Vottunarstofan Tún ehf.
Sustainable Fisheries Scheme

Marine Stewardship Council Fisheries Assessment

ISF Iceland Cod Fishery

Public Certification Report

Report on the 1st re-assessment of the fishery

Conformity Assessment Body: **Vottunarstofan Tún ehf.**
Client: **Iceland Sustainable Fisheries ehf.**

April 2017

April 2017

Assessment Team Members / Authors:
Paul A. H. Medley, Ph.D. Team Leader
Geir Hønneland, Ph.D.
Timothy Huntington, M.Sc.

Assessment Secretary:
Lovísa Ó. Guðmundsdóttir, M.Sc.

Conformity Assessment Body:
Vottunarstofan Tún ehf.
Þarabakki 3
IS-109 Reykjavík
Iceland
Tel.: +354 511 1330
E-mail: tun@tun.is

Client:
Iceland Sustainable Fisheries ehf.
Grandagarður 16
IS-110 Reykjavík
Iceland
Tel: +354 892 6628 & +354 840 6886
E-mail: info@isf.is

Contents

Glossary

ACOM	ICES´s Advisory Committee
ADCAM	Catch at age model
ASCOBANS	Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas
B_{lim}	Limit biomass reference point below which recruitment of stock is expected to be impaired
B_{loss}	A particular B_{lim} used by ICES based on the lowest past observed spawning stock biomass.
B_{MSY}	Biomass corresponding to the maximum sustainable yield (biological reference point); the peak value on a domed yield-per-recruit curve
$B_{trigger}$	The point when management intervention should be taken to avoid the stock falling below the limit reference point.
BIOICE	Benthic Invertebrates of Icelandic Waters programme
CAB	Conformity Assessment Body
CITES	The Convention on International Trade in Endangered Species of Wild Fauna and Flora
COC	Chain of Custody
CPUE	Catch per unit of effort
CR	MSC Certification Requirements
CV	Coefficient of Variation
DF	Directorate of Fisheries (Fiskistofa)
EEZ	Exclusive Economic Zone
ETP	Endangered, Threatened and Protected species
F	Fishing Mortality
FAO	Food and Agriculture Organization of the United Nations
FCR	MSC Fisheries Certification Requirements
GADGET	Globally applicable Area Disaggregated General Ecosystem Toolbox
GCR	Guidance to the MSC Certification Requirements
GT	Gross Tonnage
HCR	Harvest Control Rule
HR	Harvest ratio (Harvest rate)
IceAGE	Habitat mapping program by Iceland
ICES	International Council for the Exploration of the Seas
IPI stock	Inseparable or practically inseparable stocks
ISBF	Introduced Species Based Fisheries
ISF	Iceland Sustainable Fisheries ehf. (the Client)

ITQ	Individual Transferable Quota
IUCN	International Union for the Conservation of Nature
LRP	Limit Reference Point
LTL	LTL species: Low Trophic Level species
MFRI	Marine and Freshwater Research Institute (Hafrannsóknastofnun)
MII	Ministry of Industries and Innovation (Atvinnuvega- og nýsköpunarráðuneytið)
MRI	Marine Research Institute (Hafrannsóknastofnun)
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NAFO	North Atlantic Fisheries Organisation
NAMMCO	North Atlantic Marine Mammal Commission
NASS	North Atlantic Sightings Surveys programme
NEAFC	North East Atlantic Fisheries Commission
NGO	Non-governmental organisation
nm	Nautical miles
NPFC	North Pacific Fisheries Commission
NWWG	ICES´s North-Western Working Group
OSPAR	OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic
PCR	Public Certification Report
PI	Performance Indicator
PRI	Point of recruitment impairment (stock reference point)
PSA	Product Susceptibility Analysis
RBF	Risk Based Framework
SG	Scoring Guidepost
SI	Scoring Issue
SICA	Scale Intensity Consequence Analysis
t	tonnes
TAC	Total Allowable Catch
TRP	Target Reference Point
VME	Vulnerable Marine Ecosystem
VMS	Vessel monitoring system

1. Executive Summary

1.1 Scope of the Assessment

This report presents the results of the re-assessment of Atlantic cod (*Gadus morhua*) caught by bottom trawl, pelagic trawl, *Nephrops* trawl, Danish seine, gillnet, longline or handline within the Icelandic Exclusive Economic Zone (EEZ), North-east Atlantic, and ICES division 5.a.2 against the Marine Stewardship Council's (MSC) Principles and Criteria for Sustainable Fishing.

The report provides and account of the process followed by the assessment team during the stages of information gathering and the scoring of the fishery against the MSC Principles and Criteria for Sustainable Fishing. The report provides a qualitative description of the fishery. The report is not intended to follow standard editing norm of scientific journals, but intends to address the needs of both fisheries specialists and other interested parties e.g. consumers and/or other stakeholders. The report contains all the sections of the *Full Assessment Reporting Template* v2.0 appropriate to this re-assessment.

1.2 Assessment Team Members and Secretary

The assessment was conducted by a team of the following experts:

- Dr. Paul A.H. Medley: Team leader and expert responsible for Principle 1 issues;
- Timothy Huntington MSc: Expert assessor responsible for Principle 2 issues;
- Dr. Geir Hønneland: Expert assessor responsible for Principle 3 issues;
- Lovísa Ó. Guðmundsdóttir MSc: Assessment Secretary on behalf of Vottunarstofan Tún.

1.3 Outline of the Assessment

Full assessment of the ISF Iceland cod fishery was initiated in November 2010 and resulted in the fishery being certified in April 2012. The original assessment covered six different fishing methods: bottom trawl, Danish seine, pelagic trawl, handline, longline and gillnets. The client requested the seventh gear to be added during this re-assessment, the *Nephrops* trawl. The assessment of cod fishery was undertaken at the same time as the ISF Iceland haddock fishery since the gears, the management and the fishery operations are the same. Site visits and stakeholder consultations were conducted in May 2016. Data used in the assessment was gathered by reviewing publicly available reports and scientific journals, and from interviews with representatives of the Client and several stakeholders. The assessment team met to score the fishery against MSC principles. Four conditions were raised and put to the Client who subsequently submitted a plan of action to address those over the period of potential certification.

Preliminary Draft Report, including Client Action Plan, approved by the assessment team, was submitted for Client review in early October. Peer Review Draft Report was then submitted for peer review in November 2016. The review and responses were completed in December 2016 and the Public Comment Draft Report (PCDR) was released in early January 2017.

Comments were received on the PCDR from BirdLife International and Fuglavernd Íslands, as well as from the MSC. The comments prompted some changes to the conditions and recommendations and therefore also to the action planned by the Client. These comments together with the assessment team´s responses are published in Appendix 3 of this report. A Final Report and Determination were approved by the assessment team in the middle of March 2017. Public certification report was submitted to the certification committee 11th April 2017 for final decision.

1.4 Main Strengths and Weaknesses of the Assessed Fishery

Strengths:

- There is a strong management system for the target species consisting of an annual assessment and TAC setting. The system is reviewed, well-justified based on good quality data and is demonstrably achieving its objectives.
- There is good enforcement and compliance with regulations. Monitoring and surveillance is relatively complete for the Icelandic fleets. There is a good system to evaluate and report on weaknesses.
- The fishing industry is well integrated into the management system, which has resulted in strong support from fishers and processors. There is strong support for catch limitations and the industry has made considerable progress in adding value to landings, reducing the amount of waste product and discards.
- There is a high level of transparency throughout most of the management system. This is particularly apparent in stocks such as cod and haddock, which are evaluated through ICES.

Weaknesses:

Although single species management is very good, the Icelandic system is less strong on wider ecosystem management:

- There is no local designation of ETP species, and no risk assessment has been conducted to assess the potential impact on species known to interact with the fisheries.
- Some species may be at risk of unsustainable fishing mortality, now or in the future. It was not possible to show that common guillemot and harbour seals are not significantly affected by gillnet fishing operations.
- Although vulnerable habitats such as deepwater corals are protected, there is a need to address the impact of the fishery, in particular from bottom trawls, on large areas of sponge aggregations or "ostur" and to evaluate the need for implementing protective measures. Mapping of benthic habitats has recently been given new impetus, but will take a considerable time to complete.

1.5 Overall Conclusion

The ISF Iceland cod fishery reaches the minimum aggregate score of 80 for each of the three Principles and the minimum of 60 for each Performance Indicator. However, one gear (gillnet) fails to reach a score of 80 on three Performance Indicators, two gears (bottom trawl and longline) fail on two Performance Indicators and a third gear (*Nephrops* trawl) fails on one Performance Indicator, all of which prompt the setting of conditions.

The average weighted scores for each of the three Principles were as follows:

Principle		***Score***
Principle 1 – Target Species		95,0
Principle 2 – Ecosystem	Bottom Trawl (TB)	89.7
	Danish Seine (SD)	91.3
	Gillnet (GN)	86.0
	Handline (LH)	93.0
	Longline (LL)	87.3
	Nephrops Trawl (TN)	90.3
	Pelagic Trawl (TP)	93.0
Principle 3 – Management System		96.3

Five Performance Indicators failed to reach the minimum score of 80:

- PI 2.2.1 – Secondary Species Outcome: Gillnet 75
- PI 2.2.2 – Secondary Species Management: Gillnet 65
- PI 2.3.3 – Secondary species information: Gillnet & longline 60
- PI 2.4.1 – Habitats Outcome: Bottom Trawl 70
- PI 2.4.2 – Habitats Management: Bottom Trawl & *Nephrops* Trawl 75

1.6 Determination, Conditions and Recommendations

The assessment team recommends that the ISF Iceland cod fishery is granted certification against the MSC Fisheries Standard as a well-managed and sustainable fishery.

Handline, Danish seine and pelagic trawl have no conditions. For gillnet, longline, bottom trawl and *Nephrops* trawl, the above determination is made provided the following five conditions are sufficiently addressed in a plan of action submitted by the Client (see also section 6 and Appendix 1.3):

Gillnet

Condition 1 (PI 2.2.1)
Harbour seal must be shown highly likely to be above biologically based limits or there is evidence of recovery or a demonstrably effective partial strategy must be put in place for gillnet such that the UoA does not hinder its recovery and rebuilding.

Gillnet and longline

Condition 2 (PI 2.2.2)
A demonstrably effective partial strategy should be put in place such that the (gillnet) UoA does not hinder recovery and rebuilding of the harbour seal.

A demonstrably effective partial strategy should also be put in place for the gillnet and longlines fisheries to ensure that fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot populations are maintained at levels which are highly likely to be within biologically based limits.

These strategies should include a regular review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.

Bottom Trawl

Condition 3 (PI 2.4.1)

By the fourth surveillance audit necessary conservation and management measures for all vulnerable marine habitats shall be in place and implemented, such that the trawl fishery does not cause serious or irreversible harm to habitat structure, on a regional or bioregional basis, and function.

This condition is harmonized with that for ISF Iceland haddock, ISF Iceland golden redfish and the ISF Iceland saithe & ling fisheries.

Bottom Trawl and *Nephrops* Trawl

Condition 4 (PI 2.4.2)

By the fourth surveillance audit necessary conservation and management measures for deep-sea sponge aggregation and coral gardens shall be in place and implemented, such that there is a partial strategy in place and implemented for these habitat types specifically, ensuring that the bottom and *Nephrops* trawl fisheries do not cause serious or irreversible harm to habitat structure and function in Icelandic waters. This strategy will include, where necessary, appropriate move-on measures to avoid interactions will ALL forms of VME. This condition may be implemented together with Condition 3.

With regard to the bottom trawl fishery, this condition is harmonised with that for ISF Iceland haddock, ISF Iceland golden redfish and the ISF Iceland saithe & ling fisheries.

Gillnet and longline

Condition 5 (PI 2.2.3)

By the second surveillance audit electronic logbook reporting provides some quantitative information on of seabird bycatch that is both available and adequate to assess the impact of the UoA on main secondary species with respect to their status.

Two recommendations are made. Recommendation 1 applies to all gears except in the gillnet and longline UoAs (where this issue is covered in Condition 5) while recommendation 2 applies to all gear:

Recommendation 1 (PI 2.2.3)

The returns from electronic logbooks should be assessed by MRI on a regular basis and compared to survey and ad hoc observer data. Where disparities are determined, efforts should be made to improve accurate logbook returns for the catch of seabird and marine mammals. This recommendation applies to all gears except gillnet and longline (where this issue is covered in Condition 5).

Recommendation 2 (Traceability)

The team requests that the client issues a reminder to all of the client members, as well as auctions, to observe the following:

- to ensure full segregation of catch of each species by gear in the event more than one gear is applied during the same fishing trip;
- to ensure full segregation of catch of each species by management region, i.e. fish caught inside the Icelandic EEZ is kept separate, in the event a vessel catches the same species on the same trip inside and outside the Icelandic EEZ – and –
- to observe and implement appropriate measures of packing and labelling certified products prior to moving them to sub-contracting cooler or freezer storages upon landing, to ensure client members´ responsibility for product integrity prior to sale or further handling.

2 Authorship and Peer Reviewers

2.1 Team Members and Assessment Secretary

Dr. Paul A.H. Medley, team leader. Primarily responsible for Principle 1

Dr. Paul Medley is an independent fisheries consultant, based in the UK. His expertise includes mathematical modelling of fisheries and ecological systems, techniques for multispecies stock assessment and external review of stock assessment methodologies. He has been an invited expert for a number of stock assessment working group meetings. He has a wide practical experience in marine biology, including design and implementation of surveys and fisheries experiments. This includes addressing wider environmental issues of ecological management, including maintenance of marine biodiversity. He has taken part in several MSC fishery assessments and has worked with MSC on new methodology developments. Dr. Medley has a university degree (Ph.D.) in fisheries science, he has over five years´ experience in the fisheries sector related to the tasks under his responsibility, and has passed MSC team leader training.

Tim Huntington, M.Sc., team member. Primarily responsible for Principle 2

Tim Huntington is a fisheries biologist with over 30 years' industry and consulting experience. He has worked in capture fisheries and aquaculture in over 60 countries worldwide. Following a number of industry and consulting posts, he has specialised in promoting sustainability in fisheries and aquaculture. He has worked extensively with the MSC responsible fisheries programme, including leading pre-assessments, full assessments as well as chain of custody audits for a number of certification bodies. Tim Huntington has a university degree (M.Sc.) in Applied Fish Biology, has over five years' experience in the fisheries sector related to the tasks under his responsibility and has passed MSC team member training.

Dr. Geir Hønneland, team member. Primarily responsible for Principle 3

Dr. Geir Hønneland is Director at the Fridtjof Nansen Institute in Oslo, Norway, and adjunct professor at the University of Tromsø, Norway. He has a wide range of evaluation and consultancy experience, e.g. for the FAO and OECD, relating to responsible fisheries management. He has been involved in MSC assessments since 2009, covering cod, blue whiting, haddock, herring, mackerel and shrimp fisheries in the Northeast Atlantic and krill in the Southern Ocean. Dr. Hønneland has a university degree (Ph.D.) in political science and has studied international fisheries management, international environmental politics and international Arctic politics. He has over five years' experience in the fisheries sector related to the tasks under his responsibility, and has passes MSC team member training.

Lovísa Ó. Guðmundsdóttir, M.Sc. Assessment Secretary

Lovísa Ó. Guðmundsdóttir is an assessment coordinator for Tún's fisheries certification program. Ms. Guðmundsdóttir has a university degree (M.Sc.) in fisheries biology, has passed the MSC online training seminar, and has participated in several of Tún´s assessment works as an observer and as an assessment secretary.

RBF was not used in this assessment. Further details of the team members and assessment secretary can be obtained from Tún and from downloading the announcement of the assessment: https://fisheries.msc.org/en/fisheries/isf-iceland-cod/@@assessments.

2.2 Peer Reviewers

The following experts were confirmed as peer reviewers of this assessment report.

Robert O'Boyle M.Sc.

Robert O'Boyle received his B.Sc. and M.Sc. from McGill and Guelph Universities in 1972 and 1975 respectively. He was with Canada's Department of Fisheries and Oceans (DFO) at the Bedford Institute of Oceanography (BIO) in Dartmouth, Nova Scotia during 1977 - 2007. During this time, he conducted assessments of the region's fish resources (e.g. herring, capelin, cod, haddock, pollock, flatfishes, sharks). He headed the Marine Fish Division, with responsibility for the research programs and assessment-related activities of over 80 scientific and support staff. He subsequently coordinated the regional science advisory process for fisheries resources and ocean uses and as Associate Director of Science, managed science programs at the regional and national level. He has been involved in a number of national and international reviews, ranging from resource assessment and management to science programs. He is currently president of Beta Scientific Consulting Inc. (betasci.ca) which provides technical review, analyses and assessment of ocean resources and their management. Projects have included analyses and assessments of forage species (e.g. Atlantic Herring, Gulf and Atlantic Menhaden), deepwater species (e.g. Scotian Shelf Cusk) and endangered species (e.g. Atlantic Leatherback Turtles). He has been and is currently the principle one or two expert for a number of MSC certifications (e.g. BC Dogfish, Nova Scotia, US and Australian Swordfish, Barents Sea Cod, Haddock, and Saithe, North Sea and Baltic Sea Haddock and Danish Plaice, Deepwater Black Scabbardfish, Blue Ling, and Roundnose Grenadier, Russian Pollack and US West Coast groundfish) and is a member of the MSC's Peer Review College. He has been the chair and / or reviewer of numerous stock assessments and has prepared special reports on ocean management issues for government, industry and NGO groups. He was a member of the Scientific and Statistical Committee of the New England Fisheries Management Council during 2008-2016. He pursues research related to resource and ocean management and assessment and has published over 100 primary papers, special publications and technical reports. Recent projects include the impact of climate change on New England groundfish assessments, the trophic dynamics of the Eastern Scotian Shelf ecosystem, the impact of fish migrations on assessed fishery selectivity patterns, risk analysis in data poor assessments and the interaction of cod and grey seals in the Northwest Atlantic.

