitations weather.

The objective of the HCR for the stock is to leave at least 150,000 tonnes (=Blim) for spawning (escapement strategy). The initial (preliminary), intermediate and final TACs are based on acoustic surveys. a) The initial TAC for the coming fishing season is advised in May based autumn survey abundance estimate of immature 1 and 2 year old capelin. b) The intermediate TAC is advised in autumn based on the biomass estimate of maturing capelin. c) The final TAC is advised in January/February based on the biomass estimate of maturing capelin. The initial (preliminary) quota follows a simple forecast that is based on the relation between historic observations of age 1 and 2 juvenile abundance from the acoustic autumn surveys and the corresponding final TACs nearly 1½ year later. This was done in ICES NWWG 2016 to set the initial quota for the fishing season 2016/17. The intermediate and final TACs are set so that there is at least 95 % probability that there will be 150,000 tonnes (=Blim) of mature capelin left for spawning at the spawning time (15 march). Previously, (since early 1980s) the stock has been managed according to an escapement strategy, leaving 400 thousand t to spawning (uncertainty of the estimates were not considered).

Large knowledge about Capelin fishery are needed to carried out the stock assessment for these reason the biology of this species between others is known in depth. As the CAB briefly mentioned, the Capelin is described as a small pelagic, cold water schooling species that inhabits Arctic and subarctic waters in the North Atlantic and North Pacific. They live by day at depths down to 150m moving close to the surface at night. They are plankton feeders mainly foraging on euphausids, copepods and other planktonic crustacea all providing a rich source of oil. They thus form a rich and important part of the diet of many piscivorous fish, cetaceans and birds. They are the main single item in the diet of Icelandic cod (Vilhjálmsson, 2002). A symposium was held in Reykjavik, Iceland in

2001 titled 'Capelin 'What are they good for?'. This has provided an excellent overview of the biology, management, and the ecological role of capelin (Carscadden and Vilhjalmsson 2002).

Capelin migrations are complex and have changed significantly since the early 2000s. The migration routes, spawning, feeding and overwintering areas are well described and presented pictorially by Carscadden et al. (2013) and reproduced in Figure 8 below. Maturing capelin around Iceland make extensive feeding migrations northwards in spring and summer returning southwards between September and November.

The observed shift in distribution and migration patterns in the early 2000s took place during a period of environmental changes observed since the mid-1990s (Carscadden et al. 2001). Temperature and salinity both increased during that period southwest of Iceland, with a temperature increase of one degree or more (Hafro, 2014).

Capelin becomes sexually mature at 2 to 4 years old at a length of 15-20cm for males and 13-17cm for females living to a maximum of 6 years old. The majority of each year class spawns at age 3 years, the remainder in the following year. They are demersal spawners depositing their adhesive eggs on fine gravel at depths ranging from 10 to 150m in the Iceland area (Vilhjálmsson, 1994). Some spawning may occur in sand furrows in shallow water (Muus and Dahlstrom, 1974). They tend to move in large shoals from the north of Iceland to spawn in the main spawning areas off the southeast, south and west coasts of Iceland. They also spawn in other areas such as off the North coast but these areas are less important (Figure 8). Spawning begins in January, at temperatures of 2-40 C, peaking in March in the main spawning areas but as late as April in other areas. Capelin produce between 8,000 and 12,000 egs per female. After fertilisation all the males die but a small proportion of females do survive to spawn again the following year (Carscadden and Vilhjálmsson, 2002). The eggs hatch in about four weeks dependent on temperature and the planktonic larvae, about 4-5mm in length, are then subjected to the residual drift which carries them to the extensive nursery areas north, northeast and northwest of Iceland and on the East Greenland plateau (Figure 8).

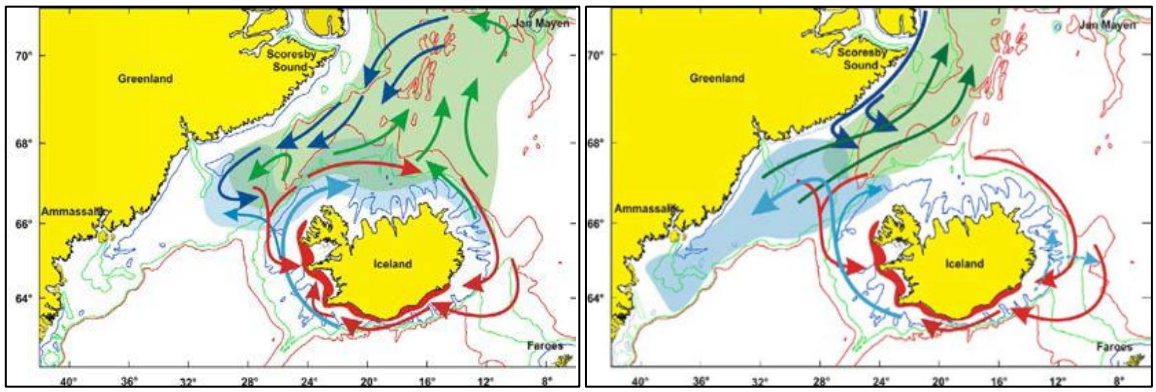


Figure 8. Changes in the seasonal distribution and migration of IGJM capelin. Historical until early 2000s (left) and since early 2000s (right). Red areas: spawning grounds. Blue areas: Nursery areas. Green area: Feeding area for the maturing capelin. Green arrows indicate the adult feeding migrations, blue arrows indicate return migration from feeding areas to overwintering areas, and red arrows indicate the spawning migrations (From Carscadden et al., 2013).

These patterns affect the results that the scientists have found in the different surveys carried out during autumn and winter every year since 1980.

4.3.1 Stock Structure

Capelin is a cold-water pelagic species widely distributed in the arctic and subarctic waters of the North Atlantic and North Pacific Oceans. The capelin, which are subject to this assessment, occur in the Iceland and Faroes Grounds, East Greenland, Jan Mayen areas and are considered to be a separate stock, the IGJM capelin stock. The stock is confined to ICES Subareas V and XIV and Division IIa west of 5°W.

The stock is shared between Iceland, Norway and Greenland according to a management plan agreed by the parties in 2003. The Faroe Islands participates in the fishery through an annual bilateral agreement with Iceland and the EU participates in the fishery through an annual bilateral agreement with Greenland. The vast majority of catches are landed at Icelandic harbours; however in some years capelin might also be landed in Norwegian or EU harbours (ICES, 2015b).

4.3.2 Stock Status

4.3.2.1 Spawning stock biomass

The annual fluctuations in SSB over the period 1979 to 2016 are shown in Figure 9. The current biomass limit level of 150,000t is also shown. Over that time series the SSB has only fallen below B_{lim} in the 1981/82 season and in the 1989/90 season. Since then it has consistently been more than two times B_{lim}, frequently more than three times and reaching more than five times B lim in the 1995/96 season.
The 2016 ICES stock assessment and advice (ICES, 2016a) indicates a spawning stock biomass at spawning time (March April) 2016 of 304,000t. This provides a greater than 95% probability that the SSB is above the biomass limit level of 150,000t. The 2016 estimate of SSB cannot be directly compared with previous estimates. This is because the method to estimate natural mortality, in the 2016 assessment process, has been revised to take into account predator abundance but the historic time series has not been revised using the new method and the biomass limit level has not been re-visited. Natural mortality is now set at 0.315.

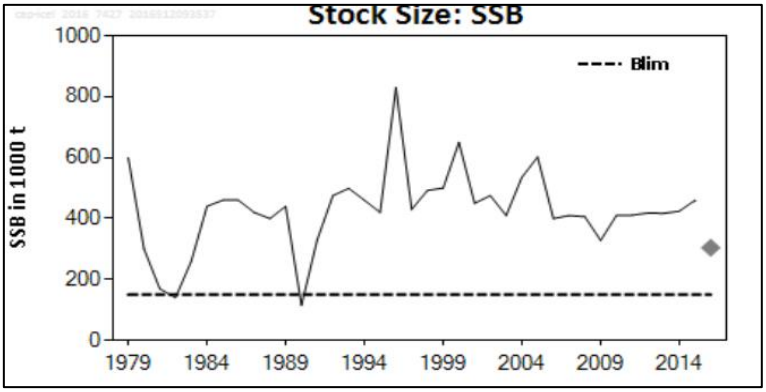


Figure 9. The Spawning stock biomass of Capelin in subareas V and XIV and Division IIa.West of 5°W. As noted in the text above the 2016 estimate of SSB (Diamond mark) is not directly comparable to the historic time series or to Blim because it is based on different assumptions about natural mortality. (ICES, 2016a)

4.3.2.2 Fishing mortality

The basic biology of this short-lived species, the nature of the fishery and the management, based on an escapement strategy to leave a minimum of 150,000t for spawning, means that the estimation of fishing mortality becomes irrelevant. The fishing mortality parameter is not required for the management of this stock which takes piscivorous predation into account via a predation model.

4.3.2.3 Recruitment

The annual estimation of recruitment at age 1 year is now an integral and important part of the management strategy for this stock. The estimation is based on a series of autumn acoustic surveys which have a time series dating back to 1979. The autumn surveys have been carried out in late autumn (October to December) from 1978 to 2009 and in early autumn (September to October) since 2010. A detailed overview of the surveys can be found in the stock annexe of the ICES assessment working group report (ICES 2015b). The autumn surveys also measure the mature part of the stock.

Figure 10 shows the annual recruitment of capelin at age 1 in the IGJM stock over the period 1979 to 2015. This clearly shows the high variability of recruitment with a period of relatively high recruitment between 1991 and 2001. This period led to spawning biomass being maintained at over 400,000t and up to 830,000t in 1995/96.

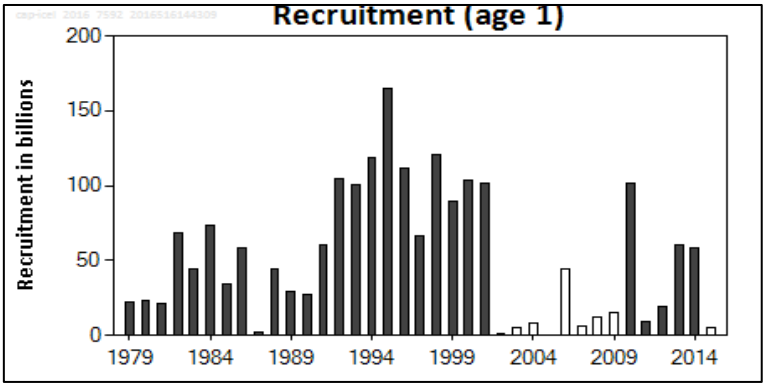


Figure 10. Annual recruitment as billions of 1 year old capelin from the autumn surveys acoustic index (the hollow bars indicate incomplete spatial coverage resulting in a potential underestimation of recruitment (ICES, 2016a).

4.3.2.4 Catch and Landings

Information about landings in the fishery is collected by the Icelandic Directorate of Fisheries which has access to both landing figures in the Icelandic ports (the official landings) and the recorded catch in the digital logbook kept by all Icelandic vessels. (ICES, 2015b).

The Icelandic legislation allows for slipping in those cases where the catches are beyond the carrying capacity of the vessel and none of the nearby vessels are able to take the surplus quantity on board. The practice of transferring catches from the purse-seine of one vessel to another vessel is a long-standing tradition in Iceland, and since skippers of purse-seine vessels generally operate in groups due to the behaviour of the fish, discards are practically zero. In the pelagic trawl fishery, such large catches of capelin rarely occur (ICES, 2015b). As a consequence the landings figures are considered by the ICES assessment working group to be a fair reflection of the actual catch.

Figure 11 shows the ICES estimate of landings over the period 1979 to 2015 (ICES, 2016a). The landings are assessed on the basis of fishing season which extends from July to March of the following year. The biology of this short lived species means that the annual pattern of landings is clearly and inevitably related to the pattern of recruitment shown in Figure 10 above. The ICES benchmark workshop on Icelandic stocks, WKICE (ICES, 2015a) and the ICES assessment working group report stock annexe (ICES, 2015b) show the catch of capelin from the IGJM stock from the 1964/65 to 2013/14 by fishing years .

Figure 12 shows the landings in the winter fishing season of 2015 by each of the four participating countries with Iceland taking 75% of the total catch of 471900t. A total of only 45500t was taken in the previous autumn fishery. For the fishing season 2015/2016 an initial quota of 54000t was advised, the intermediate TAC was 44000t (Gudmundsdottir et al. 2016) and the final TAC was set to 173300t (Bardarson et al. 2016). The landings were 174000t.

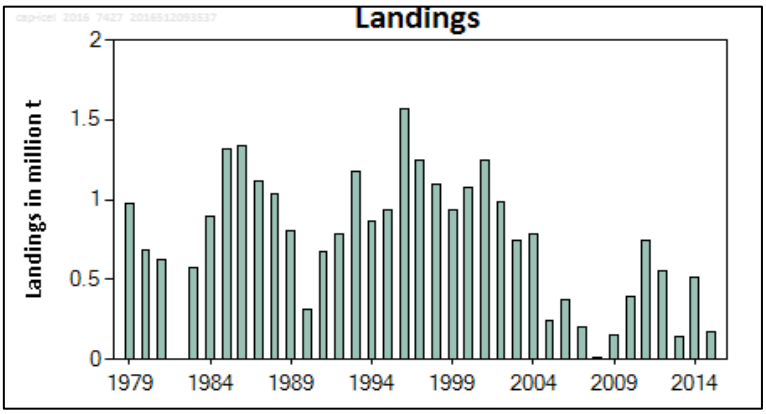


Figure 11. Landings of Capelin, in millions of tonnes, from subareas V and XIV and Division IIa.West of 5°W by fishing season - July to March of the following year, over the period 1979 to March 2016. The final figure for2015/16 fishing season (174,000t) is provisional. (ICES, 2016a).

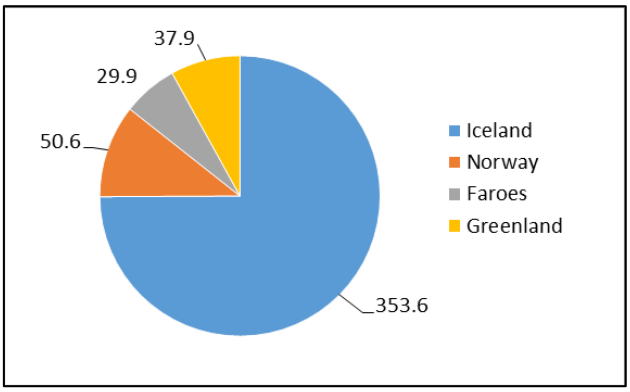


Figure 12. National landings of Capelin, in thousands of tonnes of tonnes, from subareas V and XIV and Division IIa.West of 5°W in the winter fishing season of 2015 (ICES, 2016a)

4.3.2.5 Biological Reference points

Since 1979 a Biomass escapement reference point of 400,000t has been used for the management of this stock. A biomass limit reference point had not been set. In 2015 the Benchmark Workshop on Icelandic stocks, WKICE (ICES, 2015a) defined a biomass limit reference point of 150,000 t. This new reference point is based on B_{loss}, based on observations that the recruitments generated around B_{loss}

(cohorts: 1981, 1982 and 1990) were of average strength and that average recruitment did not appear to decline at low SSB over the observed range (ICES, 2015a). The suggestion of the Benchmark Workshop, of B_{lim} at 150,000t, is now established as the only biological reference point for this stock.

4.3.3 Harvest Strategy and Harvest Control Rules

4.3.3.1 Harvest strategy

The more familiar fishing mortality based harvest strategy is inappropriate for this type of fishery harvesting a short lived species with a vital ecosystem role as an important forage species. For IGJM capelin the most important element underpinning the harvest strategy is to leave enough mature fish to ensure adequate recruitment levels for subsequent years. The strategy has to take into account not only the impact of the fishery but also predation on all age groups. This is achieved by the use of a complex model to estimate the requirements of the three main demersal predators on capelin; cod, haddock and saithe. The model is described in detail in the stock annexe to the 2015 ICES assessment working group report (ICES, 2015b) and summarised in the section on the key lower trophic level status of capelin, below.
The series of important milestones linked to the life history, which underpin the harvest strategy, are detailed in the ICES Benchmark Workshop Report, WKICE (ICES, 2015a) and summarised below.

a) Following a cohort:

- Year 0: March /April Spawning and hatching from demersal eggs
- Year 1: Measured as immatures in the autumn surveys.
- Year 2: In summer the bulk of the cohort is still immature but starting to mature. The feeding migration begins. In the autumn the majority of the cohort is mature and measured in the September to October surveys. Some of the cohort may still be immature (delayed spawners)
- Year 3: During the winter the bulk of the cohort migrate to spawn. The January to February surveys are used to measure the size of the spawning cohort on which the final TAC is based. In March/April this cohort spawns with a subsequent high natural mortality during which all the spent males and most of the spent females die. The autumn survey measures the remains of that cohort which did not spawn.
- Year 4: The winter surveys measures the rest of the cohort when migrating to the spawning grounds. The remains of the cohort spawn and die.

b) The Acoustic Surveys

- Autumn acoustic surveys (year 1) September to October measures the ages 1-3 year olds. The mature element is used to revise the TAC for the current year and the winter of following year (Fishing season year 1 / yr+1). The immature element is used to set a preliminary TAC for the following year (fishing season years +1 / +2).

- Winter acoustic surveys from January to February (year +1) measures ages 3-4 year olds. Used to revise the current year TAC (Fishing season year 1 / yr+1).
- Autumn acoustic surveys (Year +1) September – October measures 1-3 year olds. The mature element is used to revise the TAC for the year +1 and the winter of following year

(year +2) – fishing seasons year +1 and year +2. The immature element is used to set a preliminary TAC for year +2 and year +3 (fishing season years +2 / +3).

The timing and selection of the fishery that leads to the maximum yield (MSY) has not been estimated for IGJM capelin. In the Barents Sea, it has been suggested that MSY from the capelin fishery would be obtained by fishing in autumn; however, a later opening of the fisheries (January 1st) would preserve more capelin for the predators (Hamre and Tjelmeland, 1982; Gjösæter et al. 2002).

4.3.3.2 Harvest control rules

The objective of the harvest control rule for the stock is to set a final TAC which ensures, with a 95% probability, that a minimum of 150000t (=B_{lim}) remains for spawning (escapement strategy). This is achieved by a series of acoustic surveys from September through to February and a three stage process in finalising a seasonal TAC (described above). The quantity available for the fishery also has to take the quantity removed by predators.

- The initial TAC for the coming fishing season is advised in May, based on the autumn survey abundance estimate of immature 1 and 2 year old capelin.
- The intermediate TAC is advised in autumn based on the biomass estimate of maturing capelin.
- The final TAC is advised in January/February based on the biomass estimate of maturing capelin.

A new methodology for setting a preliminary TAC was developed by the benchmark workshop, WKICE (ICES, 2015a) in 2015 to replace a method which had remained unchanged since the 1990s. The new stochastic (random processes with probability) harvest control rule also covers the intermediate and final TACs which was adapted from the HCR for Barents Sea capelin.

The method for setting the preliminary TAC is detailed in Figure 13 below. This is a regression of immature (1-2yrs old) capelin abundance as measured on the autumn acoustic surveys, against a precautionary fishable biomass value. The fishable biomass value is based on the January acoustic survey taking into account catches taken before that survey, subtracting the biomass limit (the minimum mature biomass to be left to spawn) and also subtracting 150Kt for predation. The graph has a trigger level of 50 billion immature capelin which provides a limit level of zero for the initial TAC and a maximum initial TAC of 400Kt if the immature abundance is 127 billion or more (blue dashed line). The predicted final TAC is shown on Figure 13 as the solid black line.
The final TAC is set at the catch which will generate a SSB which has a 95% probability of being above the biomass limit level of 150Kt.
This whole strategy, backed by the harvest control rules to set the TAC, is considered by ICES to be precautionary. However ICES has recommended that at some time in the future, once experience of the operation of the new HCR has been gained, assumptions and practical operation of the rule should be evaluated. The ICES working group particularly identified the need for further information on predator/prey relationships and how SSB estimates from autumn and winter surveys should be weighted when final TAC is defined.

There are other harvest control rules in place in support of the harvest strategy which provide further protection for the ecological role of the stock and permit a sustainable harvest of the surplus production. These include the facility to quickly close areas where there is a high abundance of juveniles (1-2yr olds) as assessed by on board observers. There is a legal requirement to carry these inspectors when fishing in certain designated areas. There are also restricted areas where pelagic trawling is not permitted in order to avoid disturbance of capelin shoals. Furthermore areas with known high abundances of juvenile capelin (on the shelf region off NW, N and NE Iceland) have usually been closed to the summer and autumn fisheries.

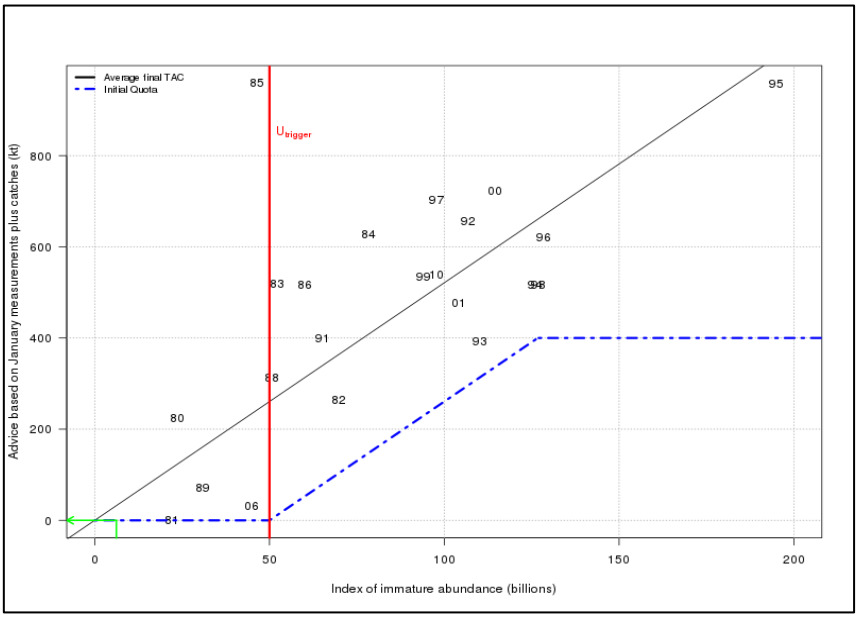


Figure 13. Indices of numbers of immature capelin from autumn surveys against advice (based on acoustic measurements in January plus catches taken before the measurements). The solid line is the 'Final TAC regression' representing the 'best' guess on the final TAC based on the survey result while the dashed line, taking a precautionary approach, shows the decision rule for advising the initial TAC. (ICES, 2015a).

4.3.3.3 Management advice

Based on the Harvest Control Rules described above ICES advised in 2015 an initial TAC of 53600t and a final TAC of 174000t for the 2015/2016 fishing season (ICES, 2015c).
For the 2016/2017 fishing season ICES advises a precautionary preliminary TAC of zero. This is because of the low abundance of immature capelin in the autumn surveys in 2015 estimated at only 6.2 billion fish which is well below the trigger level of 50 billion. However the survey coverage was incomplete because of adverse weather conditions and it is therefore likely that this was an underestimate of the abundance of immature capelin. The intermediate TAC and final TAC s for the 2016/2017 fishery will be updated based on acoustic surveys in the autumn of 2016 and the winter surveys of 2016/2017.

- Data Collection

A very important data source for the management of this fishery is the series of acoustic surveys carried out during the autumn and winter periods.

The autumn surveys in 2015 suffered from adverse weather resulting in poor coverage. As a consequence the initial TAC was set at zero for the 2016/17 fishing season and the intermediate estimate for the 2015/16 fishing season was set at 44000t. This was increased to 173000t as a result of the early winter survey in 2016. The second winter survey in 2016 suffered from adverse weather resulting in poor coverage and the survey results were not used for TAC revision.
Of equal importance as a data source is the reliability of the information on actual catches and landings from the fishery. In that context on board inspectors are present on many of the vessels and is a legal requirement when fishing in certain designated areas. All landings are made to designated ports and provide reliable estimates of the actual weight of capelin landed. In 2015 a department of fisheries inspector was present at 19.8% of all pelagic landings in Iceland. The marine research institute have a programme for biological sampling of the landings in Iceland. However in 2015 the ICES working group reported that sampling from commercial catches is not considered to be adequate. Nineteen samples from Icelandic and Greenlandic vessels have been analysed by MRI in Iceland (length measured and age read), although samples from Norway and Faroes have not yet been processed.

Biological samples from the catch are taken at sea by the fishermen, in the ports by the Marine Research Institute in Iceland (MRI) or inspectors from the Icelandic Directorate of Fisheries. The samples are analysed at MRI (fish length, weight, age (from otoliths), sex, maturation, and gonad weight). The information from the samples are then used along with the total landings data and the logbook data to estimate the age and length composition and numbers of fish by age of the total landings. Similar programmes are conducted by other participants in the fishery to a varying extent, sometimes providing catches in numbers for example by the Institute for Marine Research in Norway.

In July 2006 a multidisciplinary project began (oceanography/ecology) covering the area from Ammassalik in the west to about 10°W east of Iceland as well as the Iceland Sea north to 71–72°N. One of the main purposes of this project is to study the distribution, behaviour and feeding habits of all age groups of capelin in spring and summer.

- Stock Assessment Method

The nature of this short lived species dictates that annual stock assessment using an age based population analysis modelled approach is inappropriate. The nature of the fishery also requires contemporaneous data on abundance in order to successfully manage rational exploitation in line with the ecosystem role of this important forage species. As a consequence the capelin stock in the Iceland, East Greenland and Jan Mayen area has been assessed entirely by annual acoustic surveys since 1978. The surveys have been conducted in late autumn (October–December) in 1978–2009, in early autumn (September–October) since 2010 and in winter (January–February) since 1979.
The acoustic surveys provide absolute biomass estimates of the spawning stock and numerical abundance indices of the immature element (1-2yrs old) of the stock. These estimates are fed directly into the management of the stock
The surveys in autumn have a dual purpose, aimed at covering both the immature and the mature part of the stock. The area covered has been expanded since 2010 to cover changes in the distribution of capelin on the continental shelf of East Greenland (to 73°N in 2013), the Denmark Strait and the continental slope north off Iceland. Timing of the autumn survey has also been brought forward to avoid potential drift ice conditions affecting coverage. The indices of immature

capelin are used to predict an expected catch for the fishing season starting in the year after the surveys are conducted. The estimate of the maturing stock is used to set an intermediate TAC, sometimes revising the already set initial TAC.
The winter surveys in January–March target the spawning migration. The main survey area is along the spawning migration routes in late February and early March (Figure 2). The purpose of these surveys is to obtain an immediate estimate of the size of the spawning stock in order to set a final TAC for the rest of the season which will ensure a minimum of 150,000t will be available to spawn.
The uncertainty of the assessment and forecast depends largely on the quality of the acoustic surveys in terms of coverage, conditions for acoustic measurements and the variance in the aggregation of the capelin (ICES, 2016b). The CV on the estimate of immature abundance on the autumn survey in 2015 was 0.19 and for the mature biomass on the same survey the CV was 0.26. The CV on the estimate of mature biomass on the winter survey was 0.16 (ICES, 2016b).
During the site visit we were apprised of the direct involvement of industry in the stock assessment process. Acoustically calibrated commercial vessels have been used to input directly to the biomass estimates and to ensure adequate coverage of the distribution of the stock. They have also been used to carry out scouting surveys to complement the research vessel acoustic surveys.

4.3.4 Key Lower Trophic Level Status

Capelin is a very important forage species in the ecosystems of the Barents Sea, Greenland and Iceland. They are the main single item in the diet of Icelandic cod. They are prey to several species of marine mammals and seabirds and are also important as food for several other commercial fish species (Vilhjálmsson, 2002). There is an overview of the ecosystem, fisheries and their management in Icelandic waters, in section 09 NWWG of the ICES assessment working group report (ICES, 2015b). This has numerous references to capelin as a forage species and to changes in the distribution and abundance of capelin. For the Barents Sea ecosystem, it has been estimated that the maximum sustainable yield from its capelin fishery would be obtained by fishing in autumn, but that delaying opening of the fisheries until 1 January would be beneficial for the ecosystem (Hamre and Tjelmeland, 1982; Gjösæter et al. 2002).

Research on the ecosystem role and growth of IGJM capelin is much more limited than in the Barents Sea. However it is not unreasonable to assume that the ecosystem role of capelin is similar in both areas. Therefore the initial TAC should not be of much importance as a new measurement of the fishable stock would be available before the start of the fisheries. Initial TAC could still be beneficial for the industry to know how much to expect (ICES 2015b: stock annexe). The ICES benchmark workshop have developed a method for setting the initial and final TACs which clearly take into account the ecosystem role of capelin as a forage species based on the modelled predation rates. The method is described in the section on harvest control rules above. Consumption of capelin by Cod, haddock and saithe are modelled using a variety of data sources to arrive at realistic estimates of consumption of IGJM capelin by these three predators. Data from fish farming, stomach analysis from the wild and theoretical evacuation rates modelled by Magnusson and Palsson (1989) are used to estimate feeding rates. The predation model also requires abundance estimates of the three species and information on the spatial and seasonal coincidence with capelin schools. Spatial distribution and abundance of demersal fishes are readily available from the ICES assessment working group reports for each species. Stomach samples of cod are available from groundfish surveys in March from 1985 to 2014, for haddock from 1992 and 2005 to 2014 and from a number of other demersal fishes in 1992. Stomach samples are also available from Acoustic survey sampling in January 1993 and 1994 and also from sampling on commercial fishing vessels in 2002.

The modelled predation rates are based on three clearly defined areas (Figure 14) in order to refine and better quantify the interactions between predator and prey. Thus predation per area is calculated independently for the three areas: east, south and southwest. In the model 10% of the catches are assumed to be taken in the eastern area between 15 January and 1 February, 65% of the catches in the southern area between 1 February and 15 March, and the remaining 25% in the southwestern area be-tween 15 February and15 March.

The proportion of fish predators inhabiting the different areas along the capelin migration route is obtained from the groundfish survey in March. There may be some changes in distribution from January to March as some of the mature fish may migrate to the spawning areas so the distribution in March may be underestimating the proportion of cod and other predators east of Iceland. The area crossed and time spent in it by the eastern capelin migration is divided into three parts (ICES, 2015b).

- Eastern Area: six weeks (January 15th –March 1st).
- Southern Area: six weeks (February 1st–March 15th)
- Western Area: four weeks (February 15th–March 15th)

The resultant estimates of predation, which are used in the assessment and harvest control rules are based on half feeding rates in each area. The estimate for the Eastern area is 300-600Kt; for the Southern area 100-200Kt and for the Western area 100-200Kt.

During the site visit the assessment team was not made aware of any major concerns regarding the impact of the fishery on cetaceans in terms of capelin as a food resource. However distributions are likely to coincide at times and an evaluation of the potential impact of cetaceans on capelin abundance would provide useful additional information for the sustainable management of the stock. The benchmark workshop on Icelandic stocks, WKICE (ICES, 2015a) recommended that marine mammal abundance in the capelin distribution areas should be monitored, for example by including observers on autumn acoustic surveys. Such a program could indicate whether predation on capelin by whales in the autumn should be added to the TAC framework.

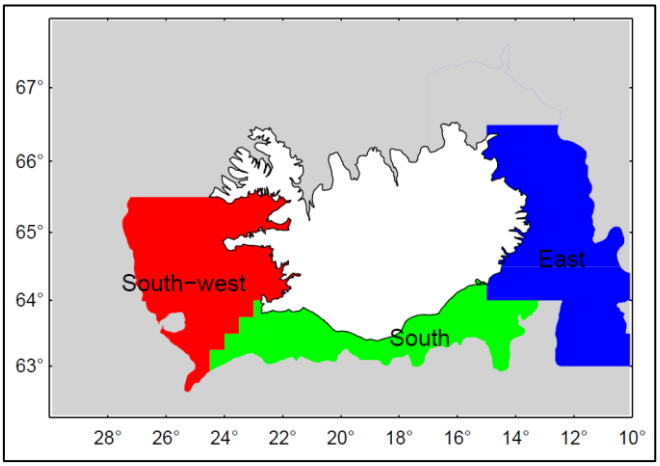


Figure 14. The three regions used in the simulations of predation on capelin migrating through the eastern part of the Icelandic shelf (ICES, 2015b stock annexe)

4.4 Principle Two: Ecosystem Background

One of the three principles to evaluate the fishery against the FCR version 2.0 is the Ecosystems background. In this section the main issues to be evaluated are detailed in the next chart from the requirements (Figure 15).

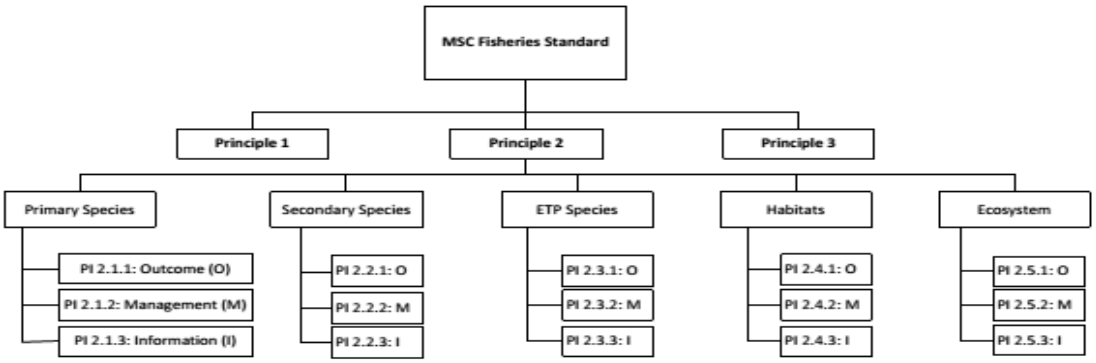


Figure 15. Chart of Principle 2 from MSC requirements V2.0. Components and Performance Indicators to be evaluated under this P2: Ecosystems Background.

Under this principle, 5 components are evaluated: Primary Species, Secondary Species, ETP species, Habitats and Ecosystems. In each component three performance indicators are scored: outcome, Management and Information.

To defining the primary and secondary species, a decision tree is used. In the new version V2.0 of FCR the CAB must classify the species if these species have management plan they should be primary species and if they don't have they should be secondary. Depending on the % of catches these species will be major or minor and it will be evaluated differently.
The figure below (Figure 16) shows the decision tree to classify these species.

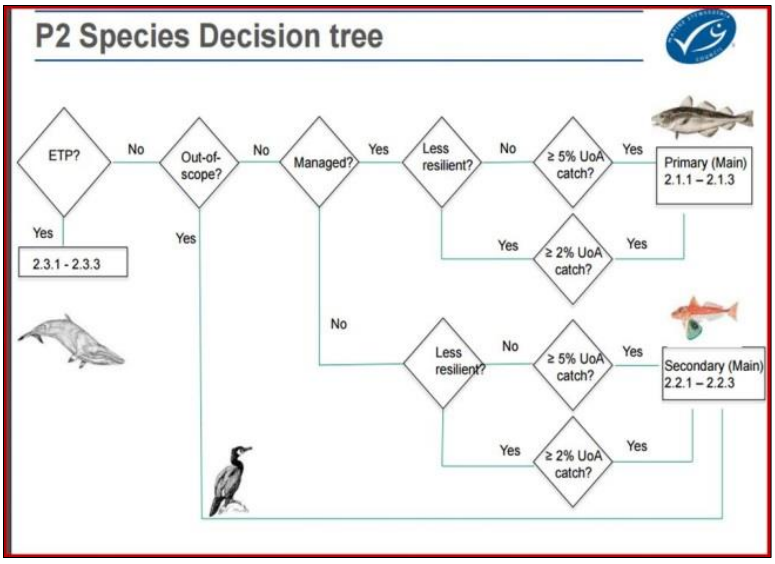


Figure 16. P2 Species Decision tree FCR V2.0

More details about primary and secondary species classification in the fishery under assessment will explain in next sections of this report.

Attending the data from the landings of the fishery available in the Directorate of Fisheries website there are a total of 14 species retained by the capelin fishery (Figure 17).

The graphic below shows that the cod account for 92% of the non-target species taking into account the total catches of the Capelin fleet. Cod is the most retained species in the fishery followed by Haddock. The rest of species represent in the figure are almost negligible with porcentages less than 0.1%.

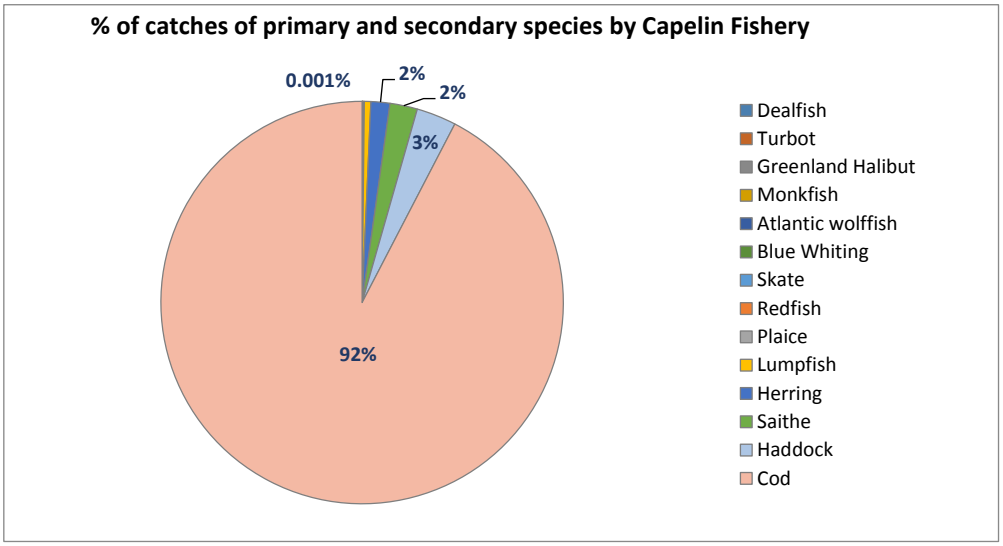


Figure 17. % of catches from the Iceland Capelin Fishery. Landing data from DoF from January 1st 2012

Primary and Secondary species evaluated in this section are managened by the catch limitation system which is based on the catch share allocated to individual vessels. Each vessel is allocated a certain share of the total allowable catch (TAC) of the relevant species. The catch limit of each vessel during the fishing year is thus determined on basis of the TAC of the relevant species and the vessel's share in the total catch.

In addition to the ITQ system, Icelandic fisheries management includes many other management measures such as area restrictions and fishing gear restrictions to ensure the fishery is targeting the Capelin and other catches are reduced. Therefore all these measures in place take into account the reduction of catches of other retained species in the fishery.

4.4.1 Primary Species

Primary species are defined as "Only in-scope species that are managed according to either target or limit reference points". The primary species are split in main or minor species too as must be consulted in the Figure 16.

Capelin fishery is very clean and the presence of retained species is not too high. The Directorate of Fisheries makes easy the consultation of the total composition of catches by vessels which fishing in Icelandic waters, the composition of catches are published in the Directorate website.

Vessels targeting Capelin with purse seine and with midwater pelagic trawls have the same retained species. No differences by gear can be detected. In both fisheries approximately 13 % of catches are

other species that are not the target species. In this 13% of catches, 14 species were described. 11 of them were defined as primary retained species by the fishery. Only one species, cod, has catches above 5%. The rest of primary species are less than 5%, the catches are almost negligible with % of 0,1.. Therefore cod is defined as main primary species and the 10 other species as minor primary species. The list of primary species is shown in the table.

Table 3. List of primary species described in the Capelin fisheries, purse seine and pelagic trawl. Data collected by DoF during last five years and published in its website.