Jose Peiro Crespo, M.Sc.

Jose Peiro Crespo is a fishery biologist with postgraduate studies in Development Cooperation and Sustainable Management. He has overall responsibility for the planning, design, execution and monitoring of all the projects at Naunet Fisheries Consultants, a marine consultancy firm based in the UK. His principal area of expertise is in relation to both artisanal and commercial fisheries and rural aquaculture. He is currently working for some NGO's conducting fisheries assessments and developing initiatives to improve living conditions in fishing communities in the South of Europe and the North of Africa. Jose has more than 8 years of experience working in a wide range of projects associated with marine biodiversity and the sustainable use of living aquatic resources. Before becoming independent, he worked as a fisheries scientist in a British marine consultancy specialized in assessing the impact of offshore wind farms on fishing resources. Before that he also worked as a marine biologist and fisheries researcher in two marine scientific centres in Portugal. His work focused mainly on collecting fishing data and developing environmental education programs in the area. As well as having worked as a researcher, Jose completed many trips on commercial fishing vessels in the capacity of scientific observer in the NAFO area, West coast of Africa and the Iberian coast. He worked aboard a broad range of fishing vessels including trawlers, long-liners and other small-scale vessels. Jose has also experience on finfish and shellfish aquaculture that he gained working in the Amazonian basin and as a quality supervisor in fish farms in Spain. Jose has worked in

fisheries and aquaculture projects in Morocco, Mauritania, Senegal, Ghana, Cape Verde, Sao Tome e Principe, Peru and several European countries. Jose has recently participated in MSC fishery assessments both as an assessor and as a peer reviewer.

3 Description of the Fishery

3.1 Unit(s) of Assessment (UoA) and Proposed Scope of Certification

3.1.1 Units of Assessment and Proposed Units of Certification (UoC)

The assessment applies to all Atlantic cod (*Gadus morhua*) caught by bottom trawl, pelagic trawl, *Nephrops* trawl, Danish Seine, gillnet, longline, and handline from the Icelandic stock (ICES Division 5.a) by vessels licenced to operate within the Icelandic EEZ. These fisheries, including the Faroese vessels, operate within the same jurisdiction under the same management system and are subject to the same coherent controls and monitoring. Within the gear categories, the fisheries are homogeneous in operation and culture and supply to a common chain of custody, with all catches and landings in Iceland and abroad being monitored and recorded by the Directorate of Fisheries. Finally, the UoAs together form an almost complete set of commercial fisheries operating in the region so that cumulative impacts (e.g. combined impacts of MSC UoAs) need not be considered separately.

Table 1: Unit(s) of Assessment and proposed Unit(s) of Certification

Units of Assessment (7)	
Fish stock	Cod (*Gadus morhua)* in ICES subarea 5.a
Location of Fishery	FAO Statistical Area 27 / ICES 5.a; Icelandic Exclusive Economic Zone
Management	Ministry of Industries and Innovation
Fishing Methods	Bottom trawl, Danish seine, Gillnet, Handline, Longline, *Nephrops* trawl, Pelagic trawl.
Fishery Practices	All registered vessels that carry valid permits for fishing within the Icelandic Exclusive Economic Zone issued by the Icelandic Directorate of Fisheries, including vessels fishing and operating in Icelandic waters under the terms of bilateral agreement between Iceland and the Faroe Islands.
Rationale for choosing the UoA	The Units of Assessment include all vessels, operating bottom trawl, pelagic trawl, *Nephrops* trawl, gillnet, Danish seine, longline and handline that fish cod in Icelandic waters.
Proposed Units of Certification (7)	
Fish stock	Cod (*Gadus morhua)* in ICES subarea 5.a
Location of Fishery	FAO Statistical Area 27 / ICES 5.a; Icelandic Exclusive Economic Zone
Management	Ministry of Industries and Innovation
Fishing Methods	Bottom trawl, Danish seine, Gillnet, Handline, Longline, *Nephrops* trawl, Pelagic trawl.
Fishery Practices	All registered vessels that carry valid permits for fishing within the Icelandic Exclusive Economic Zone issued by the Icelandic Directorate of Fisheries, and that fish, supply and/or sell cod to Iceland Sustainable Fisheries ehf. and/or its authenticated certificate sharers.
Eligible Fishers	Any new entry to the group of registered vessels targeting the cod stock and/or that are incidentally catching cod in other MSC certified fisheries within Icelandic jurisdiction.

Faroese vessels only differ from Icelandic vessels in their flag state. Faroese vessels form part of this unit of assessment. Because they use the same gear and operate within the Iceland jurisdiction to

catch Iceland cod under the same regulations, controls, monitoring and surveillance programme, it was decided that they need no separate treatment. The flag state should have no implications in this case. The CAB will be notified of all vessels within certificate and the list will be maintained in the public domain.

The ISF Iceland cod fishery is within the scope of the MSC standard. The CAB confirmed the following:

- The fishery does not target amphibians, birds, reptiles, or mammals and does not use poisons or explosives.
- The fishery is subject to Icelandic jurisdiction and is not conducted under a controversial unilateral exemption to an international agreement.
- No entity within the client group has been successfully prosecuted for violations against forced labour laws.
- There are mechanisms for resolving disputes through negotiation, the Directorate of Fisheries, the Ministry of Industries and Innovation, the Icelandic courts, and ultimately the Council of Europe court. Disputes are not common within the fishery.
- The fishery is neither an enhanced nor introduced species based fishery (ISBF) (see FCR 7.4.3 and 7.4.4).
- There are no inseparable or practically inseparable (IPI) species caught in the fishery.
- The CAB reviewed previous assessment and surveillance reports and other available information to determine the units of assessment required.
- The ISF Iceland cod fishery has not failed an assessment within the last two years.
- The client has confirmed willingness to share its certificate.
- The fishery has elements overlapping with other certified fisheries within the Icelandic EEZ. These fisheries are ISF Iceland haddock, ISF Iceland saithe and ling, ISF Iceland golden redfish, as well as Icelandic gillnet lumpfish and ISF Norwegian and Icelandic herring trawl and seine.

3.1.2 Final Units of Certification

The UoC at the time of certification and other eligible fishers are unchanged from the proposed UoC described in section 3.1.1.

Units of Certification	
Fish stock	Cod (*Gadus morhua)* in ICES subarea 5.a
Location of Fishery	FAO Statistical Area 27 / ICES 5.a; Icelandic Exclusive Economic Zone
Management	Ministry of Industries and Innovation
Fishing Methods	**1. Bottom trawl** **2. Danish seine** **3. Gillnet** **4. Handline** **5. Longline** **6. *Nephrops* trawl** 7. **Pelagic trawl**.
Fishery Practices	All registered vessels that carry valid permits for fishing within the Icelandic Exclusive Economic Zone issued by the Icelandic Directorate of Fisheries, and that fish, supply and/or sell cod to Iceland Sustainable Fisheries ehf. and/or its authenticated certificate sharers.
Eligible Fishers	Any new entry to the group of registered vessels targeting the cod stock and/or that are incidentally catching cod in other MSC certified fisheries within Icelandic jurisdiction.

3.1.3 Total Allowable Catch (TAC) and Catch Data

Table 2: TAC and Catch Data for cod.

TAC	**Year**	2015/2016	Amount	244,000 t
UoA share of TAC	**Year**	2015/2016	Amount	244,000 t
UoC share of total TAC	**Year**	2015/2016	Amount	244,000 t
Total green weight catch by UoC	**Year (most recent)**	2014/2015	Amount Bottom trawl: Pelagic trawl: Danish seine: *Nephrops* trawl: Gillnet: Longline: Handline:	 111,282 t 2 t 10,842 t 2,120 t 19,670 t 77,411 t 13,273 t
	Year (second most recent)	2013/2014	Amount Bottom trawl: Pelagic trawl: Danish seine: *Nephrops* trawl: Gillnet: Longline: Handline:	 114,344 t 20 t 10,562 t 1,857 t 18,750 t 78,631 t 16,073 t

3.2 Overview of the fishery

Cod is taken as part of a multispecies demersal fishery. Demersal fisheries have a long history in Iceland, but mechanisation began with the first trawler in Iceland arriving in 1905, replacing the decked sailboats. During much of the 20th century, British and German vessels dominated the foreign demersal fisheries and Norwegian vessels the pelagic fisheries. However, most foreign fleets were excluded from Icelandic waters as the exclusive economic zone was extended from 4 miles in 1952 to 200 miles in 1975. Foreign vessels continue to operate under licence, but take a very small proportion of the cod catch.

Total fishery catches in Icelandic waters increased from roughly 200 000t prior to the First World War, to about 700 000t between the wars, to 1.5 million t after the Second World War. Catches then declined again primarily because of the collapse of the herring stocks. Production increased again in the late 1970s and has fluctuated between 1 and 2 million tonnes per year since. These fluctuations are explained by the volatile changes in the size of the capelin stock, which makes up roughly half of the total recent catch. Cod landings have declined fairly consistently from 1955, but have stabilized since mid-1990s (Figure 1).

Fish are mostly caught by hook, gillnet, purse seine or trawl, but there have been significant advances in mechanisation and computerisation of methods, improving selectivity and efficiency. Most vessels operate in mixed fisheries and fishing is generally seasonal, with vessels changing gear and targeting different stocks through a typical year as they try to catch their quotas. For example, purse seiners catch capelin during part of the year, herring in other seasons and sometimes trawl for shrimp during other parts of the year. Many of the smaller shrimp boats switch seasonally between Danish seine, gillnet, shrimp trawl and longline. Large trawlers may fish for cod or haddock in one season, Greenland halibut in another, redfish the third and then go for cod or shrimp in distant waters.

Historically the landings of bottom trawlers contributed the largest portion of the total catches, in some years prior to 1990 reaching 60% of the total landings. In the 1990s the landings from bottom trawlers declined significantly within a period of 5 years, and have been just above 40% of the total landings in the last decade. The share of longline catch has tripled over the last 20 years and is now

on a par with bottom trawl. The share of gillnets has declined over the same time period and is now only half of what it was in the 1980s.

The Icelandic fleet has been constantly modernized for improved efficiency, working conditions and safety. In 2011 there were 1625 vessels in the Icelandic fishing fleet, including 833 small undecked boats, 764 decked vessels and 58 trawlers (Table 3). The total capacity was close to 160 000 in gross tonnage (GT) declining from 180 000 GT in 1999.

The most important fleets in Iceland are:

- Large and small trawlers using demersal trawl. This fleet is the most important one fishing cod, haddock, saithe, and redfish, and operates year around mostly outside 12 nautical miles.
- Boats (< 300 GT) using gillnet. These boats are mostly targeting cod but haddock and a number of other species are also targeted. This fleet is mostly operating close to the shore.
- Boats using longlines. These boats are both small boats (< 10 GT) operating in shallow waters as well as much larger vessels operating in deeper waters. Cod and haddock are the main target species of this fleet.
- Boats using jiggers. These are small boats (<10 GT). Cod is the most important target species of this fleet with saithe of secondary importance.
- Boats using Danish seine. (20—300 GT) Cod, haddock and variety of flatfishes, e.g. plaice, dab, lemon sole and witch are the target species of this fleet.

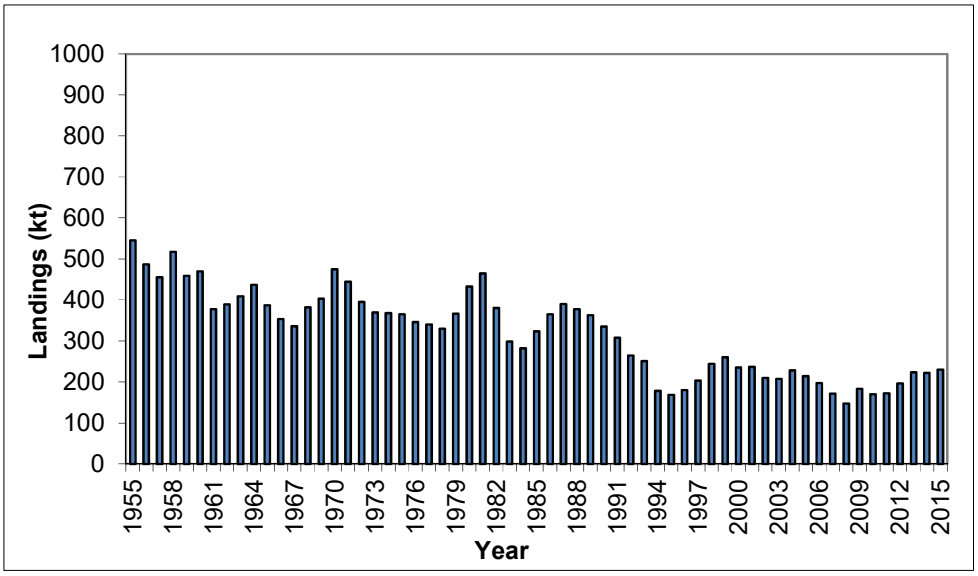


Figure 1: Landings of Iceland cod in kilotonnes.

Table 3: Total number of vessels within each broad fleet category in 2010. All vessels may vary operations and gears throughout the year.

Type	***Number of vessels***	***Gear type used***
Trawlers	57	Pelagic and bottom trawl
Vessels > 100 t	140	Purse seine, longline, trawl, gillnet
Vessels < 100 t	621	Gillnet, longline, Danish seine, trawl, jiggers
Open boats	807	Jiggers, longliners (including recreational fishers)
Total	**1625**	

3.3 Principle One: Target Species Background

3.3.1 Fishery Resources

Atlantic cod (*Gadus morhua*) live in the temperate waters throughout the North Atlantic (www.fishbase.org). There are several stocks in the North Atlantic; this assessment concerns the Icelandic stock only. The Icelandic cod stock is distributed all around Iceland, and in the assessment landings of cod within Icelandic EEZ waters it is assumed to be a single homogeneous unit (ICES 2016b).

Atlantic cod occupy varied habitat on the continental shelf, favouring rough ground, especially inshore. Juveniles prefer shallow (less than 30m depth) sublittoral waters with complex habitats, such as seagrass beds, areas with gravel, rocks, or boulder. Adults are usually found in deeper, colder waters. Although cod may be found down to 600m, most catches occur above 100m.

Cod are gregarious and form schools. During the day, form schools and swim about 30-80 m above the bottom, dispersing at night to feed. Shoaling will make cod more catchable. Shoaling also tends to be a feature of the spawning season. Egg development lasts about 14 days and the pelagic larval phase lasts around 3 months before settlement. Fecundity ranges from 2 to 9 million eggs, dependent on the size of the female.

Cod occupy a high trophic level (around 4). They feed mostly at dawn or dusk on invertebrates and fish, including young cod. In Iceland, the cod population is affected by the availability of capelin, which is a major prey species. Cod is not a key low tropic level species (FCR Annex SA 2.2.9).

The current hypothesis for Iceland cod is that pelagic eggs and larvae from the main spawning grounds off the southwest coast drift clockwise northwards and eastward along the island to the main nursery grounds off the north coast (ICES 2015a). A larval drift to Greenland waters has been recorded in some years and substantial immigrations of mature cod from Greenland which are considered to be of Icelandic origin have been observed in some periods. This pattern was considered to be common before 1970, when conditions in Greenland waters were favourable for cod. Such immigrations have been estimated in the assessment from anomalies in the catch-at-age matrix with timing and age of such events being based on expert judgement using external information. This was last observed in the 1984 year class in 1990, the number estimated being around 30 million. The influence of this immigration on the current biomass estimate is minimal.

The mature stock migrates from the spawning grounds to feeding grounds both to deeper waters in the northwest and southeast or within the shallow water realm of the continental shelf proper. Migrations greater than 200km are rare. In Iceland, spawning takes place in late winter mainly off the southwest coast but smaller, variable regional spawning components have also been observed all around Iceland.

Otherwise, extensive tagging experiments indicate that significant emigration of adult cod from Iceland to other areas may be rare. In recent years it has been observed that cod tagged in Iceland have been recaptured inside Faroese waters on the Faroese ridge proper. There may also be some exchange of cod across the Denmark Strait.

3.3.2 Status of the stock

The current state of the stock is provided in the annual advice (ICES 2016a) and the relevant working group report (ICES 2016b). Information from these sources is summarised here.

The results from the assessment show that the spawning stock in 2016 is estimated at 464 kilotonnes (kt). The values estimated in recent years are higher than has been observed over the last five decades (Figure 2). The reference biomass ($B_{4+,2016}$) is estimated to be 1243 kt, and has not been so high since the late 1970s (Figure 3). Fishing mortality, being 0.27 yr^{-1} in 2015, has declined significantly in recent years and is currently the lowest observed in the last six decades (Figure 4). Year classes since the mid-1980s are estimated to be relatively stable but with the mean around the

lower values observed in the period 1955 to 1985. The first indication of year classes 2014 and 2015 indicate that they may be larger than that observed in the recent decades.

The total biomass indices from the spring (SMB) and the fall (SMH) surveys indicate that the stock biomass has been increasing substantially in recent years and is in the last 5 years among highest since the start of the spring survey in 1985. The increase in biomass is most pronounced in larger fish.

Mean weight at age in the stock and the catches that were at the lowest recorded in 2006–8 have been increasing in recent years and are now around the long term mean. Spring survey weights in some of the important age groups have, however, declined in 2016 compared with 2015. Catch weights are hence estimated to be lower in 2016 compared to 2015.