Species	% Catches	Classification
Cod	12.13	Primary Main
Haddock	0.2	Primary Minor
Saithe/Pollock	0.29	Primary Minor
Lumpfish	0.069	Primary Minor
Herring	0.2	Primary Minor
Greenland Halibut	0.0003	Primary Minor
Monkfish	0.0007	Primary Minor
Atlantic wolfish	0.0009	Primary Minor
Blue Whiting	0.003	Primary Minor
Redfish	0.006	Primary Minor
Plaice	0.007	Primary Minor

The Directorate of Fisheries (DoF) shows in its website the cathes (kg) of cod (*Gadus morhua* Linnaeus, 1758) by the Capelin fleet since 2012 to 2016 (in 2016 the catches of February and March are included). Also, the catches of the other species by Capelin fishery must be consulted, they are reported in the table above and can be concluded that the primary species in the fishery are in low porcentaje as it was suggested the fishery is very clean.

The Marine Research Instute (MRI) has published the assessment of the cod every year. The catches of cod during the last years (2012-2016) by Capelin fishery was 236,403 kg representing 12.13% of the total catches in the fishery. Last report published by MRI shows that the total landings of cod were more than the TAC established. MRI estimate sthat in 2017 the population of mature will be less than the previous years due to the decreased of inmature population in 2013. Althought the catches of cod are decreasing in relation with previous years and since 2000 the trends of catches is decrasing (Figure 18).

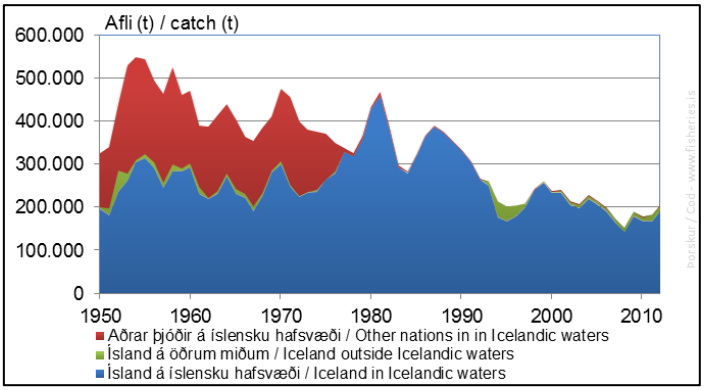


Figure 18. Cod catch (t) in Icelandic waters and cod catch by Icelandic vessels in distant waters (Source: ICES, Statistics Iceland)

The total catches of cod last year were estimated at 221 thousand tonnes by all the fleets, targeting or not the species. Between 2012 and 2016 as it reported in DoF, the catches of cod by Capelin fleet with both gears (purse seine and pelagic trawl) were 236,403 kg.

However, the last report from MRI estimated that CPUE was high for the main gear types (purse seine) in 2015. Linking changes in CPUE with changes in stock size is difficult because of technical changes in the fishery. It is also problematic to distinguish between targeted effort and indirect fishing in the logbooks. Although, capelin fishery does not hinder the stock sizes because it is estimated with the data from DoF that 0,11% of total catches of cod, came from Capelin fishery. Therefore the catches are insignificant. Further, the last assessment published in the ICES website and Directorate of Fisheries shows that the stock status of cod are fluctuating around MSY. Overfished or overfishing is not occurring.

ISF Iceland Cod was certified against MSC requirements version 1.3. Nowadays, the re-assessment is going on, at the moment the fishery is in the stage 2: peer review.

The rest of primary species are considered in this report as primary minor species. As the CAB has shown in the Table 3 the % of catches are less than 5%, for this reason the assessment team has not considered them as main species in the fishery.

The main aspects of the stock status of each species are explained as follows:

- **Haddock**

ISF Iceland Haddock is a certified fishery. It was certified against V1.3 in April 2012. At the moment, the re-assessment is carried out and is in the stage 2: peer review.

The last report from MRI shows that SSB has decreased in recent years but is above MGT $B_{trigger}$. Harvest rate in 2014–2015 is estimated at its lowest level in the assessment period and is currently below HR_{MGT}. Recruitment in 2010–2015 was low but is estimated high for 2016.

Information from surveys indicate that the proportion of the fishable part of the stock on the northern and eastern part of the shelf has increased from 10–15% to 50% in the period 2000–2008

but only 20% of catches are taken there. Therefore the fishing pressure is much lower in the north and the east compared to other areas. The northern part of the shelf has always been important nursery ground for haddock but before 2000 it migrated out of the area once mature. The areas where haddock is fished are not completely over paling with the capelin grounds. Further the % of catches come from Capelin is 0.2%, almost negligible.

Figure 19 shows the main aspect of stock status in the las assessment. The trend of catches is decreasing, the recruitment in 2016 increased regarding the previous years, the mortality is above the sustainable limit and SSb is above Btrigger and increasing as it was described.

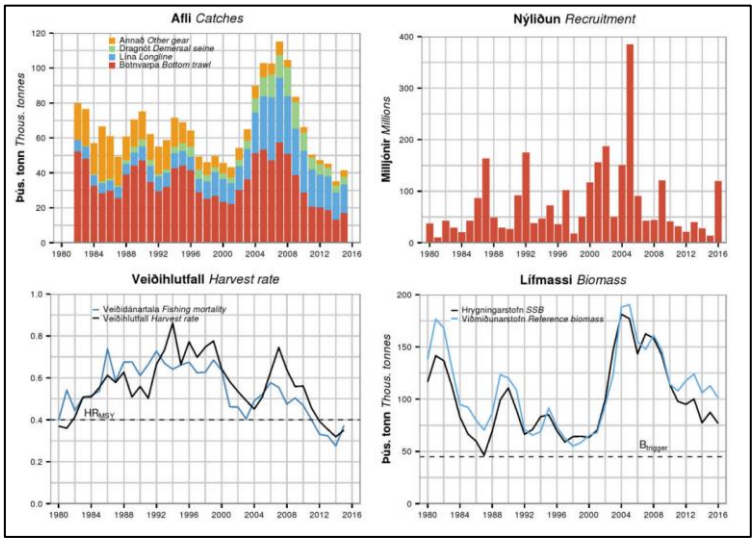


Figure 19. Haddock: Catch by gear type, recruitment at age 2, fishing mortality and harvest rate, reference stock biomass (45 cm and larger) and spawning stock biomass (SSB).

- **Saithe/Pollock**

This fishery was certified against V1.3 in September 2014, at the moment the 2nd Surveillance is going on, it has been stated in August 2016.

Stock size has increased in recent years and the SSB is now close to the average of 1980–2015. Recruitment in 2009–2015 was relatively constant and about 20% higher than the average. Harvest rate in 2015 was below HR_{MSY}.

The set TAC was not caught in 2014/2015 and that is also likely to happen in 2015/2016. At the turn of the century there was a large increase in longline effort in the demersal fisheries in Iceland, this increase was mostly at the expense of gillnet and bottom trawl fleets, the main fleets fishing saithe. Therefore, the catches come from Capelin fishery are insignificant because the gear used to fishing Saithe work in different ways. The most relevant characteristics in the stock status are shown in the

Figure 20.

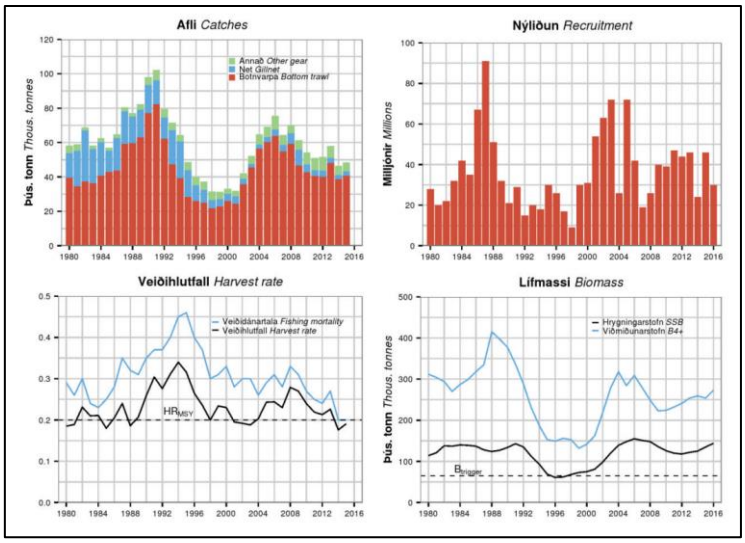


Figure 20. Saithe: Catch by gear type, recruitment at age 3, fishing mortality and harvest rate, reference stock biomass and spawning stock biomass (SSB).

- **Lumpfish**

The fishery Icelandic Gillnet Lumpfish was certified against MSC requirements V1.3 in December 2014, at the moment the 2nd Surveillance is going on, it has been stated in August 2016.

MRI advises that the initial TAC for the fishing year 2016/2017 does not exceed 2030 tonnes. The MRI will, after estimation of the biomass index in spring 2017, provide final advice for the fishing year 2016/2017. Assuming that fishing will be managed by the same method as before, MRI recommends that the number of boats which will participate in the fishery is taken into account when allocating the number of fishing days. MRI also recommends improved monitoring of bycatch and discards of other species from the female lumpfish fishery. Further, the bycatch of lumpfish must be controlled the catches from Capelin are less than 0.1%.

The female biomass index decreased between 2006 and 2013, but has increased since then. The male biomass index in 2016 has increased from 2015 and has now risen above the average of the reference period 1985–2011.

The target F_{proxy} value was originally set at 0.75, based on the mean F_{proxy} in 1985–2011. Landings in 1971–2007 were estimated in 2015, but the value of 0.75 is still used as target F_{proxy}. These data are described in the figure below:

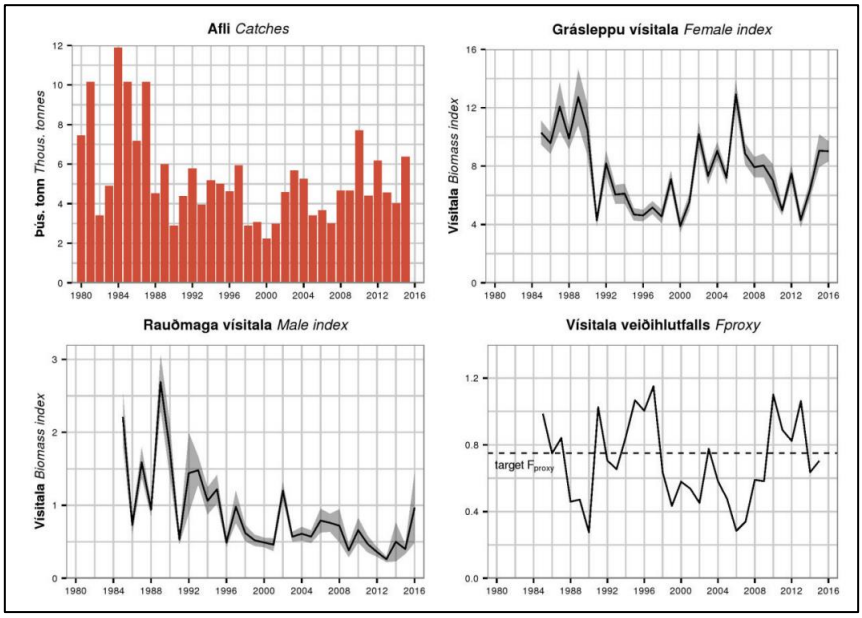


Figure 21. Lumpfish. Catch of females, biomass indices of females and males, and Fproxy (catch/survey biomass) of females.

– **Herring**

The fishery ISF Norwegian & Icelandic herring trawl and seine was certified against MSC requirements V1.3 in May 2014, at the moment the 2nd Surveillance is going on, it has been stated in August 2016.

Good recruitment in 1999–2002 resulted in a record high SSB in 2005–2008. However, the stock declined rapidly until 2011 due to mortality caused by Ichthyophonus infection. Continued reduction in the size of the SSB in recent years is due to a declining trend in recruitment. Fishing mortality was low during the first years of the infection period, but has increased and is now at F_{MSY}.

Since 1973, the stock size of Icelandic summer-spawning herring has been measured annually on acoustic surveys, generally in November–January. The stock was surveyed west of Iceland the winter 2015/2016 in January and again in March. The total acoustic estimate of adult herring (>26 cm) was 396 thus tonnes. An acoustic survey on the juvenile part of the stock was conducted in inshore northern areas from Breiðafjörður to Öxarfjörður in September–October. The results indicate that the 2014 year class is small or 2/3 of the average year class size. This year class was mainly found in Húnaflói and Eyjafjörður. Prevalence of Ichtyophonus infection in the 2003–2006 year classes is still high or 30–40%, while in the 2007–2009 year classes the rate has been increasing in the last two years. Further, new infection was detected in age 2 herring north of Iceland during this winter. Therefore, it is evident that new infection which has hardly been seen since 2001 is occurring but at a lower rate than in 2009–2010. Continued monitoring of the development of infection in the stock is important. The main results of Ichthyophonus research and monitoring to date is that the infection does not cause as high mortality as previously assumed.

Although, the stock is under observing to control the infection the catches from Capelin are less than 0.2% therefore it isn't a relevant retained species in the fishery.

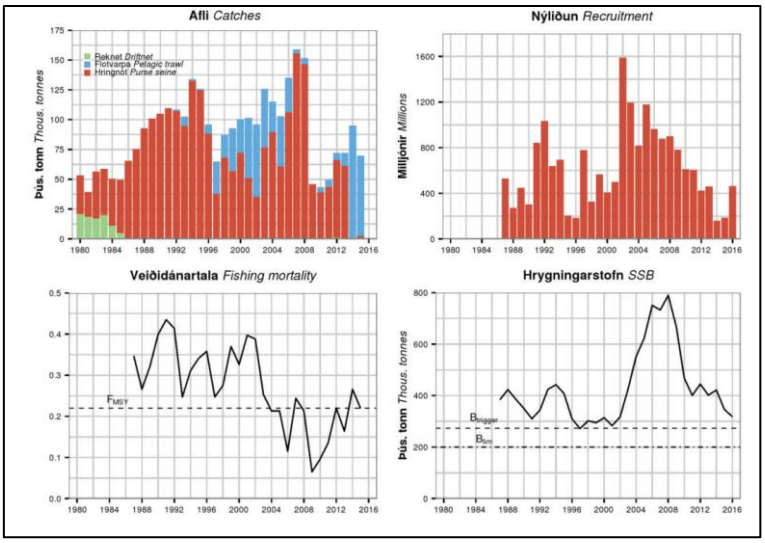


Figure 22. Herring: Catch by gear, recruitment at age 3, fishing mortality and spawning stock biomass (SSB).

- **Greenland Halibut**

MRI and ICES advise that when the MSY approach is applied, catches in 2016/2017 should be no more than 24 thus tonnes. According to an agreement between Iceland and Greenland, 56.4% of the TAC is allocated to Iceland. Although is not a relevant fact to Capelin fishery because the catches as retained species in this fishery are far less than 0.1%, almost negligible. Figure 23 shows the main aspects of the stock status, fishing mortality has decreased in recent years but is above FMSY. Biomass is slowly increasing.

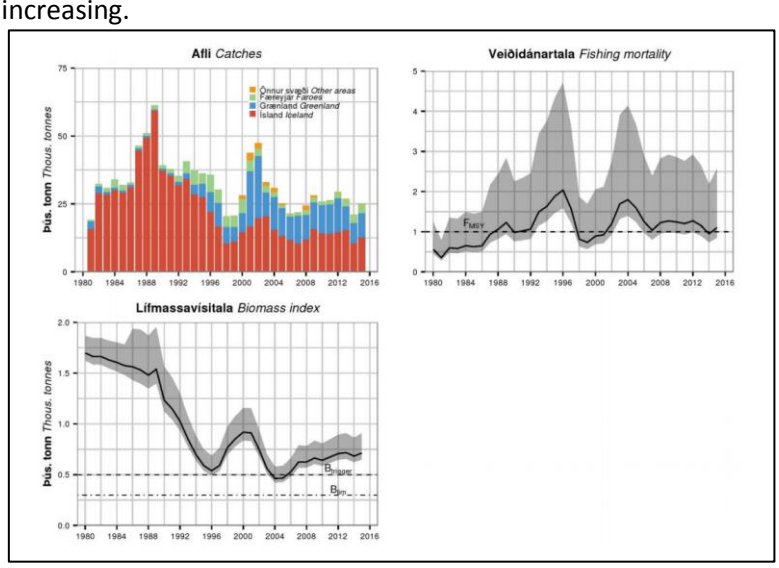


Figure 23. Greenland halibut: Catch by area, relative fishing mortality (F/FMSY) and changes in relative biomass (B/BMSY).

– **Monkfish**

The biomass index was high in 2005–2011 compared to previous years, but has since then decreased substantially. Juvenile indices show poor recruitment for year classes 2008–2014. F_{proxy} was stable when the stock peaked, but has reduced in the last few years.

Annual landings of anglerfish in Icelandic waters have steadily decreased since peaking in 2009. About half of landings are caught by gillnets and the other half mostly in demersal seine and trawls as bycatch. In recent years, most of the landings come from off Iceland's west coast. Even though as a typical demersal fish is not attained by the fishery and the catches are much lower than 0.1%. Figure 24 shows the mortality and how the catches are decreasing in the last years.

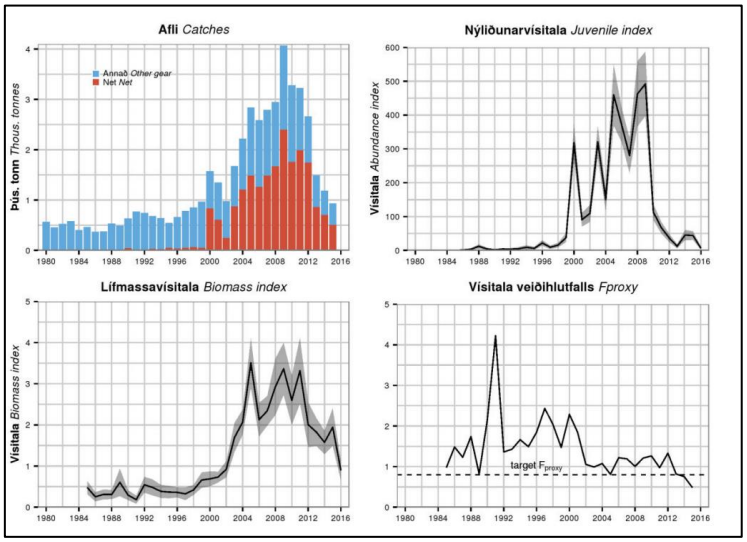


Figure 24. Anglerfish: Catch by gear type, juvenile (2-yr old) and biomass indices, and Fproxy (catch/survey biomass index).

– **Atlantic wolfish**

The annual landings of Atlantic wolfish in 2013–2015 are the lowest since before 1950. Atlantic wolfish is mainly caught in the longline fishery. Bottom trawl effort increased in 1998–2008 but has since then decreased. Fishing mortality has declined since 2009 and is now below F_{MSY}. Harvestable biomass has dropped since 2006, but is above average compared to the years from 1980. Recruitment was low in 2008–2015 (Figure 25).

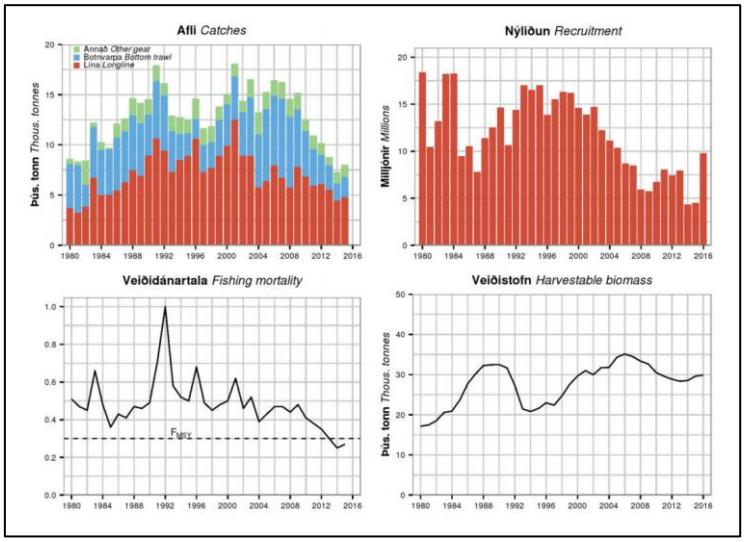


Figure 25. Atlantic wolfish: Catch by gear type, recruitment at age 5, fishing mortality, and harvestable biomass.

– **Blue Whiting**

Fishing mortality (F) has increased from a historical low in 2011 to above F_{MSY} in 2014. SSB increased from 2010 to 2014 and is above MSY $B_{trigger}$. Recruitment after 2010 is estimated above the long term average. Year classes 2009–2012 are estimated above average, and the survey indices for year classes 2013 and 2014 are also above average. (From ICES advice 2015b). ()

The International Blue Whiting Spawning Stock Survey is carried out yearly since 2004 on the spawning grounds west of the British Isles in March-April. The survey is carried out by Norway, Russia, the Faroe Islands and the EU. There is no agreement between the participating nations about catch allocation. This has resulted in catches exceeding the advice given by ICES, however the catches from Capelin Fishery doesn't hinder the stock status because are almost negligible.

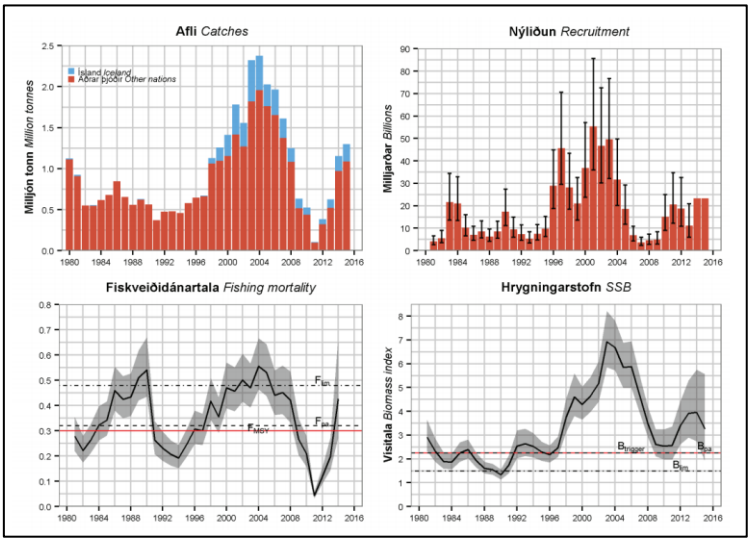


Figure 26. Blue whiting: Total and Icelandic catch, recruitment at age 1, fishing mortality and spawning stock biomass (From ICES advice 2015b).

– **Redfish**

The fishery ISF Iceland golden redfish was certified against MSC requirements V1.3 in October2014, at the moment the 2nd Surveillance is going on, it has been stated in August 2016.

The 2000–2005 year classes accounted for most of the catches in 2015. The 1996–2005 year classes are above average in size, but the 2006–2011 year classes are estimated to be below the average. Fishing mortality since 2010 has been estimated to be around FMSY. Spawning-stock biomass (SSB) has steadily increased for the past 20 years and is well above MSY $B_{trigger}$. (Figure 27)
Bilateral agreement between Iceland and Greenland on the management of the golden redfish fishery was signed in September 2015 and is based on the management plan. The agreement is for the period 2016–2018 and states that each year 90% of the TAC is allocated to Iceland and 10% to Greenland. Furthermore, 350t are allocated each year to other areas. The Faroe Islands are not a part of this agreement. Although this agreement is not relevant for Capelin fishery because the catches from these vessels are much lower than other targeting for Refish.

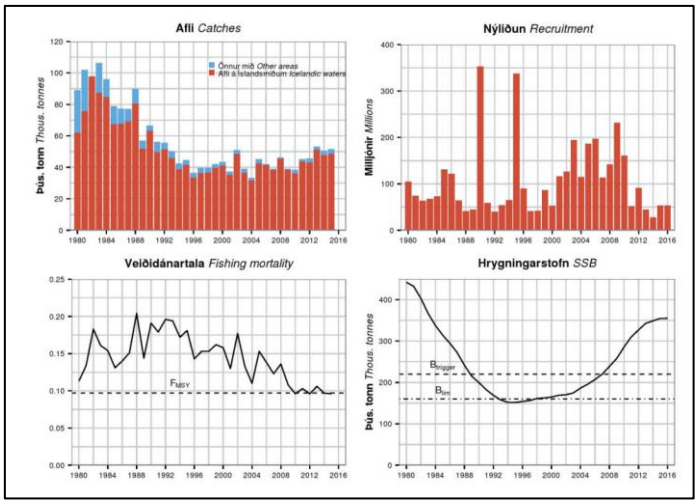


Figure 27. Golden redfish: Catch by area, recruitment at age 5, fishing mortality, and spawning stock biomass (SSB).

– **Plaice**

The annual plaice catch has been around 6000 tonnes in recent years, with about two thirds caught in demersal seine. In 1992, around half of the TAC was caught in bottom trawl, but since 1996 that proportion has been 24– 38%. Fishing effort has decreased and CPUE as increased, both in demersal seine and bottom trawl, however due to the nature of the gears using in Capelin fishery, the vessels under assessment doesn't hinder the stock status because they don't fish in the bottom surface and the fishing activities are pelagic.
Recruitment has been slow but steady since 1994. Fishing mortality has declined since 1997 and is at an all-time low, while biomass has slowly increased since 2000. (Figure 28)

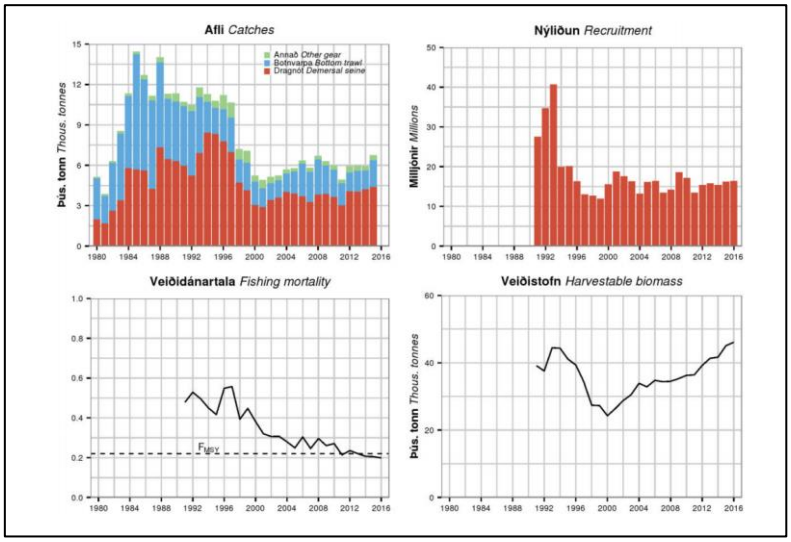


Figure 28. Plaice: Catch by gear type, recruitment (3-yr old), fishing mortality, and harvestable biomass.

4.4.2 Secondary Species

Secondary species are defined as "Unmanaged and contains a large variety of species including out-of scope sp.(amphibians, birds, reptiles and mammals) that are not ETP species"

As for primary species, the secondary species are classified into two groups: main or minor species as it was explaine in the Figure 16.

If a species is out-of-scope then it is automatically main and also secondary.

Based on the definition of secondary species and on Figure 17, the assessment team concluded that there are no main secondary species. Catch on-target species are similar for pelagic trawl and purse seine.

Therefore, no main species are described in the fishery. Three species were identified as minor secondary species with catches far less than 5 % of catches.The species identified are listed below:

- Dealfish [*Trachipterus arcticus*, (Brünnich, 1788)]
- Turbot [*Scophthalmus maximus* (Linnaeus, 1758)]
- Skate [*Dipturus batis* (Linnaeus, 1758)]

The percentage of cathes respectively were: 0.0001%, 0.0001% and 0.003% .

Information about the stock status of these species is available in the Icelandic Fisheries form Ministry of Fisheries and Agriculture website (http://www.fisheries.is). Although, these species have not TAC established and some of them as it happens with the skates that are bycatch of many kind of fisheries, the obligation to land all the catches make effort to control the fishing of these no targhet species in the UoAs.

The impact on skate by bycatch of different gears was a concerns in the iceland fisheries, however, rays (or skates) are benthic fishes that feed on a variety of benthic animals over a wide depth range.

The grey skate is in the IUCN list considered as “Critical Endangered, (CE)” but the data are form 2006 and it can be observered in the Figure 29 that the catches are decreasing since 2000.

The pelagic gear do not contact the seabed, where in many cases the skates have their potential distribution, they are an abundant constituent of the demersal fish community.

Therefore, due to the characteristics of the fishery and the types of gear, the catches of skate from the fleet under evaluation are not common. The data reported to DoF are almost negligible, 77 kilos in a period of time of 2012-2016 as it can be consulted on DoF website.

Last ICES WG2015 shows that no assessments have been undertaken for the skates in this ecoregion and no reference points have been proposed for any of these species. Preliminary results of more recent data indicate negative survey trends for this species and needs to be investigated further.

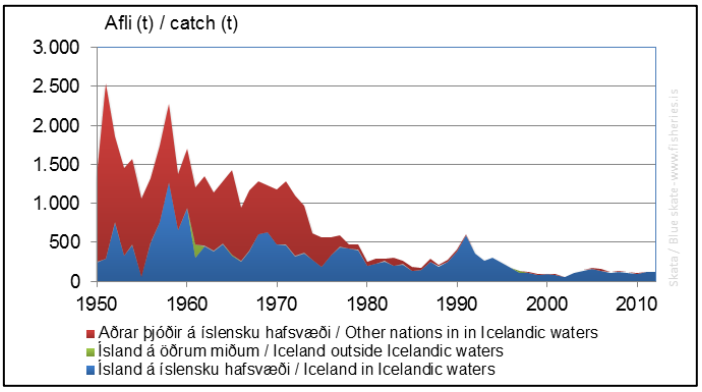


Figure 29. Skates catch (t) in Icelandic waters

However, in the Capelin fishery the catches are low, due to the overfished occurred 50 years ago by other gears, the stock of skates has been monitored, as it shown in the graphic (Figure 29) the catches are much lower than in the 50’ years.

Regarding turbot and dealfish, catches are mainly taken as bycatch, and these stocks are currently not regulated by a TAC. Fishing effort of active and passive gears of all countries has been stable in the last years. DoF manages this cathes with the obligations to land all the species fished. Although these species have not reference points, Capelin fishery, as the assessment team mentioned above, is very clean and therefore the fishery has not implication in the status of these secondary species.

4.4.3 ETP species

ETPs species are defined by MSC as “Species recognised by national legislation and/or binding international agreements to which the jurisdictions controlling the fishery under assessment are party. Species listed under Appendix I of CITES shall be considered ETP species for the purposes of the MSC assessment, unless it can be shown that the particular stock of the CITES listed species impacted by the fishery under assessment is not endangered”

The CITES appendix I can be consulted in this link, where all the species considered ETp are listed.
In Icelandic waters the presence of humpback whales (*Megaptera novaeangliae*) and Minke whales (*Balaenoptera acutorostrata*) are known. These two species are considered by IUCN as least concern (LC), both of them.

Regarding Humpback whales, although no final assessment of the current global population relative to its 1940 level is available, it seems, based on the recent rates of increase, unlikely that it is below the threshold (50% of the 1940 level) that would qualify the species for inclusion in the vulnerable category under criterion A. The available population estimates total more than 60,000 animals, well above the C and D criteria thresholds for the vulnerable category. The range of the humpback whale is not restricted, and therefore the species does not qualify for inclusion under Criterion B. The species is therefore listed as Least Concern. Completion of the ongoing Comprehensive Assessment by the IWC Scientific Committee will enable a more accurate determination of the level of recovery of the species (UICN-2008).

Regarding Minke whales there is no estimate of total global population size, but estimates from parts of the range in the Northern Hemisphere (totalling in excess of 100,000 individuals) show that it is well above the thresholds for a threatened category. While declines have been detected or inferred in some areas, there is no indication that the global population has declined to an extent that would qualify for a threatened category (IUCN-2008).

The legislation in Iceland regarding ETPs species is regulated by the Icelandic legislation (557/2007) who states to complete the logbook where any interaction or catch of birds or other endangered species must be reported to DoF. On the other hand, mammals are regulated by the Fisheries Management Act and Nature Conservation Act. no. 47/197l.Further, in Iceland, whaling is controlled by the International Whaling Commission (IWC) and the North-Atlantic Marine Mammal Commission (NAMMCO).

Marine mammals are the top predators and the largest consumers in Arctic and subarctic environments. Whale species are more evenly spread over the world, but most of the large species depend on abundant food supply in high latitudes in summer. Many migrate to warmer waters in the winter when food is harder to get in the colder ecosystems. This is also the case with many seabirds. Their ability to fly makes them able to escape the harsh northern winters but enjoy the rich food supply in these environments in the summer. The warm internal temperatures and high metabolic rate combined with large biomass of the whales make the marine mammals and the birds the top predators of the Arctic and subarctic environment.

At least 12 species of cetaceans occur regularly in Icelandic waters, 5 species of baleen whales and 7 species of toothed whales, including dolphins and porpoise. In addition, 11 species have been recorded more sporadically. Whaling has been conducted in Icelandic waters throughout the centuries and research on the whale stocks around Iceland is therefore considered important. Reliable abundance estimates exist for most species of large whales while such estimates are not available for small cetaceans. In the continental shelf area, common minke whales probably have the largest biomass while on the open ocean it is the fin whales. The list below shows the species identified in the Icelandic waters, some of them such as minke or humpback whales are more common than others that have been seen sporadically.

- Belugas (*Delphinapterus leucas*)
- Blainville´s (*Mesoplodon densirostris*)
- Blue whale (*Balaenoptera musculus*)
- Bottlenose whale (*Hyperoodon ampullatus*)

- Bowhead whales (*Balaena mysticetus*)
- Common or harbour seals (*Phoca vitulina*)
- Cuvier´s beaked whales (*Ziphius cavirostris*)
- Fin whale (*Balaenopterus physalus*)
- Grey seals (*Halichoerus grypus*)
- Grey whale (*Eschrictus robustus*)
- Harbour porpoises (*Phocoena phocoena*)
- Humpback whale (*Megaptera novaeangliae*)
- Killer whale (*Orcinus orca*)
- Long- finned pilot whale (*Globicephala melas*)
- Minke whale (*Balaenopterus acutorostrata*)
- Northern right whale (*Eubalaena glacialis*)
- Sei whale (*Balaenoptera borealis*)
- Sowerby´s (*Mesoplodon bidens*)
- Sperm whales (*Physeter macrocephalus*)
- White-beaked dolphin (*Lagenorhynchus albirostris*)

The impact that the pelagic fisheries, either purse seine or midwater pelagic trawl, have on ETP species are negligible. Therefore the strategy for managing the impact of these fisheries on ETP species, involves less effort than other fisheries with more impact on these kinds of species. The direct effects caused by the fishery are known because no species may be impacted by the fishery and there are not any protected species separately under Icelandic legislation.

The CITES Appendix I, list of species, it has the species that may interact with the fishery and they are listed in section 3. These include different species of whales, baleen whales as well as some dolphins and porpoises.

Humpback whales have been protected in Icelandic waters since 1955. Although no direct estimates of abundance exist from this time, it is clear from the post-war whaling data that the species was then very rare in Icelandic waters. Thus, at that time the population had not made a significant recovery from the overexploitation occurring from the late 19th century and up to the Icelandic whaling ban in 1915.

However, in the 1970‘s and 1980‘s a significant and rapid increase in relative abundance was documented (Sigurjónsson & Gunnlaugsson 1990), and this increase continued after the initiation of the series of the North Atlantic Sightings Surveys in 1987 (Lockyer & Pike 2009). In 1987, the estimated number of humpback whales in Icelandic and adjacent waters the Central North Atlantic) was around 1,800 animals. In subsequent surveys the abundance increased rapidly, with estimated abundance in the range 10-15 thousand in surveys conducted after year 2000. There are some indications that the increase rates may have levelled off after the turn of the century, which would be consistent with the population having reached the carrying capacity (K) of the environment, i.e. full recovery from previous overexploitation. High rates of population increase have been documented in recent decades for humpback whales in several other areas around the world (Barlow & Clapham 1997, Noad et al. 2011, Heide-Jørgensen et al. 2012) and for this reason more interactions have been recorded. This worldwide development has led to humpback whales being

listed as “Least Concern” on the IUCN global Redlist as well as on the IUCN regional list for Europe (North Atlantic). The fact that humpback whales are still listed in CITES Appendix I and are classified as Protection Stock (PS) by the IWC has no bearing on the present population status of the species. The former is a result of a CITES resolution, listing all large cetaceans in Appendix I as long as the IWC moratorium is in force, irrespective of the biological status of individual species/populations. Some studies show that the IWC listing as PS is more than 30 years old, based on a management procedure (NMP) used up to 1985 and therefore irrelevant in terms of present status.

While significant data exist on abundance in Icelandic waters, very limited direct evidence exists on the diet composition of this species compared to the more recently exploited species s.a. fin, minke, sei and sperm whales. However, in general humpback whales are known to have a broad diet spectrum ranging from planktonic crustaceans to pelagic fish species s.a. herring and capelin. From visual observations it is clear that humpback whale diet in Icelandic waters includes both capelin and krill but the relative proportions of these and other potential prey species are unknown. The only reliable estimate of consumption by cetaceans in Icelandic waters dates back to the 1980-1990‘s (Sigurjónsson & Víkingsson 1997). Recent changes in distribution and abundance of cetaceans in Icelandic waters, possibly due to climate change, indicate that humpback whales have taken over the role of common minke whales as the dominant baleen whale predator on the Icelandic shelf (Víkingsson et al. 2015). While humpback whales are known to migrate between Iceland and the Caribbean and Cape Verde (Martin et al. 1984, Smith et al. 1999, Jann et al. 2003) an unknown proportion of the population seems to reside in Icelandic waters during winter, often seen in large numbers on the capelin fishing grounds (Víkingsson 2004).

Basran (Basran, 2014) studied interactions with fisheries through photographic analysis of scarring from fishing gear and from surveys among Icelandic fishermen. According to this analysis, 41.8% of the analysed humpback whales had scars presumably resulting from interaction with fishing gear, a somewhat lower frequency than from other well studied areas such as the Gulf of Maine and Southeast Alaska. However, majority of the scarring is believed to have resulted from fishing gear other than purse-sein as could be gillnets and lobster pots (Gulf of Maine). The survey among Icelandic fishermen resulted in three accounts of humpback whales being encircled in capelin purse seines, these confirm that encirclement of humpback whales by purse seines takes place on the capelin fishing grounds. They also confirm other anecdotal evidence that in most such cases the fishermen manage to lower the seine and thereby release the whales without notable harm. In some cases the humpback whales force themselves through the seine, causing considerable financial loss to the fishermen. Therefore, it is clearly in the fisheries ‘interest to 1) avoid encircling whales and 2) if a whale is inside a seine, to lower the seine to free the whale, even if this means a loss of catch. The MFRI is not aware of any account of such interactions resulting in serious injury or mortality to humpback whales due to entrapment in capelin purse seine in Icelandic waters. While this does not prove an absence of mortality from this fishery, it strongly indicates that interactions with the capelin fishery is not a significant source of mortality for humpback whales in Icelandic waters.

Acoustic deterrents as pingers have been used extensively to reduce bycatch in various fisheries (e.g. Erbe et al. 2011, McPherson 2011). The results are variable depending on type of fishery and cetacean species. The lack of long-term monitoring of the effects makes difficult the interpretations of these results and more studies are needed.

Thorough ongoing observer programmes in pelagic trawl, NGOs programmes and diverse researches, there is a growing body of evidence to support the understanding that pelagic trawl fisheries have few encounters with protected species that result in direct mortality of protected species. In addition Icelandic legislation (557/2007) states that all fishing vessels must keep a Fishery Log-book. Birds and Mammals that are caught in fishing gear are to be reported and recorded in the Fishery Log-book. This Fishery Log-book is returned to the Directory of Fisheries once a month. These reports are then sent onto the Marine Research Institute where the information is used in their scientific work. With this information MRI realizes the stock status of minke whales which can be captured up to 226 from 2016 to 2018. Even though there is a TAC for Iceland whaling, there are no catches from Capelin fleet reported. Further, since 2003 when Iceland took part in the IWA for second time, whaling has decreased significantly (Figure 30).