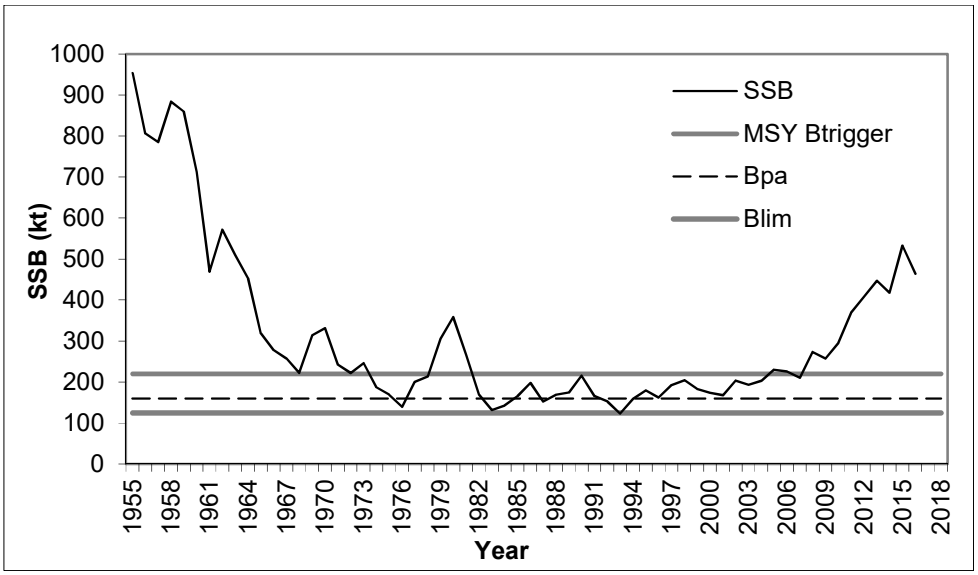


Figure 2: Spawning stock biomass (SSB) relative to trigger and limit reference points from the 2016 stock assessment.

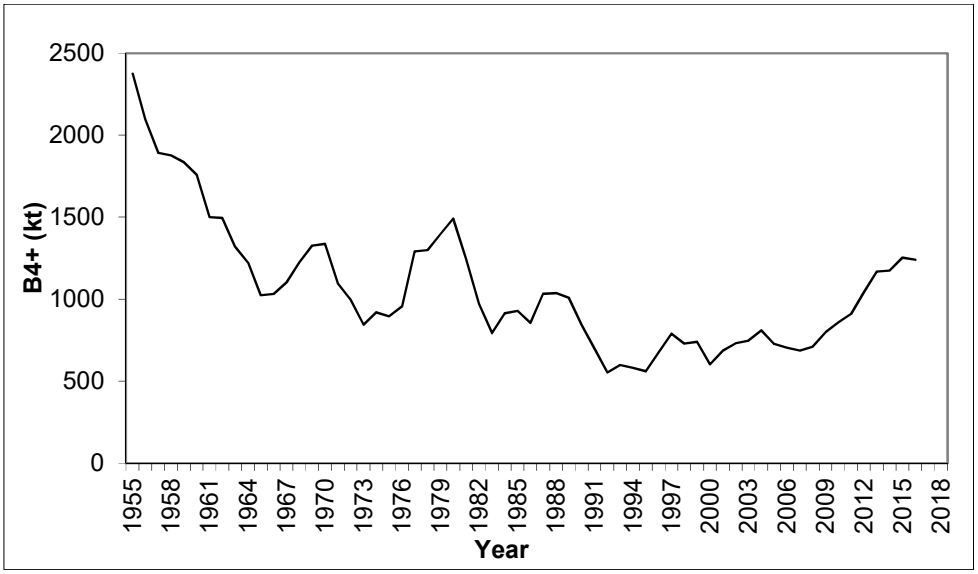


Figure 3: Biomass of 4+ year olds (B_{4+}) from the 2016 stock assessment, used as the reference biomass for TAC calculation.

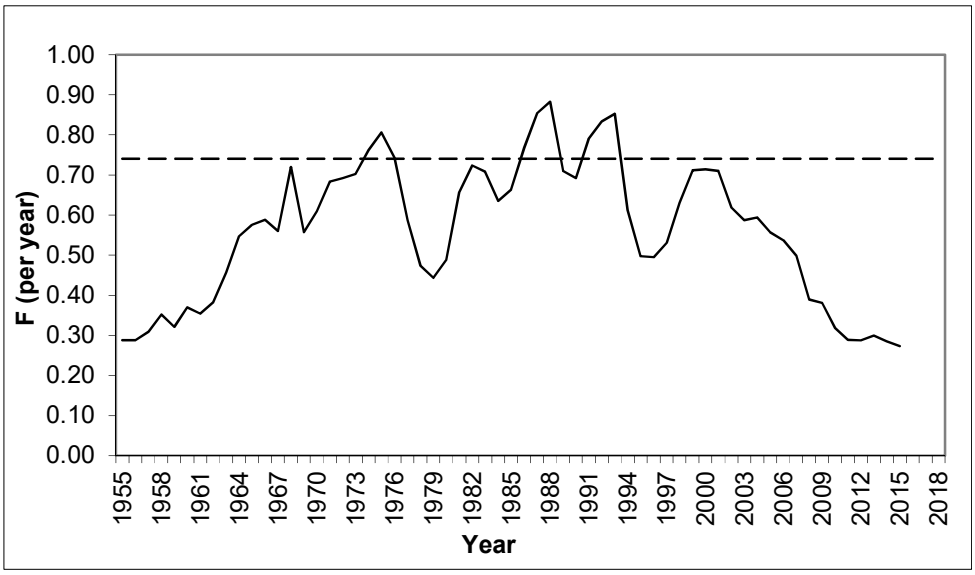


Figure 4: Fishing mortality relative to F_{lim} (dotted line) from the 2016 stock assessment.

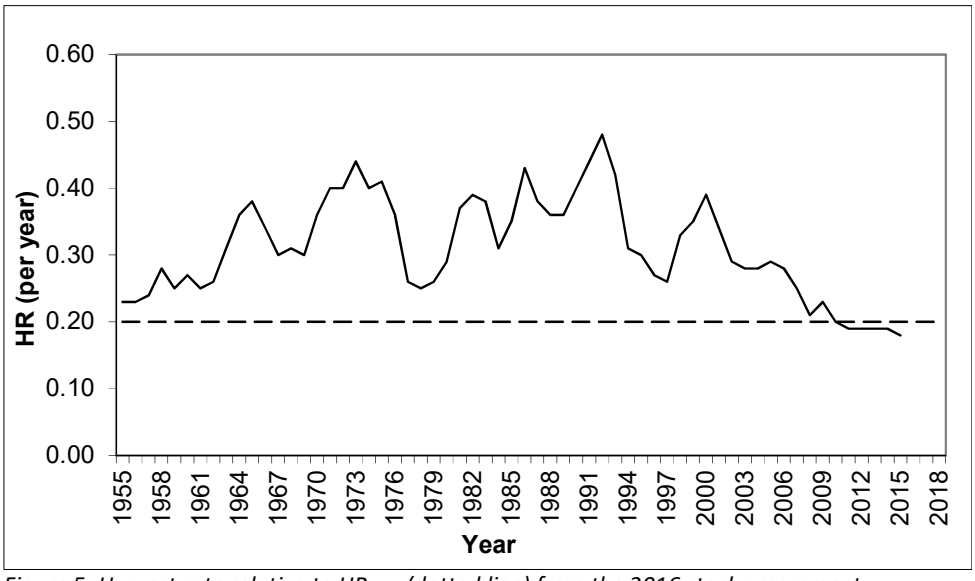


Figure 5: Harvest rate relative to HR_{MGT} (dotted line) from the 2016 stock assessment.

3.3.3 Harvest Strategy and Harvest Control Rule

The harvest strategy combines a detailed monitoring program, annual stock assessments reviewed through the expert ICES working group system, an appropriate harvest control rule that sets the TAC as well as several other measures to limit exploitation to sustainable levels. The Marine Research Institute (MRI, now MFRI) conducts the stock assessment which is reviewed through ICES North-Western Working Group (NWWG) (ICES 2015a,b; ICES 2016b). The scientific advice is ultimately provided by ICES (ICES 2016a).

The decision on the TAC each year is based on an analytical stock assessment carried out each year. Outputs from the analytical stock assessment (harvest rate, SSB and biomass of 4+ year old fish) are used in the HCR to calculate the TAC according to the management plan.

A formal HCR has been in place since 1994, but has gone through amendments and revisions. The last significant change occurred in 2007, when the harvest rate multiplier upon which the TAC for

the next fishing season is based was changed from 0.25 to 0.20 of the reference biomass (B_{4+} - biomass of fish age 4 years and older) as estimated at the beginning of the assessment year.

The HCR upon which the TAC is set when the SSB in the assessment year is estimated to be above $SSB_{trigger}$ (220 kt) is as follows:

$$TAC_{y/y+1} = (\ \min(SSB_y/SSB_{trigger}, 1) * 0.20 * B_{4+,y} + TAC_{y-1/y})/2$$

This is a simple moving average calculation calculated as the mean of a harvest ratio of 20% of the exploitable biomass and the previous TAC. Where the SSB is estimated to be below $SSB_{trigger}$ = 220 kt, the 0.20 multiplier is reduced linearly. The $B_{4+,}$ refers to the reference biomass (4 years and older) in the beginning of the assessment year (y). The advice for the 2016/2017 fishing season is:

$$TAC_{2016/2017} = (0.20*1241+239)/2 = 244$$

The current rule has been in place since the 2007/2008 fishing season and was formally evaluated by ICES in 2009. The evaluation showed that using the 0.20 multiplier (HR_{MSY}) would result in the long term maximum sustainable yield, while ensuring there is a low probability that the stock would go below the $SSB_{trigger}$ and very low probability that the stock would go below B_{lim} = B_{loss} = 125 kt (formally set in 2010). The results were robust to numerous stock-recruitment scenarios tested, including assumption that future maximum mean recruitment would be around the mean observed since 1985. ICES concluded that this HCR was consistent with the ICES Precautionary Approach and MSY approach. Implementation of the HCR has resulted in a harvest rate estimated to have been slightly below its target level (Figure 5).

Assessment errors (Coefficient of Variation $(CV) = 0.15$, autocorrelation $(\rho) = 0.45$) were included in the HCR evaluations. These errors were estimated from empirical retrospective pattern in the estimates of the reference biomass since the earliest available assessment in the 1970s. The estimated CV of the spawning stock in the assessment year is around 0.08. The CV of the fishing mortality in the year before the assessment year is around 0.06. These are probably underestimates of the uncertainty. These were used as the basis for defining precautionary reference points based on the 95 percentile log-normal probability above the SSB limit reference point.

The limit reference point for fishing mortality was derived as the long term fishing mortality that would produce B_{lim} based on the HCR simulations. The F_{pa} was derived based on the log-normal probability using the same process as for biomass. This produced an estimate equivalent to a harvest rate of 30%, significantly higher than the management plan target harvest rate of 20%.

The landings, compared to the catch defined by the harvest control rule, show an overshoot of around 8%. This can be largely attributed to various socio-economic causes. A system is in place that that should reduce overshoots, including temporary and permanent transferring of TAC, but the effect is not yet visible. Stock assessments have nevertheless shown that the HCR is meeting its target harvest ratio (Figure 5). One difficulty for hitting the target TAC is the policy to also minimise discarding.

Management measures that reduce discarding have been in place since 1991. A 5% overshoot of individual vessel quota in one fishing year is permitted, with the consequences that the vessels ITQ in the next year being reduced equivalently. In addition, up to 20% of the quota in one year can be transferred to the next fishing year, without penalty. A quota leasing market is also in place, where individual vessel can lease quota from other vessel owners on a temporary basis. The system operates in real time, meaning that if overshoot of catch of a particular species occurs during a trip, the captain can at least in theory lease quota prior to landing. The system is however somewhat limited to the supply relative demand at any particular time. There is also some allowance for individual vessels for changing quota from one species to another, although this particular measure does not apply to cod.

A system of instant area closure has been in place since the 1970s. The aim of the system is to minimize fishing on smaller fish. For cod, an area is closed temporarily (for three weeks) for fishing if

on-board inspections reveal that more than 25% of the catch is composed of fish less than 55 cm in length. No minimum landing size of any fish species exist in Icelandic waters. The minimum allowable mesh size is 135 mm in the trawl fisheries, with the exception of targeted shrimp fisheries in waters north of the island.

3.3.4 Data and Stock Assessment

The data used for assessing Icelandic cod consist of landings, catch-at-age composition and indices from standardized bottom trawl surveys. The reference biomass (B_{4+}) upon which the TAC in the fishing year is set (based on the HCR) is derived from population numbers and catch weights in the beginning of the assessment year.

The data are primarily obtained from landings reports, vessel register information, log-book, discard and survey databases. Landings of species by each boat and gear are effectively available electronically in real time (end of each landing day). Log-book statistics are generally available in a centralized database about 1 month after the day of fishing operation. Since 2009, an increasing proportion of vessels are using electronic logbooks. The sampling programs are based on log books, surveys, landings and at-sea sampling. The protocols for sampling are well defined and based on good statistical principles.

Landings of Icelandic cod in 2015 are estimated to have been 230 kt of which 228 kt where taken by Icelandic fleet and 2 kt by foreign fleets. Landings data 2001-2015 were revised in 2016. Changes in landings in last two decades have reflected changes in the TAC that is set for the fishing year (1 September to 31 August). Catch for the fishing year 2014/2015 resulted in an approximate 2% overshoot of the TAC.

Mean annual discard of cod over the period 2001–2012 is around 1% of landings. The method used for deriving these estimates assumes that discarding only occurs as high grading and is based on comparing length composition samples taken at sea and from landings (Pálsson 2003).

Demersal trawl surveys are conducted in the spring (SMB) and autumn (SMH). All catches are recorded and a range of samples are collected, including sex, length and age for the main commercial species, species composition and other ecological measures (e.g. cod and haddock food composition).

The method for deriving the catch in numbers by age is based on sampling from 20 strata, defined by areas, seasons, and gear. An R-script algorithm is used to estimate catch at age in Icelandic cod and haddock, which applies a statistically rigorous approach where sampling within a stratum is low. In practice, choice of algorithm makes little difference to final estimates, as the main problems with estimation apply to a small proportion of the catch. The mean weight at age is estimated based on the same samples and is used to estimate biomass.

Technical details of the data and stock assessment are found in the stock annex (ICES 2015a). The stock annex is written or updated during each benchmark assessment (ICES 2015b) which undertakes a review of the stock assessment methodology, making any changes deemed appropriate. Benchmark assessments may be requested by the working group, but are usually undertaken every 3 to 5 years in any case as there are always improvements to be undertaken and new methods to test on the available data. The actual findings and conclusions for each year's stock assessment are reported in the working group report (ICES 2016b). These are update assessments and are required to apply the methodology as laid out in the stock annex. That this is done is confirmed by the working group. Within ICES, the Advisory Committee (ACOM) is then responsible convert the stock assessment to scientific advice to the competent authorities, in this case the Iceland Government. This is an independent process, and while Iceland scientists are fully involved in carrying out the assessment, the process is overseen by scientists from other countries to ensure the quality of the analysis and advice and consistency with ICES best practice. ICES has been considering less frequent than annual assessment and advice updates, but this would probably require lower exploitation rates to achieve the same level of risk.

The data are used to fit a statistical catch-at-age model (ADCAM), which has been used as the basis for advice since 2002. The inputs in the analytical assessments are catch-at-age 1955–2015 and spring ground-fish survey (SMB) indices at age from 1985-2016 and fall survey groundfish survey (SMH) indices at age from 1996–2015. Only the spring survey was used up to the 2009 assessment, but both surveys have been used simultaneously since then. The model is fitted to the catch-at-age, with the fishing mortality constrained by a random walk. This approach fits to the estimated catch-at-age rather than the actual age sample data (e.g. like Stock Synthesis 3). The model is fitted to both spring and the fall survey abundance data, but sensitivity scenarios are run with each index separately. Up to 1990, periodic immigrations from Greenland have been added to the assessment based on anomalies in the catch-at-age matrix, with timing and age of such events being based on expert judgement using external information. These adjustments have negligible impact on the current status estimate. The survey residuals in a given year are modelled by a multivariate normal distribution to account for potential survey "year effects". This is a fairly sophisticated bespoke maximum likelihood model, but is not probabilistic in the sense of being Bayesian. No Markov chain Monte Carlo analysis or similar probabilistic simulation is reported. The spring and the fall survey residuals show some patterns which may be the result of changes in catchability. The fall survey gives a higher estimate of biomass than the spring survey. These issues are relatively minor and do not invalidate the stock assessment.

3.4 Principle Two: Ecosystem Background

3.4.1 Description of the Ecosystem

This overview of the ecosystem draws heavily on the ecosystem description that appears on the ICES North-Western Working Group Report (ICES, 2016) and the most recent of MRI periodic reports on the state of the environment (MRI, 2016).

Iceland is situated in the central North Atlantic at the junction of the Mid-Atlantic (Reykjanes) Ridge and the Greenland–Scotland Ridge, just south of the Arctic Circle. The Icelandic EEZ encloses a sea area of 758,000 km² of which c. 212,000 km² is less than 500 m deep (i.e. the depth at which most cod are found and caught). Generally, hard bottom is found in shallower areas while softer sediments dominate in the troughs and outside the continental slope.

Despite its northerly latitude, the climate is moderated by warm waters of the north-bound Irminger current along its western and northern seaboards and the North Atlantic Drift along the southern shores. The Polar Front lies west and north of Iceland and separates the cold and southward flowing waters of Polar origin from the northward flowing waters of Atlantic origin (see figure below). South and east of Iceland the North Atlantic Current flows towards the Norwegian Sea. The Irminger Current is a branch of the North Atlantic Current and flows northwards over and along the Reykjanes Ridge and along Iceland's western shelf break. In the Denmark Strait it divides into a branch that flows north-eastward and eastward to the waters north of Iceland and another branch that flows south-westwards along the East Greenland Current. In the Iceland Sea north of Iceland a branch out of the cold East Greenland Current flows over the Kolbeinsey Ridge and continues to the southeast along the north-eastern shelf break as the East Icelandic Current, which is part of a cyclonic gyre in the Iceland Sea, and continues into the Norwegian Sea along with Atlantic water flowing eastwards over the Iceland–Faroes Ridge (ICES, 2016).