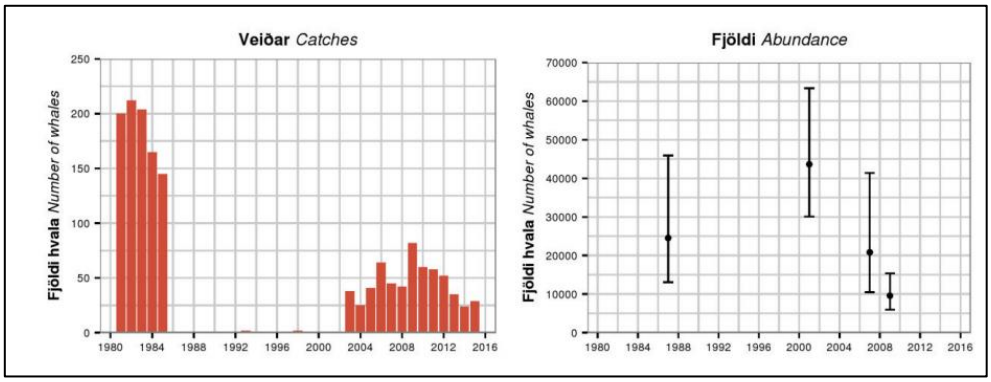


Figure 30. Whaling and abundance in the Icelandic continental shelf area with 95% confidence intervals

4.4.4 Habitats

Pelagic trawl gear and purse seine gears are not designed to contact the seabed and then they do not impact with the bottom surface being less erosive than other gears. Therefore the gear types under evaluation are designed to fish in pelagic habitats and when any interaction happens with the seafloor is exceptional.

As it is explained by Vilhjálmsson et al. (2002), Capelin has a pelagic distribution and it aggregated in schools between 0-700 meters but usually is located up to 200 m (http://www.fishbase.org/summary/252).
Then when the fishery targets capelin the fishing operation occurs in this range of depth and the interactions with the seabed is almost impossible, the fishing activity is localized at some point in the water column above the seabed.

Capelin is a pelagic species which mature individuals move inshore in large schools to spawn. In the spring large spawning shoals migrate toward the coasts and during its lifecycle has migrations to north areas (Figure 3) but normally is above the seabed where they feed on a variety of copepods and carry out large migrations in pursuit of zooplankton aggregations.

The habitats and the ground where the Capelin are and where the fishing activities take place are well defined. There is a widely information and mapping regarding the closed areas and the kind of substrate in each ground to allow fishing activities without damage the gears.

The Ministry of Fisheries and Agriculture has large knowledge regarding the distribution and characteristics of the grounds and the track record allow knowing where the vessels are fishing. Figure 31 shows the distribution of these grounds.

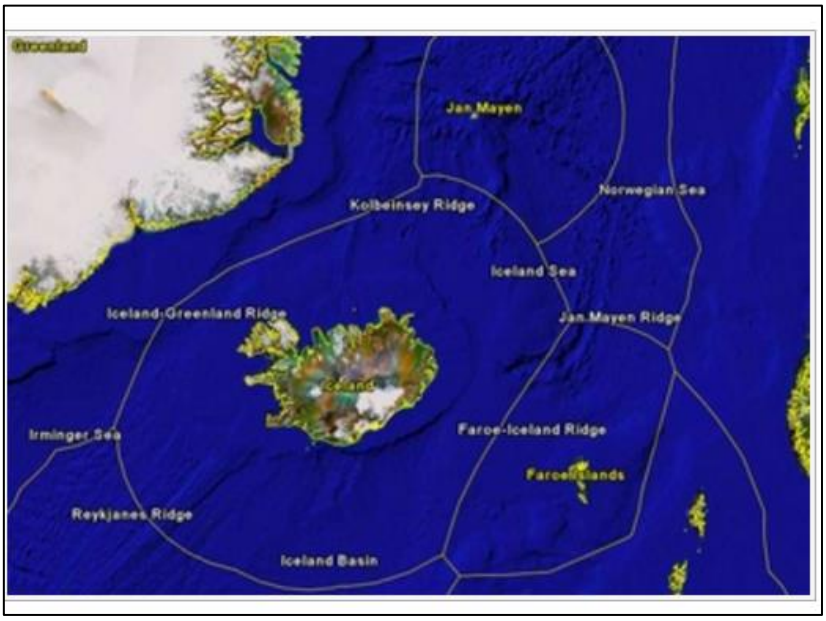


Figure 31. The 200 mile EEZ around Iceland and around neighbouring countries

The geographic boundaries of the Icelandic fishing grounds have changed with time. Originally, the grounds consisted of the waters above the continental shelf where Icelanders could conduct their fisheries in their small boats. Later the Icelandic fishing grounds were generally acknowledged as the International Council for the Exploitation of the Sea (ICES) fishing area Va. Most recently, the grounds have been extended to the 200 nm exclusive economic zone (EEZ). These grounds are well located and can be monitored. On the other hand, the DoF enforcement to co0mply with the laws established other measure to protect the habitat in Iceland, it is the prohibition on fishing with trawls within 12nm of the coast in many areas of Iceland where the most vulnerable areas of seabed (deep sea coral reefs) and benthos organisms live.

4.4.5 Ecosystems

Iceland is the second largest island in Europe, after Great Britain. It touches the Arctic Circle in the North and has maritime boundaries with Greenland in the west and north-west, Jan Mayen (Norwegian) in the north and the Faroe Islands in the south-east. The nearest neighbours are Greenland, 280 km to the northwest and the Faroe Islands, 430 km to the southeast.

The ocean around Iceland includes the boundary between warm Atlantic waters in the south and colder waters from the north. Thus, inter-annual variability in oceanic conditions is high, depending on the strength of the currents. Nevertheless, due to the warm current from the south the climate in Iceland is temperate compared to how far to the north it is located (Figure 3).

The Irminger current keeps the waters south and west of Iceland relatively warm and stable both inter and intra-annually. The major spawning grounds for most Icelandic fish stocks are in these waters. Most of them spawn in early spring, when the larvae are able to utilise the spring phytol- and zooplankton bloom, while they drift to nursery areas. The waters north of the country are colder

and fluctuate more, both between seasons, years and decades, depending on the strength of the Irminger current versus the colder currents. The waters north of Iceland are also important rearing grounds for juveniles of many species such as capelin, herring, haddock and cod. Most of the coldest waters are habited by capelin shrimp, capelin and Greenland halibut. These characteristics described and are the responsible for Capelin migrations.

The ecosystems in Iceland is large known, the MRI realized several project to improve the skills regarding the environmental conditions around Iceland. The Iceland Sea Ecosystem Project, of the Marine Research Institute, was initiated in 2006 and continued in 2007. The main objective of the project is to analyse structure and function of the Iceland Sea ecosystem, with particular emphasis on life history of the capelin stock and recent changes during the last decade. Some of the data collected in this project are still collected during the surveys realized to evaluate the stock status of main target species. The layers of salinity, temperature and nutrients are well defined in the Icelandic waters. (Figure 32 and Figure 33).

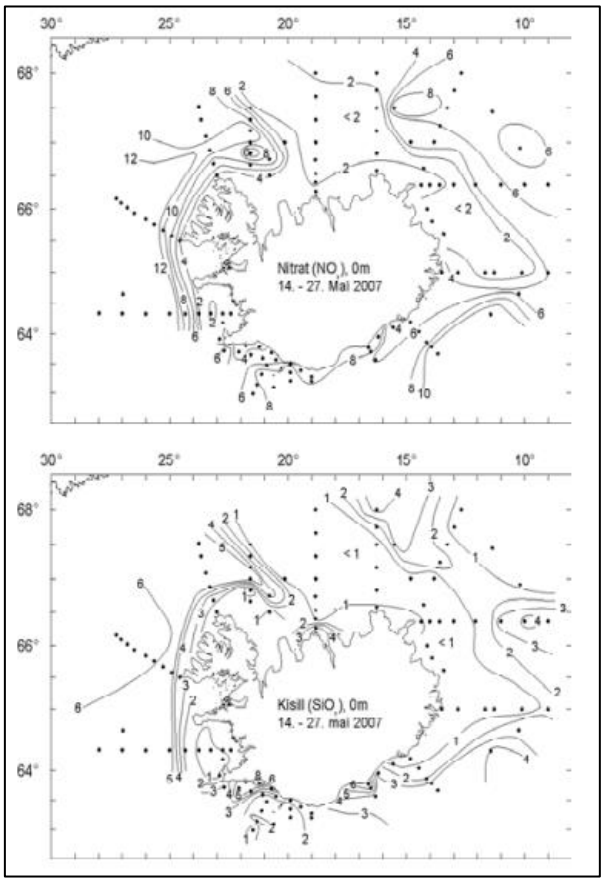


Figure 32. Nutrient concentrations at the surface in Icelandic waters 14.—27. May 2007 above) nitrate (NO3, µmol l-1) and bellow) silicate (Si, µmol l-1).

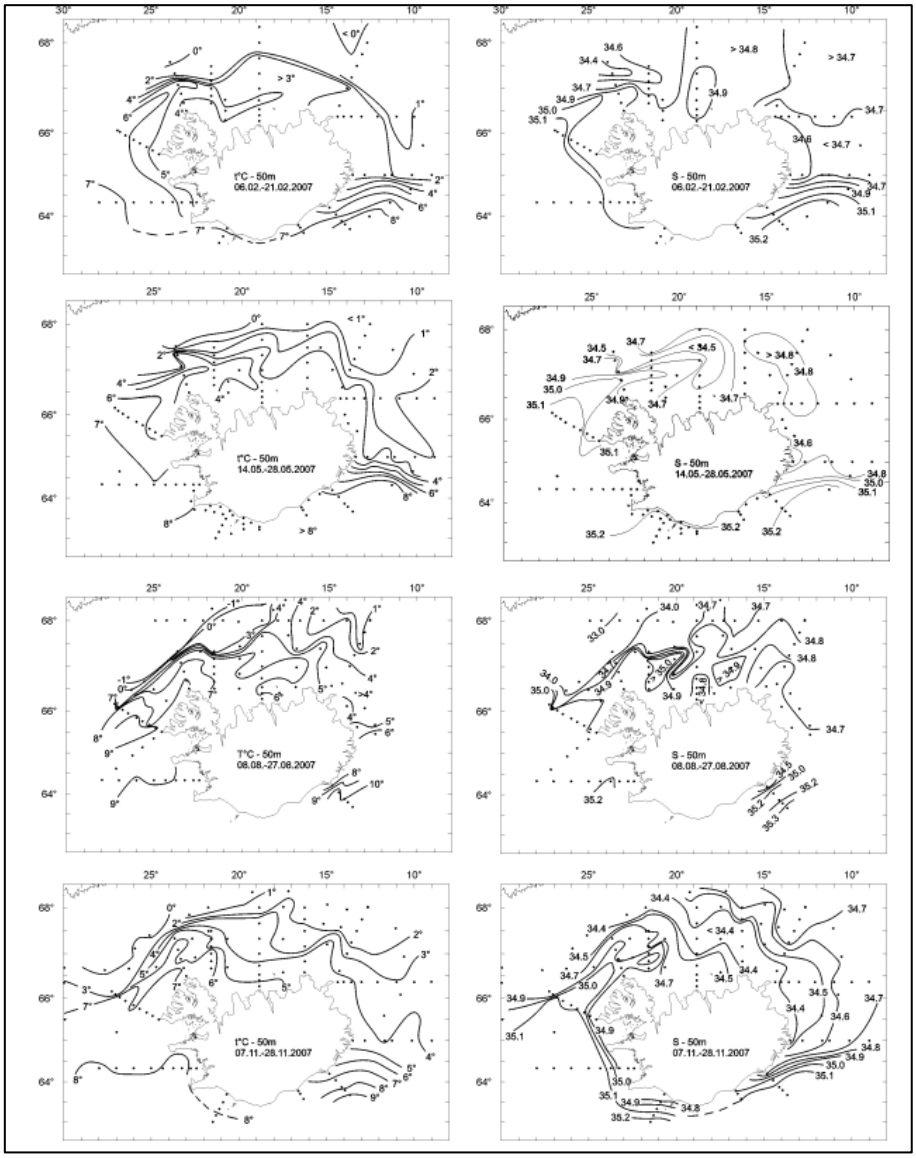


Figure 33. Sea temperature (°C, left) and salinity (right) at 50 m depth in Icelandic waters, for February, May, August and November 2007.

In the 755,932.4 km² that Iceland has as Exclusive Economic Zone including territories there are defined 18 Marine protected Areas with specific regulations to control their activities that are listed below and their distribution can be consulted on this link. No overlapping with capelin fishing grounds is noted.

- Breidafjordur Nature Reserve Conservation Area (Serlog)
- Dyrholaey Nature Reserve (Fridland)
- Flatey Nature Reserve (Fridland)
- Grotta Nature Reserve (Fridland)
- Hamarinn Natural Monument (Natturuvaetti Monument)
- Herdísarvík Nature Reserve (Fridland)
- Hornstrandir Nature Reserve (Fridland)

- Hrísey Nature Reserve (Fridland)
- Ingolfshofdi Nature Reserve (Fridland)
- Jökulsárgljúfur National Park
- Melrakkaey Nature Reserve (Fridland)
- Reykjanesfolkvangur Public Recreation Area or Country Park (Folkvangur)
- Salthofdi og Salthofdamyrar Nature Reserve (Fridland)
- Skrudur Nature Reserve (Fridland)
- Stapi og Hellnar Nature Reserve
- Surtsey Nature Reserve (Fridland)
- Varmarosar Nature Reserve (Fridland)
- Vatnsfjordur Nature Reserve (Fridland)

Further, the Coast Guard and the DoF managed and controlled these areas. The Coast Guard has an interpretation centre where the track record of every set carried out by Icelandic vessels can be consulted to enforcement the laws and regulations.

Due to the fishing is carried out with a pelagic gears the interactions with the bottom surface doesn't' occur and the impact in the bottom surface is negligible or null. The most important interaction that the fishery has in the ecosystems is the removal of capelin as LTL species which serves as a prey for a wide range of fish, mammals and birds. As some study confirms capelin is important in the diet of cod as well as a number of other fish stocks, marine mammals, and seabirds. Unlike other commercial stocks, adult capelin undertake extensive feeding migrations north into the cold waters of the Denmark Strait and Iceland Sea during summer. Capelin abundance has been oscillating over roughly a decadal period since the 1970s. However the stock status of the species is not overfished and overfishing is nort occurring. Some studies suggested that this declined in some areas where the stock is distributed could be due to environmental changes that could affect the patterns of migrations of Capelin but more research projects are needed to confirm this hypothesis.

4.5 Principle Three: Management System Background

Under P3 the CAB has described some aspects of the fishery that are divided into several sections (Figure 34) The chart below shows the PIs evaluated in the fishery under P1 and make easier the understanding of this principle.

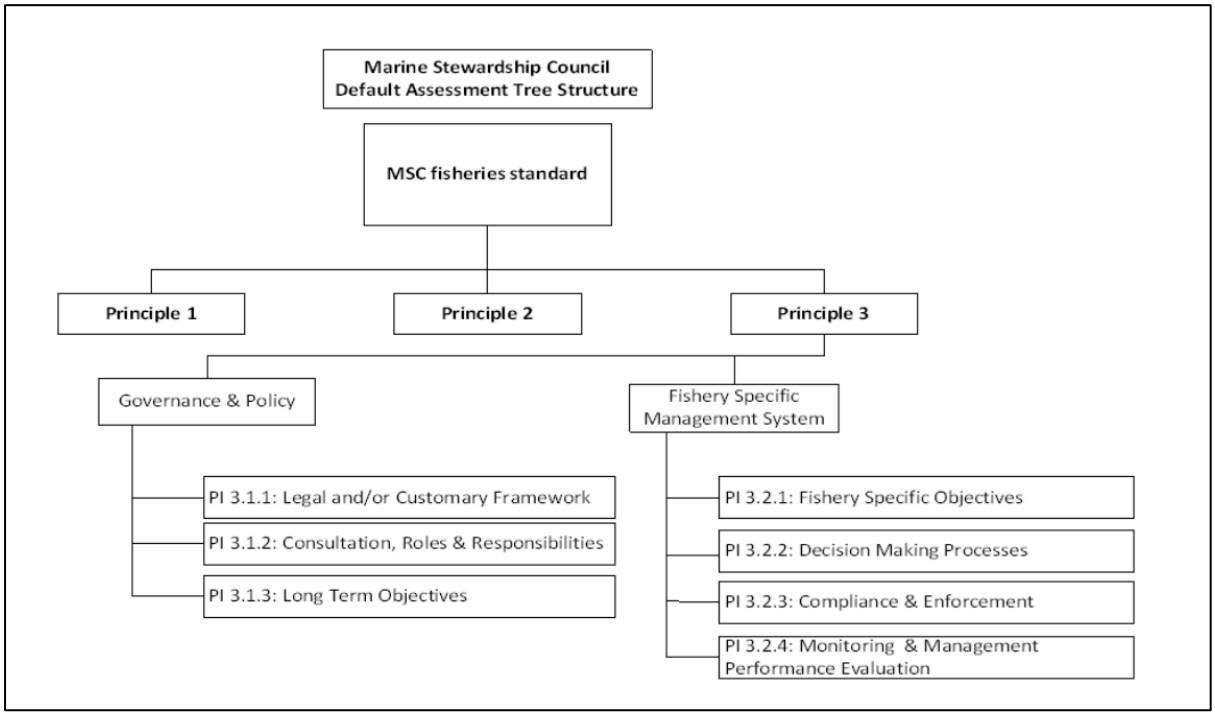


Figure 34. Principle 3 Default Tree Structure. Performance Indicators (PIs) to evaluate under principle 3.

4.5.1 The legal basis and Scope of the management system

The capelin stock (in the Iceland-East Greenland-Jan Mayen area) is a straddling stock. Most of the fishing takes place during the winter season when mature capelin migrates in large schools from their feeding areas in the north to the spawning areas south-west of Iceland. During recent years there has been very little 0 fishing during other seasons and the TAC for the remainder of this year (2016) is zero.

The fishing is managed by agreements between Iceland, Greenland and Norway that detail the catch rule that is to be used to determine the TACs for each year and how the TACs should be shared between the three coastal states. In 2003 they agreed that the catch rule should be that TACs should be equal to the estimated size of the stock minus 400.000 tonnes that should be left to spawn. This catch rule wasn't accepted as precautionary by ICES. In the winter 2014/2015 ICES accepted a new rule proposed by the Marine Research Institute (MRI) in Iceland as precautionary. This rule takes into account the uncertainty in the acoustic estimates and in the volume of capelin consumed by predators others than humans from the time of the estimation to the spawning time. The coastal states included the new rule into their agreement by a protocol without changing their basic agreement from 2003.[1] There is no date for revision of the new catch rule but the fishery is evaluated each year by MRI and by ICES.

The agreement from 2003 states that Iceland's share in the TAC should be 81%, Greenland's 11% and Norway's 8%. These shares have not been disputed so far.
There are also agreement between Iceland and Norway that allows Norwegian vessels to obtain some additional capelin quotas from the Icelandic share based on some special conditions. This agreement is linked to permits for Icelandic vessels to fish for cod and haddock in the Barent Sea.

[1] Personal communication with Jóhann Guðmundsson at the Ministry of Industry and Innovation, MII.

(See response by the Minister of Industry and Innovation in the Parliament on agreements on fishing rights during the 2010/2011 Parliamentary session, in Icelandic at http://www.althingi.is/altext/139/s/0675.html).

The interest in the capelin fishery is mainly economic, held by those that directly participate in the fishery; i.e. fishers and owners of fishing vessels, buyers of the catch, processors in Iceland, the workers in the processing plants and the customers/consumers. Practically all of the catch is exported. The capelin fishery in Iceland is an important part of the fisheries in Iceland, which, in turn, is the single largest contributor to the country's net foreign exchange earnings. Capelin is caught by large vessels using purse seine and midwater trawl.

Fisheries used to be the main economic foundation of local communities outside of the Reykjavik area. While the relative importance of the fisheries sector in the Icelandic economy has declined and the sector is no longer the backbone of as many towns and villages as it used to be in earlier times, it is still very important to the national economy as well as to the economic health of many communities outside of the Reykjavik area.

The Ministry of Industries and Innovation (MII) is responsible for the management of fisheries in Iceland as well as for the implementation of fisheries legislation, including the issuing of relevant regulations. The Ministry's duties include general administration, long-term planning and relations with other fisheries institutions at the international level. The Minister is responsible for deciding the annual TAC. Before making the decision the Minister must consider the MRI's advice for the stock.
The Icelandic Fisheries Management Act (no. 116/2006) states (Art. 1) that the authorities should "contribute to the protection of (exploitable stock in Icelandic waters) and their economic exploitation and thereby ensure secure employment and settlement in the country."[2] The Act on the utilization of exploitable marine stocks (no. 57/1996) states (Art. 1) that its aim is to contribute to "sustainable utilization which ensures maximum benefits to the Icelandic nation in the long-run."[3] These Acts make no references to the precautionary principle. The principle is embedded in some of the international conventions to which Iceland is a signatory (e.g. the OSPAR convention and the United Nations Agreement on the implementation of the provisions of the United Nations convention on the Law of the Sea, 10 December 1982, which relates to the conservation and management of straddling fish stocks and highly migratory fish stocks (in force as of 11 December 2001). The precautionary principle is also mentioned in the preface of the European Economic Area (EEA) agreement and is now firmly embedded in EEA law and regulations.[4]

4.5.2 Fishery specific objectives

The Fisheries Management Act of 1990 established the present system of Individual Transferable Quotas (ITQ) for the Icelandic fisheries. The Act stipulates that each year fish quotas shall be

[2] No. 116/2006, accessible (in Icelandic) at http://www.atvinnuvegaraduneyti.is/media/Skyrslur/Stjorn-fiskveida-2010-endanlegt.pdf. An English translation is accessible at http://www.fisheries.is/management/fisheries-management/the-fisheries-management-act/.

[3] No. 57, June 3 1996, accessible (in Icelandic) at http://www.atvinnuvegaraduneyti.is/media/Skyrslur/Stjorn-fiskveida-2010-endanlegt.pdf.

[4] See discussion on the precautionary principle in the proposal for law on main principles of environmental law (Frumvarp til laga um meginreglur umhverfisréttar, þskj. 842 – 566. mál, put forward during the 133. Session of the Althing 2006-2007, http://www.althingi.is/altext/133/s/0842.html.). This proposal was not passed.

allocated to eligible fishing vessels according to their quota shares. The Act does not define a terminal date for the system. In that sense the shares can be considered permanent. On the other hand the shares do not form a property right and can be altered or abolished by the Icelandic legislative assembly, the Althing. The quota shares can be traded and so can the annual quota allocation. There are some restrictions on this trade, e.g. each vessel must catch at least half of its quota allocation each fishing year and there are specified upper limits for the quota holdings of any one company.

This legislation on fishing rights has been tested in courts on many occasions. Two court cases in 1998 and 2000 settled basic disagreements on the foundations of the present system. On December 3rd 1998, the High Court in Iceland ruled that the provision in the Fisheries Management Act allowing the authorities to limit the entry of fishing vessels was unconstitutional as it treated those that had originally got licensing of their fishing vessels (in 1984) differently from later applicants. The High Court ruled that such unequal treatment of Icelandic citizens could only be accepted as a temporary measure justified by some extraordinary conditions. Subsequently, the Act was amended in accordance with this ruling. The amendment opened up the possibility that anyone, who applies for the licensing of a fishing vessel which conforms to a particular standard, can obtain a fishing license. However, a fishing license is not a sufficient condition for commercial fishing of a species which is subject to quota restrictions; for such fishing to be legal some quota must also be registered to the vessel and/or – as currently is possible – the vessel may have a license for Coastal fishing.
The limitations of "the right to catch" set by the Fisheries Management Act were tested in court on the 6 of April 2000 when the High Court ruled that limitations of fish catch is constitutional.[5]

The rights of different fishers to access the resource are clearly codified in the legislation. As with all other legislation in Iceland, the legislation on fisheries management has been developed through legally based, democratic processes where various stakeholder groups were consulted. Between plenary debates (readings) on draft legislation in the Althing, extensive hearings with experts and stakeholders have been conducted by permanent committees of the assembly.

Gradually the rights of different fishers to access the resource have become more homogenous and the total catch has become more predictable. The introduction of Coastal fishing (strandveiðar) in 2009, where small vessels using only hand-line can take part and where there is a common total quota for all vessels in the fishery, introduced some heterogeneity into the system. However, so far the catch allocated to Coastal fishing is small, i.e. 6,000 tonnes in total. Before deciding the total quota for the present fishing year the estimated catch in Coastal fishing was subtracted from the TACs for the relevant species. All permissions to catch capelin are allocated in the quota system this system allows to establish the objectives of the fishery in the legislation. Although, the precautionary approach is not explicitly mentioned in the legislation on fisheries management in Iceland nor has it been introduced in a general form in Icelandic law but it is stated in a number of international agreements that Iceland has signed. The precautionary principle is explicitly referred to by the MRI, ICES and the MII in relation to the catch rules that have been adopted and to the fisheries management in general.

[5] This ruling is available in Icelandic at http://www.haestirettur.is/domar?nr=767.

4.5.3 Decision making- processes

Three public institutions are at the heart of Icelandic fisheries management: the Marine Research Institute (MRI)[6], the Directorate of Fisheries (DoF) and the Ministry of Industries and Innovation (MII) formerly the Ministry of Fisheries and Agriculture). The Coast Guard also has a role in monitoring fishing activities, gears, fishing locations and discarding. Many areas in the waters around Iceland are closed for fishing, mostly because they contain large quantities of juvenile fish, but also for ecological reasons (e.g. to prevent the destruction of corals). Some areas are closed permanently for some fishing while other area closures are temporary. All discarding of catches is explicitly banned by Icelandic law.

The MRI is responsible for biological research and stock assessments and provides advice on Total Allowable Catches (TACs) to the Ministry. Its stock assessments are based on data from extensive research fishing as well as data on catches, length and age composition and sexual maturity of the fish. The MRI presents its advice at the end of May/beginning of June each year. The MRI's stock assessments and advice for many important species are reviewed each year by ICES.
There is extensive cooperation between MRI and marine research institution in other coastal states in the North Atlantic on pelagic species, including capelin.
The advice from MRI on capelin in June is basis of the TAC for the summer and autumn season. The advice for the most important season, the winter season from January to March, is based on estimates, using acoustic sonars, of the stock of mature capelin migrating to the spawning areas South-West of Iceland. These estimates are made in December-January and may even be revised later.

The MRI plays an important role in communicating scientific advice to the fishing industry. This communication takes place through the web, newspapers and meetings with people from the industry, including public meetings. Most of the funding of the MRI comes from the state budget, but the institute also obtains funds from domestic and international research funds, among them the fund "Verkefnasjóður". This body receives income from the tax on low value catch and from some fines for illegal fishing collected by the Directorate of Fisheries. The estimated funding of MRI in 2016 amounts to 3,419 million ISK (25 million EUR). Of that sum 54% is estimated to come from the state budget.[7] The number of employees is 165 and it operates two specially equipped research vessels. The MII is responsible for the management of living marine resources in Icelandic waters. The minister is constitutionally responsible to the Althing (Parliament). As fisheries are so important for the economy of Iceland the Althing has a permanent committee on matters related to fisheries and fish processing[8]. This committee discusses all proposed legislation on these matters and can decide to discuss any aspect of the industry's behaviour or any concern that some people may have.

[6] In 2015 Althing, the Icelandic Parliament, passed laws establishing a new instiution merging the old Marine Research Institute (Hafrannsóknastofnun, website: www.hafro.is) and the much smaller Institute of Freshwater Fisheries (Veiðimálastofnun, website: www.veidimal.is) in Marine Research Institute – Institute for Oceanic and Fresh Water Research (Hafrannsóknastofnun – rannsókna- og ráðgjafastofnun hafs og vatna, website: www.hafogvatn.is). This merger became effective 1st of July 2016. The new institution has 165 employees, thereof some 20 from the Institute of Freshwater Fisheries and has 2 specially equipped research vessels.

[7] Additional 126.3 million ISK (0.92 m EUR) is allocated for international co-operation and research within international institutions like North Atlantic Marine Mammal Commission (NAMMCO), International Council for the Exploration of the Sea (ICES), Northwest Atlantic Fisheries Organization (NAFO), North-East Atlantic Fisheries Commission (NEAFC), International Commission for the Conservation of the Atlantic Tunas (ICCAT) and International Whaling Commission (IWC).

[8] In 2009 its remit was extended to agriculture and its name was changed to the Althing´s Fisheries and Agriculture Committee.

It can require that information on the relevant matters be supplied by the MII or the public institutions serving the fishing industry.

4.5.4 The consultation processes

There is legislation ("Upplýsingalög" or Freedom of Information Act) in Iceland which requires ministers and public institutions to reveal existing information. Members of the Althing can obtain detailed information from the Ministry and public institutions by putting questions to the appropriate minister in the Althing.
Before making decisions, the minister consults extensively with stakeholder organisations including the Federation of Icelandic Fishing Vessel Owners (Landssamband íslenskra útvegsmanna, LÍÚ), The Federation of Owners of Small Fishing Vessels (Landssamband smábátaeigenda), the Federation of Captains and Mates (Farmanna- og fiskimannasamband Íslands, FFSÍ), the Icelandic Union of Marine Engineers and Metal Technicians (Félag vélstjóra og málmtæknimanna, VM) and the Federation of Seamen (Sjómannasamband Íslands) as well as organisations of those working in fish processing (in Iceland both fishing and fish processing are frequently carried out within the same company). All laws and regulations are published in real time as they come into effect on the Ministry's website. The Directorate of Fisheries (DoF) has many important roles in fisheries management in Iceland. The DoF licenses fishing vessels, fish processing plants and authorizes harbour scales which are used for weighing all landings of fish. It also monitors the operators of those facilities to ensure that they follow relevant regulations. The DoF gathers information on both catches (including logbook information) from the vessels at sea and information on catches from the authorized harbour scales. This information is sent electronically to the DoF at least once every day and published on the Directorate's website. The website makes available information on the quota positions of every vessel in Iceland, such as its quota allocations for each species and how much it has caught.[9] All trade in quotas and quota shares has to be reported to the DoF.

4.5.5 Monitoring and management

The DoF monitors fish processing as well as fishing. All sellers of fish must report the name of the purchaser to whom they sold fish as well as the quantity and price of fish they sold to them. Similarly all purchasers of fish must report the name of their supplier, the quantity they purchased and the price paid. The DoF regularly checks if the output of fish products from a fish processing unit is consistent with the reported input of raw fish. Monitoring of the quota system in Iceland is strengthened by the traceability measures required for exports in a country where over 90% of all fish caught is eventually exported in some form.

4.5.6 Compliance and enforcement

There is no illegal, unreported and unregulated (IUU) fishing in Icelandic waters. All landing of fish from vessels that engage in IUU fishing and the servicing of such vessels is forbidden in Iceland.
In summary, the institutions, their roles and interactions are clearly defined within the three core areas of resource management: (1) The development of the knowledge base, (2) preparation and implementation of regulations, and (3) the enforcing of the regulations. The interactions between the MII, the DoF, the Coast Guard and the MRI function well. The role of each institution is well defined, with the Ministry taking political responsibility for decisions, and the Directorate performing

[9] See DoF´s website www.fiskistofa.is. Some of the information on this website is also available in English.

the technical work at the behest of the Ministry. Decision-making procedures are well established and allow for expeditious and effective interactions. There is an established, tested and proven annual decision-making process, which ultimately results in the setting of regulations for the following year. The compliance with regulations is subject to a rigorous and efficient enforcement system.

Subsidies were abolished in the Icelandic fishing industry in the early 1990s and since 2004 the industry has been paying an annual fee based on estimated profitability of the sector and on the weighted volume of landings.[10] The fishing industry is expected to pay 8.57 b.ISK (63 m.EUR) in fees during 2016.[11] This amount is equal to 5, 7% of the value of all landings in 2015.

The Directorate of Fisheries (DoF) is entrusted with the day-to-day administration of fisheries. The DoF is responsible for implementing legislation on fisheries management and it collects and publishes numerical data and other information on fisheries. The DoF issues fishing permits to vessels and licenses scales for weighing landings. It keeps records of quota shares and quotas, including all transfers of quotas and quota shares between vessels. It also checks that vessels do not fish in excess of their quotas.

The DoF is responsible for ensuring that fishers follow regulations on gears, fishing locations and discarding. It also ensures that vessels, provided they are in the quota system, have quotas for the probable catch before leaving harbour. The DoF gets some assistance in monitoring of gear, discarding and fishing locations from the Coast Guard, which also monitors fishing activities of foreign vessels near the Icelandic fisheries zone.
The DoF collects data on fishing and fish catches landed by the Icelandic fleet and monitors compliance with rules on the weighting and recording of catches. Other duties include imposing penalties for illegal catches.

The DoF provides supervision on board fishing vessels and in ports of landing, which involves inspecting the composition of catches, fishing equipment and handling methods. The DoF also issues licenses to processing plants and supervises their production. Processors have to meet specific requirements concerning hygiene, equipment and quality control. Approved inspection bodies are responsible for inspection of hygiene, facilities and in-plant monitoring of production, both in processing establishments on land and on board vessels. Accreditation of inspection bodies is required.

The DoF has the right to demand that inspectors are allowed on board fishing vessels as observers. These observers can demand that the vessel goes to a certain fishing location and that certain gear should be used. Requiring repetition of the fishing procedures of the last fishing trip enables inspectors to compare the catches from the two trips. Comparing the catches of different vessels fishing in the same location and using the same gear is also used for monitoring.

[10] The weights are average landing prices during a recent 12-month period before the start of the fishing year.
[11] See the state budget for 2016 available at https://www.stjornartidindi.is/Advert.aspx?recordID=0f33bd9e-1305-4135-86c9-3e86c59b7d94.

A vessel owner which is found to have acted in breach of regulations gets a warning and a fine. Repeated offenses lead to heavy fines, revocation of the vessel's license to fish and possibly to prison sentences. In 2015 the DoF meted out fines to the sum of 15.8 million ISK (116,000 EUR).[12]
The DoF co-operates with a number of other institutions, including the Icelandic Coast Guard and the Harbour Authorities regarding daily recording of landed catches throughout the country. The Icelandic Coast Guard monitors fishing activities in Icelandic waters, including surveillance of areas closed for fishing and inspection of mesh sizes and other gear related practices.
The DoF and the Coast Guard survey and police the fishing of foreign fishing vessels in the Icelandic EEZ and in those cases where landings of catches take place abroad the DoF cooperates with counterparties in the relevant countries for proper weighing of the catch.

All discarding is explicitly banned by Icelandic laws. However some discarding is known to take place. Discarding in Icelandic fisheries has been estimated on several occasions through co-operative studies by the Marine Research Institute and the Directorate of Fisheries. Data collection is mainly related to cod, haddock, saithe (*Pollachius virens*) and golden redfish (*Sebastes marinus*) in demersal trawl fisheries, and plaice (*Pleuronectes platessa*) in the Danish seine fishery. Sampling for other species, such as wolfish, was not sufficient to warrant a satisfactory estimation of discarding. For each species the discard was estimated by comparing data on length distributions of fish measured at sea and landed catch from the same fishing ground.[13] There is no discarding of capelin and there are no reported cases of slippages in the capelin fishery in Iceland.

The monitoring and policing of Icelandic fishing is enhanced and strengthened by the traceability measures required for exports, since over 90% of all catches and practically 100% of capelin catches end up being exported in some form.

There have been several external reviews of the methods that the Marine Research Institute uses in its stock assessments and of the recommendations and advice it gives. The ICES reviews most of the advice annually, including the advice on saithe. There have also been special reviews made by internationally respected experts. There has not been comparable external review of the work of the Directorate of Fisheries or of the Ministry of Industries and Innovation. However, these institutions are subject to regular reviews by the Althingi´s committees, especially the permanent committee on fisheries issues. Like other public bodies, these institutions are subjected to scrutiny by The Icelandic National Audit Office (Ríkisendurskoðun). The performance of the institutions involved in fisheries management is scrutinized and intensively debated in Iceland, especially in the many fishing communities.

The MRI staff publishes its research in peer-reviewed scientific journals. The system of fisheries management is under regular review by the Althingi as well as by local authorities, the fisheries sector and the general public. The management of the Icelandic fisheries and the level of fees paid

[12] Directorate of Fisheries´ Annual Report 2015 (http://www.fiskistofa.is/media/arsskyrslur/Fiskistofa_arsskyrsla_2015.pdf) p. 22. In 2015 14 offences were sent to the police. Of 1370 warnings of withdrawals of fishing licences because of fishing in excess of quotas only 8 lead to actual withdrawals as the offenders were able to acquire the quotas that were required within the given time frame. In one case weighting licence was withdrawn. 77 fishing licences were withdrawn because of violations of logbook regulations and 15 licences were withdrawn because the owners didn't pay the resource (catch) tax. In 2015 42 fishing licences were withdrawn because the owners hadn't paid a fine for some offences.
[13] Pálsson *et. al.* (2012), Mæingar á brottkasti þorsks og ýsu 2001-2010, Hafrannsóknir no. 160 and Pálsson *et. al.* (2013), Mæingar á brottkasti þorsks og ýsu 2011, Hafrannsóknir no. 167, Marine Research Institute, 2013. Both are accessible at http://www.hafro.is/Bokasafn/Timarit/fjolr.htm.

for fishing rights (quotas) are presently important issues in Icelandic politics. The external review processes have been beneficial to the work of the MRI. It seems probable that other parts of the fisheries management system in Iceland would also benefit from more external reviews.

4.5.7 Long-term objectives

MRI's long term research plan for 2012-2016[14] is in its last year. The plan emphasizes the importance of biological, ecological and environmental research. The need to evaluate long term exploitation of important species is recognised as well as the formulation of harvest rules for as many species as possible. The plan stresses research on the effects of neighbouring waters (Greenland and Faroese) on the fish stocks in Iceland and on the stock structure. It is to be expected that the new institution will produce a new long term research plan.

The search for the capelin and the acoustic estimation has been done in co-operation with the fishing firms involved. These firms have contributed to the research by allowing that their vessels are used without compensation. They share this cost by contributing their vessels in turn.

[14] Rannsókna- og starfsáætlun árin 2012-2016, http://www.hafro.is/images/langtima12-16.pdf.

5 Evaluation Procedure

5.1 Harmonised Fishery Assessment

Certification Bodies assessing fisheries that have areas of overlap are required to ensure consistency of outcomes so as not to undermine the integrity of MSC fishery assessments. The FCR provides guidance for harmonisation where a fishery in assessment overlaps with an already certified fishery. The MSC wishes to discourage overlapping assessments to avoid potential financial, consistency and credibility costs, including:

- fisheries managers, scientists and stakeholders receiving duplicate requests for information
- duplication of costs for a fishery's certification, including that expense incurred by fishery management agencies pre- and post-certification; and
- the possibility of different assessments placing different conditions upon the same fisheries managers and upon different fishery clients.

In this fishery under assessment even there are several fisheries from the same client certified against MSC requirements. Following the FCR V2.0 in the annex PB (section PB2.1) the fishery doesn't required to harmonise because the other ISF fisheries in Iceland are certified against V1.3 with different default tree, therefore MSC defines that "Fisheries using different CR requirements shall not be required to harmonise their default tree".

However, there are 5 fisheries certified, with different target species but some of them with same gears, the table below shows the most relevant results (Table 4):

Table 4. Harmonization process: scoring of overlapping fisheries and ISF fisheries certified in Iceland

	Target species	Gear	2.1.1	2.2.1	2.3.1	2.4.1	2.5.1	3.1.1	3.1.4	3.2.1	3.2.4
ISF Iceland Saithe and ling Fishery	Saithe	Bottom trawl, Danish seine, longline, handline, gillnet and nephrops tramps	75	100	80	60	100	95	100	100	100
ISF Iceland Cod Fishery	Atlantic cod	Bottom trawl, Danish seine, longline, handline, gillnet and nephrops tramps	80	80	80	60	100	100	100	100	100
ISF Iceland Haddock	Cod & haddock	Bottom trawl and	>/= 80	>/= 80	>/= 80	>/= 80	>/= 80	>/= 80	>/= 80	>/= 80	>/= 80

Fishery		seine									
ISF Iceland Golden Red fish	Golden Redfish	Bottom trawl, Danish seine, longline, handline, gillnet and nephrops tramps	80	80	80	60	100	100	100	100	100
ISF Norwegian and Iceland herring trawl and Seine	Atlantic Herring	Trawl and seine	90	100	85	100	85	85	100	90	90
ISF Icelandic Haddock Fishery	Haddock	Bottom trawl, seine, longlines, etc	>/= 80	>/= 80	>/= 80	>/= 80	>/= 80	>/= 80	>/= 80	>/= 80	>/= 80
ISF Capelin Fishery	Capelin	Mid water trawl and purse seine	100	100	95	100	100	85	NA	100	90

The differences between rationales are due to the different version of the default tree such as 2.1.1 and 2.2.1 that evaluate the non-target species with different methodology and regarding habitat the use of different gears, bottom trawl has interactions with the seabed but pelagic gears are less negative to the bottom surface and therefore get more scoring in these PIs.
Some of them also have recommendations regarding the interactions with ETPs species as Capelin has. Therefore even the harmonization is not mandatory, the results regarding ETPs species and management systems are very similar.

5.2 Previous assessments

The fishery has not been previously assessed against MSC Principles and Criteria.

5.3 Assessment Methodologies

The MSC Principle and Criteria for Sustainable Fishing Standard sets out the requirements for a certified fishery. The Certification Methodology adopted by the MSC involves the interpretation of these Principles and Criteria into specific Performance Indicators against which the performances of the fishery can be measured according to pre-specified guideposts. A fishery is assessed against three Principles. The default assessment tree developed by the MSC includes 28 Performance Indicators. Principle 1 addresses the need to maintain the target stock at a sustainable level; Principle 2 addresses the need to maintain the ecosystem in which the target stock belongs to; and Principle 3 addresses the need for an effective fishery management system to fulfil Principles 1 and 2 and ensure compliance with national and international regulations.

PRINCIPLE 1: Sustainable fish stock
A fishery must be conducted in a manner that does not lead to overfishing 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.

The intent of this principle is to ensure that the productive capacities of resources are 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.

PRINCIPLE 2: Minimizing environment impact
Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.

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

PRINCIPLE 3: Effective management
The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.

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

Regarding the Operational Criteria that affects direct and indirectly the three principles, the fishing operations shall:

1. make use of fishing gear and practices designed to avoid the capture of non-target species (and non-target size, age, and/or sex of the target species); minimize mortality of this catch where it cannot be avoided, and reduce discards of what cannot be released alive.
2. implement appropriate fishing methods designed to minimize adverse impacts on habitat, especially in critical and sensitive zones such as spawning and nursery areas.
3. not use destructive fishing practices such as fishing with poisons or explosives.
4. minimize operational waste such as lost fishing gear, oil spills, on-board spoilage of catch, etc.
5. be conducted in compliance with the fishery management system and all legal and administrative requirements.
6. assist and co-operate with management authorities in the collection of catch, discard, and other information of importance to effective management of the resources and the fishery.

5.4 Evaluation Processes and Techniques

5.4.1 Site Visits

Initial consultation meetings were held in Reykjavik, Iceland in June 2016. The objectives of the consultation meetings were to collect information and explain the fishery. The consultation meetings were designed to be inclusive of all organizations and representatives of the fishery. However, the consultation plan was designed to strategically capture sufficient information to ensure understanding and confidence with respect to full assessment scoring.

The on-site consultation also served other important functions. These included:

- Responding to questions and comments raised by participants in the fishery at this initial stage in the assessment.
- The client group provided information, documents, and a list of stakeholders as required by SAI Global. This served to allow the assessment team to collect general information on the fisheries, identify information gaps and identify key stakeholders for the information gathering exercise.
- Following the collation of general information on the fishery, a number of meetings with key stakeholders who expressed an interest to meet were scheduled by the team to fill in information gaps and to explore and discuss areas of concern.

Meetings were held in Reykjavik are recorded in Table 5.

Table 5. Meetings with the following management and scientific organizations of the ISF Iceland Capelin Fishery during June 21-24, 2016:

Organization	Attendees	Location	Date	Key areas
Ministry of Fisheries and Agriculture	Johann Gudmunsson and Erna Jonsdottir	Reykjavik, Iceland	June 21, 2016	Enforcement, TAC, Governance and policy
Client group: ISF	Kristtin Hjalmarsson and Erla Kristinsdóttir	Reykjavik, Iceland	June 21, 2016	Catches, fleet, ISF client group characteristics, attained species, traceability, CoC
The Coast Guard	Asgrimur.L. Asgrimsson	Reykjavik, Iceland	June 22, 2016	Monitoring and control-Surveillance programme
Marine Research Institute	Birkir Bardasson, Olafun S. Asthorsson, Rista Gudmundsdottor	Reykjavik, Iceland	June 22, 2016	Stock Assessment, TAC, models, retained species
NASBO	Halldor Armansson	Reykjavik, Iceland	June 23, 2016	TAC and fishing grounds overlapping with small fleet
Vessels Visit	Kristtin Hjalmarsson	Reykjavik, Iceland	June 23, 2016	Fishing operations, interactions with whales, retained species
VSV (Part of client group)	Sindri Viðarsson	Reykjavik, Iceland	June 23, 2016	Traceability, fishing operation
Icelandic Whale Association (IWA)	Maria Bjork Gunnarsd	Reykjavik, Iceland	June 23, 2016	ETP species, interactions with whales,

				predation
Directorate of Fisheries	Sonar Gudmundsson and Aslaug Eirhdlmgeirsd	Reykjavik, Iceland	June 24, 2016	Surveillance programme, catches report and monitoring

5.4.2 Consultations

Public announcements of the progression of the full assessment were made as follow (Table 6):

Table 6. Stakeholder consultation process.

Date	Purpose	Media
10/05/2016	Fishery Enters assessment	Notification on MSC website Direct email/letter
10/05/2016	Assessment Team Nomination	Notification on MSC website
10/05/2016	Assessment Team Confirmation	Notification on MSC website
10/05/2016	Default assessment Tree	Notification on MSC website
16/05/2016	Stakeholders notification: Fishery name change	Notification on MSC website
10/05/2016	Site Visit Scheduled	Notification on MSC website Direct email/letter
23/08/2016	Stakeholders notification: Peer reviewers proposed	Notification on MSC website

5.4.3 Evaluation Techniques

Each PI under each Principle is weighted so that each of the three Principles is equal to one other.

At the Level of the Performance Indicator, the performance of the fishery is assessed as a “score”. In order for the fishery to achieve certification, an overall weighted average score of 80 is necessary for each of the three Principles and no Indicator should score less than 60. Accordingly, 100 represents a theoretically ideal level of performance and 60 a measureable shortfall.

The Scoring Guideposts (SGs) identify the level of performance necessary to achieve 100, 80 (a pass score), and 60 scores for each Performance Indicator.

The scoring methodology is fully explained in the MSC Fisheries Assessment Methodology. It can be summarized as follow:

- Scoring is a qualitative process, involving discussion between team members and arrival at a joint agreed score. Scores should be normally assigned in divisions of 5 points following the 7.10 sections on MSC FCR V2.0
- The only narrative guidance that is available is at 60, 80 and 100 SGs. Intermediate scores must therefore reflect;
    - A failure to meet all the scoring issues specified in a SG.

- The following system should then be used to determine the overall score for the PI from the scores of the different scoring issues, combining elements scores.
- This system combines a primary approach based on the combination of scores achieved by the individual scoring issues (the a) to i) list below):

a) Score = 60: all issues meet SG60, and only SG60. Any scoring issues within a PI which fails to reach SG60, represents a failure against the MSC standard and no score shall be assigned.
b) 65: all issues meet SG60; a few achieve higher performance, at or exceeding SG80, but most do not meet SG80.
c) 70: all issues meet SG60; some achieve higher performance, at or exceeding SG80, but some do not meet SG80 and require intervention action to ensure they get there.
d) 75: all issues meet SG60; most achieve higher performance, at or exceeding SG80; only a few fail to achieve SG80 and require intervention action.
e) 80: all issues meet SG80.
f) 85: all issues meet SG80; a few achieve higher performance, but most do not meet SG100.
g) 90: all issues meet SG80; some achieve higher performance at SG100 but some do not.
h) 95: all issues meet SG80; most achieve higher performance, at SG100; only a few fail to achieve SG100.
i) 100: all issues meet SG100

During the scoring of this fishery the 7.10.7.5 FCR sections was used to evaluate primary and secondary species. The scoring by elements was realized as it shown in the Table 7.

Table 7. Scoring elements defined in the ISF Capelin Fishery.

Component	Scoring elements	Main/Not main	Data-deficient or not
2.1.1	Cod	Main	Not
2.1.1	Haddock	Not main	Not
2.1.1	Saithe	Not main	Not
2.1.1	Herring	Not main	Not
2.1.1	Herring	Not main	Not
2.1.1	Lumpfish	Not main	Not
2.1.1	Greenland Halibut	Not main	Not
2.1.1	Monkfish	Not main	Not
2.1.1	Atlantic wolfish	Not main	Not
2.1.1	Blue whiting	Not main	Not
2.1.2	Cod	Main	Not
2.1.2	Haddock	Not main	Not
2.1.2	Saithe	Not main	Not
2.1.2	Herring	Not main	Not
2.1.2	Herring	Not main	Not
2.1.2	Lumpfish	Not main	Not
2.1.2	Greenland Halibut	Not main	Not

2.1.2	Monkfish	Not main	Not
2.1.2	Atlantic wolfish	Not main	Not
2.1.2	Blue whiting	Not main	Not
2.1.3	Cod	Main	Not
2.1.3	Haddock	Not main	Not
2.1.3	Saithe	Not main	Not
2.1.3	Herring	Not main	Not
2.1.3	Herring	Not main	Not
2.1.3	Lumpfish	Not main	Not
2.1.3	Greenland Halibut	Not main	Not
2.1.3	Monkfish	Not main	Not
2.1.3	Atlantic wolfish	Not main	Not
2.1.3	Blue whiting	Not main	Not
2.2.1	Dealfish	Not main	Not
2.2.1	Turbot	Not main	Not
2.2.1	Skate	Not main	Not

5.5 Traceability

5.5.1 Eligibility Date

The CAB shall nominate a date from which product from a certified fishery is sold with the label. The eligibility date should be defined following the MSC requirements and could be:

c. The date of the certification of the fishery; or
d. The date when the first Public Comment Draft6 Report is published.

Therefore, following the FCR 7.6 of V2.0 the eligibility date for this fishery should be **November 2016.**

5.5.2 Traceability within the Fishery

All commercial operations are subject to a permit from the Directorate of Fisheries (DoF), and all vessels are required to carry a VMS system, which is monitored 24hours per day by the Coast guard. Therefore, the track record of every set can be consulted. The DoF collects data on fishing and catches landed by the Icelandic fleet and monitors compliance with rules on weighing and recording of catches. All vessels are required to fill out log books to record details of fishing practices such as location, dates, gear and catch quantity. Vessels that process catch at sea fill out log books electronically and send them directly to the DoF. In Iceland, there is an obligation to land all the catches by every fleet. These catches are weighed and reported in Iceland to Port Authorities who are responsible for verify the catches and certified them by licensed operators or processing plants approved for this purpose.
The DoF monitors fish processing as well as fishing. All sellers of fish must report the name of the purchaser to whom they sold fish as well as the quantity and price of fish they sold to them. Similarly all purchasers of fish must report the name of their supplier, the quantity they purchased and the price paid. The DoF regularly checks if the output of fish products from a fish processing unit is consistent with the reported input of raw fish. Monitoring of the quota system in Iceland is

strengthened by the traceability measures required for exports in a country where over 90% of all fish caught is eventually exported in some form.

All these information are collected and published in the DoF website and can be consulted, it is public information available for all the stakeholders in the fishery. Fishing by vessels with on-board processing facilities is monitored by weighing landed products in a similar way and converting to catch weight by means yield indices, estimated several time a day by sampling catch and processed products on board. Basic handling of the catch, such as gutting and possibly heading, is commonly conducted by most types of vessels at sea, while further processing and freezing (whole, headed/gutted, fillets) is typically done by the large vessels (trawlers).

The DoF monitors, via the VMS, that trans-shipment of fish is not conducted. Some Icelandic fishery practices export fish direct from vessels, without involvement of domestic processing operations, and typically after being transferred to containers. However, recent law stipulates that any unprocessed fish must be landed and weighed in Icelandic ports prior to export. Un- or semi-processed catch may thus be exported, after landing and weighing, for storing in cold storages and/or processing in facilities in a Third Country, some of which may be subsidiaries of ISF´s shareholders. Given the tight monitoring system operated by DoF, partly via the VMS, the fishing by vessels outside the unit of certification and, thereby, the opportunity of substituting certified fish with non-certified fish, are unlikely. Several member companies of the ISF ehf. have already obtained CoC certification for the processing or trading in MSC certified fish.

Table 8 shows the main characteristics in the traceability of this fishery:

Table 8. Traceability Factors within the Fishery:

Traceability Factor	
Potential for non-certified gear/s to be used within the fishery	*No, there are only two types of gear used, pelagic trawl and purse seine*
Potential for vessels from the UoC to fish outside the UoC or in different geographical areas (on the same trips or different trips)	*There is not a possibility. The stock is within the geographical areas in the UoC.*
Potential for vessels outside of the UoC or client group fishing the same stock	*There is a TAC provided to other vessels from Norway, Greenland. All landings are monitored and logged.*
Risks of mixing between certified and non-certified catch during storage, transport, or handling activities (including transport at sea and on land, points of landing, and sales at auction)	Unlikely, all the catches from Capelin will be certified fish
Risks of mixing between certified and non-certified catch during processing activities (at-sea and/or before subsequent Chain of	Unlikely, all the catches from Capelin will be certified fish

Custody)	
Risks of mixing between certified and non-certified catch during transhipment	Unlikely, all the catches from Capelin will be certified fish
Any other risks of substitution between fish from the UoC (certified catch) and fish from outside this unit (non-certified catch) before subsequent Chain of Custody is required	Unlikely, all the catches from Capelin will be certified fish

5.6 Eligibility to Enter Further Chains of Custody

Potential certification will include all registered Icelandic vessels, as well as officially licenced fish auctions, provided these auctions do not take ownership of the catch and/or are not involved in the processing of the catch either as owners of the fish or sub-contractors. List of vessels with valid licence included in the certification and list of client group which are owners of this vessels are shown in the tables (Table 9 and Table 10) below. All of them will have the certification and could sell the fish or product with the MSC label.
A total of 30 vessels are included in the certification and ISF group are composed by 44 partners, theirs details can be consulted in the ISF website.

Table 9. List of vessels targeting Capelin in the year 2015

Reg. no.	Vessel
155	Lundey NS 14
1062	Kap II VE 7
1270	Mánaberg ÓF 42
1277	Ljósafell SU 70
1293	Birtingur NK 124
1525	Jón Kjartansson SU 111
1610	Ísleifur II VE 336
1742	Kap VE 4
2020	Suðurey ÞH 9
2203	Þerney RE 1
2281	Sighvatur Bjarnason VE 81
2287	Bjarni Ólafsson AK 70
2345	Hoffell II SU 802
2363	Kap VE 41
2388	Ísleifur VE 63
2407	Hákon EA 148
2410	Vilhelm Þorsteinsson EA 11
2411	Huginn VE 55
2618	Jóna Eðvalds SF 200
2643	Júpíter ÞH 363
2699	Aðalsteinn Jónsson SU 11
2772	Álsey VE 2
2780	Ásgrímur Halldórsson SF 250
2812	Heimaey VE 1
2862	Beitir NK 123
2865	Börkur NK 122
2881	Venus NS 150
2883	Sigurður VE 15
2885	Hoffell SU 80
2909	Bjarni Ólafsson AK 70

Table 10. List of partners who are included in the ISF client group which carries on the MSC label in its products.

Company	Website
AB Fish ehf	N/A
Akraborg ehf	www.akraborg.is
Bacco ehf	N/A
Bergur-Huginn ehf	N/A
Brim hf	www.brimhf.is
Danica Seafood hf	www.danica.is
Ferskfiskur ehf	N/A
Fisk Seafood	www.fisk.is
Fiskiðjan Bylgja hf	www.bylgja.is
Fiskkaup hf	www.fiskkaup.is
Frostfiskur ehf	N/A
HB Grandi hf	www.hbgrandi.is
Ice-Co Foods ehf	www.ice-co.com
Ice Frozen Seafood ehf	N/A
Iceland Pelagic ehf	www.icelandpelagic.is
Iceland Seafood ehf	www.icelandseafood.is
Iceland Westfjords Seafood ehf	www.iws.is
Icelandic Group hf	www.icelandic.is
Icelandic Ný-Fiskur hf	www.icelandic.is
Icemar ehf	www.icemar.is
Icemark ehf	N/A
Idunn Seafoods ehf	N/A
Iraco ehf	www.iraco.is
Íslenska umboðssalan hf	www.isa.is
Leo Fresh Fish ehf	N/A
Marz sjávarafurðir ehf	www.marz.is
Merlo Seafood ehf	www.merlo.is
Nastar ehf	www.nastar.is
Northern Seafood ehf	N/A
Rammi hf	www.rammi.is
Rekstrarfélagið Eskja hf	www.eskja.is
Royal Iceland hf	www.royaliceland.is
Samherji hf	www.samherji.is
Selhöfði ehf	N/A
Spes ehf	N/A
Skinney-Þinganes hf	www.sth.is
Stormur Seafood ehf	www.stormurseafood.is

Sverrir Björnsson	N/A
Sæmark ehf	www.saemark.is
Toppfiskur ehf	www.toppfiskur.is
Vignir G. Jónsson hf	www.vignir.is
Vinnslutöðin hf	www.vsv.is
Vísir hf	www.visirhf.is
Whitelink Seafoods ehf	N/A
Ægir sjávarfang ehf	N/A

Fish from eligible fishing vessels (and included in the client group) whole and/or semi-processed, landed at any officially approved landing site (harbour) and/or sold via (first sale) fish auction and/or kept in cold store facilities in Iceland or in a Third Country, may therefore enter into further certified chain of custody and be eligible to carry the MSC ecolabel, provided these are sold through a registered sharing partner of the fishery certificate, i.e. shareholder of the Iceland Sustainable Fisheries Ltd. Chain of custody will commence as of the first point of landing. Operators who do not share the certificate but who take ownership of the fish before it is sold to certificate sharers are required to hold MSC Chain of Custody certification. Subcontractors, who do not take ownership of the catch but are involved in the handling of the fish after landing, are required either to be holders of MSC Chain of Custody certification or to be listed as subcontractors on the scope of another MSC Chain of Custody certificate holder.

The Iceland Sustainable Fisheries Ltd. has issued a statement outlining the general terms of a potential extension of the client group for wider sharing of a potential certificate.

5.7 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to Enter Further Chains of Custody

Not applicable in this fishery

6 Principle Level Scores

The fishery under assessment fulfilled SG80 in every PIs evaluated against the FCR V2.0. Therefore the three principals have met more than 80. Table 11 shows the results for each principle. As it is required in the FCR level scores are reported with one decimal to accurate the score. The two UoAs defined in the fishery, one for every type of gears, have obtained the same scoring therefore, the CAB has fulfilled one table with the overall score for both UoAs.

Table 11. Final Principle Scores

- **UoAs 1 and UoAs 2**

*The PIs score were all identical for both UoAs so the overall Principles score is also identical.

Final Principle Scores	
Principle	**Score**
Principle 1 – Target Species	90.8
Principle 2 – Ecosystem	94.0
Principle 3 – Management System	92.9

6.1 Summary of PI Level Scores

The summary of each scoring that the CAB has decided to evaluate the fishery against the FCR V2.0 are shown in the table below (Table 12). The PIs scores were identical for both UoAs.

Table 12. Performance Indicators scoring assigned to the ISF Iceland Fishery in the UoAs 1 and UoAs 2.

Principle	Component	Performance Indicator (PI)		Score
One	Outcome	1.1.1	Stock status	90
	Management	1.2.1	Harvest strategy	95
		1.2.2	Harvest control rules & tools	80
		1.2.3	Information & monitoring	90
		1.2.4	Assessment of stock status	100
Two	Primary species	2.1.1	Outcome	100
		2.1.2	Management strategy	100
		2.1.3	Information/Monitoring	100
	Secondary species	2.2.1	Outcome	100
		2.2.2	Management strategy	85
		2.2.3	Information/Monitoring	100
	ETP species	2.3.1	Outcome	85
		2.3.2	Management strategy	80
		2.3.3	Information strategy	80

	Habitats	2.4.1	Outcome	**100**
		2.4.2	Management strategy	**95**
		2.4.3	Information	**95**
	Ecosystem	2.5.1	Outcome	**100**
		2.5.2	Management	**95**
		2.5.3	Information	**95**
Three	**Governance and policy**	3.1.1	Legal &/or customary framework	**85**
		3.1.2	Consultation, roles & responsibilities	**95**
		3.1.3	Long term objectives	**100**
	Fishery specific management system	3.2.1	Fishery specific objectives	**100**
		3.2.2	Decision making processes	**80**
		3.2.3	Compliance & enforcement	**100**
		3.2.4	Monitoring & management performance evaluation	**90**

6.2 Summary of Conditions

No condition has been raised by the assessment team.

6.3 Recommendations

On completion of the scoring process, the assessment team has recommended that the ISF Iceland Fishery is eligible to be certified according to the MSC Principles and Criteria for Sustainable Fishing. The CAB wishes to make two recommendations, however the fishery pass more effort should be necessary to comply and get more scoring in P1 and P2.

- Recommendation 1:

1.2.1-Harvest Control Rules and tools

There is a potential element of natural mortality which is not fully accounted for in the stock assessment and management process. Marine mammal abundance and its coincidence with the seasonal migration and distribution of capelin should be further investigated in particular during the winter spawning migration of capelin. Those investigations should include a thorough investigation of the level of dependence by whales on capelin as a source of food.
If appropriate the results should be incorporated into the existing predation model which currently only includes predation by cod, saithe and haddock.
This investigation should provide a more precautionary estimate of natural mortality and help to eliminate areas of uncertainty in the predictive models.

- Recommendation 2:

2.3.3- ETP species information

The CAB considers that the fishery hasn't a **comprehensive strategy** to manage impacts, minimize mortality and injury of ETP species, Although the mortality of the whales by Capelin fleet is not reported and don't happen the injuries by the gear are reported and studies are carried out to know more about this (Barscan, 2014). Personal communications with Dr. Gísli A. Víkingsson, head of Whale research in the MRI, confirm to the CAB that thus injuries are very common in the whales population around Icelandic waters.

Therefore, the CAB wishes to settle a recommendations regarding the information available to study and monitoring these interactions with the whales.

The CAB would like to encourage the recompilation and collection of data come from vessels targeting Capelin. More effort in sharing the location of these interactions could help the research studies and in future years should be a tool to avoid the interactions. Improving the relationship between fleet and researchers will help to develop a comprehensive strategy and SG 100 could be met.

6.4 Determination, Formal Conclusion and Agreement

On completion of the scoring process, the assessment team has *provisionally* recommended that the ISF capelin fishery is eligible to be certified according to the MSC Principles and Criteria for Sustainable Fishing subject to condition and client action plan outlined in the report

6.5 Changes in the fishery prior to and since Pre-Assessment

No pre-assessment is available.

6.6 Determination, Formal Conclusion and Agreement

(required for FR and PCR)

7 References

~ Act on the Icelandic Coast Guard No. 52, June 14th . 2006. Ministry of Interior. Iceland.

~ Anon, 2008. Report of the meeting of the management committee for cetaceans. North Atlantic Marine Mammal Commission(NAMMCO).

~ **Anonymous 1996**. Act on the utilisation of exploitable marine stocks, no. 57/1996, accessible in the file http://www.atvinnuvegaraduneyti.is/media/Skyrslur/Stjorn-fiskveida-2010-endanlegt.pdf

~ **Anonymous 1996**. Act on the utilisation of exploitable marine stocks, no. 57/1996, accessible in the file http://www.atvinnuvegaraduneyti.is/media/Skyrslur/Stjorn-fiskveida-2010-endanlegt.pdf.

~ **Anonymous 2006.** Fisheries Management Act no. 116/2006, an English translation is accessible at http://www.fisheries.is/management/fisheries-management/the-fisheries-management-act/.

~ **Anonymous 2010**. Reply of the Minister for Fisheries and Agriculture to a question about catches outside the catch quota system, the Althing 2009-2010, document no. 638 – issue no. 323, accessible in Icelandic at http://www.althingi.is/-altext/138/s/0638.html.

~ **Anonymous 2012**. Directorate of Fisheries' annual fishing statistics: Yfirlit yfir veiðar og afla fiskveiðiárið 2013/2014 (http://www.fiskistofa.is/media/utgefid_efni/Yfirlit_2013_2014.pdf).

~ **Anonymous 2012**. Regulations on the management of fisheries during the 2012/2013 quota year, accessible in the file http://www.stjornartidindi.is/DocumentActions.aspx?ActionType=Open&documentID=18c25ccf-e993-4c1e-b868-696cb675bf78.

~ **Anonymous 2012**. State of Marine Stocks in Icelandic Waters 2015/2016 – Prospects for the Quota Year 2016/2017, MRI's publication no. 163, accessible on MRI's website at: http://www.hafro.is/Astand/2016/fjolrit_185.pdf.

~ **Anonymous**. The section on capelin on MII's website (information centre) at http://www.fisheries.is/main-species/pelagic-fishes/capelin/.

~ Astthorsson OS, Gislason A, Jonsson, S. 2007. Climate variability and the Icelandic marine ecosystem. Deep-Sea Res Part II 54:2456–2477

~ Astthorsson, O.S., Vilhjalmsson, H. 2002. Icelandic shelf LME: Decadal assessment and resource sustainability. Pp. 219-249 in Sherman, K. and H.R. Skjoldal. Large marine ecosystems of the North Atlantic. Elsevier Press. Amsterdam.

~ Bardarson, B., Gudmundsdottir, A. and Jonsson, S.Th. 2016. Advice for TAC of Capelin in the Iceland-Greenland-Jan Mayen area for the 2015/2016 fishing season. ICES North Western Working Group, 27 April - 4 May 2016, Working Document No. 34. 3 pp.

~ Barlow J, Clapham PJ. 1997. A new birth interval approach to estimating demographic parameters of humpback whales. Ecology 78, 2:535–546

~ Basran, C. 2014. Scar-based analysis and eyewitness accounts of entanglement of humpback whales (Megaptera novaeangliae) in fishing gear in Iceland. MSc thesis, Faculty of Business and Science University Centre of the Westfjords, University of Akureyri

~ Bertulli, C.G.,Cecchetti, A., Bárðarson, H. and Robbins, J. 2011. First assessment of entanglement rate among North Atlantic humpback whales (*Megaptera novaeangliae*) off Iceland. Poster presented to the 2011 Biennial Meeting of the Society for Marine Mammalogy, Tampa, FL.

~ Brotons JM, Munilla Z, Grau AM, Rendell L (2008) Do pingers reduce interactions between bottlenose dolphins and nets around the Balearic Islands? Endanger Species Res 5:301–308

~ Carscadden, J. E., and Vilhjalmsson, H. 2002. Capelin – what are they good for? Introduction. ICES Journal of Marine Science, 59: 863–869.

~ Carscadden, J. E., H. Gjøsæter and H. Vilhjálmsson. 2013 . A comparison of recent changes in distribution of capelin (Mallotus villosus) in the Barents Sea, around Iceland and in the Northwest Atlantic. Progress in Oceanography 114, 64–83.

~ Carscadden, J. E., K. T. Frank and W.C. Leggett. 2001 January. Ecosystem changes and the effects on capelin (*Mallotus villosus*), a major forage species. Can. J. Fish. Aquat. Sci. 58 (1), 73–85.

~ English summary of the State of Marine Stocks in Icelandic Waters 2014/2015 and Prospects for the Quota Year 2015/2016- Nytjastofnar sjávar 2014/2015 og aflahorfur 2015/2016

~ Erbe C, McPherson C, Craven A. 2011. Acoustic investigation of bycatch mitigation pingers. Proj Rep 10:21

~ Gearin PJ, Gosho ME, Laake JL, Cooke L, DeLong RL, Hughes KM. 2000. Experimental testing of acoustic alarms (pingers) to reduce bycatch of harbour porpoise, Phocoena phocoena, in the state of Washington. J Cetacean Res Manag 2:1–10

~ Gjøsæter, H., Bogstad, B., and Tjelmeland, S. 2002. Assessment methodology for Barents Sea capelin, Mallotus villosus (Müller). – ICES Journal of Marine Science, 59: 1086–1095.

~ Gudmundsdottir, A. and H. Vilhjálmsson. 2002 January. Predicting total allowable catches for Icelandic capelin, 1978–2001. ICES Journal of Marine Science: Journal du Conseil 59 (5), 1105–1115.

~ Gudmundsdottir, A., and Sigurdsson, Th. 2014. Growth of capelin in the Iceland-East Greenland-Jan Mayen area. NWWG 2014/WD:29.

~ Gudmundsdottir, A., Bardarson, B., and Jonsson, S.Th. 2016. Advice for Intermediate TAC of Capelin in the Iceland-Greenland-Jan Mayen area for 2015/2016 fishing season and data for preliminary TAC of 2016/2017 fishing season. ICES North Western Working Group, 27 April - 4 May 2016, Working Document No. 33. 5 pp.

~ Guion L.A., Diehl D.E., and McDonald, D. 2011. Triangulation: Establishing the Validity of Qualitative Studies. Institute of Food and Agricultural Sciences, University of Florida.

~ Hafró. 2014. Þættir úr vistfræði sjávar 2013 Environmental conditions in Icelandic waters 2013 Reykjavík 2014 (http://www.hafro.is/Bokasafn/Timarit/fjolrit-175.pdf)

~ Hamre, J., and Tjelmeland, S. 1982. Sustainable yield estimates of the Barents Sea capelin stock. ICES CM 1982/H: 45:1–24.

~ Heide-Jørgensen M, Laidre K, Hansen R, Burt M, Simon M, Borchers D, Hansén J, Harding K, Rasmussen M, Dietz R. 2012. Rate of increase and current abundance of humpback whales in West Greenland. J Cetacean Res Manag 12:1–14

~ ICES, 2009, Report of the Ad hoc Group on Icelandic Cod HCR Evaluation (AGICOD), ICES CM 2009/ACOM:56. (http://www.hafro.is/images/HCR_Evaluations/iCod_eval_2009.pdf) H. Björnsson & Hjörleifsson, 2014, Athugun á aflareglu fyrir íslenskan þorsk. Hafrannsóknastofnun.

~ ICES. 2015a. Report of the Benchmark Workshop of Icelandic Stocks (WKICE), 26–30 January 2015, ICES Headquarters, Copenhagen, Denmark. ICES CM 2015/ACOM:31.

~ ICES. 2015b. Report of the North-Western Working Group (NWWG), 28 April–5 May, ICES HQ, Copenhagen Denmark. ICES CM 2015/ACOM:07. 717 pp.

~ ICES, 2015c. Capelin (Mallotus villosus) in subareas 5 and 14 and Divisions 2.a west of 5oW (Iceland and Faroes grounds, East Greenland, Jan Mayen area). ICES Advice, 2015, Book 2. Section 2.3.5. 8pp.

~ ICES, 2016a. Capelin (Mallotus villosus) in subareas 5 and 14 and Divisions 2.a west of 5oW (Iceland and Faroes grounds, East Greenland, Jan Mayen area). ICES Advice, 2016, Book 2. Section 2.3.5. 8pp.

~ ICES. 2016b. Report of the North-Western Working Group (NWWG), 27 April–4 May 2016, ICES Headquarters, Copenhagen, Denmark. ICES CM 2016/ACOM:08.

~ IFFO-RS Iceland Capelin Assessment. Issue No. 5, 2014.

~ Information on Parliament Standing Committees procedures (applies to the Fisheries and Agriculture Committee): http://www.althingi.is/pdf/Althingi2010_english.pdf.

~ IWC 2015. Report of the Scientific Committee. San Diego, California 22. May – 3. June, 2015. 115 bls.

~ Jann B, Allen J, Carrillo M, Hanquet S, Katona S, Martin A, Reeves R, Seton R, Stevick P, Wenzel F. 2003. Migration of a humpback whale (*Megaptera novaeangliae*) between the Cape Verde Islands and Iceland. J Cetacean Res Manag 5:125–130

~ Lockyer C, Pike DG. 2009. North Atlantic Sightings Surveys 1987-2001. NAMMCO Sci Publ 7.

~ Magnússon, K. G. and Ó. K. Pálsson. 1989. Trophic ecological relationships of Icelandic cod. Rapports et Proces-Verbaux des Reunions du Conseil International pour l'Exploration de la Mer, 188: 206–224.

~ Martin AR, Katona SK, Mattila D, Hembree D, Waters TD. 1984. Migration of humpback whales between the Caribbean and Iceland. J Mamm 652 330-333 1984

~ McPherson G. 2011. Acoustic methods to mitigate bycatch and depredation by marine mammals on commercial fishing operations in Australian waters: Fishermen's options. In: p 1–8

~ Muus, B.J.and Dahlstrom, P. 1974 Collins Guide to the Sea Fishes of Britain and North-Western Europe. Collins. St James Palace, London.

~ NAMMCO. North Atlantic Marine Mammal Commission. 2004. Report of the Working Group on minke and fin whales. In: NAMMCO Annual Report 2003, NAMMCO, Tromsø, pp.197-229.

~ NAMMCO 2015. Report of the 22nd meeting of the Scientific Committee. North Atlantic Marine Mammal Commission. 194 bls.

~ NEAFC's website at http://www.neafc.org/coastalstatemeetings. Iceland's High Court's rulein at http://www.haestirettur.is/domar?nr=767

~ Noad MJ, Dunlop R, Paton D, Cato D (2011) Absolute and relative abundance estimates of Australian east coast humpback whales (*Megaptera novaeangliae*). J Cetacean Res Manag Issue 3:243–252

~ Nytjastofnar sjávar 2015/2016 og aflahorfur 2016/2017 . Marine Institute Research, Iceland.

~ On the status of the precautionary principle in Icelandic sea http://www.ust.is/umhverfisstofnun/umraedan/grein/2012/03/30/Varudarreglan/

~ Palsson, O´. K., Gislason, A., Guðfinnsson, H. G., Gunnarsson, B., O´lafsdo´ttir, S. R., Petursdottir, H., Sveinbjo¨rnsson, S., Thorisson, K., and Valdimarsson, H. 2012. Ecosystem structure in the Iceland Sea and recent changes to the capelin (*Mallotus villosus*) population. – ICES Journal of Marine Science, 69: 1242–1254.

~ Pike, D.G., Gunnlaugsson, T., Víkingsson, G.A., Desportes, G., and Mikkelsen, B. 2010. Estimates of the abundance of humpback whales (Megaptera novaeangliae) from the T-NASS Icelandic and Faroese ship surveys conducted in 2007.IWC/SC/62/O.

~ Pike, D.G., Gunnlaugsson, Th., Víkingsson, G.A., Desportes, G. and Bloch, D. 2009. Estimates of the abundance of minke whales (Balaenoptera acutorostrata) from Faroese and Icelandic NASS shipboard surveys. NAMMCO Sci. Publ. 7:81-93.

~ Pike, D.G., Paxton, C.G.M., Gunnlaugsson, Th. and Víkingsson, G.A. 2009. Trends in the distribution and abundance of cetaceans from aerial surveys in Icelandic coastal waters, 1986-2001. NAMMCO Sci. Publ. 7:117-142.

~ Pratt, Mike (2010) IFFO Fishery Assessment Report Issue No; 3, Iceland-E.Greenland-Jan Mayen Subareas V and XIV and Division IIa west of 5W; Global Trust Certification Ltd, Dundalk, Co. Louth, Ireland.

~ Report of the North-Western Working Group (NWWG), 27 April–4 May, 2016, ICES Headquarters, Copenhagen. ICES CM 2016/ACOM:08. (Skýrslu má nálgast frá: http://www.ices.dk/community/groups/Pages/NWWG.aspx)

~ Sigurjónsson J, Gunnlaugsson T,. 1990. Recent trends in abundance of blue (Balaenoptera musculus) and humpback whales (Megaptera novaeangliae) off west and southwest Iceland, with a note on occurrence of other cetacean species. Rep.intWhalCommn 40:537–551

~ Sigurjónsson J, Víkingsson GA. 1997. Seasonal abundance of and estimated food consumption by cetaceans in Icelandic and adjacent waters. J Northwest Atl Fish Sci 22:271–287

~ Smith TD, Allen J, Clapham PJ, Hammond PS, Katona S, Larsen F, Lien J, Mattila D, Palsb. ll PJ. 1999. An ocean basin wide mark recapture study of the north Atlantic humpback whale (megaptera novaeangliae). Mar Mammal Sci 15(1):1–32

~ State of marine stock in Iceland. Nytjastofnar sjávar 2014/2015 og aflahorfur 2015/2016.

~ Statement by the minister of fisheries 15. April 2009: http://www.fiskifrettir.is/frett/6857/?q=samr%C3%A1%C3%B0.

~ Statement by the Minister published on the government sponsored website http://www.fisheries.is/management/government-policy/responsible-fisheries/nr/62

~ The Fisheries Management Act No 116, August 10th 2006. Ministry of Industries and Innovation . Iceland.

~ Víkingsson GA. 2004. Hnúfubakur. In: Páll Hersteinsson (ed) Íslensk Spendýr. Vaka-Helgafell, Reykjavik, p 224–229

~ Víkingsson, G.A, Pike, D.G., Desportes, G., Øien, N., Gunnlaugsson, Th. and Bloch, D. 2009. Distribution and abundance of fin whales (*Balaenoptera physalus*) in the Northeast and

Central Atlantic as inferred from the North Atlantic Sightings Surveys 1987-2001. NAMMCO Sci. Publ. 7:49-72.

~ Víkingsson G, Pike D, Schleimer A, Valdimarsson H, Gunnlaugsson T, Silva T, Elvarsson B, Mikkelsen B, Öien N, Desportes G, Bogason V, Hammond PS. 2015. Distribution, abundance and feeding ecology of baleen whales in Icelandic waters: have recent environmental changes had an effect ? Front Ecol Evol 3:1–18

~ Vilhjalmsson, H. 1994. The Icelandic capelin stock. Capelin, Mallotus villosus (Müller), in the Iceland–Greenland–Jan Mayen area. Rit Fiskideildar, 13: 281 pp.

~ Vilhjalmsson, H. 2002. Capelin (*Mallotus villosus*) in the Iceland-East Greenland-Jan Mayen ecosystem. ICES Journal of Marine Science 59: 870-883.

~ Vilhjálmsson, H. and J. E. Carscadden. 2002 . Assessment surveys for capelin in the Ice-land–East Greenland–Jan Mayen area, 1978–2001. ICES Journal of Marine Science: Journal du Conseil 59 (5), 1096–1104.

~ Vilhjálmsson, H. and Sigurjónsson, J. 2002. Capelin of the Iceland-East Greenland-Jan Mayen area: biology, exploitation and management. Marine Research Institute, P. O. Box 121 Reykjavik, Iceland.