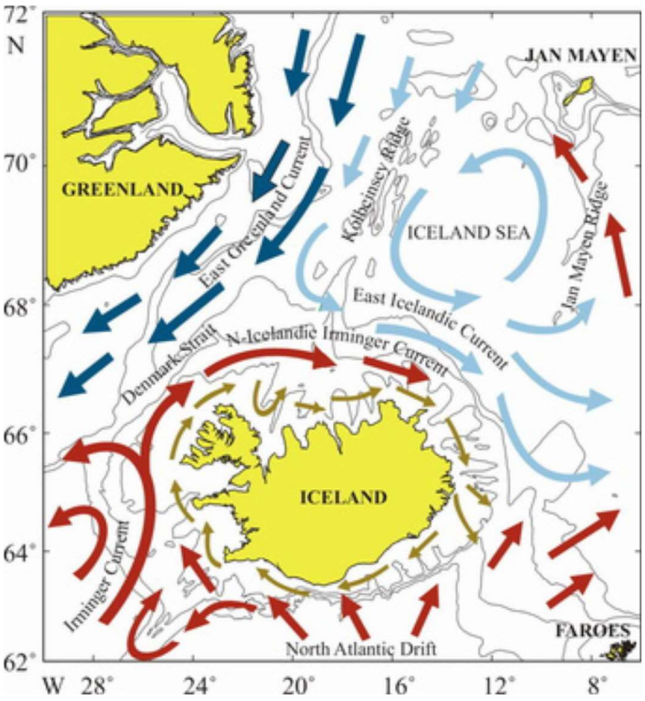


Figure 6: The residual current system around Iceland. Source: MRI (see http://www.fisheries.is/ecosystem/)

The Icelandic Shelf is a high productivity ecosystem (150–300 g C m-2 yr-1) but productivity is higher in the southwest regions than to the northeast and higher on the shelf areas than in the oceanic regions (ICES, 2016). Water masses and sediment types appear to determine the structures of benthic communities around Iceland. Research-vessel surveys indicate that shrimp biomass in Icelandic waters, both in inshore and offshore waters, has been declining in recent years. Consequently, the shrimp fishery has been reduced and is now banned in most inshore areas. The decline in the inshore shrimp biomass is in part considered to be environmentally driven, both due to increasing water temperature north of Iceland and due to increasing biomass of younger cod, haddock and whiting (ICES, 2016).

Changes in sea temperatures have also had considerable effects on the fish fauna of the Icelandic ecosystem. Species which are at or near their northern distribution limit in Icelandic waters have increased in abundance in recent years. The most notable examples of increased abundance of such species in the mixed water area north of Iceland are haddock, whiting, monkfish, lemon sole and witch. Pelagic mackerel and semi-pelagic blue whiting have been found and fished in east Icelandic water in far larger quantities than ever before. In contrast, cold water species like Greenland halibut has become scarcer. The larval drift and nursery areas of capelin have both shifted west to the colder waters off east Greenland. The arrival of adult capelin on the overwintering grounds on the outer shelf off north Iceland has been delayed; migration routes to the spawning grounds off south and west Iceland have been located farther off north and east Iceland and not reached as far west along the south coast as was the rule in most earlier years. The change in availability of capelin in the traditional grounds may have had an effect on the growth rate of various predators, including cod.

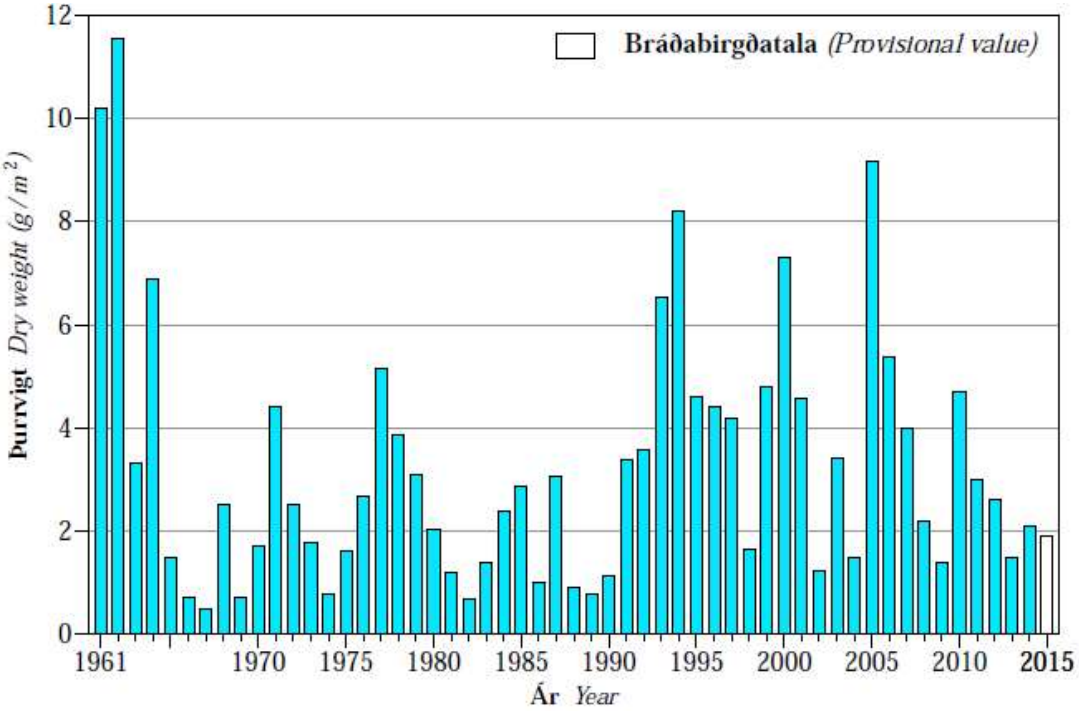


Figure 7. Zooplankton biomass (g dry weight m-2, 0-50m) in spring at Siglunes section. Source: MRI, 2016

Source: MRI, 2016

Krill are an important piece of the marine environment because not only are they the main food for pelagic fish, such as herring and capelin, they also support the larval and fry stages of all fish stocks (MRI, 2016). The abundance of krill is said to strongly affect the survivability of larval fish that have just begun to hunt for food. MRI studies have shown the correlation between the abundance of krill to the south-west in the spring and the number of cod fry in August and the recruitment of cod joining the stock. This connection is an example of the ecological connection of growth and development of organisms at the lowest stage of the food web with that of animals higher up the food chain. Long-running studies of trends in krill abundance have been on-going since about 1960. Figure 7 shows krill abundance off the north coast (Siglunes transect), where the longest data series has been collected. In 2013 and 2014 krill abundance was well below the historical average and this trend seems to be continued in 2015, based on preliminary results.

3.4.2 Species Allocation

A review was conducted through the assessment process of all species that the fishery might have a detrimental impact on. This generated a list of ETP species which overlap with the fishery operations, and species reported in landings or in relevant scientific literature. Of the 108 species/stocks identified as potentially having an interaction with the fishery, 31 have been identified as primary species (Table 12). That is, they are subject to some level of management with the general objective of maintaining these stocks as close to MSY level as is feasible. A further 20 species have been identified as ETP mainly based on their presence on international lists of vulnerable and endangered species (CITES Appendix 1, IUCN Redlist Status for out-of-scope species, AEWA table1 column A) that overlap with fishing operations (Table 18). All species not allocated to primary or ETP are considered secondary species (

Table 14).

3.4.3 Landings Profiles

The landings profile consists of the sum of the landings for trips in the 5 years 2011-2015 inclusive, where cod landed in the trip is at least 1kg. This approach is a consistent treatment of the data to determine whether species are main or minor. It excludes landings not associated with cod. It includes all landings where some cod is landed because that cod will be certified. Higher cut-off levels would tend to decrease many species as a proportion of the catch (dependent on their association with cod), so this approach is precautionary as it is more likely to identify more species as "main". However, it should be noted that the results are robust to this treatment since the majority of trips land a high proportion of cod.

The criteria for allocation of species between minor and main follows the methodology in CR2.0 GSA3.4.2.2. Information on potential resilience was obtained from www.fishbase.org, and included size, fecundity, growth rates and trophic level, following procedures for scoring productivity in PSA (see CR2.0 SA3.4.2.2 and Annex PF Risk Based Framework), where a productivity score of greater than or equal to 2 indicated the species was less resilient. In cases where information on productivity was missing or could not be found, a higher risk score was allocated. A 2% threshold on the catch was applied for less resilient species and 5% for more resilient species. Landings greater than this threshold would indicate that the species was "main".

*Table 4: **Bottom trawl** landings profile. PSE indicates whether the species is addressed as primary (PRI), secondary (SEC) or endangered, threatened or protected (ETP). The main and minor species allocation is based on their proportion of the catch, with the exception that all out-of-scope species are consider main. Landings are rounded to the nearest tonne, so landings of 0t implies landings <500kg over the period.*

Species	*PSE*	*Category*	*Landing (t)*	*%*
Atlantic Cod	P1	N/A	442748	40.00
Saithe	PRI	Main	204533	18.48
Golden Redfish	PRI	Main	198989	17.98
Haddock	PRI	Main	89091	8.05
Greenland halibut	PRI	Minor	50053	4.52
Deepwater redfish	PRI	Main	44131	3.99
Greater silver smelt	PRI	Minor	25330	2.29
Atlantic wolffish	PRI	Minor	12570	1.14
Ling	PRI	Minor	8205	0.74
Plaice	PRI	Minor	7957	0.72
Whiting	PRI	Minor	4497	0.41
Blue ling	PRI	Minor	4352	0.39
Spotted wolffish	PRI	Minor	3556	0.32
Lemon sole	PRI	Minor	2164	0.20
Norway redfish / Small redfish	PRI	Minor	1983	0.18
Mackerel	PRI	Minor	1660	0.15
Anglerfish	PRI	Minor	863	0.08
Black scabbardfish	SEC	Minor	830	0.08
Starry ray	SEC	Minor	616	0.06
Megrim	SEC	Minor	411	0.04
Witch	PRI	Minor	367	0.03
Cusk / Tusk	PRI	Minor	319	0.03
Blue whiting	PRI	Minor	313	0.03
Atlantic halibut	SEC	Minor	215	0.02
Roundnose Grenadier	SEC	Minor	208	0.02
Northern shrimp	PRI	Minor	208	0.02
Blue Skate / Common Skate	SEC	Minor	139	0.01

Species	*PSE*	*Category*	*Landing (t)*	*%*
Herring	PRI	Minor	125	0.01
Roughhead grenadier	SEC	Minor	91	0.01
Northern wolffish	SEC	Minor	75	0.01
Common dab	PRI	Minor	71	0.01
Greenland shark	SEC	Minor	58	0.01
Orange roughy	SEC	Minor	58	0.01
Long rough dab	PRI	Minor	39	0.00
Lumpfish female	PRI	Minor	28	0.00
Baird's slickhead	SEC	Minor	21	0.00
Spiny dogfish / Picked dogfish	SEC	Minor	16	0.00
Rabbit fish	SEC	Minor	6	0.00
Portuguese dogfish	SEC	Minor	6	0.00
Shagreen ray	SEC	Minor	4	0.00
Atlantic bluefin tuna	PRI	Minor	2	0.00
Norway pout	SEC	Minor	2	0.00
Lumpfish male	PRI	Minor	2	0.00
Greater eelpout	SEC	Minor	2	0.00
Sailray	SEC	Minor	1	0.00
Unknown	SEC	Minor	1	0.00
Norway lobster	PRI	Minor	1	0.00
Black dogfish	SEC	Minor	0	0.00
Porbeagle	SEC	Minor	0	0.00
Grey gurnard	SEC	Minor	0	0.00
Turbot	SEC	Minor	0	0.00
Pollack	SEC	Minor	0	0.00
Harbour seal	SEC	Main	0	0.00
Atlantic pomfret	SEC	Minor	0	0.00
White hake	SEC	Minor	0	0.00
Greater forkbeard	SEC	Minor	0	0.00
Dealfish	SEC	Minor	0	0.00

*Table 5: **Danish Seine** landings profile, indicating main and minor species. PSE indicates whether the species is addressed as primary (PRI), secondary (SEC) or endangered, threatened or protected (ETP). The main and minor species allocation is based on their proportion of the catch, with the exception that all out-of-scope species are consider main. Landings are rounded to the nearest tonne, so a landings of 0t implies landings <500kg over the period.*

Species	***PSE***	***Category***	***Landing (t)***	***%***
Atlantic Cod	P1	N/A	51324	40.97
Haddock	PRI	Main	25822	20.61
Plaice	PRI	Main	18882	15.07
Saithe	PRI	Main	6554	5.23
Lemon sole	PRI	Minor	5395	4.31
Atlantic wolffish	PRI	Main	4786	3.82
Witch	PRI	Minor	3107	2.48
Common dab	PRI	Minor	2775	2.21
Golden Redfish	PRI	Minor	2128	1.70
Ling	PRI	Minor	1474	1.18
Anglerfish	PRI	Minor	885	0.71
Starry ray	SEC	Minor	529	0.42
Whiting	PRI	Minor	479	0.38
Megrim	SEC	Minor	424	0.34
Long rough dab	PRI	Minor	320	0.26
Blue ling	PRI	Minor	192	0.15
Blue Skate / Common Skate	SEC	Minor	133	0.11
Atlantic halibut	SEC	Minor	38	0.03
Spiny dogfish / Picked dogfish	SEC	Minor	11	0.01
Spotted wolffish	PRI	Minor	10	0.01
Lumpfish female	PRI	Minor	6	0.01
Grey gurnard	SEC	Minor	4	0.00
Lumpfish male	PRI	Minor	3	0.00
Mackerel	PRI	Minor	1	0.00
Rabbit fish	SEC	Minor	1	0.00
Cusk / Tusk	PRI	Minor	1	0.00
Shagreen ray	SEC	Minor	0	0.00
Turbot	SEC	Minor	0	0.00
Sea cucumber	PRI	Minor	0	0.00
Flounder	SEC	Minor	0	0.00
Pollack	SEC	Minor	0	0.00
Greater silver smelt	PRI	Minor	0	0.00
European Flying Squid	SEC	Minor	0	0.00
Greenland halibut	PRI	Minor	0	0.00
Northern wolffish	SEC	Minor	0	0.00
Dealfish	SEC	Minor	0	0.00
White hake	SEC	Minor	0	0.00
Sailray	SEC	Minor	0	0.00
European Hake	SEC	Minor	0	0.00
Atlantic rock crabs	SEC	Minor	0	0.00

*Table 6: **Gillnet** landings profile, indicating main and minor species. PSE indicates whether the species is addressed as primary (PRI), secondary (SEC) or endangered, threatened or protected (ETP). The main and minor species allocation is based on their proportion of the catch, with the exception that all out-of-scope species are consider main. Landings are rounded to the nearest tonne, so a landings of 0t implies landings <500kg over the period.*

Species	***PSE***	***Category***	***Landing (t)***	***%***
Atlantic Cod	P1	N/A	91188	80.39
Saithe	PRI	Main	14318	12.62
Greenland halibut	PRI	Minor	2433	2.14
Ling	PRI	Minor	1981	1.75
Haddock	PRI	Minor	1666	1.47
Golden Redfish	PRI	Minor	644	0.57
Plaice	PRI	Minor	435	0.38
Anglerfish	PRI	Minor	334	0.29
Blue ling	PRI	Minor	74	0.07
Cusk / Tusk	PRI	Minor	64	0.06
Atlantic wolffish	PRI	Minor	48	0.04
Lumpfish female	PRI	Minor	40	0.04
Lumpfish male	PRI	Minor	34	0.03
Starry ray	SEC	Minor	34	0.03
Whiting	PRI	Minor	32	0.03
Spotted wolffish	PRI	Minor	19	0.02
Common dab	PRI	Minor	17	0.02
Spiny dogfish / Picked dogfish	SEC	Minor	16	0.01
Blue Skate / Common Skate	SEC	Minor	10	0.01
Mackerel	PRI	Minor	9	0.01
Lemon sole	PRI	Minor	9	0.01
Long rough dab	PRI	Minor	8	0.01
Atlantic halibut	SEC	Minor	5	0.00
Witch	PRI	Minor	3	0.00
Herring	PRI	Minor	3	0.00
Porbeagle	SEC	Minor	2	0.00
Pollack	SEC	Minor	1	0.00
Deepwater redfish	PRI	Minor	1	0.00
Greenland shark	SEC	Minor	0	0.00
Megrim	SEC	Minor	0	0.00
Lumpfish roe	PRI	Minor	0	0.00
Roundnose Grenadier	SEC	Minor	0	0.00
Flounder	SEC	Minor	0	0.00
Dealfish	SEC	Minor	0	0.00
Portly spider crab	SEC	Minor	0	0.00
Shagreen ray	SEC	Minor	0	0.00
Turbot	SEC	Minor	0	0.00
Greater silver smelt	PRI	Minor	0	0.00
Sailray	SEC	Minor	0	0.00
Red deepsea crab	SEC	Minor	0	0.00
White hake	SEC	Minor	0	0.00
Norway redfish / Small redfish	PRI	Minor	0	0.00
Black dogfish	SEC	Minor	0	0.00
Blue mussel	SEC	Minor	0	0.00
Greater forkbeard	SEC	Minor	0	0.00
Grey gurnard	SEC	Minor	0	0.00

*Table 7: **Handline** landings profile, indicating main and minor species. PSE indicates whether the species is addressed as primary (PRI), secondary (SEC) or endangered, threatened or protected (ETP). The main and minor species allocation is based on their proportion of the catch, with the exception that all out-of-scope species are considered main. Landings are rounded to the nearest tonne, so a landings of 0t implies landings <500kg over the period.*