➢ **Consulted website**

~ https://www.atvinnuvegaraduneyti.is/
~ http://us.whales.org/issues/whaling-in-iceland
~ http://www.hafro.is/Astand/2016/english/whales_2016.pdf
~ https://iwc.int/members
~ http://www.fiskistofa.is/english
~ http://www.smabatar.is/
~ http://www.ospar.org/
~ http://www.iceland.is/trade-invest/fisheries
~ http://www.fisheries.is/
~ http://www.hafro.is/index_eng.php
~ http://www.iwa-network.org/
~ http://landvernd.is/en
~ https://eng.atvinnuvegaraduneyti.is/ministers/nr/7594
~ http://icewhale.is/
~ http://www.icelandsustainable.is/
~ http://www.hbgrandi.com/
~ http://www.vsv.is/en/about-us

Appendices

8 Appendix 1 Scoring and Rationales

8.1 Appendix 1.1 Performance Indicator Scores and Rationale – Evaluation Tables

8.2 Principle 1 – Sustainable Target Fish Stocks – Evaluation Tables

PI 1.1.1A - key LTL [NOTE: only use this table for stocks identified as key LTL]

PI 1.1.1 A		**The stock is at a level which has a low probability of serious ecosystem impacts**		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to ecosystem impairment			
	Guidepost	It is **likely** that the stock is above the point where serious ecosystem impacts could occur.	It is **highly likely** that the stock is above the point where serious ecosystem impacts could occur.	There is a **high degree of certainty** that the stock is above the point where serious ecosystem impacts could occur.
	Met?	Y	Y	Y
	Justification	A biomass limit reference point is set at 150,000t which is a precautionary B loss, based on observations that the recruitments generated around this limit level (cohorts, 1981, 1982and 1990) were of average strength and that average recruitment did not appear to decline at low SSB over the observed range. In setting this limit level, and managing exploitation, the role of capelin as a key forage species in the Icelandic ecosystem has been taken into account through a predation model which assesses the requirements of the three main demersal predator species, cod, haddock and saithe. The SSB estimated at spawning time in 2016 was 304,000t and it is therefore high degree of certainty (95% probability) that the stock is above a point where serious ecosystem impacts could occur. Even the basic biology of this short lived species and the potential for variable recruitment means that the more rigorous requirements MRI shows in the last report on May 2016 with 95% of probability that the fishery is above therefore There is a **high degree of certainty** that the stock is above the point where serious ecosystem impacts could occur and **SG 100 is met.**		
b	Stock status in relation to ecosystem needs			
	Guidepost		The stock is at or fluctuating around a level consistent with ecosystem needs.	There is a **high degree of certainty** that the stock has been fluctuating around a level consistent with ecosystem needs or has been above this level over recent years.
	Met?		Y	N

	Justification	The whole ethos in terms of the managnment of this short lived species is centered on the precautionary biomass limit reference point. This is the point which dictates and controls the exploitation of the fishery at a maximum sustainable yield. It is important to bear in mind that, irrespective of any exploitation or predation, most individuals of a cohort die, after spawning once, at the age of 3 years. Their basic biology thus dictates that the exploitation has to be carefully managed throughout a fishing season. This is to ensure that a minimum of 150,000t is available to spawn and maintain a sustainable population which satisfies both the ecosystem requirements and a fishery. That careful management takes into account the abundance of juveniles and the ecosystem demands on the capelin stock as a major forage species. Modelling predation by cod, haddock and saithe, and initially setting provisional, intermediate and then a final TAC is based on residual availability of the stock, an escapement strategy to harvest the surplus. This ensures that first and formeost the ecosystem needs and also the biomass limit level have been satisfied before any exploitation can take place. That careful management strategy has ensured that the SSB has consistently been at over two times the biomass limit level and as high as five times that level in 1996. The success of this strategy satisfies the requirements at SG 80. However because of some uncertainty generated by the basic biology of this short lived species and the inherent difficulty of determining unfished spawning biomass levels, or the total stock biomass, the more rigorous requirements, for a high degree of certainty, at SG 100 are not met. Therefore, the stock is at or fluctuating around a level consistent with ecosystem needs and **SG 80 is met.**
References		Hamre and Tjelmeland, 1982; Magnússon and Pálsson, 1989; Carscadden, et al. 2001; Gjøsæter, et al. 2002; Vilhjálmsson, 2002; ICES, 2015a; ICES, 2015b; ICES, 2015c; ICES, 2016a; ICES, 2016b

Stock Status relative to Reference Points

	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to ecosystem impairment (SIa)	B_{lim}	150000 tonnes	304000 tonnes
Reference point used in scoring stock relative to ecosystem needs (SIb)	B_{lim}	150000 tonnes	304000 tonnes

OVERALL PERFORMANCE INDICATOR SCORE:	**90**
CONDITION NUMBER (if relevant):	**NA**

PI 1.1.2 – Stock rebuilding

PI 1.1.2		Where the stock is reduced, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	**Rebuilding timeframes**			
	Guidepost	A rebuilding timeframe is specified for the 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 stock.
	Met?	(Y/N)		(Y/N)
	Justification	Not applicable		
b	Rebuilding evaluation			
	Guidepost	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within the specified timeframe.	There is evidence that the rebuilding strategies are rebuilding stocks, **or it is likely** based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.	There is **strong** evidence that the rebuilding strategies are rebuilding stocks, **or it is highly likely** based on simulation modelling, exploitation rates or previous performance that they will be able to rebuild the stock within the specified timeframe.
	Met?	(Y/N)	(Y/N)	(Y/N)
	Justification	Not applicable		
References		[List any references here]		
OVERALL PERFORMANCE INDICATOR SCORE:				**NA**
CONDITION NUMBER (if relevant):				

PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guidepost	The harvest strategy is **expected** to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy **work together** towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is **designed** to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	Y	Y	Y
	Justification	There is no formal management plan for this stock. The more familiar fishing mortality based harvest strategy is inappropriate for this type of fishery harvesting a short lived species with a vital ecosystem role as an important forage species. For IGJM capelin the most important element underpinning the harvest strategy is to leave enough mature fish to ensure adequate recruitment levels for subsequent years. The strategy has to take into account not only the impact of the fishery but also predation on all age groups. This is achieved by the use of a complex predation model to estimate the requirements of the three main demersal predators on capelin, cod, haddock and saithe. The status of the stock is assessed acoustically with up to four surveys throughout the autumn and winter every year. The results of each assessment are analysed and used to determine initial, intermediate and final TACs once the ecosystem and minimum spawning biomass levels have been satisfied. In that way the strategy is responsive to stock status and clearly designed to achieve the stock management objectives for a key lower trophic level species. The precautionary TAC setting procedure is clearly designed to only harvest the surplus once the ecosystem and subsequent spawning stock needs have been satisfied. Therefore, The harvest strategy is responsive to the state of the stock and is **designed** to achieve stock management objectives reflected in PI 1.1.1 SG80 and **SG 100 is met**.		
b	Harvest strategy evaluation			
	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	N
	Justification	This harvest strategy is considered by ICES to be precautionary. The permited exploitation level is determined annually and adjusted throughout the fishing season with initial, intermediate and final TACs. Harvesting the surplus in this way is clearly secondary to the ecosystem needs for capelin as an important forage species. This is achieved through the predation model and careful acoustic		

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
		monitoring of stock status before any exploitation is sanctioned. The current level of SSB at over two times a biomass limit level and average recruitment over the past two years provides evidence that the strategy is achieving its objectives. Some elements of the harvest strategy, including defining a biomass limit level, have only been operational for a short time and are not yet fully evaluated. Once the new harvest control rule has been operational for a few years ICES recommends that assumptions and practical operation should be evaluated. Furthermore there is an unquantified degree of predation on capelin by whales. Although this is seasonal and not considered to be significant it would nevertheless be useful if this element of predation could be further investigated and if necessary incorporated into the existing predation model as an additional element of natural mortality. This has been made the subject of a recommendation. Therefore the requirements at SG 100 are not yet met and at the moment, the harvest strategy may not have been fully **tested** but evidence exists that it is achieving its objectives and **SG 80 is met.**		
c	Harvest strategy monitoring			
	Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	Y		
	Justification	The status of the stock is monitored acoustically by a series of surveys to determine the abundance and biomass of the immature and mature elements of the stock. These surveys, which determine the level of permitted exploitation, are designed to maintain an adequate abundance of spawners after ecosystem needs have been satisfied. Therefore, Monitoring is in place that is expected to determine whether the harvest strategy is working and **SG 60 is met.**		
d	Harvest strategy review			
	Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			Y
	Justification	The most recent benchmark workshop on Icelandic stocks, in 2015, reviewed the harvest strategy for this stock and introduced some changes in the way that initial and final TACs are determined. The success of the strategy is also kept under annual review at the ICES assessment working group dealing with all the stocks in this area. Therefore, the harvest strategy is periodically reviewed and improved as necessary and **SG 100 is met**.		
e	Shark finning			
	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	Not applicable		

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
f	**Review of alternative measures**			
	Guidepost	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	N/A. There is not unwanted catches in the fishery.		
References		Hamre and Tjelmeland, 1982; Gjøsæter, et al. 2002 ICES, 2015a; ICES, 2015b; ICES, 2016a; ICES, 2016b		
OVERALL PERFORMANCE INDICATOR SCORE:				**95**
CONDITION NUMBER (if relevant):				**NA**

PI 1.2.2 – Harvest control rules and tools

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guidepost	**Generally understood** HCRs are in place **or available** that are **expected** to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	**Well defined** HCRs are **in place** that **ensure** that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock **fluctuating around** a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock **fluctuating at or above** a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, **most** of the time.
	Met?	Y	Y	N
	Justification	The current strategy is based on harvesting surplus production once the ecosystem requirements and minimum spawning stock levels have been satisfied. This is achieved in a precautionary way by assessing stock status acoustically with a series of surveys throughout the autumn and winter periods. These quantitative surveys assess the abundance of juveniles (1-2yrs old) and adults which will spawn in that fishing season. The preliminary and intermediate TACs are very precautionary and based on the numbers of juveniles assessed during the autumn surveys. A precautionary abundance level has to be met before any harvesting is permitted. Even, as in the 2015 autumn surveys, if immature capelin abundance levels are assessed as low because of poor survey coverage, no preliminary TAC is granted. When juvenile abundance is very high on these surveys a trigger level is set to restrict the initial and intermediate TAC to 400,000t. The eventual surplus fishable biomass for the season is based on the January acoustic survey taking into account catches taken before that survey, subtracting the biomass limit (the minimum biomass to be left to spawn) and also subtracting 150Kt for predation. This final TAC is set at the catch which will generate a SSB which has a 95% probability of being above the biomass limit level of 150Kt. There are other harvest control rules in place to further protect the ecological role of the stock and permit a sustainable harvest of the surplus production. These include the facility to quickly close areas where there is a high abundance of juveniles (1-2yrs old) as assessed by on board observers. There is a legal requirement to carry these inspectors when fishing in certain designated areas. There are also restricted areas where pelagic trawling is not permitted in order to avoid disturbance of capelin shoals. This whole strategy, backed by the harvest control rules to set the TAC, is considered by ICES to be precautionary. These well defined and practised rules are expected to keep the stock fluctuating around a target level consistent with ecosystem needs. Therefore, **well defined** HCRs are **in place** that **ensure** that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock **fluctuating around** a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs and **SG 80 is met.**		

PI 1.2.2	There are well defined and effective harvest control rules (HCRs) in place			
b	HCRs robustness to uncertainty			
	Guidepost		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a **wide** range of uncertainties including the ecological role of the stock, and there is **evidence** that the HCRs are robust to the main uncertainties.
	Met?		Y	N
	Justification	The main uncertainty in relation to the harvest control rules is the reliability of the acoustic surveys which dictate the level of surplus production available for the fishery. These surveys, in particular the winter surveys, are carried out in a hostile environment and survey coverage can often be affected by adverse weather and ice conditions. Such conditions affect the reliability of the acoustic measurments through reduction in survey coverage and dispersal of capelin aggregations. All these important parameters are measured with coefficients of variation and are evaluated and used accordingly. The requirements at SG 80 are therefore met. However the team did not consider that current practice takes account of a wide range of uncertainty (SG 100). For example the ecosystem role of cetaceans could be impacting on the surplus production available for harvesting and more data is needed on the seasonal coincidence of their distributions with capelin aggregations. We have made this the subject of a recommendation also related to PI 1.2.3. Therefore, the HCRs are likely to be robust to the main uncertainties and **SG 80 is met**.		
c	**HCRs evaluation**			
	Guidepost	There is **some evidence** that tools used **or available** to implement HCRs 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 HCRs.	**Evidence clearly shows** that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	Y	Y	N
	Justification	The predation model used to quantify the ecosystem requirements in relation to capelin as an important forage species is well established. Available evidence, in the form of the status of dependent demersal stocks; cod, haddock and saithe, suggest that this ecological measure is effective. The incorporation of the predation model into the management of the fishery and the overarching requirement to leave a minimum abundance of mature fish for spawning, results in a fishable quantity of surplus production. The fishery is then very strictly controlled by in season TAC adjustments to ensure that the resource is not over exploited. Examination of TAC compliance over the past thirty years shows that the final agreed TAC is never exceeded and in many years the landings are below the TAC. The success of this element of the harvest control rules is the result of rigorous enforcement of on board log books, designated landings ports, on board fisheries inspectors and inspection of actual landings. For an example in 2015 an inspector was present at 19.8% of all pelagic landings. This provides sufficient evidence that the requirements		

PI 1.2.2	There are well defined and effective harvest control rules (HCRs) in place	
		at SG 80 are fully met. However, some elements of the harvest control rules are new in particular the model used to set the initial TAC which is heavily dependent on a reliable autumn acoustic survey estimate of the abundance of immature fish. In the meantime the team considers that the more rigorous requirements at SG 100 for all the evidence to 'clearly show' is not met. Therefore, **available evidence indicates** that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs and **SG 80 is met.**
References		ICES, 2015a; ICES, 2015b; ICES, 2016a; ICES, 2016b
OVERALL PERFORMANCE INDICATOR SCORE:		**80**
CONDITION NUMBER (if relevant):		**NA**

PI 1.2.3 – Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	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, UoA 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
	Justification	The basic biology of capelin over its wide distribution range in the cold arctic and subarctic waters of the North Atlantic and North Pacific is well described. The capelin which are the subject of this assessment occur in the Iceland, East Greenland and Jan Mayen area and are clearly identified as a separate stock (IGJM stock). The basic biology of the species in this area is well known and described providing a raft of fundamental knowledge which is used in support of the harvest strategy. The species is known to be short lived with a high natural mortality after spawning at 3-4 yrs old, with close to 100% of the males dying and most of the females as well. This is vital information in support of the harvest strategy which, as a priority, addresses the ecological role of this important forage species. Knowledge of the seasonal distribution, feeding and spawning migrations is well documented and significant changes in migration routes have been noted in recent years. This fundamental knowledge base firmly underpins all the regulations to provide a sustainable fishery whilst successfully addressing the important ecological role of the capelin stock in this area. There is also a wide range of environmental data collected over many years by the Marine Research Institute Rejkjavik, and by other countries, related to the oceanography of the Icelandic coastal and the Iceland Greenland shelf areas. Some but not all of these data are directly related to fisheries. The information data base for this area and for this species is considered to be comprehensive and the requirements at **SG 100 are fully met.**		
b	Monitoring			
	Guidepost	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency	Stock abundance and UoA removals are **regularly monitored at a level of accuracy and coverage consistent with the harvest control rule**, and one or more indicators are	**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

PI 1.2.3		Relevant information is collected to support the harvest strategy		
		to support the harvest control rule.	available and monitored with sufficient frequency to support the harvest control rule.	the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Y	Y	N
	Justification	Total catch and landings data are adequately monitored and controlled through designated landing port legislation. No vessels are permitted to take part in the fishery without a licence and available quota. Discarding is banned in Icelandic waters and there are arrangement in place in the purse seine fishery for occaisional excess catch to be transferred to a neighbouring vessel. The landings data are considered to be a fair reflection of the actual catch. However in 2015 the ICES working group reported that biological sampling from commercial catches is not considered to be adequate, an issue which will be addressed with a reccomendation. The team was afforded live access to the national fisheries monitoring system during the site visit. The level of monitoring and surveillance was considered by the team to be exceptionally good with 24 hour screen monitored surveillance of all fishing activities. Information on the dependence of cetaceans on capelin and their seasonal coincidence need to be addressed and is an area of uncertainty in relation to the management of this fishery and the lower trophic level status of capelin. The ICES working group particularly identified the need for further information on predator/prey relationships and how SSB estimates from autumn and winter surveys should be weighted when the final TAC is defined. As a consequence the requirements at SG 100 are not fully met. Some of these issues are also mentioned at PI 1.2.2 and will be the subject of a recommendation related to both performance indicators. Therefore, stock abundance and UoA 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 and **SG 80 is met**.		
c	Comprehensiveness of information			
	Guidepost		There is good information on all other fishery removals from the stock.	
	Met?		Y	
	Justification	A small occassional by-catch of capelin may occur in some other pelagic fisheries such as the herring and mackerel fisheries. These incidental catches are not common occurrences in fisheries targeting shoaling species. If and when they do occur the catches must be landed and recorded against the species TAC. All discarding is banned in Icelandic waters and the penalties for non compliance are severe. Therefore, there is good information on all other fishery removals from the stock and **SG 80 is met.**		
References		Carscadden et al, 2001; Carscadden et al, 2013; Carscadden and Vilhjalmsson, 2002; Gjøsæter, et al. 2002; Hafro, 2014; Hamre, and Tjelmeland, 1982; ICES, 2015a; ICES, 2015b; ICES, 2016b; Muus and Dahlstrom, 1974; Vilhjálmsson, 1994; Vilhjálmsson, 2002.		

PI 1.2.3	Relevant information is collected to support the harvest strategy	
OVERALL PERFORMANCE INDICATOR SCORE:		90
CONDITION NUMBER (if relevant):		NA

PI 1.2.4 – Assessment of stock status

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guidepost		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		Y	Y
	Justification	The nature of this short lived shoaling species dictates that annual stock assessment using a traditional age based population analysis modelled approach is inappropriate. The nature of the fishery also requires contemporaneous data on abundance in order to successfully manage rational exploitation in line with the ecosystem role of this important forage species. As a consequence the capelin stock in the Iceland, East Greenland and Jan Mayen area has been assessed entirely by annual acoustic surveys since 1978. There are usually four surveys each year, two in the autumn (September - December and two in the winter (January – February). These surveys produce abundance estimates of immature (1-2yr olds) and maturing and mature fish (3-4 yrs old). The surveys are mainly carried out on a research vessel with sophisticated and well calibrated sonar equipment and technical expertise to run them. Some commercial vessels have occasionally taken part using calibrated equipment and scientists to operate the gear and interpret the results. The results of the acoustic surveys are available very quickly and are then fed directly into the management of the stock. This fully meets the requirements at both SG 80 and SG 100. Therefore, the assessment takes into account the major features relevant to the biology of the species and the nature of the UoA and **SG 100 is met.**		
b	Assessment approach			
	Guidepost	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	Y	Y	
	Justification	The stock assessment produces abundance estimates in two formats essential for the management of the stock. The immature portion of the stock, assessed in the autumn surveys is presented as a numerical abundance. This information is then used directly via a regression to determine an initial TAC for the fishing season 15 to 18 months later. The mature stock abundance is a biomass estimate which is used to determine stock status in relation to a biomass limit level (150,000t). This is the minimum SSB level which must be left to spawn taking into account the ecosystem		

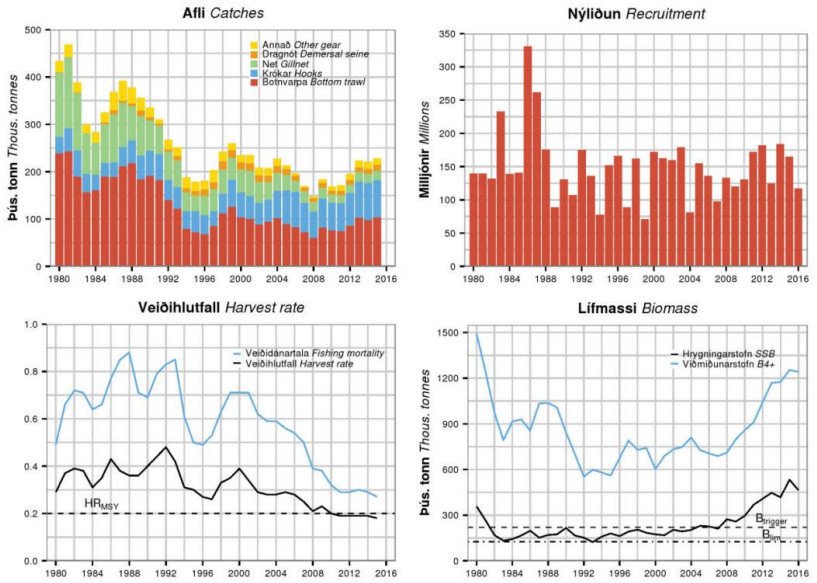
PI 1.2.4		There is an adequate assessment of the stock status		
		requirements of predation by cod, haddock and saithe. The biomass limit level has been appropriately estimated as B loss based on observations that the recruitments generated around this value (cohorts,1981, 1982 and 1990) were of average strength and that average recruitment did not appear to decline at low SSB over the observed range. Therefore, The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated and **SG 80 is met.**		
c	Uncertainty in the assessment			
	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	The main uncertainty in the assessment is the reliability of the acoustic surveys. Uncertainty is generated when survey coverage is reduced, which can occur for a variety of reasons. Most commonly adverse weather affects coverage but vessel operational problems have also affected coverage in some seasons. In erring on the side of precaution no attempt is made to interpolate statistically for unsampled areas and the actual acoustic survey results area accepted. Using the 2015/16 surveys as an example,the early autumn survey was affected by bad weather. The report noted that the estimates of the immature and mature biomass were considered to be minimum estimates (likely underestimates). The late autumn survey was also affected by poor weather and ice conditions which bably affected survey coverage. As a result the survey estimate was not used for the intermediate TAC advice. The first winter survey had no problems but the report did comment that the observed pattern of movement of capelin during the survey may have led to an overestimate of stock size. In the absence of a reliable estimate from the late autumn survey this survey was used to set the final TAC. In view of the problems encountered on the autumn the Iceland fishing industry funded a second winter survey. Ironically this survey was also blighted by poor weather and this survey estimate was not used for TAC advice. However, sometimes the weather consitions are not the best for estimating survey, the example of one seasons stock assessment surveys provides sufficient evidence to support the requirements at SG 80. The estimate of the mature biomass left to spawn (the biomass limit level of 150,000t) is estimated with 95% probability of not being below that level , therefore the CAB has information to confirm that the assessment takes into account uncertainty and is evaluating stock status relative to reference points in a **probabilistic** way and **SG 100 is met.**		
d	Evaluation of assessment			
	Guidepost			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.

PI 1.2.4	**There is an adequate assessment of the stock status**			
	Met?			Y
	Justification	The only real test for this assessment is the ongoing status of the spawning stock in relation to supporting ecosystem needs and a viable fishery. The acoustic survey method has been used for the IGJM capelin stock since 1978. During conversation between the CAB and MRI it was concluded that the assessment method was tested by ICES - see ICES 2015 report. Report of the Benchmark Workshop on Icelandic Stocks (WKICE), 2015. ICES had external advisors to review the work during the process of making that report before approved by ACOM. Furthermore, ICES review the assessment annually by the NWWG group, advisory drafting group and thereafter it is approved by ACOM. and there appears to be the assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored and **SG 100 is met.**		
e	Peer review of assessment			
	Guidepost		The assessment of stock status is subject to peer review.	The assessment has been **internally and externally** peer reviewed.
	Met?		Y	Y
	Justification	Before the results of the assessment by the ICES assessment working group are released into the public domain they are reviewed by an independent group of scientists within appointed by ICES to form the Advisory Committee on Management (ACOM). Only when endorsed by ACOM are the results of the assessment released in the form of advice on stock status and the future management of the fishery. A similar process is followed for the periodic Benchmark Workshops which examine all the data inputs and methodology and endorse any proposed changes in either the assessment to TAC setting procedures. Furthermore, ICES review the assessment annually by the NWWG group, advisory drafting group and thereafter it is approved by ACOM. Therefore, the assessment has been **internally and externally** peer reviewed.		
References		ICES, 2015a; ICES, 2015b; ICES, 2015c; ICES, 2016a; ICES, 2016b; Vilhjalmsson, 1994. Pers. communications MRI-June 2016		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				**NA**

8.3 Principle 2 – Environmental Impact of Fishing – Evaluation Tables

PI 2.1.1 – Primary species outcome. UoA 1 (Purse Seine) and UoA 2 (Midwater pelagic trawl)

PI 2.1.1		The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guidepost	Main primary species are **likely** to be above the PRI OR If the species is below the PRI, the UoA has measures in place that are **expected** to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are **highly likely** to be above the PRI OR If the species is below the PRI, there is either **evidence of recovery** or a demonstrably effective strategy in place **between all MSC UoAs which categorise this species as main**, to ensure that they collectively do not hinder recovery and rebuilding.	There is a **high degree of certainty** that main primary species are above the PRI **and are** fluctuating around a level consistent with MSY.
	Met?	Y	Y	Y
	Justification	Capelin fishery is very clean and the presence of retained species is not too high. The Directorate of Fisheries makes easy the consultation of the total composition of catches by vessels which are included in both UoAs. The CAB decides to evaluate both UoAs in the same tables because the composition of catches in each gear is practically the same, no differences are described. All the species identify in the fishery are retained by both gears and the % of catches does not show differences. Non-target species represent 13% of total catch. However, only 14 species are retained by the fishery. Eleven of them are primary species but just one species has catches above 5%. Cod is considered the only main primary species. The catches of cod during the last four years by Capelin fishery was 236,403 kg representing 12.13% of the total catches in the fishery. The total catches of cod last year were estimated at 221 thousand tonnes. The catches by Capelin fleet with purse seine well as midwater pelagic trawl were 236,403 kg. Therefore 0.11% of cod catches came from Capelin fishery . These catches are almost negligible regarding the total cacthes of this species and then the Capelin fishery does not hinder the status of cod stock and SG 80 is reach. The last assessment published in the ICES website and Directorate of Fisheries shows that the stock status of cod are fluctuating around MSY. Overfished or overfishing is not occurring as it could be observed in the figures.		

PI 2.1.1		The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.		
		 The Figures represent: 1 top left catches per gear and year: 2 top right recruitment per year: 3 bottom left Harvest rate and mortality and 4 bottom right biomass per year. In the figures the assessement team observes that biomass index shows an increase in the last seven years, mostly due to increase in abundance of older cod. The reference biomass has increased in recent years and it is now larger than observed in the last three decades. The spawning stock is increasing and it is the larger data since the early 1960s. During the last decade, the harvest rate has declined from 34–40% to around 20% and the fishing mortality from above 0.7 in 2000 to 0.3 in 2014. Recruitment during this period has been around two thirds of the long-term average. The decrease in harvest rate, imposed by management action, has hence been the main reason for the increase in stock size (Nytjastofnar sjávar 2014/2015 og aflahorfur 2015/2016). For these facts, ICES reviewed the HCRs and determinated that are in accordance with the precautionary approach. Therefore, there is a **high degree of certainty** that main primary species are above the PRI **and are** fluctuating around a level consistent with MSY and **SG 100 is met.**		
b	Minor primary species stock status			
	Guidepost			Minor primary species are highly likely to be above the PRI OR If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species

PI 2.1.1	The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.		
Met?			Y
Justification	As the assessment team explain in the issue above the compostion of the catches between gear do not have significant differences. In the two UoAs evaluated, 11 primary especies are identified, 10 of them are minor primary species and they are going to be evaluated in this issue. The species classified as minor primary species are listed bellow: - Haddock (*Melanogrammus aeglefinus* Linnaeus, 1758) - Saithe(*Pollachius virens* Linnaeus, 1758) - Herring (*Cuplea harengus* Linnaeus, 1758) - Lumpfish (*Cyclopterus lumpus* Linnaeus, 1758) - Greenland Halibut [*Reinhardtius hippoglossoides* (Walbaum, 1792)] - Monkfish (*Lophius piscatorius* Linnaeus, 1758) - Wolfish (*Anarhichas lupus* Linnaeus, 1758) - Blue whiting [*Micromesistius poutassou* (Risso, 1827)] - Redfish [*Sebastes norvegicus* (Ascanius, 1772)] - Plaice (*Pleuronectes platessa* Linnaeus, 1758) ***Haddock***- The catches by purse-seine or midwater pelagic trawl represent less than 1 % of the total catches. Regarding the Satus of Marine Stock published by hafro the Tac in last year was less than the year before and growth has increased since then. Growth in 2014 is estimated above average and faster than predicted last year. Mean weight at age in March 2015 is close to or above the average since 1985 for all age groups. The TAC estimated for 2016 was higer than the year before then, haddock stock status is highly likely to be above the PRI and **SG 100 is met**. ***Saithe***- In 2014, landings of saithe were 46000 t, compared to 58000 t in 2013. The catches decreased following the precautionary approach. The TAC for the quota year 2014/2015 was set according to the harvest control rule (HCR) at 58000t. Following the advice of MRI and to ensure the conservation of the stock the studies show that short-term projections based on the HCR indicate that the reference biomass at the beginning of 2016 was around 238000 t. According to the HCR, the saithe TAC for the quota year 2015/2016 was 55000 t less than the year before, even though the stock is not overfished and overfishing is not occurring. Then, saithe stock status is highly likely to be above the PRI and **SG 100 is met**. ***Herring***- Landings of Icelandic summer-spawning herring during the fishing season 2014/2015 amounted to 95000 t but the TAC was set at 83 000 t. The difference is because of transfer of quota between years. The main part of the stock overwintered in offshore areas west of Iceland instead of inshore areas in Breiðafjörður as it did for the seven preceding years. The spawning stock biomass is estimated 342000t in the year 2015, significantly lower than in the 2014 assessment. A very small 2011 year class entering the spawning stock is the main reason for the decline in SSB. MRI recommends a TAC of 71 000t for 2015/2016 based on F0.1 = 0.22. Then even the advice is keep the TAC lower than years before the UoAs doesn't hinder the stock status because the catches of herring are		

PI 2.1.1		The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.
		estimated at 0,2% and **SG 100 is met.** ***Lumpfish-*** In 2014, about 4000t of female lumpfish were landed in Iceland, which is 1500 t below the average landings of the period 1971–2014. Effort and number of licenses have decreased in recent years. After several years of decline, the biomass index has increased over the past two years. The basis of the MRI advice is to keep Fproxy at or below the average from the reference period (1985–2011). MRI recommends an initial TAC of 2040 t for the 2015/2016 quota year. Then, lumpfish stock status is highly likely to be above the PRI and **SG 100 is met**. ***Greenland Halibut-*** In 2014, approximately 21000t of Greenland halibut were landed from the East Greenland, Iceland, and Faroese waters. Biomass indices from combined surveys in Icelandic and Greenlandic waters have been increasing in recent years and are close to the high levels observed in 1998–2001. ICES and MRI recommend that effort should be reduced to a level corresponding to the longterm maximum sustainable yield to keep the increasing indices. Then, green halibut stock status is highly likely to be above the PRI and **SG 100 is met**. ***Monkfish-*** In 2014, about 1200t of monkfish were landed from Icelandic waters. The catches have been declining since 2009 when they reached a maximum of 4100 t. Survey indices since 2012 have shown poor recruitment for year classes 2008–2014. Due to the decreasing recruitment, the fishable stock is expected to decline in the coming years. MRI recommends that that the catches be no more than 1000 t in the quota year 2015/2016. Even the assessment team cannot confirm the stock is below PRI, the cathes come form Capelin fishery are insignificant and are estimated at 0,0007%, then the CAB can confirm that the UoAs doesn't hinder the stock and **SG 100 is met.** ***Atlantic wolffish-*** Landings of Atlantic wolffish in 2014 were about 7300 t, the lowest landings since before 1950. The index of fishable biomass is above average but recruitment indices are at historically low levels. The fishable part of the stock has been decreasing since 2006 and is not expected to increase much in the coming years, since recruitment to the fishable stock will be low. MRI recommends a TAC of no more than 8 00 t for the quota year 2015/2016, based on Fmax = 0.29. In addition, MRI recommends a continued closure of the major spawning area off West Iceland during the spawning and incubation season in autumn and winter, then even the CAB cannot confirm the stock is below PRI, the catches come from Capelin fishery and the UOAs under evaluation don't hinder the recovery of the fishable stock because the catches are negligible and are estimated at 0,0009 % and **SG 100 is met.** ***Blue whiting-*** International landings of blue whiting in the Northeast Atlantic in 2014 are estimated at around 1.2 million t, of which Icelandic landings were around 183 thousand t. Due to poor recruitment of the year classes 2005–2008, the spawning stock declined to about 2.9 milliont in 2010. Since then, recruitment has been close to the longterm average, which in combination with low fishing mortalities has led to an increase in the spawning stock biomass, to about 5.7

PI 2.1.1	The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.	
		millionit in 2015. ICES recommended a catch quota not exceeding 840 thousand tonnes in 2015. ICES are working to keeo the recruitment increasing, however the catches come from Capelin fishery are negligible regarding the total catches and do not hinder the stock. Then, there is evidence that the UoA does not hinder the stock status of this minor primary species and **SG 100 is met.** ***Redfish-*** In 2014, the Icelandic government adopted a formal management plan for the golden red- fish fishery in East-Greenland/Iceland/Faroes area. ICES has evaluated this management and it will be adopted during the year. The management plan is based on a HCR of FMSY,9–19 = 0.097, reducing linearly if the spawning stock is estimated below 220,000t (Btrigger), so it complied with the precautionary approach. According to the HCR, the golden redfish TAC for the quota year 2015/2016 was 51,000t for the EastGreenland/Iceland/Faroes area. Then, redfish stock status is highly likely to be above the PRI and **SG 100 is met**. ***Plaice-*** In 2014, about 600 t of plaice were landed. Survey biomass indices show the biomass is increased in recent years since year 2000. Stock assessment indicates a decrease in fishing mortality since 1996. MRI recommends that the catch should not exceed 6,500 t in the quota year 2015/2016, and that regulations regarding area closures on spawning grounds remain in effect. Complining with these recommendations the plaice stock status is highly likely to be above the PRI and **SG 100 is met**.
References		http://www.hafro.is/Astand/2016/english/cod_2016.pdf ICES, 2009, Report of the Ad hoc Group on Icelandic Cod HCR Evaluation (AGICOD), ICES CM 2009/ACOM:56. (http://www.hafro.is/images/HCR_Evaluations/iCod_eval_2009.pdf) H. Björnsson & Hjörleifsson, 2014, Athugun á aflareglu fyrir íslenskan þorsk. Hafrannsóknastofnun. (http://www.hafro.is/images/HCR_Evaluations/iCod_endurskodun_a_aflareglu_2014.pdf) ICES. 2016. Report of the North-Western Working Group (NWWG), 27 April–4 May, 2016, ICES Headquarters, Copenhagen. ICES CM 2016/ACOM:08. (Skýrslu má nálgast frá: http://www.ices.dk/community/groups/Pages/NWWG.aspx) English summary of the State of Marine Stocks in Icelandic Waters 2014/2015 and Prospects for the Quota Year 2015/2016- Nytjastofnar sjávar 2014/2015 og aflahorfur 2015/2016	

Score element 1 (Cod)	**100**
Score element 2 (Haddock)	**100**
Score element 3 (Saithe)	**100**
Score element 4 (Herring)	**100**
Score element 5 (Lumpfish)	**100**
Score element 6 (Greenland Halibut)	**100**
Score element 7 (Monkfish)	**100**
Score element 8 (Wolfish)	**100**
Score element 9 (Blue whiting)	**100**

PI 2.1.1	The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.
Score element 10 (Redfish)	100
Score element 11 (Plaice)	100
OVERALL PERFORMANCE INDICATOR SCORE:	100
CONDITION NUMBER (if relevant):	NA

PI 2.1.2 – Primary species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are **measures** in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to above the point where recruitment would be impaired.	There is a **partial strategy** in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the point where recruitment would be impaired.	There is a **strategy** in place for the UoA for managing main and minor primary species.
	Met?	Y	Y	Y
	Justification	The main primary species in the fishery is cod. Until 1983 the main measures to control the catches and the pressure on species was made with effort limitations. This measures had proved unsuccessful when the cod stock was in decline. Then, Iceland's national parliament, adopted a management system of individual transferable quotas (ITQs) for individual vessels. The present comprehensive fisheries management system is still based on ITQs. The quotas represent shares in the national total allowable catch (TAC). They are permanent, perfectly divisible and fairly freely transferable. The objectives are, according to the Fisheries Management Act, to promote the conservation and efficient utilisation of the marine resources and then to ensure the sustainability of the fisheries while emphasising the economic benefits of the fisheries sector. Translating this management system to primary species, each vessels targeting Capelin need quota to land cod and other retained species. All the species landing must be reported and an obligations of landing is implemented in the fishery. The catch limitation system is based on the catch share allocated to individual vessels. Each vessel is allocated a certain share of the total allowable catch (TAC) of the relevant species. The catch limit of each vessel during the fishing year is thus determined on basis of the TAC of the relevant species and the vessel's share in the total catch. In addition to the ITQ system, Icelandic fisheries management includes many other management measures such as area restrictions and fishing gear restrictions to ensure the fishery is targeting the Capelin and other catches are reduced. Therefore, there is a starategy in place for the UoAs for managing main and minor primary species and **SG 100 is met** in each species evaluated in this PI.		
b	Management strategy evaluation			
	Guidepost	The measures are considered **likely** to work, based on	There is some **objective basis for confidence** that the measures/partial	**Testing** supports **high confidence** that the partial strategy/strategy will work,

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
		plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	strategy will work, based on some information directly about the fishery and/or species involved.	based on information directly about the fishery and/or species involved.
	Met?	Y	Y	Y
	Justification	For all the primary species retained by the fishery, main or minor the management system implementation is working. The obligation of landing, all catches must be landed, and the control by TAC is supervised by the the Directorate of Fisheries. All the catches landed are reported and the Icelandic law has a system where the catches in port are weighted and all the species landed are checked. Effective control and enforcement is inseparable part of the responsible fisheries management. The Directorate of Fisheries monitors Icelandic fisheries closely to ensure that all rules are being followed. Scientific research is essential for successful management. The Marine Research Institute carries out wide ranging and extensive research on the status and productivity of the commercial stocks, and long-term research on the marine environment and the ecosystem around Iceland. The results of this research are the foundations of the advice on sustainable catch level of the fish stocks then every year the MRI gives advices to the Minister to establish the quotas and to report the status of each species and if the strategy implemented for its management is working succesufully.Also, the stock assessments are a type of testing suppor and overfished and overfishing is not happening in any primary species. Therefore, testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved and **SG 100 is met** for all the primary species, main and minor, identified in the Capelin fishery.		
c	Management strategy implementation			
	Guidepost		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a).
	Met?		Y	Y
	Justification	The fishery under assessment is a very clean fishery, as the results form DoF show. The percentage of catches of other species is very low. It is consequence of the strategy implemented in the fishery to avoid other species is working. The system estabiliched allow to reduce the catches of primary species because the flet need to have quota to landing other species and some measures for the fulfillment of the obligations of landing are in place. The enformcement of these regulations are very hard in Icelandic fisheries, All the the vessels involved in the fishery have to report catch quotas and catches. This work is done in the Fisheries Directorate's central data base which is accessible to all. The system has a high transparency and the avabilability of the data is ensured.		