Species	***PSE***	***Category***	***Landing (t)***	***%***
Atlantic Cod	P1	N/A	31810	77.77
Saithe	PRI	Main	8554	20.91
Golden Redfish	PRI	Minor	312	0.76
Haddock	PRI	Minor	67	0.16
Ling	PRI	Minor	55	0.14
Mackerel	PRI	Minor	33	0.08
Cusk / Tusk	PRI	Minor	26	0.06
Anglerfish	PRI	Minor	14	0.03
Atlantic wolffish	PRI	Minor	10	0.02
Lumpfish female	PRI	Minor	6	0.01
Greenland halibut	PRI	Minor	4	0.01
Plaice	PRI	Minor	3	0.01
Whiting	PRI	Minor	3	0.01
Witch	PRI	Minor	2	0.00
Lemon sole	PRI	Minor	2	0.00
Starry ray	SEC	Minor	1	0.00
Spotted wolffish	PRI	Minor	1	0.00
Atlantic halibut	SEC	Minor	1	0.00
Spiny dogfish / Picked dogfish	SEC	Minor	1	0.00
Blue Skate / Common Skate	SEC	Minor	0	0.00
Pollack	SEC	Minor	0	0.00
Deepwater redfish	PRI	Minor	0	0.00
Blue ling	PRI	Minor	0	0.00
Megrim	SEC	Minor	0	0.00
Lumpfish male	PRI	Minor	0	0.00
Lumpfish roe	PRI	Minor	0	0.00
Norway redfish / Small redfish	PRI	Minor	0	0.00
Harbour seal	SEC	Main	0	0.00
Northern stone crab / Stone king crab	SEC	Minor	0	0.00
Common dab	PRI	Minor	0	0.00
Greater silver smelt	PRI	Minor	0	0.00
Turbot	SEC	Minor	0	0.00
European eel	SEC	Minor	0	0.00

*Table 8: **Longline** landings profile, indicating main and minor species. PSE indicates whether the species is addressed as primary (PRI), secondary (SEC) or endangered, threatened or protected (ETP). The main and minor species allocation is based on their proportion of the catch, with the exception that all out-of-scope species are considered main. Landings are rounded to the nearest tonne, so a landings of 0t implies landings <500kg over the period.*

Species	***PSE***	***Category***	***Landing (t)***	***%***
Atlantic Cod	P1	N/A	357141	63.09
Haddock	PRI	Main	90925	16.06
Ling	PRI	Main	36222	6.40
Atlantic wolffish	PRI	Main	26426	4.67
Cusk / Tusk	PRI	Minor	23512	4.15

Species	*PSE*	*Category*	*Landing (t)*	*%*
Golden Redfish	PRI	Minor	6620	1.17
Starry ray	SEC	Minor	6455	1.14
Spotted wolffish	PRI	Minor	5810	1.03
Blue ling	PRI	Minor	4993	0.88
Saithe	PRI	Minor	4156	0.73
Whiting	PRI	Minor	1239	0.22
Plaice	PRI	Minor	851	0.15
Greenland halibut	PRI	Minor	782	0.14
Blue Skate / Common Skate	SEC	Minor	308	0.05
Anglerfish	PRI	Minor	143	0.03
White hake	SEC	Minor	104	0.02
Atlantic halibut	SEC	Minor	100	0.02
Shagreen ray	SEC	Minor	94	0.02
Sailray	SEC	Minor	34	0.01
Deepwater redfish	PRI	Minor	32	0.01
Common dab	PRI	Minor	25	0.00
Spiny dogfish / Picked dogfish	SEC	Minor	24	0.00
Long rough dab	PRI	Minor	21	0.00
Greater forkbeard	SEC	Minor	11	0.00
Norway redfish / Small redfish	PRI	Minor	3	0.00
Roundnose Grenadier	SEC	Minor	2	0.00
Lumpfish female	PRI	Minor	2	0.00
Northern wolffish	SEC	Minor	2	0.00
Lemon sole	PRI	Minor	2	0.00
Rabbit fish	SEC	Minor	2	0.00
Black dogfish	SEC	Minor	2	0.00
Mackerel	PRI	Minor	2	0.00
Greenland shark	SEC	Minor	1	0.00
Pollack	SEC	Minor	1	0.00
European eel	SEC	Minor	1	0.00
Black scabbardfish	SEC	Minor	1	0.00
Roughhead grenadier	SEC	Minor	1	0.00
Lumpfish roe	PRI	Minor	0	0.00
Dolphin	SEC	Main	0	0.00
Porbeagle	SEC	Minor	0	0.00
Witch	PRI	Minor	0	0.00
Sea cucumber	PRI	Minor	0	0.00
Greater silver smelt	PRI	Minor	0	0.00
Baird's slickhead	SEC	Minor	0	0.00
Lumpfish male	PRI	Minor	0	0.00
Greater eelpout	SEC	Minor	0	0.00
Megrim	SEC	Minor	0	0.00
Turbot	SEC	Minor	0	0.00
Portly spider crab	SEC	Minor	0	0.00
Harbour seal	SEC	Main	0	0.00
Dealfish	SEC	Minor	0	0.00
Atlantic pomfret	SEC	Minor	0	0.00
Atlantic rock crabs	SEC	Minor	0	0.00
Grey gurnard	SEC	Minor	0	0.00
Vahl's eelpout	SEC	Minor	0	0.00

*Table 9: **Nephrops trawl** landings profile, indicating main and minor species. PSE indicates whether the species is addressed as primary (PRI), secondary (SEC) or endangered, threatened or protected (ETP). The main and minor species allocation is based on their proportion of the catch, with the exception that all out-of-scope species are considered main. Landings are rounded to the nearest tonne, so a landings of 0t implies landings <500kg over the period.*

Species	***PSE***	***Category***	***Landing (t)***	***%***
Norway lobster	PRI	Main	9246	22.50
Atlantic Cod	P1	N/A	8439	20.54
Golden Redfish	PRI	Main	6685	16.27
Ling	PRI	Main	5116	12.45
Saithe	PRI	Main	2940	7.16
Witch	PRI	Main	2630	6.40
Anglerfish	PRI	Minor	1705	4.15
Megrim	SEC	Minor	1072	2.61
Whiting	PRI	Minor	846	2.06
Haddock	PRI	Minor	787	1.92
Blue ling	PRI	Minor	764	1.86
Lemon sole	PRI	Minor	396	0.96
Atlantic wolffish	PRI	Minor	292	0.71
Blue Skate / Common Skate	SEC	Minor	88	0.21
Atlantic halibut	SEC	Minor	20	0.05
Starry ray	SEC	Minor	18	0.04
Plaice	PRI	Minor	16	0.04
Cusk / Tusk	PRI	Minor	10	0.03
Spotted wolffish	PRI	Minor	5	0.01
Long rough dab	PRI	Minor	3	0.01
Norway redfish / Small redfish	PRI	Minor	1	0.00
Greater silver smelt	PRI	Minor	1	0.00
Portly spider crab	SEC	Minor	1	0.00
Common dab	PRI	Minor	1	0.00
Shagreen ray	SEC	Minor	0	0.00
Mackerel	PRI	Minor	0	0.00
Spiny dogfish / Picked dogfish	SEC	Minor	0	0.00
Greenland halibut	PRI	Minor	0	0.00
Greater forkbeard	SEC	Minor	0	0.00
Sailray	SEC	Minor	0	0.00
Northern wolffish	SEC	Minor	0	0.00
Porbeagle	SEC	Minor	0	0.00
White hake	SEC	Minor	0	0.00
Turbot	SEC	Minor	0	0.00
European Flying Squid	SEC	Minor	0	0.00
Lumpfish female	PRI	Minor	0	0.00
Pollack	SEC	Minor	0	0.00
European eel	SEC	Minor	0	0.00

*Table 10: **Pelagic trawl** landings profile, indicating main and minor species. PSE indicates whether the species is addressed as primary (PRI), secondary (SEC) or endangered, threatened or protected (ETP). The main and minor species allocation is based on their proportion of the catch, with the exception that all out-of-scope species are consider main. Landings are rounded to the nearest tonne, so a landings of 0t implies landings <500kg over the period..*

Species	***PSE***	***Category***	***Landing (t)***	***%***
Capelin	PRI	Main	8039	37.43
Mackerel	PRI	Main	7200	33.52
Herring	PRI	Main	2245	10.45
Golden Redfish	PRI	Main	1099	5.12
Pearlside	SEC	Minor	892	4.15
Saithe	PRI	Minor	521	2.43
Blue whiting	PRI	Minor	508	2.37
Atlantic Cod	P1	N/A	468	2.18
Greenland halibut	PRI	Minor	233	1.09
Haddock	PRI	Minor	97	0.45
Deepwater redfish	PRI	Minor	52	0.24
Greater silver smelt	PRI	Minor	29	0.14
Norway pout	SEC	Minor	27	0.12
Whiting	PRI	Minor	22	0.10
Spotted wolffish	PRI	Minor	8	0.04
Lumpfish female	PRI	Minor	7	0.03
Atlantic bluefin tuna	PRI	Minor	7	0.03
Norway lobster	PRI	Minor	5	0.02
Ling	PRI	Minor	5	0.02
Blue ling	PRI	Minor	4	0.02
Plaice	PRI	Minor	4	0.02
Atlantic wolffish	PRI	Minor	2	0.01
Norway redfish / Small redfish	PRI	Minor	1	0.00
Megrim	SEC	Minor	1	0.00
Anglerfish	PRI	Minor	1	0.00
Atlantic halibut	SEC	Minor	0	0.00
Lemon sole	PRI	Minor	0	0.00
Witch	PRI	Minor	0	0.00
Roundnose Grenadier	SEC	Minor	0	0.00
Starry ray	SEC	Minor	0	0.00
Blue Skate / Common Skate	SEC	Minor	0	0.00
Black scabbardfish	SEC	Minor	0	0.00
Grey gurnard	SEC	Minor	0	0.00
Dealfish	SEC	Minor	0	0.00
Cusk / Tusk	PRI	Minor	0	0.00

*Table 11: **Selected species landings by gear**. Landings are given as total tonnes landed during the calendar years 2011-2015 inclusive. Total landings are all landings of each species into Iceland. Gear landings are only landings of that gear associated with the Principle 1 species (i.e. trips with at least 1kg of cod landed).*

Species	Total (t)	Bottom trawl	Danish seine	Gillnet	Handline	Longline	Nephrops trawl	Pelagic trawl	Shrimp trawl
Atlantic Cod	1034132	444577	51324	91188	69130	357212	8443	1778	6155
	100.0	43.0	5.0	8.8	6.7	34.5	0.8	0.2	0.6
Atlantic wolffish	45227	12606	4786	48	56	26426	292	9	3
	100.0	27.9	10.6	0.1	0.1	58.4	0.6	0.0	0.0
Blue Skate	722	139	133	10	0	309	88	0	15
	100.0	19.3	18.4	1.3	0.1	42.8	12.2	0.1	2.1
Capelin	1834701	0	0	0	0	0	0	8039	0
	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Common dab	3491	71	2775	17	0	25	1	0	1
	100.0	2.0	79.5	0.5	0.0	0.7	0.0	0.0	0.0
Deepwater redfish	51282	44192	0	1	0	32	0	245	45
	100.0	86.2	0.0	0.0	0.0	0.1	0.0	0.5	0.1
Golden Redfish	234081	199672	2128	644	818	6620	6693	2673	324
	100.0	85.3	0.9	0.3	0.3	2.8	2.9	1.1	0.1
Haddock	209757	89283	25822	1666	283	90925	787	252	291
	100.0	42.6	12.3	0.8	0.1	43.3	0.4	0.1	0.1
Herring	812767	125	0	3	0	0	0	68279	21
	100.0	0.0	0.0	0.0	0.0	0.0	0.0	8.4	0.0
Ling	53583	8210	1474	1981	88	36222	5123	12	7
	100.0	15.3	2.8	3.7	0.2	67.6	9.6	0.0	0.0
Long rough dab	711	39	320	8	0	21	3	0	225
	100.0	5.5	45.0	1.1	0.0	2.9	0.5	0.0	31.6
Mackerel	805192	1660	1	9	39	2	0	119681	0
	100.0	0.2	0.0	0.0	0.0	0.0	0.0	14.9	0.0
Norway lobster	9296	1	0	0	0	0	9254	5	0
	100.0	0.0	0.0	0.0	0.0	0.0	99.5	0.1	0.0
Plaice	29538	7963	18882	435	3	851	16	11	13
	100.0	27.0	63.9	1.5	0.0	2.9	0.1	0.0	0.0
Saithe	252023	204608	6554	14318	13540	4156	2940	2380	113
	100.0	81.2	2.6	5.7	5.4	1.6	1.2	0.9	0.0
Witch	6311	367	3107	3	2	0	2630	0	41
	100.0	5.8	49.2	0.1	0.0	0.0	41.7	0.0	0.6

3.4.4 Primary Species

The primary species consist of managed stocks (Table 12). In all cases there is some assessment of status of the stock using implicit or explicit reference points. The exploitation of most stocks is controlled through a TAC. However, exploitation rates are also limited by fleet capacity, closed areas, and mesh size. Management of all stocks with a TAC is carried out under the same system as described in the Principle 1 section (3.3).

The species composition associated with each gear is determined by the catch profiles (Table 4-Table 10). This consists of the landings of all species associated with cod during the period 2011-2015 inclusive. Note that for gears which only catch cod as a bycatch (e.g. Table 10: pelagic trawl), the catch of cod and associated species is very small over the five years. The status of each primary species is summarised in Table 13.

There are several deepwater (beaked) redfish stocks around Iceland, and at least two of these may well be below their limit reference points. It should also be noted that stock units are disputed, so there is considerable uncertainty over stock definitions outside Iceland. Allocation of the landings to appropriate stocks is important particularly for bottom trawl where deepwater redfish is a main species (Table 4). The landings of deepwater redfish associated with cod have not been associated with any particular stock, but appears to be highly likely to be the Icelandic slope stock. The other possible stock is the shallow water (<500m depth). The fishery does not operate in deeper water (>500m), so catches would not include the stock in Subareas V, XII, and XIV (Iceland and Faroes grounds, north of Azores, east of Greenland) and NAFO Subareas 1+2 (deep pelagic stock > 500 m) or the stock in Division 14.b. (demersal Southeast Greenland). The fisheries for cod are demersal, so the two pelagic stocks are not likely to form a significant part of the landings. The other demersal stock in 14.b is outside the fishery area. Finally, the proportion of the landings reported from within the Icelandic area (ICES area 5a) relevant to this certificate represented an average of 2.6% of the total landings in 2015/2016, and similar low proportion in previous years (see ICES 2016 beaked redfish advice). This suggests any catches within the Iceland EEZ are not preventing any recovery and would be a small proportion of landings, if any, making it at most a minor species even for bottom trawl. Therefore, all landings are assumed to come from the Icelandic slope stock.

Table 12: Primary species list, including English, scientific and Icelandic names, and level of resilience.

English Name	***Species***	***Icelandic Name***	***Type***	***Resilience***
Anglerfish / Monkfish	*Lophius piscatorius*	Skötuselur	Fish	High
Atlantic bluefin tuna	*Thunnus thynnus*	Túnfiskur	Fish	Low
Atlantic wolffish	*Anarhichas lupus*	Steinbítur	Fish	Low
Blue ling	*Molva dypterygia*	Blálanga	Fish	Low
Blue whiting	*Micromesistius poutassou*	Kolmunni	Fish	High
Capelin	*Mallotus villosus*	Loðna	Fish	High
Common dab	*Limanda limanda*	Sandkoli	Fish	High
Cusk / Tusk	*Brosme brosme*	Keila	Fish	High
Deepwater redfish (Icelandic Slope)	*Sebastes mentella*	Djúpkarfi	Fish	Low
Deepwater redfish (International stocks)	*Sebastes mentella*	Úthafskarfi	Fish	Low
Golden redfish	*Sebastes marinus*	Gullkarfi	Fish	Low
Greater silver smelt	*Argentina silus*	Gulllax / Stóri gulllax	Fish	High

English Name	*Species*	*Icelandic Name*	*Type*	*Resilience*
Greenland halibut	*Reinhardtius hippoglossoides*	Grálúða	Fish	Low
Haddock	*Melanogrammus aeglefinus*	Ýsa	Fish	High
Herring	*Clupea harengus*	Síld	Fish	High
Lemon sole	*Microstomus kitt*	Þykkvalúra / Sólkoli	Fish	High
Ling	*Molva molva*	Langa	Fish	High
Long rough dab	*Hippoglossoides platessoides*	Skrápflúra	Fish	High
Lumpfish	*Cyclopterus lumpus*	Grásleppuhrogn / Rauðmagi / Grásleppa	Fish	High
Mackerel	*Scomber scombrus*	Makríll	Fish	High
Northern shrimp	*Pandalus borealis*	Rækja	Crustacean	Low
Norway lobster	*Nephrops norvegicus*	Humar / Leturhumar	Crustacean	Low
Norway redfish	*Sebastes viviparus*	Litli karfi	Fish	Low
Plaice	*Pleuronectes platessa*	Skarkoli	Fish	High
Saithe	*Pollachius virens*	Ufsi	Fish	High
Sea cucumber	*Holothuroidea*	Sæbjúga	Holothurian	High
Spotted wolffish	*Anarhichas minor*	Hlýri	Fish	Low
Pearlside	*Maurolicus muelleri*	Gulldepla	Fish	High
Witch	*Glyptocephalus cynoglossus*	Langlúra	Fish	High

Table 13: Stock status for primary species that interact the cod fishery. The status score is indicative of the scoring guidepost for PI 2.1.1 a. If a species is designated minor for a particular gear, the species is considered under scoring issue PI 2.1.1 b, which has only one scoring guidepost: SG100. In this case, the SG100 is equivalent to the PI 2.1.1 a SG80, so it is met if the stock scores 80 in this table. Minor species only affect scores above 100 for the performance indicator. The Status interpretation is as follows: Stock is likely above its PRI – 60; Stock is highly likely above its PRI (or recovering) – 80; Stock is fluctuating around its MSY – 100. (See PI 2.1.1 a scoring guideposts for details. Information is taken from the ICES 2016 advice as listed in the References.

Stock	**Justification**	**Status**
Blue ling (North East Atlantic)	ICES considers that the stock biomass is above candidate target and limit biomass reference points. Overall, there are indications that fishing mortality has been decreasing in the last three years, but recruitment is expected to be low over the next few years due to a low juvenile abundance index recorded since 2010. The fishing mortality proxy measure is estimated to have been below the reference F_{proxy} in the last two years.	100
Deepwater redfish (Icelandic slope stock)	The stock status is unknown. The lack of long time-series of abundance indices prevents the determination of stock status. The limited abundance data available suggest that the stock size is stable. ICES has not indicated that any rebuilding is required and has expressed no requirement to reduce the TAC, but as the working group has pointed out, the decision assumes that the stock is not already below MSY or PRI levels. The TAC is set for all fleets, although the measure is not designed to rebuild, just stabilise the stock until its status can be determined. However, the available information does not suggest the stock is currently below the PRI.	80

Stock	Justification	Status
Greater silver smelt (Iceland)	Survey indices show an increase in stock biomass in 2014 follow by a decrease in 2015. The index in 2014 was very high due to few large hauls in the Icelandic autumn survey, and it is thought the change in the index from 2013 to 2014 is unlikely to be driven by changes in biomass, but there is no evidence of a decline in stock size. The F_{proxy} has decreased since 2010, so the exploitation rate in 2014 was at a similar level as in 2002–2007. The general results suggest that the stock is at least stable and highly likely above the PRI meeting SG80.	80
Spotted wolffish (Iceland)	The recruitment index, total biomass index and fishable biomass index has been decreasing in recent years and all three of these indices were at an historical minimum in 2015 since measurement started in 1985. The indices are likely to continue to fall unless there is a substantial reduction in catch. Based on the index, the fishable biomass is around 30-40% of the peak in the time series and therefore the stock is currently likely to be above its PRI. However, perception of the stock could change if fishing mortality is not reduced in future.	80
Small redfish (Iceland)	Catches have been sporadic, with catches remaining very low in most years, but peaking in 2010 at 2600t, whereas catches have been around 500t since. Norway redfish are caught in a wide area of the spring survey, mostly along the southern coast. The biomass index of Norway redfish has been increasing since 2000 and the index in 2015 was the highest since surveys began in 1985. It appears that current catches are having limited impact on stock at the current time and the status of the stock appears good.	80
Northern shrimp (Offshore)	There is one recognised management unit. As for inshore shrimp, the abundance of offshore shrimp is inversely related to the abundance of cod in the same areas. The total stock biomass index of offshore shrimp appears to show a long term downward trend since the 1990s. The female index (spawning stock biomass proxy) may also be showing a long term low downward trend. Reference points for the offshore shrimp spawning stock biomass index have not been determined, but the Northwest Atlantic Fisheries Organization (NAFO) has recommended that the limit reference point should be set at 15% of the highest measurement. The female index in 2014 is well above that level, suggesting the stock is well above its PRI.	80
Northern shrimp (Inshore)	There are 9 separate management units based around fjords. These are likely separate populations, but there is no information on the degree to which their recruitment is connected. It is unclear whether they should be treated as separate stocks or a metapopulation. For the pre-assessment we assume they form a metapopulation, but the lack of increase in some populations despite very low catches may suggest their connectivity is limited. Note that many changes in population are attributed to cod and haddock predation. The TAC is set based on the biomass surveys. Overall, the fishery is responsive to the perceived stock status, so should not be hindering any recovery.	80
Blue whiting (North East Atlantic)	Fishing mortality (F) has increased from a historical low in 2011 to above F_{MSY} in 2014 (but below F_{lim}). Spawning-stock biomass (SSB) increased from 2010 to 2014. It has been above the MSY $B_{trigger}$ since the late 1990s. Recent recruitments are estimated above average, but with significant uncertainty. This meets SG100.	100

Stock	Justification	Status
Mackerel (North East Atlantic)	Based on the 2014 benchmarked assessment and subsequent update, this lowest level was estimated to have occurred in 2002 (1.84 million t). This is assumed to be the PRI. The estimate of SSB at spawning time in 2015 was 3.62 million tonnes (mt), which is well above the PRI and above the MSY $B_{trigger}$ level of 3.0mt. This is interpretation as being around or above the MSY level, meeting SG100.	100
Greenland halibut (Iceland / Greenland)	The assessment is indicative of stock trends and provides relative measures of stock status. The stock assessment estimates that the stock has been below the biomass that is associated with B_{MSY} since the early 1990s and is presently at 68% of B_{MSY}, but highly likely above the PRI (B_{lim}=30%B_{MSY}). Since the 2004–2005 the stock has been slowly increasing and present fishing mortality is estimated to be around F_{MSY}. The stock has been increasing since 2004 and 2005 and is currently well above the MSY $B_{trigger}$ (50%B_{MSY}).	80
Common dab (Iceland)	Dab CPUE has decreased during 1997-2000, increased again 2001-2002, but has now been very low since 2006. The biomass index was low 2006-2009, and low again in 2015, but higher and stable 2010-2014. Based on age data, fishing mortality has been very high in last years, mostly on 4-6 year old fish. Most reports suggest maturity is reach at 2-3 years old, so many dab may be able to spawn before being subject to the high fishing mortality. The scientific advice has suggested a precautionary TAC of 500t, which is around the dab bycatch, so would effectively exclude a directed fishery. This further suggests that the stock should be considered in recovery. Given the low indices and high fishing mortality, it is not clear that the stock is highly likely above PRI.	60
Lemon sole (Iceland)	According to biomass indices from the spring survey, the lemon sole fishable stock decreased by about half from 1987 until 2000, but increased through 2003–2010, but again has been decreasing in recent years. There are no reference points, but the biomass and recruitment indices remain higher than early series 1985-2002. Analyses suggest catches in the recent past have been too high, so the TAC has been reduced to 1200t. Nevertheless, the stock is currently highly likely above its PRI.	80
Plaice (Iceland)	Biomass indices from the spring survey indicate that the plaice fishable stock decreased considerably in 1985–2001. Indices have increased somewhat, and then remained steady since. Based on age-catch analysis, the stock has been estimated to have decreased by more than half in 1993–2000, reaching a minimum in 2000. Since 2000, fishing mortality has been reduced and the fishable biomass has been increasing despite low recruitment. The quota is set at F_{MSY}, assuming the low recruitment is ongoing, and a seasonal closed area is used to help protect the spawning stock. Given the stock assessment results, it is unlikely that the stock is below PRI and with the current increase in stock size, the fishery is not hindering any recovery to the MSY level.	80
Long rough dab (Iceland)	CPUE biomass index indicates that the fishable biomass index has decreased substantially since 2003 and has been at a historical low in last years, but the juvenile index has been increasing and is now above the average for 1985-2014. Long rough dab is mostly caught as bycatch. MRI recommends no TAC, no direct fishing of long rough dab and that main spawning areas will be closed during spawning to promote rebuilding. As the juvenile index has been high in recent years, the stock is at least likely above PRI, meeting SG60.	60

Stock	Justification	Status
Saithe (Iceland)	The spawning-stock biomass of Icelandic saithe has been well above the B_{lim} and the fishing mortality has declined from 0.30 in 2009 to 0.19 in 2014, just below the target rate 0.2 (F_{MSY}).	100
Haddock (Iceland)	The spawning-stock biomass (SSB) increased to a peak level 2004 to 2008, but since 2008 the SSB has decreased. The harvest rate is currently estimated near target of 0.4. Recruitment is highly variable, was high in the period 1998–2003, and has been low 2008–2013, but the 2014 year class has been estimated to be strong. The biomass is well above the trigger, and appears to be around the long term stock size since 1980, and the harvest rate has been reduced in line with reduction in stock size. This suggests the stock is being maintained around MSY, its most productive level.	100
Atlantic Wolffish (Iceland)	Atlantic wolffish abundance is tracked in the spring groundfish survey. The survey also provides a recruitment index as it catches wolffish before they recruit to the fishery. The survey suggests that the fishable stock biomass decreased by more than half in 1985–1995 but has generally increased since then, and in 2015 the index is above average. Recruitment was high from 1991–1998, but has decreased since to the lowest level in 2015. Increases in fishable stock indices from 1995–2008 correspond to the high recruitment indices in earlier years. The stock assessment indicates a decreasing trend in fishing mortality since the late 1990s when levels greatly exceeded F_{MSY}, and has recently fallen below F_{MSY}. Therefore the stock is highly likely to be above its PRI, but because F_{MSY} has only recently been applied, it is not clear whether it is at the MSY level yet.	80
Atlantic bluefin tuna (Mediterranean)	The perception of the stock status derived from the 2014 updated assessment suggested that fishing mortality for both younger and older fish have declined during the recent years, while SSB has increased. F_{2013} appears to clearly be below the reference target $F_{0.1}$ (F_{MSY} proxy), while current SSB is most likely to be above the level expected at $F_{0.1}$.	80
Capelin (Iceland / Faroes / E. Greenland)	The ICES assessment indicates a spawning-stock biomass of 304 000 t at the time of spawning in 2016 (March–April), which corresponds to a greater than 95% probability of the SSB being above B_{lim} (150000 t). The 2016 catch limit has been set to zero while awaiting an acoustic survey in the autumn. There is a high degree of certainty that the stock is above B_{lim}, but whether this is consistent with MSY is unclear.	80
Herring (Iceland and Norwegian Spring Spawning)	There are several stocks of herring caught around Iceland. Summer spawning herring is consider well above its B_{lim} and MSY $B_{trigger}$ point, so can be considered as around the MSY level. The Norwegian spring spawning herring stock has been declining and estimated to be below MSY $B_{trigger}$ in 2014. Fishing mortality in 2014 was below F_{pa} and F_{MSY} and the management plan target F, although F had been above this in recent years. The stock is still well-above its B_{lim}.	80
Ling (Iceland)	The spawning-stock biomass is currently at its highest level in the time series 1982-2015, and fishing mortality has decreased since 2008 and is now the lowest in the time-series. Catches have increased substantially in the last decade.	100

Stock	Justification	Status
Lumpfish	The MRI advice is based on a maximum harvest rate not exceeding the 1985–2011 average. The objective to prevent the female lumpfish biomass not falling below the historical minimum. These imply reference points for the survey indices and an appropriate HCR. The female biomass is well above its historical low point, indicating that the stock is above its PRI. Note that male biomass shows a long term decline and is near its historical minimum in 2014 since 1985.	80
Anglerfish/Monkfish	The biomass indices show that the fishable stock increased rapidly in 2001–2005 due to good recruitment and since then the fishable biomass index has remained high compared to previous years. However, recent recruitment has been poor, and biomass may well decline somewhat in future. The TAC is being adjusted accordingly. There are no reference points for this stock, but based on the historical information it is highly likely the stock is above any PRI.	80
Nephrops (Iceland)/Norway lobster	The *Nephrops* May biomass survey index has been decreasing since 2008 and was at an historical minimum in 2014. Based on a commercial CPUE index, MRI has indicated that this may at least in part be due to changes in survey catchability rather than just abundance. Effort has been reduced in the past, and management has achieved the target fishing mortality ($F_{0.1}$) or below it since 1995. The main concern appears to be overexploitation in some areas in some years, and overall biomass is declining rapidly due to low recruitment. Large *Nephrops* (proxy for SSB) has been declining but is above the long term mean. MRI has not yet recommended a reduction in harvest rate, suggesting they believe SSB is still well above the PRI.	80
Golden Redfish (Iceland, Faroes, E. Greenland, W. Scotland, N. Azores)	Spawning-stock biomass has steadily increased for the past 20 years and is well above MSY $B_{trigger}$. Fishing mortality since 2010 is estimated to be around F_{MSY}.	100
Witch (Iceland)	The *Nephrops* survey suggests that the fishable witch stock declined in 2005–2008, but has been steady since. Recruitment has been very poor in recent years, which will probably mean further decrease in the fishable stock in the coming years. Current biomass appears to be above any B_{lim} because biomass has been broadly stable through the recruitment decline.	80
Sea cucumbers (Iceland)	The distribution and abundance of sea cucumbers is very patchy. Biomass swept-area surveys have been conducted on three fishing grounds within two of the three areas sea cucumbers occur. Landings have been recommended to not exceed 10% of the estimated stock biomass in each area. The fishery is expanding, and it appears likely that a significant proportion of the biomass is unexploited (i.e. outside currently fished areas). Therefore, it is highly likely above PRI at the current time.	80
Pearlside (Iceland)	Very little is known about pearlside, the last acoustic survey being in 2010. This could not give an accurate estimate of biomass, but suggested of about 250000t, 140000t was in the area where the fishing effort concentrated. A precautionary TAC of 30000t was set, which implies a low fishing mortality compared to the size of the stock. Given the catches have generally been much less than this limit, it is highly unlikely the stock is below any candidate PRI reference point.	80
Tusk (Iceland)	Fishing mortality has declined in recent years, but is above the current FMSY estimate. SSB has been increasing in recent years and is likely above any candidate MSY $B_{trigger}$.	80

3.4.5 Bait Species

There is a general lack of quantitative data on bait use, and the assessment of bait relied mostly on information obtained during the site visit. Longline and handline vessels use a variety of bait, subject to availability, price and preference. Important source of bait are herring (Norwegian spring spawners), NEA mackerel, Pacific saury (*Cololabis saira*), South Atlantic squid (*Loligo* spp.), and artificial bait. There is no commitment to purchase bait from any particular source, such as sustainable sources.

All bait stocks are managed stocks. There is a commercial directed fishery at these stocks and an intention (or there should be) to manage them to sustainable levels. Therefore, these stocks are considered primary species.

All main bait stocks are described are in good condition, although the status of some is highly uncertain or has not been formally determined. Local bait sources (herring, mackerel) are assessed by ICES and they are also caught as bycatch in these fisheries Table 13). Status of stocks from sources from further afield (Pacific saury, *Loligo* squid) are more uncertain. No recent stock assessment has been completed from Pacific saury, although one is expected in 2017 (NPFC 2015). Squid could originate from a number of stocks for which the status is unknown.

The most common bait size is 30 g/hook compared to current reported catch rates of around 700g/hook (Chun Gil, 2005). Given also that the bait could consist of a mix of species from different stocks, each with life history characteristics giving them high resilience, the bait use as a proportion of the total catch indicates all bait should be treated as minor species (<5% of landings).

3.4.6 Secondary Species

Secondary species are the part of the catch that is (i) not covered by P1, (ii) are not considered primary species (e.g. managed) and (iii) may be out of the MSC scope but are not assigned as ETP species (see next section). Although some of these species, such as Atlantic halibut, whiting and sea urchins are monitored and managed to a degree, the stock status has not been evaluated yet against reference points and they are not managed using TAC, rather there is a potential for intervention. These, for this assessment at this time, have been allocated to the secondary species group.

There are no major secondary species that are not out-of-scope species (e.g. >5% of the catch) for any UoA. We are considering six 'out of scope' bird species and nine 'out of scope' marine mammal species that are potentially vulnerable to these fisheries as 'main' species. Please note that for these 'out of scope' species, the focus of the assessment has been on **gillnets** and **longlines** which evidence indicates have much higher interaction levels than the other gears being assessed. In addition, information is insufficient to associate by-catch of out-of-scope species with trips where cod are landed, so all activities of the fisheries are considered in assessment of out-of-scope species.

Table 14: Secondary species list, including English, scientific and Icelandic names. Resilience has been included for all in-scope species. Species which are not in scope would already be considered main.

FISH				
English Name	***Species***	***Icelandic Name***	***Type***	***Resilience***
Atlantic barracudina	*Magnisudis atlantica*	Digra geirsíli	Fish	Low
Atlantic halibut	*Hippoglossus hippoglossus*	Lúða	Fish	Low
Atlantic pomfret	*Brama brama*	Stóri bramafiskur	Fish	Low
Baird's slickhead	*Alepocephalus bairdii*	Gjölnir	Fish	Low
Black scabbardfish	*Aphanopus carbo*	Stinglax	Fish	Low
Blackbelly rosefish	*Helicolenus dactylopterus*	Svartgóma	Fish	Low
Broadnose chimaera / straightnose rabbitfish	*Rhinochimaera atlantica*	Trjónufiskur	Fish	Low
Cornish blackfish	*Schedophilus medusophagus*	Bretahveðnir	Fish	Low
Dealfish	*Trachipterus arcticus*	Vogmær	Fish	Low
European eel	*Anguilla anguilla*	Áll	Fish	High
European Hake	*Merluccius merluccius*	Lýsingur	Fish	High
Flounder	*Platichthys flesus*	Flundra	Fish	High
Greater eelpout	*Lycodes esmarkii*	Dílamjóri	Fish	Low
Greater forkbeard	*Phycis blennoides*	Litla brosma	Fish	Low
Grey gurnard	*Eutrigla gurnardus*	Urrari	Fish	High
Horse mackerel	*Trachurus trachurus*	Brynstirtla	Fish	High
Megrim	*Lepidorhombus whiffiagonis*	Stórkjafta / Öfugkjafta	Fish	High
Northern wolffish	*Anarhichas denticulatus*	Blágóma	Fish	Low
Norway pout	*Trisopterus esmarkii*	Spærlingur	Fish	High
Ocean sunfish	*Mola mola*	Tunglfiskur	Fish	Low
Orange roughy	*Hoplostethus atlanticus*	Búrfiskur	Fish	High
Pollack	*Pollachius pollachius*	Lýr	Fish	High
Rabbit fish	*Chimaera monstrosa*	Geirnyt/Havmus	Fish	Low
Raitt's/Lesser sandeel	*Ammodytes marinus*	Sandsíli	Fish	High
Roughhead grenadier	*Macrourus berglax*	Snarphali	Fish	Low
Roundnose grenadier	*Coryphaenoides rupestris*	Slétti langhali	Fish	Low
Salmon	*Salmo salar*	Lax	Fish	Low
Scalebelly eelpout	*Lycodes squamiventer*	Mjóri	Fish	Low
Snake blenny	*Ophidion barbatum*	Stóri mjóni	Fish	Low
Spiny eel	*Notacanthus chemnitzii*	(Nef)broddabakur	Fish	Low
Turbot	*Psetta maxima*	Sandhverfa	Fish	High
White hake	*Urophycis tenuis*	Stóra brosma	Fish	High
Whiting	*Merlangius merlangus*	Lýsa	Fish	High

Table 14 contd.