PI 2.1.2		**There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.**		
		Therefore, there is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue a and **SG 100 is met** for all the primary species, main and minor, identified in the Capelin fishery.		
d	Shark finning			
	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	NA		
e	Review of alternative measures			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	Y	Y	Y
	Justification	Unwanted catches do not occur in the fishery under assessment. The fishery is very clean and the main and minor pruprimary species are negiglible. When determining what is 'negligible' the MSC does not specify a set cut-off; following this criteria the team considers the significance of the catch in relation the proportion of the unwanted catch as part of the total catch and the % is very low. Therefore this issue is not relevant to this fishery under assesment.		
References		The fisheries management act. No 116, 10 August 2006. Ministry of Fisheries and Agriculture. Statement on responsible fisheries in Iceland, 2006. Information Centre of Icelandic Ministry of Fisheries and Agriculture. www.fisheries.is /www.fiskistofa.is		

Score element 1 (Cod)	**100**
Score element 2 (Haddock)	**100**
Score element 3 (Saithe)	**100**
Score element 4 (Herring)	**100**
Score element 5 (Lumpfish)	**100**
Score element 6 (Greenland Halibut)	**100**
Score element 7 (Monkfish)	**100**

PI 2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.
Score element 8 (Wolfish)	100
Score element 9 (Blue whiting)	100
Score element 10 (Redfish)	100
Score element 11 (Plaice)	100
OVERALL PERFORMANCE INDICATOR SCORE:	100
CONDITION NUMBER (if relevant):	NA

PI 2.1.3 – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guidepost	Qualitative information is **adequate to estimate** the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adeqaute to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is **adequate to assess** the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptiblity attributes for main primary species.	Quantitative information is available and is **adequate to assess with a high degree of certainty** the impact of the UoA on main primary species with respect to status.
	Met?	Y	Y	Y
	Justification	The main primary species in the fishery is cod as it was explained above. There are enough quantitative information to evaluate the effect of the fishery in the stock. As the CAB explained in the table 2.1.1 and 2.1.2 the Icelandic fisheries have a well defined management plan. A system of TACs are implemented and these TACs are, and have been in the past, set up to limit fishing activity and try to decrease, in most of cases, the mortality. The official catch statistics (logbook information) is collected by the national authorities to complete the Directorate of Fisheries data base. The catches of cod come from Capelin fishery can be consulted in this data base. Every vessel has the obligation of reporting the total composition of its catches and the exactly weight of each species is facilated to DoF. There are inspections on port, as a part of the Surveillance programme established by DoF (Fisheries management Act), to control the weight of these catches reported, then the accuracy of these quantitative data are reliable. These programmes data are available to national and international scientific institutions, and are submitted annually to MRI and ICES, to the Working group participating in a Workshop on Icelandic Stocks (WKICE) to assess the sustainability of the stocks.The results are completely available for anyone interested in the stock status of these species. Following the criteria used by Guion et.al 2011 to evaluate if the quantitative and qualitative information must be consider acurrate and adequate to assess one		

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
		studies, the information must come from 3 different sources, this research tecnique is called triangulation and it awards accuracy. This type of triangulation, where different sources are used , is is the easiest to implement. Data triangulation is particularly well suited for information given the different stakeholder as it happens in a fishery under evaluation. Therefore the assessment team has the information of stock assessment from ICES, the report and advive from MRI and the data available in the Directorate of Fisheries and Ministry. The CAB can conclude that quantitative information is available and is **adequate to assess with a high degree of certainty** the impact of the UoA on main primary species with respect to status and **SG 100 is met.**		
b	Information adequacy for assessment of impact on minor primary species			
	Guidepost			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			Y
	Justification	The minor primary species reported herein are 10 species. As the CAB explained above the catches of these species are minimal and no higher than 0.3 %, even these % of catches are negligible and don't hinder the status of the stock, same rationale given above is used for minor primary species. The DoF trough the Fisheries Management Act perform the duties to guarantee the information is adequate. In the Art. 18 of this Act explains how all the catches must be reported and inpectors nmust ensure and supervise the landing, weighing, processing, export, etc. All these quantitative data are available in hafro website and used to published the assessment of each species in the State of Marine Species book in Iceland. Therefore, some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status and **SG 100 is met** for al the minor primary species defined in the fishery.		
c	Information adequacy for management strategy			
	Guidepost	Information is adequate to support **measures** to manage **main** primary species.	Information is adequate to support a **partial strategy** to manage **main** Primary species.	Information is adequate to support a **strategy** to manage **all** primary species, and evaluate with a **high degree of certainty** whether the strategy is achieving its objective.
	Met?	Y	Y	Y
	Justification	Following the criteria used by Guion et.al 2011 to evaluate if the quantitative and qualitative information must be consider acurrate and adequate to assess one studies, the information must be come from 3 different sources. Data triangulation is particularly well suited for information given the different stakeholder as it happens in a fishery under evaluation. Therefore the assessment team has the information of stock assessment from ICES, the report and advive from MRI and the data available in the Directorate of Fisheries and Ministry. The Arcticle 17 and 18 of		

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species
		the Fisheries Management Act describe the Surveillance programme. The coast guard supervises that these strategies are in place and the vessels are complining with. The roles of Coast Guard can be consulted in this document Act on the Icelandic Coast Guard No. 52, June 14th 2006 and it is explained how the Coast guard is involved in the fishery law enformcement. Therefore, the strategy implemented in the assessment for all the primary species achieve the objective and the fishery doesn't hinder the management of these species. Therefore, information is adequate to support a **strategy** to manage **all** primary species, and evaluate with a **high degree of certainty** whether the strategy is achieving its objective and **SG 100 is met**.
References		http://www.hafro.is/Astand/2016/english/cod_2016.pdf www.hafro.is State of marine stock in Iceland. Nytjastofnar sjávar 2014/2015 og aflahorfur 2015/2016. Guion L.A., Diehl D.E., and McDonald, D. 2011. Triangulation: Establishing the Validity of Qualitative Studies. Institute of Food and Agricultural Sciences, University of Florida. Act on the Icelandic Coast Guard No. 52, June 14th 2006. Ministry of Interior. Iceland The Fisheries Management Act No 116, August 10th 2006. Ministry of Industries and Innovation . Iceland

Score element 1 (Cod)	**100**
Score element 2 (Haddock)	**100**
Score element 3 (Saithe)	**100**
Score element 4 (Herring)	**100**
Score element 5 (Lumpfish)	**100**
Score element 6 (Greenland Halibut)	**100**
Score element 7 (Monkfish)	**100**
Score element 8 (Atlantic Wolfish)	**100**
Score element 9 (Blue whiting)	**100**
Score element 10 (Redfish)	**100**
Score element 11 (Plaice)	**100**
OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	**NA**

PI 2.2.1 – Secondary species outcome

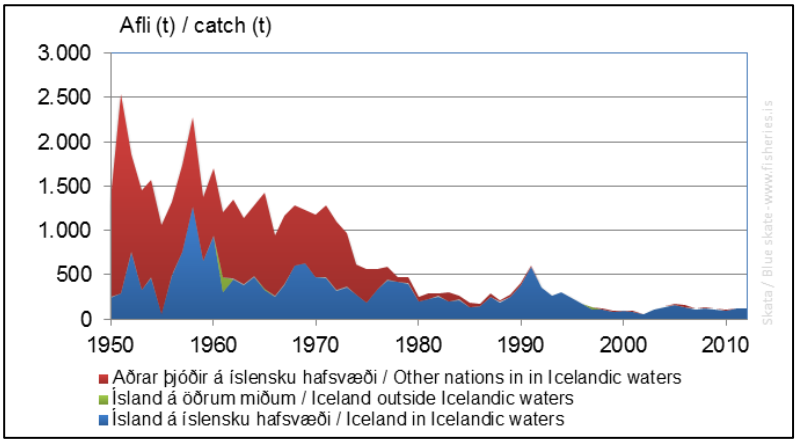
PI 2.2.1		**The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guidepost	Main Secondary species are **likely** to be within biologically based limits. OR If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are **highly likely** to be above biologically based limits OR If below biologically based limits, there is either **evidence of recovery** or a **demonstrably effective partial strategy** in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that also have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.	There is a **high degree of certainty** that main secondary species are within biologically based limits.
	Met?	Y	Y	Y
	Justification	There is no main secondary species in the fishery. The total composition of catches was analized by the assessment team and just three species were identified as secondary species in the fishery. All these species are representing of less than 0,005 % of catches. Therefore the catches are almost negligible and all these species were classified as minor in this fishery. Therefore, there is a **high degree of certainty** that the fishery doenst hinder main secondary species and **SG 100 is met** because there are no main species in the fishery.		
b	**Minor secondary species stock status**			
	Guidepost			Minor secondary species are highly likely to be above

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit.		
				biologically based limits. OR If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			Y
	Justification	The catches of Capelin fishery were analized in the tables above and as the assessment team has explained there is no higher catches because the fishery is very clean. As the CAB has explained in the primary species, the composition of catches between UoA doesn't perform differences and as it shown in the Directorate of Fisheries data base the species and % are the same in both UoAs, therefore the CAB will analized them in the same tables to make easy the reading of the report and don't repeat the information. Three species were identified as minor secondary species with catches far less than 5 % of catches.The species identified are listed below: - Dealfish [*Trachipterus arcticus*, (Brünnich, 1788)] - Turbot [*Scophthalmus maximus* (Linnaeus, 1758)] - Skate [*Dipturus batis* (Linnaeus, 1758)] The percentage of cathes respectively were: 0.0001%, 0.0001% and 0.003% . Information about the stock status of these species is available in the Icelandic Fisheries form Ministry of Fisheries and Agriculture website (http://www.fisheries.is). Therefore even these species have not TAC established and some of them as it happens with the skates that are bycatch of many kind of fisheries, all the catches must be landed and the assessment team can confirm that the catches. Last WK2015 from ICES defined that noreference points and no stock assessments are developed for these species but the programme to reduce the bycatch contribute to decrase the cathes of these species that are taken mainly as bycacth. As can be consulted in the DoF website, the catches come from the Capelin fishery (UoAs)are insignificant and don't hinder the stock of these species, then **SG 100 is met** for all the minor secondary species.		
References		http://www.fisheries.is The Fisheries Management Act No 116, August 10th 2006. Ministry of Industries and Innovation . Iceland		

Score element 1 (Dealfish)	**100**
Score element 2 (Turbot)	**100**
Score element 3 (Skate)	**100**
OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	**NA**

PI 2.2.2 – Secondary species management strategy

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	**Management strategy in place**			
	Guidepost	There are **measures** in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a **partial strategy** in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a **strategy** in place for the UoA for managing main and minor secondary species.
	Met?	Y	Y	Y
	Justification	There are no main secondary species identified in the Capelin fishery. Further, the strategy in place to control the species retained by the fishery is the obligations to land and the control established at port. As the assessment team mentioned above, the coast guard is in charge to oversee that any illegal activity take place, such as discarding species. Therefore all the cathes are reported to the Directorate of Fisheries and then for MRI. Even the most catches of minor secondary species, Skate, has not TACs set up. The % of cathes of each fishery are known. Then, the catches come from UoAs are known and there is not significant impact in these species. Therefore, there is a strategy in place for the UoA for managing main and minor secondary species and **SG 100 is met.**		
b	Management strategy evaluation			
	Guidepost	The measures are considered **likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is **some objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	Y	Y	Y turbot and dealfish N skate
	Justification	The obligation of landed is a good measures to control the impact of the fisheries in the retained spcies. This obligations as the assessment team described above is controlled by the DoF, the Coast Guard and the inpsectors at port. The logbook , mandatory in each vessels, recorded all the cathes and also it's a effective		

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
		measures. Then, thereis information directly form the UoAs that shows the catches are negligible and then doesn't hinder the stock complaining with the objectives established with this kind of regulation. However, the CAB considers that catches of skate in many different fisheries around the Iceland water, are responsable that the stake has been overfished even catches are now only about 10% of catches 50 years ago. There is no TAC on the grey skate as it is primarily a bycatch in a variety of fisheries. The status of the grey skate stock are at a low level. Therefore more effort is needed to support that the strategy is working because even the catches in the UoAs are low the cumulaticve impact with other fisheries in the area can affect the stock of stake. Therefore, **testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved regarding turbot and dealfish but the assessment team cannot conform that testing supports with more than 80% of probability that the strategy works with stake, then **SG 100 is not reach.**		
c	Management strategy implementation			
	Guidepost		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Y	Y turbot and dealfish N skate
	Justification	As it was explained above, there is some evidence that the strategy of landing and control the catches works to minimize the retained species which aren't the target species, however the assessment team has not clear evidence that the strategy is achieving its objectives regarding skates catches because the stock status is low and the mortality is high even being better than years before as it's shown in the figure. The catches are far less than in the 50th years.  Source:Fisheries Iceland (www.fisheries.is)		
d	Shark finning			
	Guidepost	It is **likely** that shark	It is **highly likely** that shark	There is a **high degree of**

PI 2.2.2		**There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.**		
		finning is not taking place.	finning is not taking place.	**certainty** that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	Not relevant		
e	Review of alternative measures to minimise mortality of unwanted catch			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of main secondary species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of main secondary species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch of all secondary species, and they are implemented, as appropriate.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	No unwanted cates of secondary species are occurring in the fishery. The fishery is very clean and the main and minor secondary species are negiglible. When determining what is 'negligible' the MSC does not specify a set cut-off; following this criteria the team considers the significance of the catch in relation the proportion of the unwanted catch as part of the total catch and the % is very low. Therefore this issue is not relevant to this fishery under assesment.		
References		http://www.fisheries.is The Fisheries Management Act No 116, August 10th 2006. Ministry of Industries and Innovation . Iceland		

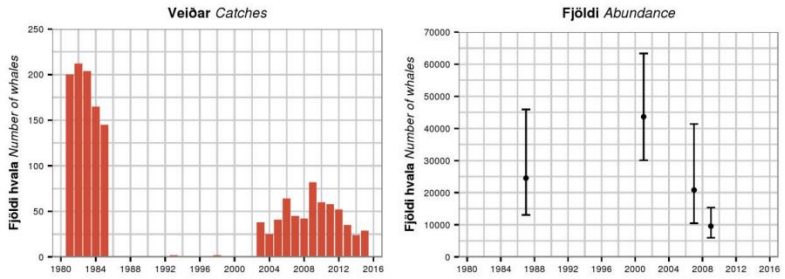
Score element 1 (Dealfish)	**100**
Score element 2 (Turbot)	**100**
Score element 3 (Skate)	**80**
OVERALL PERFORMANCE INDICATOR SCORE:	**85**
CONDITION NUMBER (if relevant):	**NA**

PI 2.2.3 – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guidepost	Qualitative information is **adequate to estimate** the impact of the UoA on the main secondary species with respect to status. OR **If RBF is used to score PI 2.2.1 for the UoA:** Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and **adequate to assess** the impact of the UoA on main secondary species with respect to status. OR **If RBF is used to score PI 2.2.1 for the UoA:** Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and **adequate to assess with a high degree of certainty** the impact of the UoA on main secondary species with respect to status.
	Met?	Y	Y	Y
	Justification	No main secondary species in the fishery were identified and there are enough quantitative information to evaluate the effect of the fishery in the stock. Therefore with the quantitative data available the assessment team can conclude that there is not main secondary species and **SG 100 is met.**		
b	**Information adequacy for assessment of impacts on minor secondary species**			
	Guidepost			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			Y
	Justification	The minor secondary species reported herein are 3 species. As the CAB explained above the catches of these species are minimal and no higher than 0.003 %. The DoF trough the Fisheries Management Act perform the duties to guarantee the information is adequate. In the Art. 18 of this Act explains how all the catches must be reported and inpectors must ensure and supervise the landing, weighing,		

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.		
		processing, export, etc. All these quantitative data are available in hafro website and used to published the assessment of each species in the State of Marine Species book in Iceland and evaluate the impact of the fisheries in species which make the whole marine ecosystem in Iceland. Therefore, some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status and **SG 100 is met**.		
c	Information adequacy for management strategy			
	Guidepost	Information is adequate to support **measures** to manage **main** secondary species.	Information is adequate to support a **partial strategy** to manage **main** secondary species.	Information is adequate to support a **strategy** to manage **all** secondary species, and **evaluate** with a **high degree of certainty** whether the strategy is **achieving its objective**.
	Met?	Y	Y	Y
	Justification	The coast guard supervises that these strategies are in place and the vessels are complining with. The roles of Coast Guard can be consulted in this document Act on the Icelandic Coast Guard No. 52, June 14th 2006 and it is explained how the Coast guard is involved in the fishery law enformcement. Therefore, the strategy implemented in the assessment for all the secondary species achieve the objective and the fishery doesn't hinder the management of these species. However more effort to set up a TACs for skate and increase the management of these species must be consider. Therefore, information is adequate to support a **strategy** to manage **all** secondary species, and evaluate with a **high degree of certainty** whether the strategy is achieving its objective and **SG 100 is met** for the three minor secondary species described herein.		
References		State of marine stock in Iceland. Nytjastofnar sjávar 2014/2015 og aflahorfur 2015/2016. Guion L.A., Diehl D.E., and McDonald, D. 2011. Triangulation: Establishing the Validity of Qualitative Studies. Institute of Food and Agricultural Sciences, University of Florida. Act on the Icelandic Coast Guard No. 52, June 14th 2006. Ministry of Interior. Iceland The Fisheries Management Act No 116, August 10th 2006. Ministry of Industries and Innovation . Iceland www.hafro.is		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				**NA**

PI 2.3.1 – ETP species outcome. UoC 1 and UoC 2

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guidepost	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/stock are known and **likely** to be within these limits.	Where national and/or international requirements set limits for ETP species, the **combined effects of the MSC UoAs** on the population/stock are known and **highly likely** to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a **high degree of certainty** that the **combined effects of the MSC UoAs** are within these limits.
	Met?	Y	Y	Y
	Justification	The minke whales is common in Iceland and there is a national limits established to monitore the effects in the population. MRI advices annual catches of no more than 224 common minke whales on the Icelandic continental shelf in 2016–2018.  Figure: Whaling, and abundance in the Icelandic continental shelf area with 95% confidence intervals. The legislation in Iceland regarding ETPs species is regulated by the Icelandic legislation (557/2007) who states to complete the logbook where any interaction or catch of birds or other endangered species must be reported to DoF. On the other hand, mammals are regulated by the Fisheries Management Act and Nature Conservation Act. no. 47/197l. Further, in Iceland, whaling is controlled by the International Whaling Commission (IWC) and the North-Atlantic Marine Mammal Commission (NAMMCO). The Vessels in Iceland are not obligated to have e-logbook to report the cathes. However, the obligations to land all the catches and be reported in the first point of land provides with quantitative data. All these data are reported to DoF In DoF website the cacthes of whales can be consulted. MRI realizes every year the stock assessments of Minke whales, this species has a domestic consum in Iceland.. Regaridng the MRI report the abundance of common minke whales increased up to 2001, but decreased thereafter. This change likely represents changes in distribution within the Central North Atlantic stock area as a result of changed distribution of important prey species such as sandeel and capelin. Even the distribution has changed and this species prey on Capelin the whales killed by Capelin fleet are		

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
		negligible. The interactions are known but cacthes come from capelin fishery are not registered. Last report published by UICN the stock of Minke whales and Humpback whales seem based on the recent rates of increase, unlikely that it is below the threshold (50% of the 1940 level) that would qualify the species for inclusion in the Vulnerable category under criteria. The species are therefore listed as Least Concern. On the other hand, the whaling is carried out by specific fleet, the International Whaling Commission (IWC) has reported the whaling from Iceland but there is not catches from the fishery under assessment. Therefore for Minke whales, the species that has a limt established, there is a **high degree of certainty** that the **combined effects of the MSC UoAs** are within these limits and **SG 100 is met**.		
b	Direct effects			
	Guidepost	Known direct effects of the UoA are likely to not **hinder recovery** of ETP species.	Known direct effects of the UoA are **highly likely** to not **hinder recovery** of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	Y	Y	N
	Justification	The direct effects caused by the fishery are known because no species may be impacted by the fishery and there are not any protected species under Icelandic legislation. The rationale is provided for both gears used in the assessment. Both gears have low level of interaction with ETPs and the same species are identified and no changes are detected by gears in the terms of species that have been identified. The CITES Appendix I, list of species, it has the species that may interact with the fishery and they are listed in section 3. These include different species of whales, baleen whales as well as some dolphins and porpoises. According to MRI and DoF, stakeholders along with client fishery skippers, encounters between the fishery and ETP species are exceptionally rare and this is consistent with the findings of other MSC certified fisheries in Iceland such as Herring fishery or Saithe fishery with danish seine. Thorough ongoing observer programmes in pelagic trawl, ONGs programmes and diverses researches, there is a growing body of evidence to support the understanding that pelagic trawl fisheries have few encounters with protected species that result in direct mortality of protected species. In addition Icelandic legislation (557/2007) states that all fishing vessels must keep a Fishery Log-book. Birds and Mammals that are caught in fishing gear are to be reported and recorded in the Fishery Log-book. This Fishery Log-book is returned to the Directory of Fisheries once a month. These reports are then sent onto the Marine Research Institute where the information is used in their scientific work. Accordingly, the fishery is highly unlikely to create unacceptable impacts for any ETP populations. This is corroborated by the MRI, DoF and material published by ICES (SGBYC, WGMME) as well as general understanding of the ETP species footprint of pelagic trawl and purse seine fisheries. Evidence supplied by the Icelandic Authorities have no reports of seabirds being		

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
		captured - and suggest that it is highly unlikely that they get captured in the purse seine or midwater trawl. Captains have informed the authorities that this type of bird capture has never occurred. As it is reported by several NGOs as could be AWI, interactions may occur but these do not necessarily always lead to mortality of affected individuals. The interactions with humpback and the purse seine are identified by the skypers and other research or sighting programmes. The populations of humpbak is increased in the last years, consequently the interactions with humpback have also increased in last fishing season. Studies are carry out to know the relationship between the increasement in the number of humpback specimens and the interactions (Barsan 2014). The assessment team did find some evidence that on average 1-2 Humpback whales are caught each year in a Capelin Purse seine nets, but could not find any evidence on the injury sustained by the mammal. An anonimus report has reported that as many as 5 whales may have been caught by the fleet. The CAB cannot confirm these data and the cacthes coming from Capelin fleet aren't verified. Evidence supplied by the Icelandic Authorities has no records of whales ever being captured by pelagic trawls. However, the interactions with the purse-seine happen and depends the populations of humpback these interactions may increase. If a purse seine boat does capture a whale the captain is instructed to release the net and catch of fish. The use of sonar makes this possible interaction very easy to avoid and if a whale is caught the boat will make every effort to open the gear and allow it to swim out unhurt. On the other hand, to avoid this kind of interactions, there is a research project starting next winter which will be carried out with pingers and it will try to describe how the whales reaction to these acoustic methods. The project will be realized by the Husavik Research Center. Further, with the landed obligations the vessels have to report any catches as the assessment team has explained above. Every month the logbook is reported to DoF and must be consulted. In the DoF website it can be checked that since January 2013 just two vessels have captured dolphins, besides these vessels do not target capelin, and any whales were captured or reported by Capelin fleet. The assessment team has evidences that catches of ETP species come from Capelin fishery are negligible, however the interactions should be reported and more effort to know how these interactions could affect the specimens entangled and how they could avoid the presence of whales are needed and it will be a recommendations in the assessment. Then, the assessment team can support that known direct effects of the UoA are **highly likely** to not **hinder recovery** of ETP species and **SG 80 is met** but the issue is not fully meet.		
c	Indirect effects			
	Guidepost		Indirect effects have been considered and are thought to be **highly likely** to not 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	N
	Justification	Indirect effects could be defined as depletion of the target species, which could be a		

PI 2.3.1	The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species
	key food source for some species or through physical disturbance when the whales or other ETPs are entangled in the nets. There is some studies to describe the entanglement of whales, and other countries as USA, Australia or New Zeland have management plan to trackle the entanglement. Regarding the role of Capelin as LTL species and its relation with the feeding habit of whales, it is highly unlikely that the fisheries reduce the capelin stocks to a point where it would adversely affect ETP populations. Stefánsson et al. (1997) studied the interactions between cetaceans and some fish species (mainly capelin and krill) in Icelandic waters. The results indicate that both minke and humpback whales may have significant direct impact on the status of the capelin stock. The effects of fin whale predation on the capelin stock seems less significant unless such consumption occurs outside the sampled area, which is considered quite possible. The assessment team has a concerns regarding the introduction of how whales prey on capelin in the prediction models to understand well how important is the role of the capelin as LTL in the whales populations. Therefore, even the directs impacts are negligible and also the indirects impacts, there is a lack of information regarding how the capelin could be affect the feeding patterns of whales and more effort to know how can be affected the humpbacks by the interactions with the nets in the purse seine fishery when the specimens try to avoid or get away from the gears would be realized. Then, the CAB cannot conclude that there is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species and **SG 100 does not reach.**
References	Stefánsson et al. 1997 Pike et al. (2007, 2009a & 2010) Basran, C. 2014 Bertulli, C.G et al. 2011 Víkingsson et al. 2009 Icelandic Fisheries Report 2007. (www.fisheriesiceland.is) [NAMMCO] North Atlantic Marine Mammal Commission. 2004. Report of the Working Group on minke and fin whales. In: NAMMCO Annual Report 2003, NAMMCO, Tromsø, pp.197- 229. NAMMCO 2015. Report of the 22nd meeting of the Scientific Committee. North Atlantic Marine Mammal Commission. 194 bls. IWC 2015. Report of the Scientific Committee. San Diego, California 22. May – 3. June, 2015. 115 bls.
OVERALL PERFORMANCE INDICATOR SCORE:	**85**
CONDITION NUMBER (if relevant):	**NA**

PI 2.3.2 – ETP species management strategy. UoC 1 and UoC 2

PI 2.3.2		**The UoA has in place precautionary management strategies designed to:** • **meet national and international requirements;** • **ensure the UoA does not hinder recovery of ETP species.** **Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)			
	Guidepost	There are **measures** in place that minimise the UoA-related 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 UoA'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 UoA'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
	Justification	The impact that the pelagic fisheries, either purse seine or midwater pelagic trawl, have on ETP species are negligibles. The fishing operation itself can be considered as a strategy to minimize impact on whales. However, where limited information is available the assessment team needs to be more precautonary. Considering the information available for this fishery as follows: expert opinion and results of research project from scientific institutions in Iceland (MRI); Published literature in relation to Capelin fishery and ETPs species in the area; Information from the fishery (skippers); Information from NGOs and information from different committees such as UNEP, CMS and NAMMCO with which Iceland has agreement and has been involved in the decision making process of these commitees regarding different issues to protect ETP species. The CAB must be precautonary and following the MSC guideline some of the data collection methods defined in this fishery are classify as lower level of verifiability and higher bias. To determinate a comprehensive statategy in place the fishery needs more effort for getting data from observer programmes or other technologies and independent research programmes. Some research projects are in place but it would be necessary a higer level of involvement from the fishery under assessment to report any interactions with the whales or any ETPs. The NGO AWI has some quantitative data from sightings and an University Research has been undertaken with short term eyewitness form skippers in Iceland waters, even the CAB does not insure wether all the data are fom the UoAs, the number of interactions within the fishery was low. In addition to the above, Iceland has an active programme of cetacean stock assessment carries out by MRI to improve the skills about the mammals populations within Icelandic waters. Iceland is a member of NAMMCO - the North Atlantic Marine Mammal Commission, an international body for cooperation on the		

PI 2.3.2		**The UoA has in place precautionary management strategies designed to:** • **meet national and international requirements;** • **ensure the UoA does not hinder recovery of ETP species.** **Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.**		
		conservation, management and study of marine mammals in the North Atlantic, as the CAB mentioned above and It has been involved in some desion making to established protected areas. Through regional cooperation, the member countries of NAMMCO aim to strengthen and further develop effective conservation and management measures for marine mammals. Therefore even the fishery does not reach SG 100 because it has not a comprehensive strategy in place and needs more effort to get data with a higher level of verifiability, there are agreements in place for protection of cetacean spcies and then, there is a **strategy** in place for managing the UoA'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 and **SG 80 is met.**		
b	Management strategy in place (alternative)			
	Guidepost	There are **measures** in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **strategy** in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **comprehensive strategy** in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species
	Met?	Not relevant	Not relevant	Not relevant
	Justification	Not relevant, issue a scored		
c	Management strategy evaluation			
	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 an **objective basis for confidence** that the measures/strategy will work, based on **information** directly about the fishery and/or the species involved.	The strategy/comprehensive 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.
	Met?	Y	Y	N
	Justification	There is a general knowledge regarding the low interactions that the pelagic fisheries have with the whales. As it has been explained above, there are several scientific studies regarding the whales in Icelandic waters and its interactions with the fishery, there is collaboration between the fleet targeting Capelin and some research project carries out by the University of Iceland's research center in Húsavík and the interviews with the skippers give the CAB some information regarding how the fleet avoids the interactions with the whales. Some published studies (Pike et al. 2010 and Barsan, C. 2014) show how the poulations of humpback are increasing in the last years. These measures in place of		

PI 2.3.2		**The UoA has in place precautionary management strategies designed to:** • **meet national and international requirements;** • **ensure the UoA does not hinder recovery of ETP species.** **Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.**		
		the fishery are considered an appropriate strategy in conjunction with Iceland's participation in overall cetacean management through NAMMCO and commitment to monitoring status of some key whale populations in Icelandic waters. The CAB can confirm that some vessels are collaborating with several research projects and the interviews with the skyppers let the assessment team prove that the fleet avoids the interactions and when a entanglement happens the mortality of the whales is very rare, normally the fishery doesn't hinder the recovery of the specimens. Therefore, as the assessment team mentioned in the issue above, the data available must not be considered as lower bias to meet SG 100 and for this reason it is not met, more data coming directly form the fishery should be available. However, the CAB is aware of there is an **objective basis for confidence** that the measures/strategy will work, based on **information** directly about the fishery and/or the species involved and **SG 80 is met**.		
d	Management strategy implementation			
	Guidepost		There is some **evidence** that the measures/strategy is being implemented successfully.	There is **clear evidence** that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	Met?		Y	N
	Justification	There is evidence that the strategy is implemented and there is patterns in how the fleet manages the interactions with the whales, the interviews with the skyppers let we know that the fleet avoids the interactions and when a entanglement happens the mortality of the whales is very rare, almost negligible, 1 or 2 humbacks are captured per year by the whole capelin fishery (IFFO RS Iceland Capelin Assessment 2014), normally the fishery doesn't hinder the recovery of the specimens. Then, the assessment team can insure that there is eveidence that the measures/strategy is being implemented successfully and **SG 80 is met.**		
e	Review of alternative measures to minimize mortality of ETP species			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	Y	Y	N
	Justification	Populations of many whales and cetacean species are stable or increasing in		

PI 2.3.2		**The UoA has in place precautionary management strategies designed to:** • **meet national and international requirements;** • **ensure the UoA does not hinder recovery of ETP species.** **Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.**
		Icelandic waters as MRI and some publications (Pike et al. 2010 and Barsan, C. 2014) suggested in the last report. However,there are few reports (mainly anecdotal) of encounters with ETP species in capelin fishery. Capture in purse seine gear is possibly as it was explained above, but it is considered unlikely that this will result in mortality although scar studies (Barsan, C. 2014) have been developed to know more about the impact of these interactions. The metods of fishing lets opportunities to release animals which are not in immediate danger of drowning. The agreements between Iceland and other countries involved in the Convention for the Portection of the Marine Environment of the North-East Atlantic (OSPAR convention) and the participation in the NAMMCO commission must be considered as a regular review of the startegy implemented to protect the ETPs species. However there is not a biannual review in the UoAs. Then, there is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate and **SG 80 is met**.
References		NAMMCO 2016 http://www.ospar.org/ Pike et al. 2010 Barsan, C. 2014
OVERALL PERFORMANCE INDICATOR SCORE:		**80**
CONDITION NUMBER (if relevant):		**NA**

PI 2.3.3 – ETP species information. UoC 1 and UoC 2

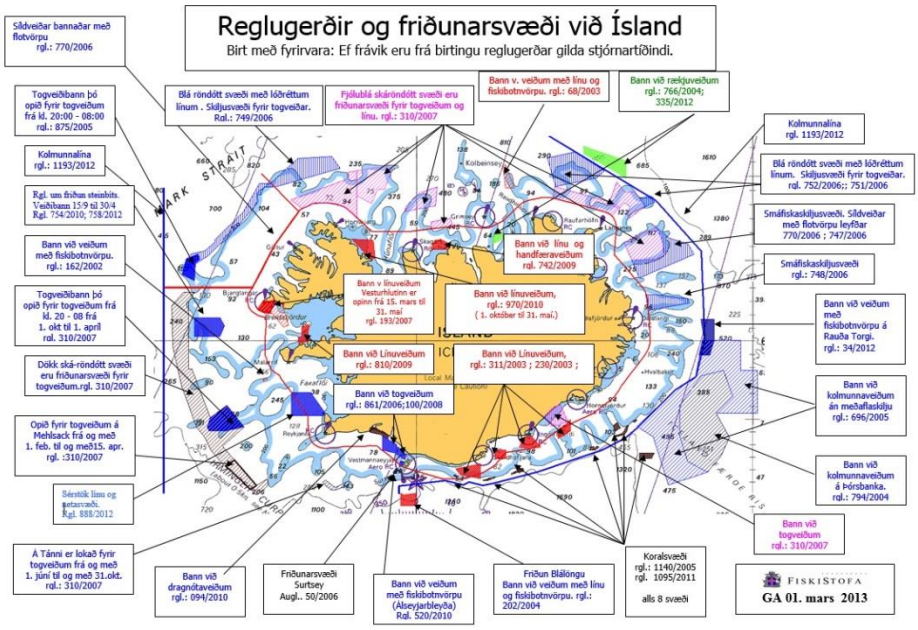
PI 2.3.3		**Relevant information is collected to support the management of UoA impacts on ETP species, including:** • **Information for the development of the management strategy;** • **Information to assess the effectiveness of the management strategy; and** • **Information to determine the outcome status of ETP species.**		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guidepost	Qualitative information is **adequate to estimate** the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is **adequate to estimate productivity and susceptibility** attributes for ETP species.	Some quantitative information is **adequate to assess** the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.	Quantitative information is available to assess with a high degree of certainty the **magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status** of ETP species.
	Met?	Y	Y	N
	Justification	There is sufficient information available to allow fishery related mortality to be quantitatively assessed for all affected species. Altohoug the fishery must be more proactive to recopilate quantitative data, the information from different sources shows that the mortality of ETPs species caused by Capelin fishery is almost negligible. Catches data are routinely reported and while reporting of interactions with ETP is not mandatory, there is sufficient understanding of the species involved, their distribution, population status and susceptibility to bycatch in purse seine and midwater trawl gears to make a quantitative estimation of mortality within capelin fishery therefore even the fishery needs more effort to get quantitative data the assessment team insures that some quantitative information is **adequate to assess** the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species and **SG 80 is met.**		
b	Information adequacy for management strategy			
	Guidepost	Information is adequate to support **measures** to manage the impacts on ETP	Information is adequate to measure trends and support a **strategy** to manage	Information is adequate to support a **comprehensive strategy** to manage impacts, minimize mortality and

PI 2.3.3		**Relevant information is collected to support the management of UoA impacts on ETP species, including:** • **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.**		
		species.	impacts on ETP species.	injury of ETP species, and evaluate with a **high degree of certainty** whether a strategy is achieving its objectives.
	Met?	Y	Y	N
	Justification	NAMMCO is a forum for the presentation of diverse and useful data from all signatory parties and the reports of the annual meeting provide useful information that supports the management of ETP species in the North Atlantic. Hoyt et al. 2011, suggested for the protection of the Northeast Atlantic marine environment which requires signatories to identify marine species and areas in need of protection, OSPAR convention needs countries signed and Iceland is one of them which has been involved in the decision making process. Population status of some ETP species are monitored and periodic abundance estimates are made by MRI and reported through NAMMCO. Research on population structure and behaviour by the aid of photoidentification and skin biopsy sampling. At the MRI these techniques have been applied in research on killer whales since 1981 and humpback whales and blue whales since 1990. Research on harbour porpoises and white-beaked dolphins that have drowned in fishing gear (bycatch). This includes studies on feeding ecology, reproduction, age composition, population genetics and energetics. Monitoring and biological sampling of cetaceans that have stranded or beached on the coast of Iceland and the Coast Guard onto the surveillance programme is in charge to control any capture or damage ocurring by the fleet. Although information is scarce on feeding ecology of most of the species regularly occurring in Icelandic waters, information on biomass and residence time gives indications of total consumption by cetaceans in Icelandic waters, and possible effects on the yield of commercially important fish species. Some studies such as Víkingsson et al.XXX suggests seasonal variation in the distribution of cetaceans in coastal Icelandic waters and shift in the distribution patterns caused by changes in the distribution of prey fish and other environmental factors hard to explain. Information from MRI and NAMMCO in each annual report is very useful to know the stock status of marine mammals present in Iceland water and whether any change in the behaviour is happening and if it could be strengthened by Capelin fishery and therefore information is adequate to measure trends and support a **strategy** to manage impacts on ETP species and **SG 80 is met.**		
References		http://www.fisheries.is/main-species/marine-mammals/ Anon, 2008. Report of the meeting of the management committee for cetaceans. North Atlantic Marine Mammal Commission (NAMMCO). http://www.nammco.no/webcronize/images/Nammco/927.pdf Marine Research Institute. Cetacean web pages http://www.hafro.is/undir_eng.php?ID=15&REF=2 Stefánsson, G., Víkingsson et al.2009		

PI 2.3.3	**Relevant information is collected to support the management of UoA impacts on ETP species, including:** • **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.**
OVERALL PERFORMANCE INDICATOR SCORE:	**80**
CONDITION NUMBER (if relevant):	**NA**

PI 2.4.1 – Habitats outcome. UoC 1 and UoC 2

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guidepost	The UoA is **unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is **highly unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Y	Y	Y
	Justification	Pelagic trawl gear and purse seine gears are not designed to contact the seabed and then they do not impact with the bottom surface being less erosive than other gears. Therefore these gear types are designed to fish in pelagic habitats and when any interaction happens with the seafloor is exceptional. As it is explained by Vilhjálmsson et al. (2002), Capelin has a pelagic distribution and it aggregated in shools between 0-700 meters but usually is located up to 200 m (http://www.fishbase.org/summary/252), then when the fishery targets capelin the fishing operation occurs in this range of depth and the interactions with the seabed is almost impossible, the fishing activity is localized at some point in the water column above the seabed. Capelin is a pelagic species which mature individuals move inshore in large schools to spawn. In the spring large spawning shoals migrate toward the coasts and during its lifecycle has migrations to north areas but normally is above the seabed where they feed on a variety of copepods and carry out large migrations in pursuit of zooplankton aggregations. Capelin is most abundant in areas of open water as pelagic species, Capelin is most efficiently caught using mid-water trawls or purse seines, which are used to fish the upper layers of the water column.Then, 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 and **SG 100 is met.**		
b	VME habitat status			
	Guidepost	The UoA is **unlikely** to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is **highly unlikely** to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	Not relevant	Not relevant	Not relevant

PI 2.4.1		**The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.**
	Justification	The fishery has not any interactions with VMEs, further any protected area in Iceland is identified and represented in a map to make easy its localization. The Coast Guard takes into account these areas in their control programme and they monitor the any activity in these areas to comply with the law. The map below represents the different areas classified in Icelandic waters. No overlapping between fishing grounds and VMEs is noted. 
c	**Minor habitat status**	
	Guidepost	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?	Y
	Justification	As it was explained above no VMEs are found and also no minor habitats are damaged. The pelagic fisheries, either purse seine and midwater trawl operate in the water colum and many studies show how the pelagic fisheries do not hinder the habitat. Some studies conclude that the impact of the gears in the habiatat depends on the time of contact with the bottom surface and at the same time it might vary depends the substrate and characteristics of the sea bed.
References		ICES Advice 2008, Book 2 http://www.fishbase.org Vilhjálmsson, H. and Sigurjónsson, J. 2002. Capelin of the Iceland-East Greenland-Jan Mayen area: biology, exploitation and management. Marine Research Institute, P. O. Box 121 Reykjavik, Iceland.

PI 2.4.1	**The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.**	
	Vilhjalmsson, H. 2002. Capelin (*Mallotus villosus*) in the Iceland-East Greenland-Jan Mayen ecosystem. ICES Journal of Marine Science 59: 870-883.	
OVERALL PERFORMANCE INDICATOR SCORE:		**100**
CONDITION NUMBER (if relevant):		**NA**

PI 2.4.2 – Habitats management strategy. UoC 1 and UoC 2

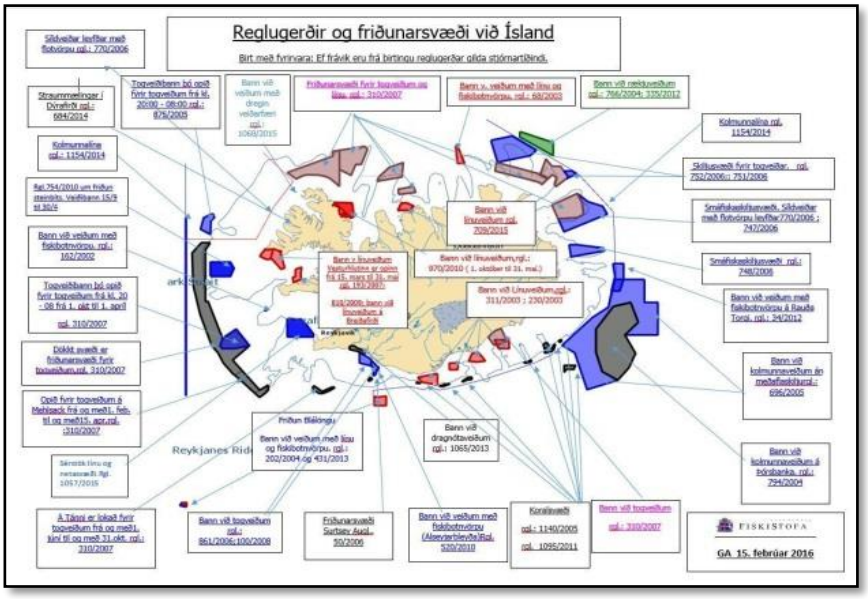
PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are **measures** in place, if necessary, that are expected to achieve 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 all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Y	Y	Y
	Justification	Capelin lifes in mid-water during its whole lifecycle. Fishing operations target the discrete shoals in mid-water, normally well above the seabed. The midwater pelagic trawl fishery seeks to actively avoid contact with the seabed in order not to damage expensive fishing gea.In fact many measures that minimise fishing gear/seabed interaction are in place such as: the use of electronics devices depth sounders, sonar and trawl position monitoring systems to control the position o the gear and how is operating during the set. There is a widely information and mapping regarding the closed areas and the kind of substrate in each grounds to allow fishing activities without damege the gears. Other measure is the prohibition on fishing with trawls within 12nm of the coast in many areas of Iceland where the most vulnerable areas of seabed (deep sea coral reefs) are. There are different type of closed areas to fishing activity, some of them are close to avoid the juvelines catches or because the habitat might be damaged or both. The information is review by MRI and DoF and the updates on the mapping are shared with the fishermen and they are monitorng by the Coast Guard, then they have enough information for preventing harm on habitats. Therefore, there is a **strategy** in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats and **SG 100 is met.**		
b	Management strategy evaluation			
	Guidepost	The measures are **considered likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some **objective basis for confidence** that the measures/partial strategy will work, based on **information directly about the UoA and/or habitats** involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on **information directly about the UoA and/or habitats** involved.
	Met?	Y	Y	N
	Justification	The gears evaluated under this report are well defined by FAO and they are well-known , many studies show how the pelagic fisheries have less effect on habitat than other gears. Regarding the habitats the assessment team has information directly from the fishery to evaluate that the UoAs do not hinder the habitata. Accordinly the Icelandic Fisheries management plan every vessels have an		

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.		
		electronical logbook and every set is tracked. The DoF and the Coast Guard can monitor the track record of every fishing activity, then it is well known where and how the fleet is working. Then there is good information on the spatial location and timing of the fishery. Further information regarding benthic habitats is available through on-going research in Icelandic waters carried out by MRI as well as through OSPAR. Therefore there is some **objective basis for confidence** that the measures/partial strategy will work, based on **information directly about the UoA and/or habitats** involved and **SG 80 is met**. However, the assessment team cannot insure if any testing is carried out by the UoAs or on the other hand they are developed by national or international bodies and SG 100 is not met.		
c	Management strategy implementation			
	Guidepost		There is **some quantitative evidence** that the measures/partial strategy is being implemented successfully.	There is **clear quantitative evidence** that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		Y	Y
	Justification	The gears employed in the UoAs are well defined and both are pelagic gears. The fishing gear used in this fishery is not suitable for situations where the gear would routinely touch the seabed and then it is almost negligible that the fishery hinder the habiats. Quantitative data are available with the track record. Every set come from Capelin fishery might be cheched in the DoF and as the CAB explained above, the coast guard is in charge in the to control the fleet is not doing any violations of the law as could be any fishing activity in a vulnerable or closed area. Therefore, there is **clear quantitative evidence** that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue a and **SG 100 is met**.		
d	**Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs**			
	Guidepost	There is **qualitative evidence** that the UoA complies with its management requirements to protect VMEs.	There is **some quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is **clear quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	Not relevant		
References		ICES Advice 2008, Book 2 1 www.fisheries.is		

PI 2.4.2	**There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.**	
	http://www.fao.org/fishery/geartype/search/en	
OVERALL PERFORMANCE INDICATOR SCORE:		**95**
CONDITION NUMBER (if relevant):		**NA**

PI 2.4.3 – Habitats information. UoC 1 and UoC 2

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidepost	The types and distribution of the main habitats are **broadly understood**. OR If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and **vulnerability** of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. OR If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	Y	Y	Y
	Justification	The distribution of habitat types is available from various surveys and studies (OSPAR, MRI and BioICE) - and the information is improved upon with on-going research (Ocean 2025). Mapping for the area in which the fishery operates is available in the DoF and different areas are classified and identify in the maps which also are available for the fleet as it's shown in the figure.		

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
		 Figure. Mapping of the different areas around the grounds in Icelandic waters. Mapping of vulnerable seabed habitats, such as Lophelia pertusa reefs, carbonate mounds and burrowing megafauna can be accessed on http://www.ospar.org Therefore, the distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats and **SG 100 is met**.		
b	Information adequacy for assessment of impacts			
	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. OR **If CSA is used to score PI 2.4.1 for the UoA:** Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. OR **If CSA is used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	The physical impacts of the gear on all habitats have been quantified fully.
	Met?	Y	Y	Y

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
	Justification	As it was explained above, the pelagic gears do not have phiysical impact in the habitats, the gears operate in the water colum and the interactions with the bootom surface don't occur therefore physical impacts are not identified in these UoAs. There are no known impacts of the fishing gear on the pelagic habitat. Further, the vessels have different device sto avoid the interactions with the seabed because it would involve a high cost to repair the gears then the skypeers realize the fishing activity on the gorunds they have the certain the contact with the sea floor doesn't happen. Therefore, the physical impacts of the gear on all habitats have been quantified fully and **SG 100 is reach.**		
c	Monitoring			
	Guidepost		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in habitat distributions over time are measured.
	Met?		Y	N
	Justification	The information is review by DoF and some surveys that the MRI carried out but they are not led at benthic habitat then the information is not enough to recognize all the changes. OSPAR makes studies to imporve the knowledge and the distribution of sensitive areas but more studies aimed at habitat and environmental factor that could affect the grounds fishing should be carried out. However sufficient data continue to be collected to detect any increase in risk to habitat, through ongoing stock status monitoring, catch recording and spatial and temporal operation of the fishery and **SG 80 is met**.		
References		www.ospar.org www.fisheries.is		
OVERALL PERFORMANCE INDICATOR SCORE:				**95**
CONDITION NUMBER (if relevant):				**NA**

PI 2.5.1 – Ecosystem outcome. UoC 1 and UoC 2

PI 2.5.1		The UoA 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	Ecosystem status			
	Guidepost	The UoA 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 UoA 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 UoA 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	There is well knowledge regarding the ecosystems in Iceland. The area where the Capelin fishery takes place is well define and many studies are in place (Gudmundsdottir, A., et al. 2013, O. K. Palsson et al. 2012, Vilhjálmsson, H., et al. 2002). These studies show the main environmental characteristics of the area where capelin fishery takes place. The ecological importance of capelin and the large capelin fishery that has taken place in this area since the early 1970s has generated intensive research and monitoring of the state of capelin stocks since the mid-1960s (Vilhjálmsson, H., et al. 2002). The studies show that changes in the environmental conditions as could the increament in the temperature has generated shift in the trends of ecosystems patterns and then recent changes in migration and distribution of capelin are described, the spatial pattern of capelin indicated northward displacement of 0-group capelin and westward displacement of older capelin in recent years (Palsson, O.K., et al. 2012). All the changes in the patterns of distribution cannot be explained by enrirovental changes and could affect the distribution of other species which prey on capelin. Research studies have been carried out in the area to know more about this changes in the patterns. One of the most important interaction that the fishery has in the ecosystems is the removal of capelin as LTL species which serves as a prey for a wide range of fish, mammals and birds. As some study confirms capelin is important in the diet of cod as well as a number of other fish stocks, marine mammals, and seabirds. Unlike other commercial stocks, adult capelin undertake extensive feeding migrations north into the cold waters of the Denmark Strait and Iceland Sea during summer. Capelin abundance has been oscillating over roughly a decadal period since the 1970s, producing a yield of >1600 Kt at the most recent peak. In recent years the stock size of capelin has decreased from about 2000 Kt in 1996/97 to about 1000 Kt in 2006/07 (Anon., 2007). The available data suggest some warming in recent years. In the absence of other relevant, environmental factors, it is concluded that the large change in capelin distribution seems to have resulted from a rather modest warming in the Iceland Sea, which displaced the capelin stock into the western and southwestern waters of the Iceland Sea, i.e. East Greenland waters and the Denmark Strait. Corresponding		

PI 2.5.1		**The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.**
		spatial changes in the prey species of capelin can neither be ruled out nor verified because of a lack of long-term zooplankton data (Palsson, O. K., et al. 2012). Then, more studies should be carried out to know how the changes in caplein could be affected the distribution of the species which prey on this stock. More effort to know how the whales prey on capelin are also needed and should be included in the predition models. However any study consulted has proved that the fishery causes an irreversible harm. Therefore, there is **evidence** that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function and **SG 100 is met.**
References		Astthorsson, O.S., Vilhjalmsson, H. 2002. Icelandic shelf LME: Decadal assessment and resource sustainability. Pp. 219-249 in Sherman, K. and H.R. Skjoldal. Large marine ecosystems of the North Atlantic. Elsevier Press. Amsterdam. Astthorsson OS, Gislason A, Jonsson, S. 2007. Climate variability and the Icelandic marine ecosystem. Deep-Sea Res Part II 54:2456–2477 Palsson, O´. K., Gislason, A., Guðfinnsson, H. G., Gunnarsson, B., O´lafsdo´ttir, S. R., Petursdottir, H., Sveinbjo¨rnsson, S., Thorisson, K., and Valdimarsson, H. 2012. Ecosystem structure in the Iceland Sea and recent changes to the capelin (*Mallotus villosus*) population. – ICES Journal of Marine Science, 69: 1242–1254. H. Vilhjálmsson and J. Sigurjónsson: Capelin of the Iceland-East Greenland-Jan Mayen area: biology, exploitation and management. 2002. Marine Research Institute, P. O. Box 121 Reykjavik, Iceland. ICES Advice 2008, Book 2
OVERALL PERFORMANCE INDICATOR SCORE:		**100**
CONDITION NUMBER (if relevant):		**NA**

PI 2.5.2 – Ecosystem management strategy. UoC 1 and UoC 2

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are **measures** in place, if necessary which take into account the **potential impacts** of the fishery on key elements of the ecosystem.	There is a **partial strategy** in place, if necessary, which takes into account **available information and is expected to restrain impacts** of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a **strategy** that consists of a **plan**, in place which contains measures to **address all main impacts of the UoA** on the ecosystem, and at least some of these measures are in place.
	Met?	Y	Y	Y
	Justification	In last decade, the recommendations from ICES and other management bodies is the ecosystem approach to manage the fisheries. Since early 1990 Iceland has increased focus on and consideration of the ecosystem approach to managing exploited populations of living aquatic resources. A broad range of regulatory measures in place within Iceland and which aim to limit adverse effects of fishing on the marine ecosystem. This strategy includes all the measures the CAB has cited in the rationale above such as; ITQs systems, monitoring programme and Surveillance, obligations of landings, control size, closed areas, surveys to monitor the stock status, collaboration of the industry with research project, scientific advice, etc. Indeed all these measure constitutes a plan in place to control the impact of the fishery in the ecosystem. The information is public and can be conslted in the website of each body working on the management plan. Therefore there is a **strategy** that consists of a **plan**, in place which contains measures to **address all main impacts of the UoA** on the ecosystem, and at least some of these measures are in place and **SG 100 is met.**		
b	Management strategy evaluation			
	Guidepost	The **measures** are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ ecosystems).	There is **some objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved
	Met?	Y	Y	N
	Justification	The stategy in place has relevant information regarding the stock status, fleet composition, cathes composition, sensible areas for fishing and all these data are available and many research studies (cited above PI 2.5.1) are carried out to improve the knowledge about role of capelin in the icelandic ecosystems. The results of these studies have shown that the startegy works and the preoucatounary apporach is in place to protect the ecosystem. However more data of the		

PI 2.5.2	**There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.**			
		interactions with the ETPs species should be reported to support that the fishery doesn't hinder the stock status of these species, therefore SG 100 cannot be reach but there is **some objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved and **SG 80 is met.**		
c	**Management strategy implementation**			
	Guidepost		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Y	Y
	Justification	The principal potential risk or impact of the fishery is depletion of the capelin stocks, which are important prey species. The stock biomass for the stock has been significantly above precautionary and limits reference points for in recent years and this is considered likely to prevent serious or irreversible indirect harm through depletion of key prey species. In addition, there are other low trophic level stocks in Iceland waters through which energy can be transferred to higher levels, such as herring, mackerel and blue whiting which are monitored and evaluated every year as capelin stocks by MRI and ICES. After the site visit and the meetings hold with the stakeholders, the assessment team has clear evidence that all the measures to management the fishery described herein are complied by the fleet and as the coast guard reported in its interviwe no violations of the law came from capelin fishery. These information also can be consulted and it's open access. Therefore, there is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) and **SG 100 is met.**		
References		Palsson, O´. K., Gislason, A., Guðfinnsson, H. G., Gunnarsson, B., O´lafsdo´ttir, S. R., Petursdottir, H., Sveinbjo¨rnsson, S., Thorisson, K., and Valdimarsson, H. 2012. Ecosystem structure in the Iceland Sea and recent changes to the capelin (*Mallotus villosus*) population. – ICES Journal of Marine Science, 69: 1242–1254. H. Vilhjálmsson and J. Sigurjónsson: Capelin of the Iceland-East Greenland-Jan Mayen area: biology, exploitation and management. 2002. Marine Research Institute, P. O. Box 121 Reykjavik, Iceland. ICES Advice 2008, Book 2 www.fisheries.is www.hafro.is www.fiskistofa.is		
OVERALL PERFORMANCE INDICATOR SCORE:				**95**
CONDITION NUMBER (if relevant):				**NA**

PI 2.5.3 – Ecosystem information. UoC 1 and UoC 2

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidepost	Information is adequate to **identify** the key elements of the ecosystem.	Information is adequate to **broadly understand** the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	There is adequate information available that allows for a broad understanding of the key elements marine ecosystem (including phytoplankton, zooplankton fish, seabirds, marine mammals and environmental elements such as ocean temperature, currents, salinity), of study area as the assessment team has described above. All the information cited is open access and can be consulted by any stakeholder. The information is enough to undersatnd the fishery and its interactions with the key elements of the ecosyetm. Even though more effort to include the mortality that the whales cause with preying on capelin must be realized. Therefore, information is adequate to **broadly understand** the key elements of the ecosystem and SG 80 is met.		
b	Investigation of UoA impacts			
	Guidepost	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but **have not been investigated** in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and **some have been investigated in detail**.	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and **have been investigated in detail**.
	Met?	Y	Y	N
	Justification	The impacts that the fishery may be originated on the ecosystems are well defined if it referred to environmental factors or physical harms. More effort to know the feeding habit of some species which prey on capelin must be carried out. This fact could be a lack of information regarding the ecosystem trophic levels and must be investigated in details, then SG 100 ci snot met. However, as the assessment team has mentioned, studies regarding the ecosystem structure and its recent changes are carried out and knowledges are increasing. Therefore, main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and **some have been investigated in detail** and **SG 80 is met.**		
c	Understanding of component functions			
	Guidepost		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.		
			are **known**.	ecosystem are **understood**.
	Met?		Y	Y
	Justification	The understanding about the fishery is well defined and the impacts in P1 and P2 are well known even more effort to include the predation of the whale in capelin are needed. The capelin biology is well defined. There are many research realized about this species in Icelandic waters. Some studies have shown that studies of the ecology of fish species in Iceland have mostly been limited to capelin historically the largest fish stock in the area. Extensive acoustic surveys were conducted in the Iceland Sea in the 1980s and 1990s through Icelandic and Norwegian research efforts, with the aim of analysing the life history and catch potential of capelin, as well as linkages to hydrographic conditions (Vilhjalmsson, 1994, 2002). The main patterns in capelin behaviour and migrations were relatively clear during the 1980s and early 1990s, with environmental factors as important determinants in interannual variability of life-history traits, and fluctuating, though largely predictable, stock trends (Vilhjalmsson, 1994). Then, a comprehensive research is available and main functions of Principle 1 and 2 components are understood in terms of providing ecosystem services and the impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are **understood** and SG **100 is met.**		
d	Information relevance			
	Guidepost		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components **and elements** to allow the main consequences for the ecosystem to be inferred.
	Met?		Y	Y
	Justification	As it mentioned above a comprehensive research of capelin is available, adequate information and understanding regarding retained species , ETPs and impacts of the fishery can be consulted and most of them are open access. The information and the transparency in the fishery is in place and easy to get. All the stakeholders interviewed during the site visit agreed that the surveillance programme works correctly and the information is reported monthly and it has been demonstrated that ecosystem consequences are low and more effort to avoid lack of information in some issues are been conducted, then adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred and **SG 100 is met.**		
e	Monitoring			
	Guidepost		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		Y	Y
	Justification	The surveillance programme reviews all the information regarding the capelin		

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.
		fishery. The fisheries management plan force the fleet to report monthly al the catches and any violations of the law is reported by the coast guard to DoF. There are several inpection proegrammes which controling the obligations that the fleet targeting capelin has. Data are regularly presented, reviewed and considered in a variety of ICES working groups, as well as within more specific research projects. All the information is also available for MRI advice. Then, the assessment team insures that the information collected makes a good background of the fishery and it's supposed it will continue into the future. Therefore the CAB considers the that current quantities and quality of data available are sufficient to allow for detection of an increase in risk to any ecosystem components and then, information is adequate to support the development of strategies to manage ecosystem impacts and **SG 100 is met.**
References		Palsson, O´. K., Gislason, A., Guðfinnsson, H. G., Gunnarsson, B., O´lafsdo´ttir, S. R., Petursdottir, H., Sveinbjo¨rnsson, S., Thorisson, K., and Valdimarsson, H. 2012. Ecosystem structure in the Iceland Sea and recent changes to the capelin (*Mallotus villosus*) population. – ICES Journal of Marine Science, 69: 1242–1254. H. Vilhjálmsson and J. Sigurjónsson: Capelin of the Iceland-East Greenland-Jan Mayen area: biology, exploitation and management. 2002. Marine Research Institute, P. O. Box 121 Reykjavik, Iceland. ICES Advice 2008, Book 2 www.fisheries.is www.hafro.is www.fiskistofa.is www.lhg.is
OVERALL PERFORMANCE INDICATOR SCORE:		**95**
CONDITION NUMBER (if relevant):		**NA**

8.4 Principle 3 – Effective Management – Evaluation Tables

PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainability in the UoA(s); 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	SG 100
a	Compatibility of laws or standards with effective management			
	Guidepost	There is an effective national legal system **and a framework for cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and **organised and effective cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and **binding procedures governing cooperation with other parties** which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	Y	Y	Y
	Justification	There have been effective international agreement between Iceland, Greenland and Norway since 2003 on the catch rule for deciding the TACs each year and on the shares of each coastal state in the TAC. All commercial fishing in Iceland is subject to a management system that is obliged by law to aim for the "sustainable utilization (of the stock) which ensures in the long run maximum benefits for the Icelandic nation." There is no illegal, unreported and unregulated (IUU) fishing in the Icelandic EEZ. All landings of fish from vessels that engage in IUU fishing is forbidden, as is the servicing of such vessels. There are no controversial exemptions to international agreements. Fisheries in Iceland are subject to a comprehensive regulatory framework. The management system is demonstrably compliant with national legislation, and has a clear legal basis. Secondary legislation providing for regulations and enforcement provisions has been built on overarching fisheries laws. The Ministry of Industries and Innovation, which manages all fisheries in the Icelandic EEZ, is obliged to deal with concerns from those active in the fishery as well as other interested parties. The coastal states involved in the fishing of capelin have been able to renew their agreement each year since 2003 but the agreeement is not binding for more than one year. Therefore, there is an effective national legal system and **binding procedures governing cooperation with other parties** which delivers management outcomes consistent with MSC Principles 1 and 2 and **SG 100 is met.**		
b	Resolution of disputes			
	Guidepost	The management system incorporates or is subject by law to a **mechanism** for the resolution of legal	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes	The management system incorporates or is subject by law to a **transparent mechanism** for the resolution of legal disputes

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainability in the UoA(s); 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.**		
		disputes arising within the system.	which is **considered to be effective** in dealing with most issues and that is appropriate to the context of the UoA.	that is appropriate to the context of the fishery and has been **tested and proven to be effective**.
	Met?	Y	Y	N
	Justification	Disputes within the capelin fishery in Iceland can be resolved in the first instance by negotiations within the system. Some issues can be solved with the help of the Directorate of Fisheries or the Ministry of Industries and Innovation. Further disputes can be resolved through the courts. These mechanisms are transparent, tested and proven to be effective. The proceedings of the courts in Iceland are open to the public and the rulings have to be explained and are public documents. Any Icelandic citizen or organization can take legal action to the high court in Iceland and ultimately to the Council of Europe Court. This system meets the requirement of a transparent mechanism for the resolution of legal disputes and it has been tested and proven to be effective. The international cooperation in the capelin fishery has been effective since 2003 but given the many instances of partial break-down of similar agreements on fising of pelacig species in the North Atlantic between coastal states within the framework of NEAFC this cannot be said to be proven to be effective. Therefore, 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 UoA **and SG 80 is met.**		
c	Respect for rights			
	Guidepost	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.	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.	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.
	Met?	Y	Y	N
	Justification	The management system in Iceland is comprehensive and encompasses all fishing in Icelandic waters and those participating in it. Management is considered to be consistent with the cultural context, scale and intensity of the fishery. The access rights of different fishers are clearly codified in the legislation. As with all other legislation in Iceland, the legislation on fisheries management has been developed		

PI 3.1.1		**The management system exists within an appropriate legal and/or customary framework which ensures that it:** • **Is capable of delivering sustainability in the UoA(s); 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.**
		through a legally based, democratic process where various stakeholder groups are consulted and given ample opportunity to protect their interests and argue their points of view and interests. In most cases the management system tries to avoid legal disputes. It implements binding judicial decisions arising from legal challenges in a fairly rapid manner. This was e.g. the case when the high court ruled in 1998 that the ban on the licensing of a fishing vessel without removal from the fleet of vessels of equal capacity was unconstitutional. Icelandic legislation allows all citizens to fish in Icelandic waters providing that fishing is for their own consumption. Therefore, 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 and **SG 80 is met**.
References		**Anonymous 1996**. Act on the utilisation of exploitable marine stocks, no. 57/1996, accessible in the file http://www.atvinnuvegaraduneyti.is/media/Skyrslur/Stjorn-fiskveida-2010-endanlegt.pdf. **Anonymous 2006.** Fisheries Management Act no. 116/2006, an English translation is accessible at http://www.fisheries.is/management/fisheries-management/the-fisheries-management-act/. **Anonymous 2006**. http://www.fisheries.is/main-species/pelagic-fishes/capelin/.
OVERALL PERFORMANCE INDICATOR SCORE:		**85**
CONDITION NUMBER (if relevant):		**NA**

PI 3.1.2 – Consultation, roles and responsibilities

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	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	The legal framework for fisheries management in Iceland explicitly defines the role of organisations and individuals in the management process. The Ministry of Industry and Innovation (MII, formerly the Ministry of Fisheries and Agriculture) issues regulations that further define these roles. Some of the consultation process is organized by the MII and some comes through stakeholder initiative. Roles of stakeholders, such as fishermen´s organisations and/or research institutes have defined roles within the management system. These roles are well understood and respected for all areas of responsibility and interaction, therefore, 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 and SG 100 is met.		
b	Consultation processes			
	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	Y
	Justification	The management system in Iceland includes a comprehensive consultative process where stakeholders are invited to have their say regarding regulations and the regulatory approach. The organisations of those working in the fishing sector, IcelandicThe FisheriesFederation of Icelandic Fishing Vessel Owners (Landssamband íslenskra útvegsmannaSamtök fyrirtækja í sjávarútvegi, SFSLÍÚ), National Association of Small BoatThe Federation of Owners of Small Fishing Vessels (Landssamband		

PI 3.1.2		**The management system has effective consultation processes that are open to interested and affected parties.** **The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties**		
		smábátaeigenda, LS), the Federation of Captains and Mates (Farmanna- og fiskimannasamband Íslands, FFSÍ), the Icelandic Union of Marine Engineers and Metal Technicians (Félag vélstjóra og málmtæknimanna, VM) and the Federation of Seamen (Sjómannasamband Íslands), as well as organisations of those working in fish processing (in Iceland fishing and fish processing are frequently conducted within the same company), organise discussions on various aspects of the fisheries management system. The leaders of those organisations meet for regular consultations with the MII, the Althing´s Permanent Committee on Fisheries and Agriculture and with individual members of the Althing. A number of local authorities take a strong interest in matters related to fisheries management and regulations. Icelandic law mandates that hearings are held when new legislation is prepared for fishing management. This process allows the fishing industry and other stakeholders (including NGOs) to influence new legislation. Thus the management system regularly seeks and accepts relevant information, including local knowledge and explains to some extent how it is used or not used. There are many examples of the use of stakeholders' inputs, mostly from fishers. This includes logbook and catch data from the fishers to discussion with fishers in preparations for design of research fishing. Unfortunately it is also necessary to explain to fishers that claim there is much more fish in the sea than the MRI estimates are probably exaggerations, possibly based on unusually good fishing in some specific area. Therefore, 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** and SG 100 is met.		
c	Participation			
	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	N
	Justification	The consultation process <u>provides an opportunity</u> for all interested parties to affect new regulation and fishing management legislation, but some stakeholders will claim that they do not get much <u>encouragement</u> from the authorities and SG 100 is not reach. In some cases this claim is justified and therefore The consultation process **provides opportunity** for all interested and affected parties to be involved. **SG 80 is met**.		
References		Information on Parliament Standing Committees procedures (applies to the Fisheries and Agriculture Committee): http://www.althingi.is/pdf/Althingi2010_english.pdf. Statement by the minister of fisheries 15. April 2009: http://www.fiskifrettir.is/frett/6857/?q=samr%C3%A1%C3%B0. Annual consultation meeting on the status of the cod stock (MRI and fisheries		

PI 3.1.2	**The management system has effective consultation processes that are open to interested and affected parties.** **The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties**	
	stakeholders): http://www.hafro.is/undir.php?ID=19&REF=3&fID=11886&nanar=1	
OVERALL PERFORMANCE INDICATOR SCORE:		**95**
CONDITION NUMBER (if relevant):		**NA**

PI 3.1.3 – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC fisheries standard, and incorporates the precautionary approach.		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guidepost	Long-term objectives to guide decision-making, consistent with the MSC fisheries standard and the precautionary approach, are **implicit** within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach are **explicit** within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach, are **explicit** within **and required by** management policy.
	Met?	Y	Y	Y
	Justification	**Clear long-term overall goals for fisheries management are set out in legislation.** These objectives include sustainable management, maximizing benefits to the nation and efficiency. Environmental objectives are in place and observed, e.g. in relation to protection of coral reefs and geographically defined sea-based management plans. Ecological quality objectives are also developed through the OSPAR cooperation, to which Iceland is a contracting party, but fully developed plans to measure environmental performance are not yet in place. The precautionary approach is not explicitly mentioned in the legislation on fisheries management in Iceland nor has it been introduced in a general form in Icelandic law but it is stated in a number of international agreements that Iceland has signed. The precautionary principle is explicitly referred to by the MRI, ICES and the MII in relation to the catch rules that have been adopted and to the fisheries management in general. Then, Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach, are **explicit** within **and required by** management policy and **SG 100 is met**.		
References		On the status of the precautionary principle in Icelandi see http://www.ust.is/umhverfisstofnun/umraedan/grein/2012/03/30/Varudarreglan/		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				**NA**

PI 3.2.1 Fishery-specific objectives

PI 3.2.1		The fishery-specific management system 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	Objectives			
	Guidepost	**Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **implicit** within the fishery-specific 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-specific 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-specific management system.
	Met?	Y	Y	Y
	Justification	The first article of the Act on Fisheries Management states that "The exploitable marine stocks of the Icelandic fishing banks are the common property of the Icelandic nation. The objective of this Act is to promote their conservation and efficient utilization, thereby ensuring stable employment and settlement throughout Iceland. The objective of the management plan for capelin to maintain the exploitation rate at the rate which is consistent with the precautionary approach. This objectives is defined in a measurable way by the reference points against which the stock is assessed on an annual basis. Iceland has ratified a number of conventions on species protection and management, such as the Convention on Biological Diversity, the OSPAR Convention and the CITES Convention. These conventions have established objectives for conserving endangered, threatened or protected species and habitats, and if issues are identified relating to ETP species, a number of mechanisms have been developed to detect and reduce impacts. These objectives are attained through various restrictions on gear and area closures to protect vulnerable habitats and juvenile fish. The management of golden redfish includes measures relevant to the effects the fishery has on the ecosystem. The biological reference points used in the setting of the TAC for target and main retained species are explicit and consistent with the outcomes expressed by MSC's Principle 1 and 2. In relation to Principle 2 specifically, most of the main retained species have management plans, and for species of low commercial importance, a key objective is to eliminate discarding in order to ensure that catches and stocks can be monitored and that incentives are in place to fish selectively. Therefore, **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-specific management system and **SG 100 is met**.		
References		Statement by the Minister published on the government sponsored website www.fisheries.is, http://www.fisheries.is/management/government-policy/responsible-fisheries/nr/62		

PI 3.2.1	The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.
	Anonymous 1996. Act on the utilisation of exploitable marine stocks, no. 57/1996, accessible in the file http://www.atvinnuvegaraduneyti.is/media/Skyrslur/Stjorn-fiskveida-2010-endanlegt.pdf. **Anonymous 2006**. Fisheries Management Act no. 116/2006, an English translation is accessible at http://www.fisheries.is/management/fisheries-management/the-fisheries-management-act/. **Anonymous**. The section on capelin on MII's website (information centre) at http://www.fisheries.is/main-species/pelagic-fishes/capelin/. **Anonymous 2010**. Reply of the Minister for Fisheries and Agriculture to a question about catches outside the catch quota system, the Althing 2009-2010, document no. 638 – issue no. 323, accessible in Icelandic at http://www.althingi.is/-altext/138/s/0638.html. **Anonymous 2012**. Regulations on the management of fisheries during the 2012/2013 quota year, accessible in the file http://www.stjornartidindi.is/DocumentActions.aspx?ActionType=Open&documentID=18c25ccf-e993-4c1e-b868-696cb675bf78. **Anonymous 2012**. State of Marine Stocks in Icelandic Waters 2015/2016 – Prospects for the Quota Year 2016/2017, MRI's publication no. 163, accessible on MRI's website at: http://www.hafro.is/Astand/2016/fjolrit_185.pdf.
OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	**NA**

PI 3.2.2 – Decision-making processes

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.		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	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	The setting of a TAC for the capelin fishery uses a management plan, reference points and strategies that have been tested and found to meet the requirements of the precautionary principle. It is based on research work done by the Marine Research Institute in Iceland and ICES. This work is subjected to review by ICES as is most of the work done by the MRI. The decision-making processes are transparent and timely. MRI's advice is given to the Minister, who informs and consults with organizations of vessel owners and crew. Gear regulations and area closures are used to obtain objectives concerning bycatch and catch of juveniles and objectives concerning the ecosystem. On April 4 2014 the Ministry of Environment announced that the Icelandic government had sent to the OSPAR convention declaration of five more coral conservation areas bringing the total number to 14. Therefore, there are **established** decision-making processes that result in measures and strategies to achieve the fishery-specific objectives and **SG 80 is met.**		
b	Responsiveness of decision-making processes			
	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	The decision-making processes respond in a transparent, timely and adaptive manner to serious and other important issues identified via relevant research, monitoring, evaluation and consultation. Management plans have been developed		

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.		
		in working groups where the industry and unions of the crew have their representatives. These plans are partly reviewed each year through the stock assessments and the advice provided by MRI and ICES each year. In those cases where a management plan has been found to be faulty, like the original management plan for cod from 1995 they have been reviewed (cod in 2004) and subsequently the minister has adopted a new management plan (for cod in 2007). Decision-making processes respond to all issues of major importance which have been identified in relevant research, but it is difficult to contend that it has responded to all issues in a timely manner therefore it responds 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 and **SG 80 is met.**		
c	Use of precautionary approach			
	Guidepost		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Y	
	Justification	The managers of the stock (the Ministry and the Minister) are obliged to consult the Marine Research Institute before deciding the TAC (or the effort quota) each year. This institute provides the best available information about the state of the stock. The precautionary approach is not formally part of the decision-making process, but the objectives set by law and the reference points and management strategy respects the basic principles of the precautionary approach. The recent implementation of the management plan should mean that this process is now more explicit (e.g. TAC will no longer be set exceeding MRI advice, even by a small amount). Therefore, decision-making processes use the precautionary approach and are based on best available information and **SG 80 is met.**		
d	Accountability and transparency of management system and decision-making process			
	Guidepost	Some information on the fishery's performance and management action is generally available on request to stakeholders.	**Information on the fishery's 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 the fishery's 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	The management system will respond to findings and recommendations emerging from research, monitoring, evaluation and review activity. It will explain their		

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.		
		decisions to fishermen's organizations, individual fishermen and the general public and scientists will note if important findings or recommendations are ignored. There is legislation (upplýsingalög, Freedom of Information Act) in Iceland requiring ministers and public institutions to reveal existing information or reasons for certain decisions being taken. Members of the Althing can obtain detailed information from the Ministry and public institutions by putting questions to the appropriate minister in the Althing. Both the public and fishers have access to such information through the political process and local parliamentarians. This would apply to NGOs, which, however, have not been active in fisheries issues in Iceland. There is formal reporting on MRI advice and fishery performance. However, there is no formal reporting on the response of the management system to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity. Therefore, **information on the fishery's 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 and **SG 80 is met.**		
e	Approach to disputes			
	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	N
	Justification	There are several examples where authorities have attempted to comply in a timely fashion with binding judicial decisions arising from legal challenges. The most noteworthy and important is the case when the Supreme Court in 1998 found special licensing of fishing vessels that were allowed to fish in the Icelandic EEZ to be unconstitutional. Perhaps the management system does not always act proactively enough to avoid legal disputes. Therefore, The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges and **SG 80 is met**.		
References		NEAFC's website at http://www.neafc.org/coastalstatemeetings. Iceland's High Court's rulein at http://www.haestirettur.is/domar?nr=767		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**

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.**
CONDITION NUMBER (if relevant):	**NA**

PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guidepost	Monitoring, control and surveillance **mechanisms** exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance **system** has been implemented in the fishery 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 and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	Y	Y	Y
	Justification	For the fishing of capelin by Icelandic vessels there exists a comprehensive monitoring, control and surveillance system. This system has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules. A comprehensive monitoring, control and surveillance system is in place, with inspections at sea and at landing sites. Also post-landing checks of reported landings against quotas are performed for each vessel. A satellite based vessel monitoring system applies to all vessels. The Directorate of Fisheries receives logbook data and data on landings which are weighed on specially authorized and closely monitored scales. Data is transmitted electronically to the Directorate, in real time. Data on each vessel's catch and quota allowance (including all transfers of quota) is posted on the Directive's website. This information is updated daily. Because most of the catch is exported there are additional ways to control reporting of catches by checking if the reported input of raw fish is consistent with the volume of production. The main management measure that the Directorate of Fisheries monitors is the quotas of individual fishers, catches and processing. There are cases where individual fishermen have been found to cheat through illegal landings and/or discarding. There are no reliable evidence that these violations exceed a few percentages of the TACs. The Directorate of Fisheries together with the Coast Guard monitors gear regulations and area closures. The extensive monitoring and the low number of violations observed do indicate that these rules are respected. There are agreements between some of the coastal states on fishing in each other's EEZs and landing in foreign ports. The port has to be authorised and subject to public surveillance. All landings by Icelandic vessels in foreign ports are subject to strict rules and reporting procedures and there is a well-established and coordinated mechanism to enable port-of-landing authorities to report the landing to the relevant authorities in a timely fashion. The same is true for foreign vessels that land in Icelandic ports. The directorates of fisheries in the coastal states co-operate in the control of the landings and for accuracy in the reporting on the landings. Therefore, a **comprehensive** monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules and **SG 100 is met.**		

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.		
b	Sanctions			
	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
	Justification	Violations of regulations are subject to sanctions which have been demonstrated to provide an effective deterrence against violations. Misreporting is subject to strict penalties. The relatively few cases of illegal landings, small estimated discarding and the number of violations of gear regulations and area closures do demonstrate that the sanctions that are in place and the high probability of being apprehended if engaging in illegal activities do form an effective deterrence. The relatively few cases of illegal landings, small estimated discarding and the number of violations of gear regulations and area closures do demonstrate that the sanctions that are in place and the high probability of being apprehended if engaging in illegal activities do form an effective deterrence. Sanctions to deal with non-compliance also exist in Greenland, Faroe Islands and Norway, and may lead to fines or evocation of fishing licenses tehrefore there is a system of sanctions consistently applied and **demonstrably** provide effective deterrence and **SG 100 is met.**		
c	Compliance			
	Guidepost	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.	**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.	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.
	Met?	Y	Y	Y
	Justification	There is generally a high degree of compliance with regulations. There is no significant evidence of systematic non-compliance. In cases of non-compliance, a range of penalties can be applied. A minor infringement leads to a warning and a second offence leads to temporary withdrawal of fishing licenses. Serious offenses are brought to the courts and can lead to prison sentences. Corrective actions are well established, codified, understood and tested. Amongst the information provided to management by fishers is essential logbook and VMS data, provided to the Directorate of Fisheries and to the MRI. This information is checked through weighing of the catch (including all bycatch) in the harbour and review of VMS records. Other information in relation to the species mix/catch composition gained		

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.		
		through sampling is further evidence of data that is provide to the management system. Therefore, 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 and **SG 100 is met.**		
d	Systematic non-compliance			
	Guidepost		There is no evidence of systematic non-compliance.	
	Met?		Y	
	Justification	The level of compliance is relatively high. Data from inspections at sea and those carried out at landings indicate that the number of serious infractions is relatively low. The management system in general has a high level of legitimacy among fishers, probably because the need to manage resources through restrictions on fishing access is well understood. Some foreign vessels land some of their catches of capelin in Icelandic harbours. The catches they land in their home countries have to be landed in special authorized harbours where their catches are weighted and reported to the Directorate of Fisheries in Iceland. There is no common monitoring of the surveillance and monitoring system in individual states engaged in the fishery therefore There is no evidence of systematic non-compliance with the gears and **SG 80 is met.**		
References		**Anonymous 2012**. Directorate of Fisheries' annual fishing statistics: Yfirlit yfir veiðar og afla fiskveiðiárið 2013/2014 (http://www.fiskistofa.is/media/utgefid_efni/Yfirlit_2013_2014.pdf).		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				**NA**

PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		**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	Evaluation coverage			
	Guidepost	There are mechanisms in place to evaluate **some** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **key** parts of the fishery-specific management system	There are mechanisms in place to evaluate **all** parts of the fishery-specific management system.
	Met?	Y	Y	Y
	Justification	There have been several external reviews made by international experts on the methods that the Marine Research Institute uses to assess fish stocks and on the advice it gives to government. There has not been a comparable external review of the work of the Directorate of Fisheries or of the Ministry of Fisheries and Agriculture. However these institutions are subject to regular reviews by the Althing´s committees, especially the permanent committee on fisheries issues. As with other public institutions in Iceland these institutions are subjected to scrutiny by The Icelandic National Audit Office (Rikisendurskodun). The performance of these institutions is also intensively debated in Iceland, especially in the many fishing communities. The MRI experts have published their research in peer reviewed scientific journals. The overall performance of the management regime for the resource is examined annually, including assessment of stock status and feeding ecology. Since 1970 the Marine Research Institute has carried out extensive environmental surveys up to four times per year in relation to oceanography and primary- and secondary production. The management plan for the fishery has been externally reviewed by ICES and therefore, There are mechanisms in place to evaluate **all** parts of the fishery-specific management system. **SG 100 is met.**		
b	Internal and/or external review			
	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	There have been several reviews of the management system in Iceland during the last 30 years since the introduction of the system of transferable quotas. In most cases those involved in these reviews were internal to the political process in Iceland and to the fishing industry. The external review processes has been beneficial to the work of the MRI. Capelin assessment and advice is regularly reviewed internally by a TAC committee		

PI 3.2.4	**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.**	
	and externally by ICES, as was the management plan for the fishery. Therefore, the fishery-specific management system is subject to **regular internal** and **external** review and SG 80 is met.	
References	**Anonymous 2012**. Directorate of Fisheries' annual fishing statistics: Yfirlit yfir veiðar og afla fiskveiðiárið2013/2014 (http://www.fiskistofa.is/media/utgefid_efni/Yfirlit_2013_2014.pdf).	
OVERALL PERFORMANCE INDICATOR SCORE:		**90**
CONDITION NUMBER (if relevant):		**NA**

9 Appendix 1.2 Risk Based Framework (RBF) Outputs

Not applicable

10 Appendix 1.3 Conditions

No conditions were established in this fishery

11 Appendix 2 Peer Review Reports

Summary of Peer Reviewer 1 opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes**	**CAB Response**
Justification: Principle 1. The assessment team has probably extracted all the available assessment data for this stock of capelin and these UoAs. The evaluation data for this stock are taken mainly from the most recent ICES assessment and are used in the best/most efficient way as well as the observations fishery from this closely monitored fishery. Principle 2. I agree with the overall conclusion on Principle 2. The effect from this fishery on both the primary main and minor as well as the retained secondary species other species seems to be small, Especially because the by-catch of these species except cod seems to be very small. However the data for some of the secondary species are sporadic. It is also mentioned that, as a key LTL species, capelin is an important prey species in the ecosystem, probably also for several species of baleen whales (Minke and Humpback). The effect on the benthos from capelin fishery, which now is mainly by purse seine, seems to be negligible. Concerning Principle 3 the fisheries on this stock are managed internationally by agreements between Iceland , Greenland and Norway. The Icelandic share of the TAC is distributed in ITQs. The Icelandic capelin fishery is, like other Icelandic fisheries, closely and well monitored, also regarding by-catch.		The assessment team acknowledges the reviewers for his comments, and responses to comments on specific PI and rationale are provided in the Performance Indicator Review table

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe? ***[Reference: FCR 7.11.1 and sub-clauses]***	**N/A**	**CAB Response**
Justification:		

If included:

Do you think the client action plan is sufficient to close the conditions raised? ***[Reference FCR 7.11.2-7.11.3 and sub-clauses]***	**N/A**	**CAB Response**
Justification:		

Table 13 For reports using one of the default assessment trees:

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
Example:1.1.2	*No*	*No*	*NA*	*The certifier gave a score of 80 for this PI. The 80 scoring guidepost asks that there is evidence that rebuilding strategies 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 the timeline specified. However, no timeline has been specified based on previous performance, or simulation models.*	
1.1.1	yes	Yes			
1.1.2	Yes	Yes			
1.2.1	Yes	No	NA	Harvest strategy. I agree with the scoring of the 4 issues: a, b, c, d. But as I see it the overall score of 95 is not in accordance with the standard FCR reqirements of 'cumulative' scoring.	The assessment team has followed the clause 7.10.5.3 of MSC FCR and following the criteria when all the scoring issues of SG 80 are met but not all meet SG 100 intermiediate scores musut to nbe given (85, 90, 95) therefore award 95 when most of the issue are fully met. In this cases 3 of them are fully met and just one is not fully met. Therefore 95 is correct.