RAY & CEPHALOPOD				
English Name	***Species***	***Icelandic Name***	***Type***	***Resilience***
Blue/Common Skate	*Dipturus flossada*	Skata	Ray	Low
Sailray	*Rajella lintea*	Hvítaskata	Ray	Low
Shagreen ray	*Leucoraja fullonica*	Náskata	Ray	Low
Starry ray	*Amblyraja radiata*	Tindaskata	Ray	Low
European Flying Squid	*Todarodes sagittatus*	Smokkfiskur	Cephalopod	High
BIVALVES, CRUSTACEAN, ECHINOIDS, GASTROPODS				
English Name	***Species***	***Icelandic Name***	***Type***	***Resilience***
Atlantic rock crab	*Cancer irroratus*	grjótkrabbi	Crustacean	Low
Blue mussel	*Mytilus edulis*	Kræklingur / Bláskel	Bivalve	High
Green crab	*Carcinus maenas*	Strandkrabbi / Bogkrabbi	Crustacean	High
Ocean quahog	*Arctica islandica*	Kúfiskur / Kúskel	Bivalve	Low
Portly spider crab	*Libinia emarginata*	Trjónukrabbi	Crustacean	Low
Red deepsea crab	*Chaceon affinis*	Tröllakrabbi	Crustacean	Low
CETACEANS, PINNEPEDS, SHARKS				
English Name	***Species***	***Icelandic Name***	***Type***	***Resilience***
Black dogfish	*Centroscyllium fabricii*	Svarthákur	Shark	Low
Greenland shark	*Somniosus microcephalus*	Hákarl	Shark	Low
Harbour porpoise	*Phocoena phocoena*	Hnísa	Cetacean	
Harbour seal	*Phoca vitulina*	Landselur	Pinneped	
Leafscale gulper shark	*Centrophorus squamosus*	Rauðháfur	Shark	Low
Porbeagle	*Lamna nasus*	Hámeri	Shark	Low
Portuguese dogfish	*Centroscymnus coelolepis*	Gljáháfur	Shark	Low
Spiny / Picked dogfish	*Squalus acanthias*	Háfur	Shark	Low
White-Beaked Dolphin	*Lagenorhynchus albirostris*	Höfrungur	Cetacean	
BIRDS				
English Name	***Species***	***Icelandic Name***	***Type***	***Resilience***
Common guillemot	*Uria aalge*	Langvía	Bird	
Cormorant	*Phalacrocorax carbo*	Dílaskarfur	Bird	
Fulmar	*Fulmarus glacialis*	Fýll	Bird	
Great black-backed gull	*Larus marinus*	Svartbakur	Bird	
Northern gannet	*Morus bassanus*	Súla	Bird	
Shag	*Phalacrocorax aristotelis*	Toppskarfur	Bird	

Table 15: 'Out of scope' secondary species

Applicable to gillnets and longlines only

SEABIRDS		
English Name	***Species***	***Icelandic Name***
Common guillemot	*Uria aalge*	Langvía
Cormorant	*Phalacrocorax carbo*	Dílaskarfur
Fulmar	*Fulmarus glacialis*	Fýll
Great black-backed gull	*Larus marinus*	Svartbakur
Northern gannet	*Morus bassanus*	Súla
Shag	*Phalacrocorax aristotelis*	Toppskarfur
MARINE MAMMALS		
Bearded seal	*Eringnathus barbatus*	Kampselur
Dolphins	*Dephinidae*	Höfrungar
Grey seal	*Halichoerus grypus*	Útselur
Harbour porpoise	*Phocoena phocoena*	Hnísa
Harbour seal	*Phoca vitulina*	Landselur
Harp seal	*Pagophilus groenlandicus*	Vöðuselur
Humpback whale	*Megaptera novaeaamgliae*	Hnúfubakur
Ring seal	*Phoca hispida*	Hringanóri
White-Beaked Dolphin	*Lagenorhynchus albirostris*	Hnýðingur

3.4.6.1 Outcome status – 'in scope' species

All finfish landings of secondary species are minor, and in many cases negligible. Discarding is likely to occur, but is not expected to be high. Discarding is a requirement for viable Atlantic halibut. However, no formal evaluation of status of these species has been undertaken (e.g. ecological risk assessment).

Overall capacity of the fleets has been reduced so that fishing effort is commensurate with the productivity of the main pressure stocks (cod, haddock, saithe, ling, herring, capelin etc.). This provides some protection for non-target species as well.

Survey information is likely to be available, and may be reviewed, but is not published except in a few cases. Atlantic halibut survey index suggests that the stock is currently increasing, although it has been heavily depleted since 1984. Other survey data are unpublished. Surveys may not be suitable for tracking the abundance of many of these species.

3.4.6.2 Outcome status – 'out of scope' seabirds

Seabirds use sea cliffs as nesting sites and breeding colonies of seabirds are found all around Iceland. Since the early eighties the populations of seabirds have in general reduced significantly which most likely has been driven by changes in food availability. Seabirds are most vulnerable to be caught by fishing gear while feeding relatively close to the shore, in particular lumpfish gillnets.

Cod-directed gillnets catch relatively large numbers of common guillemots (72%) and fulmars (19%), and smaller numbers of northern gannet (3%). Longlines also catch fulmars (79%) and to a lesser extent black-backed gulls (4%).

Table 16: Observed number of birds caught in fishing gear

Species	Gear	Number	% *	Period	Source
Fulmar	Gillnet	144	18.8	2009-2014	MRI Gillnet survey (Pálsson et al, 2015)
	Longline	37	79.0	2014-2015	MRI Observer data
Northern gannet	Gillnet	24	3.1	2009-2014	MRI Gillnet survey (Pálsson et al, 2015)
Great black-backed gull	Longline	2	4.0	2014-2015	MRI Observer data
Common guillemot	Gillnet	554	72.1	2009-2014	MRI Gillnet survey (Pálsson et al, 2015)
Great cormorant / shag	Gillnet	0	0.0	2009-2014	MRI Gillnet survey (Pálsson et al, 2015)
	Longline	2	4.0	2014-2015	MRI Observer data

* Percentage of total bird bycatch in gear.

Source: See table (last column)

Pálsson et al., 2015 used data from observers, the scientific cod gillnet surveys (conducted in April each year) and self-reported data to estimate bycatch in Icelandic waters. It should be noted that while bycatch reporting is now mandatory, returns of electronic log books have been low. In addition, some differences have been observed between observer-collected data and self-reported data on bycatch, which are important to understand and explore in the context of this re-assessment. Irrespective, the Hafro report (for gillnets) and personal communication with Hafro (for longlines, from soon to be published observer data, coverage of ~1% of the fleet) gives the following estimates of annual mortality rates (see the BirdLife International & Fuglaverndarfélag Íslands formal stakeholder submission in Appendix 3 for more details):

Cod longlines	**Cod gillnets**
Fulmar - 4,037/year	Common guillemot - 4,400/year
Northern gannet - 327/year	Fulmar - 1,100/year
Black guillemot - 327/year	
Cormorant - 218/year	
Great black-backed gull - 218/year	

These figures are discussed further below in context with the species and fisheries.

Fulmar (*Fulmarus glacialis*): The European Fulmar population is estimated to number between 2.8 million and 4.4 million pairs. Approximately 1-2 million pairs are estimated to breed in Iceland, with 1-5 million birds present over winter. Despite the fluctuations in the fulmar population, it remains a common breeder in Iceland, not least in eastern Iceland, where numbers are increasing. Historically 3,300 and 10,500 fulmars were hunted annually in Iceland, but this practise is far less frequently nowadays. Pálsson *et al* (2015) estimate that cod longlines and gillnets account for around 2,019 and 1,100 fulmar deaths, respectively per year. It is considered that fisheries are not a threat to the population status of this species (Dr. Erpur Snær Hansen, Náttúrustofa Suðurlands / South Iceland Nature Research, pers. comm., 24 May 2016).

Northern gannet (*Morus bassanus*): the Northern Gannet is found on both sides of the Atlantic Ocean, whose breeding sites include northern France, the United Kingdom, Ireland, Iceland, Norway and the eastern tip Quebec (Canada) (del Hoyo *et al*. 1992). Del Hoyo et al. estimated the global population to number 526,000 individuals and the population is increasing (Birdlife International, 2016). This strictly marine species wanders mostly over continental selves, feeding on shoaling pelagic fish which are mostly caught by plunge-diving from large heights. It also attends trawlers and

will form large congregations where food is plentiful. Breeding is highly seasonal starting between March and April, usually in large colonies on cliffs and offshore islands, but also sometimes on the mainland.

Pálsson *et al* (2015) estimate that cod longlines account for around 164 northern gannet deaths a year. It is considered that these longline fisheries are not a threat to the population status of this species (Dr. Erpur Snær Hansen, Náttúrustofa Suðurlands / South Iceland Nature Research, pers. comm., 24 May 2016).

Great black-backed gull (*Larus marinus*): this species can be found breeding on coasts from the extreme north-west of Russia, along Scandinavia, on Baltic Sea coasts, on the coasts of north-western France, the United Kingdom and Ireland, across the north Atlantic in Iceland and southern Greenland and on the Atlantic coasts of Canada and the USA down to North Carolina. Individuals breeding in harsher environments will migrate south, wintering on northern coasts of Europe from the Baltic Sea to southern Portugal, and down North America as far south as the Caribbean (del Hoyo et al. 1996). The overall population trend is increasing, although some populations are stable (Birdlife International 2016). In Iceland they are common all along the coast, but more common in the south. However this species is in decline in Iceland, possibly due to the declining availability of discarded offal and land-based waste (Dr. Erpur Snær Hansen, Náttúrustofa Suðurlands/South Iceland Nature Research, pers. comm., 24 May 2016).

Pálsson *et al* (2015) estimate that cod longlines account for around 109 great black-backed gull deaths a year.

Common guillemot (*Uria aalge*): The Common Guillemot is a pursuit-diving marine bird which forages primarily during daylight. One parent remains at the colony with the chick whilst the other is on a foraging trip. Birds departing colonies usually splash-down to form large rafts close to the colony before departing to foraging areas. The Common Guillemot has a circumpolar distribution, occurring in the low-arctic and boreal waters of the north Atlantic and north Pacific (del Hoyo *et al.* 1996). The global population is estimated to number > c.18,000,000 individuals (del Hoyo *et al.* 1996).

In the core distribution area, the North Atlantic, *Uria aalge* is declining. The population in Iceland is declining after many previous decades of increase, and the populations in Scotland, Norway and the Faroes are also declining (Berglund, P-A. & J. Hentati-Sundberg, 2015). In the Baltic Sea however, Common Guillemot may be increasing in Sweden, Finland and Denmark. The overall decline within the AEWA area fulfils the criteria for categorization as 'Significant Long-term Decline'.

Pálsson *et a*l (2015) estimate that cod gillnets account for around 4,400 common guillemot deaths a year. Whilst the population may be declining, it is not currently considered that the gillnet fisheries are a threat to the population status of this species (Dr. Erpur Snær Hansen, Náttúrustofa Suðurlands / South Iceland Nature Research, pers. comm., 24 May 2016).

Great cormorant (*Phalacrocorax carbo*) / European Shag (*Phalacrocorax aristotelis*): the cormorant inhabits both marine and freshwater areas, whilst the shag is exclusively marine. Shags typically breed on (steep) sea cliffs whilst cormorants breed on top of small islands where they build their nests. Both shag and cormorant breed in the Breiðafjörður region of Iceland. During the winter they can be found all along the coast.

The population of the cormorants has gradually increased in some periods in Iceland and Norway - numbers in Iceland increased from 2,350 nests in 1995 to 4,500 nests in 2007. However shags numbers are in decline – IUCN state that the decline is not believed to be sufficiently rapid to approach the thresholds for 'Vulnerable' under the population trend criterion (>30% decline over ten years or three generations) and for this reason the species is evaluated as 'Least Concern' in Europe.

Pálsson *et al* (2015) estimate that cod longlines account for around 109 cormorant / shag deaths a year. It is considered that fisheries are not a threat to the population status of these species (Dr.

Erpur Snær Hansen, Náttúrustofa Suðurlands / South Iceland Nature Research, pers. comm., 24 May 2016).

3.4.6.3 Outcome status – 'out of scope' marine mammals

Based on MRI observer data, marine mammal interactions with these fisheries are restricted to gillnets. No marine mammal interactions were observed in the recent longline bycatch observer programme (MRI, unpublished), although toothed whales and seals may be attracted to the bait. Interactions with towed gear such as trawls and the Danish seine are likely to be minimal.

The table below shows the number of marine mammals observed to be caught in MRI's cod gillnet survey over an eighteen year period. The main species caught were harbour porpoises (nearly 80%), with smaller quantities of harp seals (12%) and harbour seals (4%)[1]. We will consider the fate of these three species further below.

[1] One ETP species, the hooded seal, represented 0.2% of marine mammals caught (1 observed in 18 years) and is considered in the next section on ETPs.

Table 17: Observed number of marine mammals caught in fishing gear (1997 – 2014)

Species	***Gear***	***Numbers***	***% ****
Harbour porpoise	Gillnet	330	79.3
Harbour seal	Gillnet	17	4.1
Dolphins	Gillnet	7	1.7
White-beaked dolphin	Gillnet	6	1.4
Humpback whale	Gillnet	0	0.0
Grey seal	Gillnet	3	0.7
Harp seal	Gillnet	50	12.0
Bearded seal	Gillnet	2	0.5
Ring seal	Gillnet	0	0.0

*) Percentage of total bycatch of marine mammals caught in gillnet.
Source: MRI Gillnet survey (Pálsson et al, 2015)

Harbour porpoise (*Phocoena phocoena*): In the North Atlantic, harbour porpoise can be divided into two separate populations, one in the Northwest and the other in the Northeast (Gaskin 1984, Andersen 1993, Andersen 2003). Within these populations, Gaskin (1984) identified 14 putative sub-populations, based primarily upon coincident summer distribution patterns and the assumption that harbour porpoise is confined largely to continental shelf areas. However, sighting data, satellite telemetry and records of bycatches indicate that harbour porpoise are capable of considerable movements and are not restricted to nearshore areas (Stenson and Reddin, 1990).

Harbour porpoise is common in shallow waters all around Iceland in spring to autumn, but less during the winter months (Ólafsdóttir *et al*., 2002). Abundance estimates of harbour porpoise, based on the North Atlantic Sightings Surveys programme (NASS) conducted in 1987, 1989 and 1995, indicated a population size of around 27,000 animals (Sigurjónsson & Víkingsson 1997; Stenson, 2003). The estimate was based on the shipboard part of NASS in 1987 and mostly on offshore observations (Gilles et al. 2011). This rough estimate most likely represents an underestimation of abundance as the proportion of porpoises sightings missed for ship surveys can be quite high (Gilles et al. 2011). The NASS programme aimed at estimating the summer distribution and abundance of cetacean populations in the North East Atlantic. The results demonstrated great variation in distribution of harbour porpoise sightings between surveys but their occurrence was mainly inshore. In 2007 an aerial survey was conducted which specifically was designed to get reliable estimates of harbour porpoise distribution and abundance in Icelandic waters (Gilles et al. 2011). Highest densities were estimated in Breiðafjörður and to the NW of the fjord as well as in inshore waters off East Iceland (see figure below). The estimated population size of harbour porpoise in Icelandic waters is estimated at 43,179 animals (95% confident interval: 31,1755 – 161,899 animals). The IUCN considers the harbour porpoise to be of 'least concern' (Hammond *et al*, 2008). Harbour porpoises are covered by the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS), but Iceland is not a signatory, so it is not considered an ETP for this assessment.

In Iceland, harbour porpoises are mainly caught in gillnets as by-catch in the lumpfish fishery (NAMMCO, 2016), rather than the cod-directed fisheries currently under assessment. The hunting of harbour porpoise in Iceland has virtually ceased, but is still extensively hunted in neighbouring Greenland. The harbour porpoise is the most commonly bycaught marine mammal and according to MRI calculations, the by-catch in gillnets has decreased since 2003, from 7,300 animals to about 1,600 animals in 2009–2013, in line with decreased cod net effort (Pálsson *et al*, 2015). The diet of harbour porpoises in Icelandic coastal waters has been studied based on examination of individuals caught incidentally during 1991-1997 (Víkingsson *et al*. 2003). Most of the animals were caught in

bottom set gillnets targeting cod (*Gadus morhua*) and majority of the bycatch occurred in nearshore areas and shallower than 100 m depth. The overwhelming majority of the bycatch occurred in March and April.

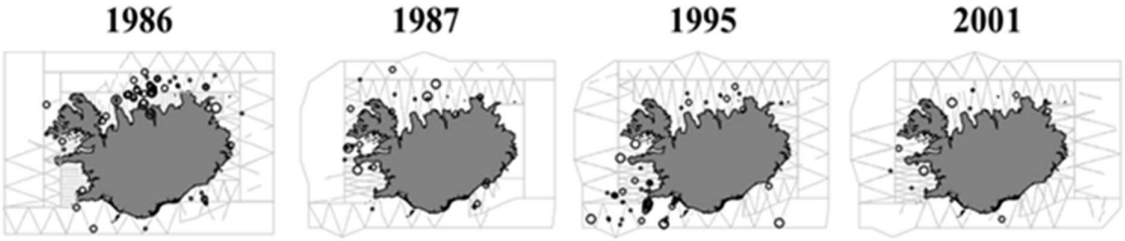


Figure 8: Harbour porpoise sightings. Sightings of harbour porpoise around Iceland during the 1986-2001 North Atlantic Sightings Survey (NASS). Grey lines indicate the effective survey effort. Source: Pike et al. 2009.