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.2	Yes	Yes	NA		
1.2.3	Yes	Yes	NA		
1.2.4	Yes	Yes	NA		
2.1.1	Yes	(Yes)	NA	Clarification of the cod catches: In which way do the 236403 kg cod represent 12.13% of the "fishery". See also general comments.	The assessment team has done a estimation of catches. The data reported from DoF shows that the catches of Cod coming from capelin fishery during the period of time between 2012-2016 are 236,403kg. The total catches of non-target species reporting bu DoF are 252,680 and the total landing of the fleet was 1,948,686. Therefore the estimation of catches of cod during this period is 12.13% of the total landing.
2.1.2	Yes	Yes	NA		
2.1.3	Yes	Yes	NA		

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.2.1	Yes	(No)	NA	It is a matter of subjectivity how to assess the influence of the capelin fisheries on the stocks of Skate, Turbot and Dealfish and to whether SG80 or SG 100 is appropriate.: Skate stock is at a very low level. We don't know much about stock status of Tubot in Icelandic waters and nothing about the status of the widely distributed Dealfish. So how can we detect 'evidence' that the UoA does not hinder the recovery etc.'? The bycatch information indicate very low catches of these species, but at the same time:this does not give information on dynamics of these 'stocks'. There is no evidence for anything. We are uncertain about the uncertainties	The assessment team has assumed that the quantitative data from DoF are by itself a eveidences to confrim that Capelin fishery is not a risk for secondary minor species. The catches of turbot and delafish are 2 kilos in 4 years less than 0.0001% of the total landing. In the year 1992 the Marine Research Institute started to collect turbot in collaboration with Icelandic fishermen to form a brood stock, they has concluded that is a very rare species in Icelandic waters and the annual catch is usually only a few fish. On the other hand, the distrubution of turbot is at sandy bottom surfaces. The delafish has a range of distribution of 300m-600m. The grounds of the fishery are normally distributed until 300 meters and the fishery operates in the water colum therefore the catches of turbot and dealfish are very unsual. Skate has a % of catches in the period of four years of 77 kg (0.003 %). The Ministry of Fisheries has reported that the catches of skate are decreasing since 2010 (Figure 29). The assessment team considers that the quantitative data of catches and furthermore, the types of gears used in the fishery are sufficient evidences to justify these minimum rates of catch and settles that the fishery is not a risk for thiese species classified as secondary minor.

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.2.2	Yes	(No)	NA	Because of the uncertinty, I would give scores of 80 fore all 3 species. Note: The English language is partularly bad in PI 2.2.1, PI 2.2.2 and PI 2.2.3 And now 'Skate' has become 'Stake'	The assessment team has corrected the wording and formatting of the texts cited by the reviewer. The CAB does not agree with the re-scoring and has kept the same score of 100 in two species, dealfish and turbot because the cath of two kilos in 4 years is enough evidence to justify that the fishery has a managemnt plan to avoid the cath of non-target species. However, it is true that there are more uncertainties in the skate satus even the catches are insignificant in the fishery the CAB was precautonary and has scored skate at SG 80. The scoring by element result shows an overall score of 85 and the CAB considers is precautory and according with the information available.

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.2.3	Yes	No	N/A	Again: I am not sure the coast guard data are suficient for an evaluation (with 'a high dgree of certainty') whether the stategy works (issue c) Overall score = 90.	The capelin fishery has enough quantitative data to evaluate primary and secondary species. Further the surveillance program carried out by the DoF and the coast guard is complete and ell-defined to get SG 100. The coast guard realises inspectiona at sea and in the port. All the vessels under assessment have the obligation to land all the catches, bycacth is not happening and all the species captured must be landed and reported. The data of the total composition of catches are accurate. The CAB agrees that the program to manage the secondary species is working and justify the rationale given to meet Sg100. On the other hand, all vessels are required to carry a VMS system, which is monitored 24hrs a day by the Coast guard, there is no possibility to avoid the monitoring of the coast guard and the information is truthful.
2.3.1	Yes	Yes			
2.3.2	Yes	Yes			

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.3.3	Yes	Yes			
2.4.1	Yes	Yes			
2.4.2	Yes	Yes			
2.4.3	Yes	Yes			
2.5.1	Yes	Yes			
2.5.2	Yes	Yes			
2.5.3	Yes	Yes			
3.1.1	Yes	Yes			
3.1.2	Yes	Yes			
3.1.3	Yes	Yes			

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
3.2.1	Yes	Yes			
3.2.2	Yes	Yes			
3.2.3	Yes	Yes			
3.2.4	Yes	Yes			

Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary) can be added below and on additional pages.

General

Reading this report gives the impression that it has been produced very fast, **too fast!** No proof reading has been done on this draft, not even a computerised spelling check. This draft report certainly needs a proof reading to improve the English language as well as the large amount of typing/spelling errors. It is bad in sects. 3.2 -3.4. Take a look, for instance, in Sect. 3.2 in the **Executive summary**.

CAB response:

A revision to improve the English was done. The typing/spelling checking was also made. The report has taken the time proposed on the MSC website and the necessary period of time to review the information gathered during the site visit and available in the different website of stakeholders was taken. The CAB agrees with the recommendations regarding the English but does not agree with the impression that it has been produced very fast.

Special comments:

Sect. 4.1.3

It is mentioned, that the most recent (ICES) report (and advice) was published 19 May 2016. Why not already here mention that the initial quota for 2016/17 advised by ICES is 0 (zero).

CAB response:

The objective of the harvest control rule for the stock is to set a final TAC which ensures, with a 95% probability, that a minimum of 150000t (=B_{lim}) remains for spawning (escapement strategy). This is achieved by a series of acoustic surveys from September through to February and a three stage process in finalising a seasonal TAC (described above). The quantity available for the fishery also has to take the quantity removed by predators.

- The initial TAC for the coming fishing season is advised in May, based on the autumn survey abundance estimate of immature 1 and 2 year old capelin.
- The intermediate TAC is advised in autumn based on the biomass estimate of maturing capelin.
- The final TAC is advised in January/February based on the biomass estimate of maturing capelin.

Therefore the fact that the first TAC is zero does not entail that the stock status is below the TRPs. It's a precautionary approach to allow that the stock status holds in a good conditions.

Sect. 4.2.1

Capelin is possibly the most ecologically important fish in Icelandic waters….- ?? – What is meant? This statement needs more specification/explanation!

CAB response:

Capelin is consider as key LTL species in the Icelandic ecosystem and for this reason the stock was evaluated as Key LTL and the table 1.1.1A was evaluated. The Cab has considered this important role in the ecosystem and it' explained in the report.

Sect. 4.2.3

I think it should be mentioned in this section, that the majority of the landings/catches of capelin at present are taken by purse seiners! (According to ICES, 93% were taken by purse seine in the 2015/16 season). This is also a much cleaner fishery than the pelagic trawl fishery.

'There are strong indications that the efficiency of the capelin fishery has increased substantially since the introduction of the vessel-quota system.' What is meant with the 'efficiency of the fishery'? I assume increasing catches with fewer vessels (higher CPUEs)?

CAB response:

The fisheries technical article published by FAO "The Effects of Introducing Transferable Property Rights on Fleet Capacity and Ownership of Harvesting Rights in Iceland's Fisheries" (Runolfsson, B. and Arnason, R., 2011) explained the results of introducing ITQs system in Iceland Capelin and Herring Fisheries. The "efficiency of the capelin fishery has increased…" is referred to the system introduced which has allowed to reduce the total fleet tonnage (GRT) by over 25%, and the total days-at-sea for the fleet fell by almost 25%. The effort is controlled and also the number of vessels which have quota for this resource, further the system is a strategy to keep the stock at sustainable level as it was proved by different studies (Technical report FAO 2001, Burk 1991, Hayek 1976, Buchanan 1975). New Zealand and Iceland were pioneer in implementing this system. So it's means in this context that when the fishery stated to be manage by ITQ the catches per unit of effort increased and the usability of this natural resource is better than with the previous system of quotas (IQs).

Sect. 4.2.4

I assume that Fig. 7 refer to Icelandic catches/landings only ?! But the text refers to all landings or what? According to ICES, Icelandic catches alone never reached 1.5 million t. Fig. 7 should include a longer time series going back at least to the year 1996 with the million t catches as mentioned in the text, or a reference to Fig. 12.

Normally, you would also show the catches/landings figures in a table, cf. my comments to Sect. 4.4.1.

"*In the last report carried out by ICES in 2016 an initial quota of zero was* ***established*** *….."* It has been advised by ICES (ICES only advises).

CAB response:

The CAB has changed the graphic and has kept just the plot from the last ICES report to avoid any misunderstanding between graphics from different organisms (ICES and the statice.ie). The CAB assumes that the data from ICES are more updated and they are revised every year for different experts in the fishery.

Sect. 4.3

"In the last stock assessment the methodology was as it is described in the WKICE NWWG REPORT…". There are two reports: WKICE (2015) and the 2016 ICES NW WG Report.

CAB response:

The CAB has rectified the mistake. The report referred in this section is NWWG Report 2016

Sect. 4.4 and 4.4.1

Fig. 18. *"The graphic below shows that I (?) the retained species account for 13% of total catches...."*As I read this figure it shows the % distribution of the retained by-catch (cod const. app. 92% of the retained by-catch).

The description of the cod catches in the Capelin fleet is very imprecise and confusing, for instance.:

The % figures for primary species in Table 3: which data are they based on? A summation over 5 years *("last five years", 2012-16)* or what?

"*The catches of cod during the last four years by Capelin fishery was 236,403 kg representing 12.13% of the total catches in the fishery….."* Now it is only 4 years. But again which fishery? If 12.36 % is 236403 kg the total would be 1912646 kg. Which total fishery is that ? It could be some of the pelagic trawl fishery ?,

Further down the text the 236403 kg refer to the caches in 2015 but this number only constitutes 0.11 % of the total catches of cod that year. It is very confusing!

It is unclear how these 236 t of cod constitute a percentage 12.36 cod and where they come from (Cod caught in the some capelin fishery?)

By-catch is a very important issue for most fisheries and in their assessments the CABs should always present the available relevant data in their reports. In this case the relevant data from the Icelandic Directory of Fisheries and specify the bases of the above mentioned percentages.

NB! The same figures are mentioned in a similar confusing way in App. 1 scoring PI 2.1.1

Wolfish/: This species is a species of concern in the NW Atlantic and data deficient in most of its distribution. In Icelandic waters catches have declined since around 2000. Note: The English name ''

is mainly used for species belonging to Siluriformes (even if DoF uses ‘’). In any case, it is confusing to use as heading to a paragraph dealing with wolfish (the Atlantic wolfish *Anarhichas lupus*). The name ‘Wolfish’ is also used in Sect. 4.5

CAB response:

The name of was changed for wolfish because the species that is analysed is the Atlantic wolfish that is also called Atlantic in some place, so to avoid misunderstanding it will be called in this document as wolfish**.** The confusion came from the Fisheries.ie because the same species is classified as follow: “*Scientific: Anarhichas lupus. English: Wolfish, Atlantic wolfish, , Atlantic , seawolf. Icelandic: Steinbítur, sladdi. For more languages see the Marine Animal Dictionary. Source: www.fisheries.ie*”

The data come from the DoF, the CAB does not attach the table with the data because there are 2618 register. The data are form 2012 to first fishing season in 2016, catches corresponding to February and March. The confusion regarding five or four years was corrected in the text.

The percentages of cod are explained in the table above. 92% correspond to the % of catches of the total non retained species in the fishery, therefore the most relevant species in the fishery that is not capelin it will be Cod.

The 12, 13% of catches corresponds with the total composition of catches in the period of time specified, 2012 to 2016 in the Capelin fishery.

Aclarations were made in the text to make easy the understanding and this summary is attached

Period of time 2012-2016	**Total capelin kg=1948686**	**Catches(kg)**	**% Total**
1	Dealfish	2	0.0001
2	Turbot	2	0.0001
3	Greenland Halibut	6	0.0003
4	Monkfish	14	0.0007
5	Atlantic wolfish	19	0.0010
6	Blue Whiting	71	0.0036
7	Skate	77	0.0040
8	Redfish	116	0.0060
9	Plaice	140	0.0071
10	Lumpfish	1335	0.0685
11	Herring	403	0.2000
12	Saithe	5782	0.2900
13	Haddock	8310	0.4200
14	Cod	236403	12.1314
Total	Total catches of non target species by the Capelin fishery	**252,680**	**13%**

Sect. 4.4.2

Secondary species. Although the effect of the pelagic trawl and purse seine fisheries for capelin on the stocks of Skates (*Dipturus batis*) probably is insignificant, it should be mentioned that this species is classified as critically endangered by IUCN. The decline in Icelandic waters is shown in Fig. 30. Very little information is available on *Trachipterus*.

CAB response:

The percentage of catches of these two species in the fishery are 0.0003% and 0.0001%. Since 2012 to 2016, in kilos, the data coming from the DoF, are 77 for skate and 2 for Dealfish. The information to justify the rationale and the roles of these species in the fishery is enough, it no make senses explain more about these species. they are secondary minor species in the fishery, with an insignificant impact that they have in the fishery. However more explanation of these species have been done in the tables above.

The CAB has added more information regarding the status of skate in the IUCN list. The CAB has considered the precatory approach and the skate scores 80 in all the issues and does not reach 100 as the other secondary species.

Sect. 4.4.4

Fig. 32 needs to be improved that the EEZ becomes visible.

In the previous paragraph the '*minister*' of Fisheries is mentioned. I assume that it should be the ministry.

Table 7: I don't understand how the dealfish (Trachipterus) can be classified as 'not data-deficient'

CAB response:

In the table 7 dealfish is not classified as not data deficient because is not limited data for the fishery under assessment. There is quantitative data for these species in the fishery and in this document the CAB has not been evaluating the dealfish as target species whether not as secondary minor. The data available are enough to evaluate this species and its role in the fishery under assessment and therefore it is not needed classified it as data limited.

The mistake in spelling minister was corrected.

The CAB has enlarged the figure to make easy its understanding.

Sect. 6

Scores at principle level. Following my comments to the score for PI 1.2.1 in Sect. 8 (App. 1), I don't understand how the CAB has arrived at an overall SG 95 here, with the 4 issues being scored 100, 80, 60, and 100?

Also the scoring of PI 2.2.1 should be reconsidered.

CAB response:

The scores of 1.2.1 was explained above and it was met following the FRC clause 7.10.5.3 where MSC specifies that award of 95 is met when most scoring issues are fully met and just few of them are not fully met. In this case just one is not fully met, therefore 95 is met.

The CAB does not agree that the outcome of secondary species need to be re-scoring and it was explained in the table above.

~ Summary of Peer Reviewer 2 Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes/No** Yes	**CAB Response**
Justification: The conclusions seem to be appropriate but require further documentation as noted in Table 1, below.		The assessment team acknowledges the reviewer for his comments, and responses to comment on specific PI and rationale are provided in the Performance Indicator Review table. The assessment team has justified all the comments and in most of cases, more information was given to justify the rationale of the CAB in each answer.

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe? ***[Reference: FCR 7.11.1 and sub-clauses]***	**Yes/No** NA	**CAB Response**
Justification:		

If included:

Do you think the client action plan is sufficient to close the conditions raised? ***[Reference FCR 7.11.2-7.11.3 and sub-clauses]***	**Yes/No** NA	**CAB Response**
Justification:		

Table 14 For reports using one of the default assessment trees:

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
Example:1.1.2	*No*	*No*	*NA*	*The certifier gave a score of 80 for this PI. The 80 scoring guidepost asks that there is evidence that rebuilding strategies 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 the timeline specified. However, no timeline has been specified based on previous performance, or simulation models.*	

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.1.1	No	No	NA	The Team correctly treats the stock as a LTL species, and used Box SA2 for scoring. SI a: The rationale does not reference all requirements and does not explain how they are met, to score at the 100 level. As per FCR SA2.2.12, stock status of LTL species may be scored with respect to B0, F, ecosystem model results, or from robust empirical data such as fishery independent surveys. Perhaps The Team could explain how B0 and F don't apply here, reference robustness of the acoustic surveys, and explain how the predation model yields Blim with 95% certainty? This was touched on in the background section of the report but was not brought forward to the scoring justification section. SI b: The rationale does not reference all requirements and does not explain how they are met, to score at the 80 level. Specifically, refering to FCR SA2.2.13, the rationale needs to explain how the target level: *"i. Does not impact the abundance levels of more than 15% of the other species and trophic groups by more than 40% (compared to their state in the absence of fishing on the target LTL species); and ii. Does not reduce the abundance level of any other species or trophic group by more than 70%.*	In evaluating this whole pocess it must be appreciated that the IGJM and the Barents Sea capelin are unique amongst the pelagic species of the North Atlantic. Their role as an important LTL forage species with a potential for a sustainable harvest of surplus production is strongly dictated by their life history strategy of almost 100% natural mortality after spawning.Inevitably this unique situation does not always fit well with the wording of the MSC requirements. Neveretheless the intent is the same and the team have shown throughout the section on Principle 1 that, the in managing this stock, the first and foremost requirement is that of the ecosystem and to annually ensure that there is a minimum of 150,000t of mature or maturing capelin left to spawn. The basis for this biomass limit level of 150,000t is firmly established based on B loss but we have not claimed 95% probability at the scoring issue only 80% at SG80.

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.1.1	No	No	NA	(continue)	This reference point was strongly supprted by the ICES benchmark workshop in 2015. In relation to the comments on scoring issue b) the comments above are also applicable. The team is confident that all the issues raised here are adequately addressed. The predation model based on the abundance of the predator species (from up to date ICES reports) and the coicidence both temporally and spatially with capelin distributions is very sophisticated.This is then firmly linked to a very precautionary approach to the assessment of capelin biomass through acoustic surveys. The assessment team confirms that it represents the role model for the management of a LTL species and well satisfies the requirements of the MSC process. The assessment team has erred on the side of caution and only scored this at SG 80 with the resoning clearly explained in the comments.
1.1.2	NA	NA	NA		
1.2.1	Yes	Yes	NA		

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.2	No	No	NA	SI c: The rationale does not provide specific evidence to support the conclusion. The rationale references that the status of cod, haddock and saithe stocks support that the exploitation levels of capelin under the HCR are achieved; however, the recent/current status of these stocks is not provided in the rationale for documentation.	The assessment team has commented that "Available evidence, in the form of the status of dependent demersal stocks; cod haddock and saithe, suggest that this ecological measure is effective". The CAB agrees with the reviewers comment that the CAB has not quoted the specific stock status of these three species although we have referenced the relevant ICES assessment reports. Their pecific status in 2015 is detailed below. Saithe: SSB is currently at 139kt which is above the average (1980 to 2014) and well above the biomass trigger and limit levels. (65kt and 61kt respectively. Haddock: SSB in 2015 was 78,319kt and has been below the long term mean of 99,792kt since 2011. However it is still well above the biomass lmit level of 45kt. Cod: SSB in 2015 was 547kt the highest in the time series for 50 years and well above the biomass limit level of 45kt The assessment team has erred on the side of caution and only scored this PI at 80 fully explaining the reasons.

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.3	Yes	Yes	NA		

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.4	No	No	NA	SI e: With regard to external review, the rationale appears to contradict other published information. The rationale states: *"Only when endorsed by ACOM are the results of the assessment released in the form of advice on stock status and the future management of the fishery."* However, on page 382 of ICES (2016), it states; *"The assessment and advice on the final TAC for capelin based on the autumn and winter surveys are issued directly to the Coastal States by the Icelandic Marine Research Institute. This process is not internationally peer reviewed prior to the release of the advice. Among the reasons for using this process is the need for fast advice once the survey result is available. The ICES ACOM procedure is more time consuming. NWWG therefore recommends that a fast track workflow based on online meetings is established if possible."* ICES. 2016. Report of the North-Western Working Group (NWWG), 27 April–4 May 2016, ICES Headquarters, Copenhagen, Denmark. ICES CM 2016/ACOM:08	The assessment team is not entirely sure what point the reviewer is making here. The review process for the ICES assessment and advice is almost entirely internal every year and only exceptionally do ICES call on the services of an independent reviewer. This is why we have scored it at SG80. However the reviewer may be saying that there is no peer review process at all because some preliminary management action is taken before the ICES advice is released. This is correct but ultimately the peer reviewed advice, relaesed in May, forms the basis of the agreed final TAC.The requirementat SG 80 are therfore met but not those at SG 100.

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.1.1	Yes	Yes			
2.1.2	Yes	Yes			

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.1.3	No	No		SI c: The rationale does not provide specific evidence to support the conclusion. The rationale refers to "data triangulation" by ICES, MRI, and MII as evidence that information is adequate to support and evaluate the strategy with a high degree of certainty. However, these three entities are presumably all working with the same base of information, and thus cannot be seen as bringing data "from three different sources" as stated in the rationale. Also, enforcement by the Coast Guard is mentioned, but no information on coverage or compliance rates is provided. Potentially, information such as from an on-board observer program could help to confirm that the strategy is working, but none is provided.	The assessment team has been considering that the information is coming from three different sources because every organism analized the data indenpently. The Coast guard is in charge, with the DoF, of the surveillance program. The cCoast guard is in charge of the enforcement. They carried out inpections at sea and at port and they control the access to the close areas as well. Every vessel includes in this assessment has to report every set and the use of the VMS is mandatory and it is connected 24 hours with the Coast guard center, therefore they can track every activity that the fleet makes and the information is recorded. On the other hand, discard is forbiden in the fishery and every catch must be landed and reported. The DoF has data from every fishing activity that the vessls realised and therefore the information on primary species is well-known and is adequate to support a strategy to manage all these primary species.

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.2.1	Yes	Yes			
2.2.2	Yes	Yes			
2.2.3	Yes	Yes			
2.3.1	Yes	Yes			
2.3.2	Yes	Yes			
2.3.3	Yes	Yes			
2.4.1	Yes	Yes			
2.4.2	Yes	Yes			
2.4.3	Yes	Yes			
2.5.1	Yes	Yes			

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.5.2	Yes	Yes			
2.5.3	Yes	Yes			
3.1.1	Yes	Yes			
3.1.2	Yes	Yes			
3.1.3	Yes	Yes			
3.2.1	Yes	Yes			
3.2.2	Yes	Yes			

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
3.2.3	No	No		The rationale does not provide specific evidence to support the conclusion. Enforcement coverage levels, and compliance rates are not provided to demonstrate a consistent ability to enforce relevant management measures, strategies and/or rules.	The assessment team has revised the information and it has concluded that the fishery has several measures in place to control the enforcement of the management strategies. A comprehensive monitoring, control and surveillance system is in place, with inspections at sea and at landing sites. Also post-landing checks of reported landings against quotas are performed for each vessel. A satellite based vessel monitoring system applies to all vessels. The Directorate of Fisheries together with the Coast Guard monitors gear regulations and area closures. The extensive monitoring and the low number of violations observed do indicate that these rules are respected. The relatively few cases of illegal landings, small estimated discarding and the number of violations of gear regulations and area closures do demonstrate that the sanctions that are in place and the high probability of being apprehended if engaging in illegal activities do form an effective deterrence. Because all these facts the assessment team considered that rationale justify the scoring given in this PI and SG 100 is met.

Performance Indicator	Has all available relevant information 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. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
3.2.4	Yes	Yes			

12 Appendix 3 Stakeholder submissions

~ AWI submissions

Assessment Stage	Fishery	Date	Name of Organization
Fishery announcement and stakeholder identification	ISF Iceland Capelin	8 June 2016	Animal Welfare Institute (AWI) Attn.: Kate O'Connell

Nature of Comment
A) I wish to indicate that I am a stake holder in this fishery, please keep me informed about each stage of the assessment process
B) I wish to suggest information or documents important for the assessment of this fishery
C) I wish to suggest other individuals or organizations who should be considered stakeholders in the MSC assessment of this fishery

Additional Information/Detail
A) The Animal Welfare Institute (AWI) is committed to safeguarding marine species and their habitats. Our efforts focus on curbing humankind's harmful impact by urging governments and other decision makers to halt or prevent damaging actions, as well as educating the public and seafood industry about the deleterious effects their actions can have on the oceans' inhabitants, including fisheries bycatch of non-target marine mammals species and sharks. AWI regularly participates in international fora such as CITES and IWC. The organisation also has regularly participated in the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (UNICPLoS), and has funded research related to the mitigation of cetacean entanglement in fishing gear. AWI has undertaken a review of North Atlantic fisheries, including Icelandic fisheries, in light of increased consumer interest in the products from these fisheries in the US and Europe. B) We urge the assessment team to consider the following information related to the potential for encirclement of humpback whales (*Megaptera novaeangliae*), an ETP species, in the capelin purse seine fishery. Although it appears that numbers in the North Atlantic are recovering following decades of over-exploitation by the commercial whaling industry, humpbacks are still listed on Appendix I of CITES, and are also listed as a Protection Stock (PS) by the International Whaling Commission. Further, investigations show that while the population of humpbacks in Icelandic waters had experienced a surge in growth from 1986 to 2001, more recent research seems to show that from 2001 to 2007 there was little or no growth in population

size, and that the population size may have reached a plateau.

Pike, D.G., Gunnlaugsson, T., Víkingsson, G.A., Desportes, G., and Mikkelsen, B. (2010) Estimates of the abundance of humpback whales (*Megaptera novaeangliae)* from the T-NASS Icelandic and Faroese ship surveys conducted in 2007. IWC/SC/62/O13.

A significant number of humpback whales frequent Icelandic waters, and more than 300 individual humpback whales have been photo-identified since 2001; the information is catalogued by the Húsavík Whale Museum and the Rannsóknasetur Háskóla Íslands (see http://rannsoknasetur.hi.is/photo_identification_project). These photos can often provide evidence of entanglement in fishing gear.

A 2010 assessment for the IFFO indicated that there was "some evidence that on average 1-2 Humpback whales are caught each year in Capelin Purse seine nets" and that "[s]ome reports have stated that as many as 5 whales may have been caught."

Pratt, Mike (2010) IFFO Fishery Assessment Report Issue No; 3, Iceland-E.Greenland-Jan Mayen Subareas V and XIV and Division IIa west of 5W; Global Trust Certification Ltd, Dundalk, Co. Louth, Ireland.

A second, more in-depth report from 2014 refers to the "prominence of humpbacks interacting with capelin purse seines" and suggests that, "this may be one of the more significant issues in Iceland." The paper notes that although the whales can often be freed from the nets, or the nets tear thus allowing the whales to swim free, that "entanglement studies may not be including interactions with seine nets even though this could still have detrimental consequences for the whale."

The same study notes that capelin is one of the major prey species for North Atlantic humpback whales, and that "whales are known to congregate where prey abundance is high (Johnson and Wolman, 1984), which suggests that there could be a higher probability of humpbacks being incidentally caught in capelin seine nets while they are feeding in Icelandic waters in areas with significant fishing activity."

Basran, Charla (2014) Scar-based analysis and eyewitness accounts of entanglement of humpback whales (Megaptera novaeangliae) in fishing gear in Iceland
45 ECTS thesis submitted in partial fulfilment of a Master of Resource Management degree in Coastal and Marine Management at the University Centre of the Westfjords, Degree.

Studies in other oceans on a variety of cetacean species indicate that encirclement by purse seine nets –even if an animal is released alive -- can impact physiology, negatively impacting immune systems, feeding and other behaviors.

There are dozens of anecdotal accounts of humpback interactions with capelin fisheries in Icelandic media; some of these are referenced in the Basra papers.

Examples of additional articles are as follows:

In a November 1988 article, Ilinrik Þórarinsson, a skipper on board a capelin vessel, mentioned numerous interactions with humpback whales (as well as a "larger whale') that involved encirclement of the whales. In some cases the whales were released by lowering the net and in others, the nets were torn. The title of the article indicated that whales were being encircled "every night". "Loðnuveiðarnar: Skipin fá stórhveli í nótina á hverri nóttu". Morgunblaðið 29.11.1988.

In December of 1988, an article again referred to the presence of humpback whales on the capelin fishing grounds, and that "up to four whales a night" have been encircled by the nets. "Loðna: Hvalafjöld ógnar veiðum". Þjóðviljinn. 10.12.1988.

In 1989, there was a reference to a large number of humpbacks on the capelin grounds off Kolbein Island. "Stór loðna suður af Kolbeinsey", Morganblaðið 02.11.1989.

In August of 1993, it was noted that it was common for two to three whales a night to be encircled in the capelin purse seine fishery. "Loðnan dreifðari:Loðnugöngur fyrir Vestur- og Norðurlandi". Morgunblaðið 14.08.1993.

In February 1995, an article noted two vessels having encircled humpback whales while capelin fishing (the Þórður Jónasson EA and the Beitir NK). In one case, the net was lowered and the whale freed, and in another the whale became entangled and then broke the net to get free. "Loðnuskipið Þórður Jónasson EA: Hnúfubakur skemmdi nótina". Morgunblaðið 17.02.1995.

A November 1995 article refers to the presence of humpback whales on the capelin grounds and the fact that they are encircled; the article notes the presence of "strong currents" as also being problematic. "Hvalir og sterkur straumur að angra Sjómennina". Dagur. 29.11.1995.

A July 1998 article again refers to the presence and encirclement of humpback whales on the capelin fishing grounds, this time to the north of Húnaflóa. Also contains a reference to the presence of orcas. "Veiðisvæði loðnu norður af Húnaflóa ". Dagur. 08.07.1998.

A 2002 article featured an interview with Kristján Loftsson, in which he stated that he had been speaking with a number of capelin skippers during a fisheries exhibit and that "out of 50 times a net was cast, 40 involved humpbacks" "Sumir eru hræddir við drauga". Dagblaðið Visir, 12.09.2002.

A January 2005 article noted the presence of humpback whales on the capelin fishing grounds east of Langanesi, and referenced the fact that whale encirclements did occur, with some net damage incurred. "Hnúfubakur á miðunum". Frettablaðið. 15.01.2005.

On December 13, 2012, the HB Grandi company posted an article on their website "Tveir til þrír hnúfubakar í nótinni í einu!". The article noted that the skipper of the HB Grandi vessel Lundey reported a large number of humpback whales on the capelin grounds to the north of Vestfjördur. The seine nets were said to tear on at least four or five occasions" after humpbacks had been encircled, with the fact that sets were taking place at night "making it difficult to avoid the whales". http://www.hbgrandi.is/frettir/frett/2012/12/13/Tveir-til-thrir-hnufubakar-i-notinni-i-einu

In light of the recent changes to the MSC assessment process, and the need to consider cumulative impacts of fisheries in the area, AWI also draws attention to a study that indicated that "[i]n total, 19 out of 44 (43.2%) humpback whales sampled at Iceland had a high likelihood of prior entanglement" while an additional fifteen humpbacks (34.1%) had one or more injuries that could have been entanglement-related, but the evidence was inconclusive. Five (11.4%) showed unhealed injuries indicative of a recententanglement event, including one individual from with monofilament still embedded in the wound.

The paper concluded that the results "suggest that humpback whales off Iceland have an entanglement rate approaching that of humpback whales in the Gulf of Maine, where entanglement is of known management concern" and recommended additional research to clarify the magnitude and impact of entanglement on this population.

Bertulli, C.G.,Cecchetti, A., Bárðarson, H. and Robbins, J. (2011). First assessment of entanglement rate among North Atlantic humpback whales (Megaptera novaeangliae) off Iceland. Poster presented to the 2011 Biennial Meeting of the Society for Marine Mammalogy, Tampa, FL.

The Basra paper cited above also raises concerns for entanglement of humpback whales in other fishing gear off Iceland. A survey of fishermen conducted for the report yielded the finding of "6 eye-witness entanglement accounts involving humpbacks interacting with a variety of fishing gear including seine nets, hook-and-line gear, and gillnets."

Again, there have been anecdotal accounts of humpbacks entangled in fishing gear, for example a whale that was freed by the Coast Guard in 2014 http://grapevine.is/news/2014/08/28/humpback-whale-saved-from-netting-video/ and another freed –likely from lumpfish gillnet gear -- in August of 2015 http://icelandmag.visir.is/article/humpback-faxafloi-bay-rescued-fishing-nets-teams-iceland-uk-and-usa

AWI wishes to draw the attention of the team to the fact that the International Whaling Commission (IWC) recognizes that cetacean entanglement in fishing gear is a growing problem, and now offers capacity building for entanglement responses. The training includes information on data collection and prevention as well as safe-release practices that seek to minimize danger to fishers, as well as improving the possibility of a live release for whales (see https://iwc.int/entanglement). The IWC was involved in the successful release attempt of the humpback in 2015

http://icelandmonitor.mbl.is/news/nature_and_travel/2015/08/15/humpback_whale_rescue_underway/

C) There are a number of cetacean experts and stakeholders in Iceland whom we believe should be contacted by assessment team. While it is expected that the team will contact researchers at the Marine Research Institute, we would especially recommend contacting whale expert Dr. Gísli Víkingsson (gisli@hafro.is).

We also suggest that the team contact IceWhale, the Icelandic Whale Watching Association. Many IceWhale members have created a platform for marine biologists and university students conducting both short and long term studies. The main emphasis has been on photo identification but also dive time and habitat studies, as well as assessments of fishing impacts. Maria Björk Gunnarsdóttir, secretary of Elding, can be contacted at info@icewhale.is

Finally, Dr. Marianne Helene Rasmussen of the Húsavík Research Center/University of Iceland is an expert on marine mammal science. She can be reached at mhr@hi.is

Virginia Polonio

From: Jean Ragg
Sent: 09 June 2016 16:36
To: 'Kate O'Connell'
Subject: RE: MSC assessment of the ISF Iceland Capelin Fisheries

Dear Kate,

Thank you for your submission.

I have added you to our stakeholder list and forwarded your submission to the assessment team.

Kind Regards,
Jean

Kind Regards,
Jean Ragg

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Virginia Polonio

From: Virginia Polonio
Sent: 22 September 2016 17:22
To: 'kate.oconnell@balaena.org'
Subject: ISF Capelin Fishery-MSC Certification

Dear kate,

I am Virginia Polonio assessor form SAI Global and team leader of the assessment team of ISF Capelin Fishery.

I appreciated the email you sent to our administrator programme few months ago when the announcement of the fishery was done.

As we answered you, you were included as stakeholders in the fishery and the reason of this email is to advice you that all the references you submitted were consulted and as you proposed, a meeting with Maria Bjork was carried out and you will consulted in the report.

The personal meetings with Dr. Gisli Vikingsson, Charla Barsnan and Dr. Marianne Helene Rasmussen were not possible due to the schedule but information by email was shared.

All this data have been consulted during the scoring of this fishery and it could be consulted during the public consultation at the stage of the certification: "public comment draft report,(PCDR)
This report is expected to be posted on MSC website next November 2016. As stakeholder, an email will be sent to notify the publication of this report.

Please any question do not hesitate to contact me.

Kind regards,
Virginia Polonio, Ph.D
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13 Appendix 4 Surveillance Frequency

The fishery has a surveillance plan that it was determined by the CAB following the FCR 7.23.4. Table 15 and Table 16 show the level of surveillance settled by the CAB and the timing planned for the next surveillance.

Table 15. Timing of surveillance audit

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

The level of surveillance has been settled as ***level 4*** by the Cab due to the fishery comply with the FCR 7.24. No conditions are established and the ability to verify information remotely is possible. Icelandic fisheries have a transparent a clear system of management. The most of the data are available in different websites and the data can be obtained on request.

Table 16. Surveillance level rationale

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
1	**January 2018**	**May 2018**	Scientific advice to be released in May 2018, proposal to postpone audit to include last report of scientific advice and final TAC established for 2018/2019 after the winter survey.

14 Appendix 5 Objections Process

(REQUIRED FOR THE PCR IN ASSESSMENTS WHERE AN OBJECTION WAS RAISED AND ACCEPTED BY AN INDEPENDENT ADJUDICATOR)

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

(Reference: FCR 7.19.1)