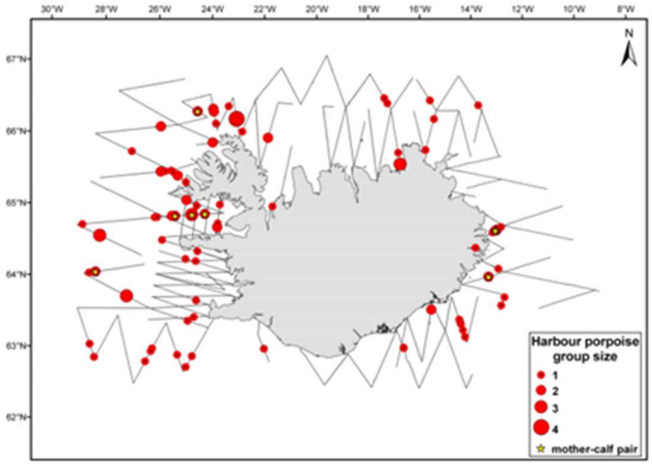


Figure 9: Aerial survey of harbour porpoise distribution in Iceland (2007). Results of aerial surveys conducted in the summer of 2007 in Icelandic waters based on sightings made by experienced observers. Grey line indicates effective survey effort in good or moderate harbour porpoise sighting conditions (Beaufort Sea states lower than 3), equivalent to 88% of the total effort. Source: Gilles et al. 2011.

Harbour seal (*Phoca vitulina*): The Icelandic Seal Centre (ISC) and Icelandic Institute of Freshwater Fisheries (IFF, now part of MFRI) conducted a partial population count of harbour seals in 2014 during the moulting period in August-September (NAMMCO, 2016). Due to insufficient funding and thus limited coverage, the data provided by this survey will not produce a new reliable population estimate for the Icelandic harbour seal population. However, the results show a severe reduction in the surveyed areas since the last full count in 2011 (e.g. a considerable reduction from the 11,000 animals found in 2011, implying that the population size is likely to be smaller than the 12,000 animals defined in the management objectives by the Icelandic government (MRI 2015).

Harp seal (*Pagophilus groenlandicus*): the harp seal population is found in three separate populations, each of which uses a specific breeding site. The western North Atlantic stock, which is the largest, is located off eastern Canada. A second stock breeds on the "West Ice" off eastern Greenland, which contributes to Icelandic individuals. Due to its large population size, and the increasing trend in two the 'West Ice' population group, the harp seal should continue to be classified by IUCN as 'Least Concern'. (Kovacs, 2015).

3.4.6.4 Management of Secondary Species

There are no direct management interventions for in-scope secondary species (finfish, crustaceans, sharks and rays), with the exception of Atlantic halibut. Landings of in-scope secondary species is small (all are minor species), and in most cases negligible. Many input controls limiting exploitation of the main target stocks (cod, haddock, saithe etc.), such as limits on capacity, mesh size and so on, will also protect non-target stocks. With very low catches of secondary species, it is quite likely that further action is not required, but this has not been formally determined. Improved management of these stocks would likely lead them to be classified as primary species.

There is a requirement to discard Atlantic halibut if it is viable and all directed fishing at halibut has been prohibited (MRI, 2015). This is based on the biomass index that indicates Atlantic halibut has been depleted in the past, most likely due to bottom trawl and longline activities. Evidence from the surveys indicates that the population size has been increasing in recent years, suggesting that the current management strategy is successfully rebuilding the stock.

Icelandic longline fisheries use mitigation measures in order to reduce bycatch of seabirds (pers. comm. Gunnlaugur Eiriksson, ISF; Vottunarstofan Tún 2011). The longliners use either bird-scaring buoy lines or a gas alarm which is sounded when the line is shot. During the winter time, the lines are often shot in the dark, which reduces the possible bycatch of seabirds.

In addition to the reduced gillnet fishing effort in recent years the following management measure is likely to contribute to further reduction in bycatch of harbour porpoise: In order to protect the spawning stock of cod extensive seasonal closures are in operation during the spawning season (Regulation nr. 30/2005). All fisheries are closed within 12 miles along the south and west coast and within 6 miles along the north and east coast in April each year.

3.4.6.5 Information on Secondary Species

Information on in-scope secondary species will broadly be the same as for primary species, except they are not the focus of scientific sampling programmes. Landings of all in-scope species, mainly finfish, are recorded (Table 4-Table 10). In addition, landings of some out-of-scope species, such as harbour seals, have also been reported, but these are rare. Data on all catches are recorded in the demersal surveys, although these remain unpublished. These data were used to demonstrate increasing abundance of Atlantic halibut (MRI, unpublished data). No ecological risk assessment of these species has been carried out.

During June-August 2015, the MRI participated in a large scale cetacean sightings survey (NASS-2015) conducted in cooperation with the Faroes, Greenland and Norway under coordination of the NAMMCO Scientific Committee. The Icelandic part of the survey was conducted from two research vessels and one aircraft (NAMMCO, 2016).

The registration of marine mammals caught in the MRI spring gillnet survey was initiated in 1997 and for birds in 2009. The MRI spring gillnet survey is equivalent to 2% of the total cod gillnet fishing effort in April. The first year's the gillnet survey was only conducted in the south and west of the country but since 2002 it is also done in the north.

Icelandic regulations require that all bycatch should be recorded. The registration of bird and mammal bycatch in commercial cod gillnets (other than lumpfish) started in 2002. Bycatch registration was received from 5% of the cod gillnet vessels until 2009. No birds were registered. In 2009 they switched to electronic logbooks and after that no information on marine mammals or bird bycatch has been returned. Just recently discussion between competent authorities (MII, MRI and DF) and the National Association of Small Boat Owners has taken place in order to improve logbook reporting of marine mammals and seabirds bycatch. In the effort to step up monitoring of such

bycatch DF has issued a new simplified logbook form that is believed to improve reporting of bycatch[2].

The recent MFRI report (Pálsson *et al.*, 2015) used data from observers, the scientific cod gillnet surveys (conducted in April each year) and self-reported data to estimate bycatch in Icelandic waters. It should be noted that while bycatch reporting is now mandatory, returns of electronic log books have been low. In addition, some differences have been observed between observer-collected data and self-reported data on bycatch, which are important to understand and explore in the context of this re-assessment. Information on catches of seabirds in gillnets targeting cod indicate that the fishing mortality is low in late summer but increases during the winter months with a peek in April to May), at the time when capelin (*Mallotus villosus*) is spawning in shallow waters off the coast of Iceland.

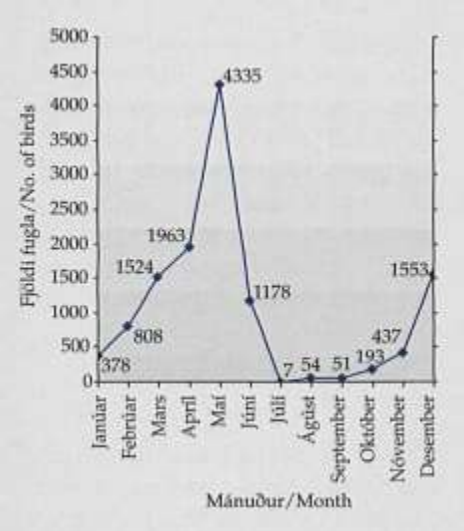


Figure 10: Temporal variation in numbers of seabirds drowned in cod nets during the years 1993-1994. Source: Peterson 2002.

The Icelandic Fisheries Management Act requires that all catches shall be landed. Therefore, no discarding should take place. All catches landed in Iceland must be weighed using specially authorized scales and the landing data is instantly transmitted to the database of Directorate of Fisheries (DF).

There are strict requirements for the keeping of log books on-board all fishing vessels, containing information on fishing practices such as location, dates, gear and catch quantity. Log books must be made available to inspectors from the DF and to MRI for scientific purposes. A team of inspectors from DF monitors landing and weighing practices and inspectors may board fishing vessels to monitor catch composition, handling methods and fishing equipment. Following a random investigation, inspectors can join the vessel crew to the same fishing ground the vessel visited during the previous fishing trip, in order to examine their fishing practices. Also, the system of instant recordings of landings allows for the use of DF database to trace the origin and date of catch and to compare catches by an individual vessel to other vessels fishing at the same location and date. Discrepancies in catch proportion can lead to further inspections.

[2] http://www.hafro.is/undir.php?ID=242&REF=3

3.4.7 Endangered, Threatened and Protected Species

The MSC defines ETP species as those that are recognized as such by national legislation and/or binding international agreements to which the jurisdictions controlling the assessed fishery are party. Species are not considered as ETP under MSC protocols if they:

- only appear in non-binding lists;
- are only the subject of intergovernmental recognition;
- are not included in national legislation and
- are not subject to binding international agreement.

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. However, Iceland is not a signatory to Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS). 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.

Nine bird, eight cetaceans, one terrestrial mammal, one seal and one marine reptile species have been identified as ETP species that have the potential to interact with marine fisheries (see Table 18 and Table 19).

Table 18: ETP species list, including English, scientific and Icelandic name.

English Name	***Species***	***Icelandic Name***	***Type***
Atlantic Puffin	*Fratercula arctica*	Lundi	Bird
Black Guillemot	*Cheppus grylle islandicus*	Teista	Bird
Black-tailed godwit	*Limosa limosa islandica*	Jaðrakan	Bird
Common Pochard	*Aythya ferina*	Skutulönd	Bird
Gyrfalcon	*Falco rusticolus*	Fálki	Bird
Horned Grebe	*Podiceps auritus*	Flórgoði	Bird
Long-tailed Duck	*Clangula hyemalis*	Hávella	Bird
White-tailed eagle	*Haliaeetus albicilla*	Haförn	Bird
Whooper swan	*Cygnus cygnus*	Álft	Bird
Blue Whale	*Balaenoptera musculus*	Steypireyður	Cetacean
Bowhead whale	*Balaena mysticetus*	Norðhvalur/Grænlandshvalur	Cetacean
Fin Whale	*Balaenoptera physalus*	Langreyður	Cetacean
Humpback whale	*Megaptera novaeangliae*	Hnúfubakur	Cetacean
Minke whale	*Balaenoptera acutorostrata*	Hrefna	Cetacean
North Atlantic Right Whale	*Eubalaena glacialis*	Sléttbakur	Cetacean
Sei Whale	*Balaenoptera borealis*	Sandreyður	Cetacean
Sperm Whale	*Physeter macrocephalus*	Búrhvalur	Cetacean
Hooded Seal	*Cystophora cristata*	Blöðruselur	Pinneped
Leatherback	*Dermochelys coriacea*	Leðurskjaldbaka	Reptile
Polar Bear	*Ursus maritimus*	Ísbjörn	Mammal

Table 19: ETP species designations in Icelandic marine waters

English Name	***Species***	***Type***	***IUCN Status***	***IUCN Pop. Trend***	***CITES, App. I***	***AEWA***
Atlantic Puffin	*Fratercula arctica*	Bird	VU	Decreasing		
Black Guillemot	*Cheppus grylle islandicus*	Bird				Y
Black-tailed godwit	*Limosa limosa islandica*	Bird				Y
Common Pochard	*Aythya ferina*	Bird	VU	Decreasing		
Gyrfalcon	*Falco rusticolus*	Bird			Y	
Horned Grebe	*Podiceps auritus*	Bird	VU	Decreasing		Y
Long-tailed Duck	*Clangula hyemalis*	Bird	VU	Decreasing		
White-tailed eagle	*Haliaeetus albicilla*	Bird			Y	
Whooper swan	*Cygnus cygnus*	Bird				Y
Blue Whale	*Balaenoptera musculus*	Cetacean	EN	Increasing	Y	
Bowhead whale	*Balaena mysticetus*	Cetacean			Y	
Fin Whale	*Balaenoptera physalus*	Cetacean	EN	Unknown	Y	
Humpback whale	*Megaptera novaeangliae*	Cetacean			Y	
Minke whale	*Balaenoptera acutorostrata*	Cetacean			Y	
N-Atlantic Right Whale	*Eubalaena glacialis*	Cetacean	EN	Unknown		
Sei Whale	*Balaenoptera borealis*	Cetacean	EN	Unknown	Y	
Sperm Whale	*Physeter macrocephalus*	Cetacean	VU	Unknown	Y	
Hooded Seal	*Cystophora cristata*	Pinniped	VU	Decreasing		
Leatherback	*Dermochelys coriacea*	Reptile	VU	Decreasing	Y	
Polar Bear	*Ursus maritimus*	Mammal	VU	Unknown		

Following discussions with various authorities (e.g. MRI, Birdlife International) and a literature review, one bird species (the black guillemot) and one marine mammal (the hooded seal) have been shown to have interactions with two gears (**gillnets** and **longlines**) under assessment (Table 19). These two species are examined in more detail below.

Table 20: Observed number of individuals of ETP-species caught in fishing gears (gillnet & longline)

Species	*Gear*	*Number*	*% **	*Period*	*Source*
Black guillemot	Gillnet	1	0.1	2009 - 2014	MRI Gillnet survey (Pálsson et al, 2015)
	Longline	3	6.0	2014 - 2015	MRI Observer data
Hooded seal	Gillnet	1	0.2	1997 - 2014	MRI Gillnet survey (Pálsson et al, 2015)

*) Percentage of total bycatch.

3.4.7.1 Outcome Status

Black guillemot (*Cheppus grylle islandicus*): in 2000 there are around 10,000 – 15,000 black guillemot individuals in Iceland, around 3% of the European population. Although the population trend in North America is increasing (Birdlife International, 2012), more recently Birdlife International (2015) report that the Icelandic population is decreasing at a moderate rate e.g. 20 – 49%). Black guillemots are nearshore feeders, and several studies (at the Bay of Fundy, Finland, Denmark and Iceland) found that black guillemots foraged between 0.5 and 4 km from nest sites, and occasionally beyond 7 km away (Birdlife International, 2000). As such they are more susceptible to inshore gillnets, such as those targeting lumpfish, rather than cod gillnets that are usually operated further offshore.

Hooded seal (*Cystophora cristata*): hooded seals in the Greenland 'West Ice' area have shown, and continue to show, a declining trend. Comparing pup production estimates for 1997 and 2012 indicates a population decrease of 3.7% per year and a reduction in population size of 43% in 15 years (Kovacs, 2016). The most recent estimate of the total size of this population is 82,830 (SE=8,028) and models suggest a continued decline of approximately 7% per year in the coming decade (Øigård *et al*. 2014). This stock is less than 10% of its abundance observed some 60 years ago (ICES, 2013). Overhunting was clearly involved in the collapse of this stock as quotas were being set for a population size much larger than it actually was. However, the cause of the significant, on-going decline in this population is thought to be related to climate change induced alternation of its sea ice breeding habitat and increased predation by polar bears and killer whales in the pupping areas (Øigard *et al*., 2014) but prey availability might also be an issue.

3.4.7.2 Management

In 2007 the NAMMCO Management Committee for Seals and Walruses recommended a commercial catch level of zero for hooded seals, only allowing limited research catches, but it is still being caught in large numbers by Greenland. The average catches over the last 5 years are around 1,850 animals, compared to the previous five years when the annual catch was 3,400 (NAMMCO, 2016).

3.4.7.3 Information

During June-August 2015, the MRI participated in a large scale cetacean sightings survey (NASS-2015) conducted in cooperation with the Faroes, Greenland and Norway under coordination of the NAMMCO Scientific Committee. The Icelandic part of the survey was conducted from two research vessels and one aircraft (NAMMCO, 2016).

The registration of marine mammals caught in the MRI spring gillnet survey was initiated in 1997 and for birds in 2009. The MRI spring gillnet survey is equivalent to 2% of the total cod gillnet fishing effort in April. The first year's the gillnet survey was only conducted in the south and west of the country but since 2002 it is also done in the north.

Icelandic regulations require all bycatch to be recorded. The registration of bird and mammal bycatch in commercial cod gillnets (other than lumpfish) started in 2002. Bycatch registration was received from 5% of the cod gillnet vessels until 2009. No birds were registered. In 2009 they

switched to electronic logbooks and after that no information on marine mammals or bird bycatch has been returned.

The recent MFRI report (Pálsson *et al*., 2015) used data from observers, the scientific cod gillnet surveys (conducted in April each year) and self-reported data to estimate bycatch in Icelandic waters. It should be noted that while bycatch reporting is now mandatory, returns of electronic log books have been low. In addition, some differences have been observed between observer-collected data and self-reported data on bycatch, which are important to understand and explore in the context of this re-assessment.

3.4.8 Habitats

3.4.8.1 Outcome Status

Iceland is located at the junction of the Mid-Atlantic Ridge and the Greenland-Scotland Ridge just south of the Arctic Circle and this is reflected in the topography around the country. Substrate characteristics can be largely influenced by depth. Hard bottom is more often found in shallower waters compared to deep waters. In deeper waters, hard bottom is often confined to abrupt features such as ridges and seamounts. Soft sediments often dominate in the troughs and outside the continental slope. The shelf around Iceland is narrowest off the south coast and is cut by submarine canyons around the country (ICES, 2016).

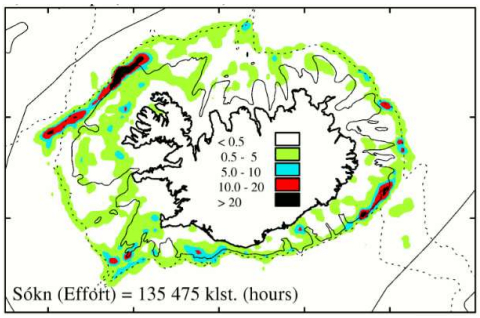
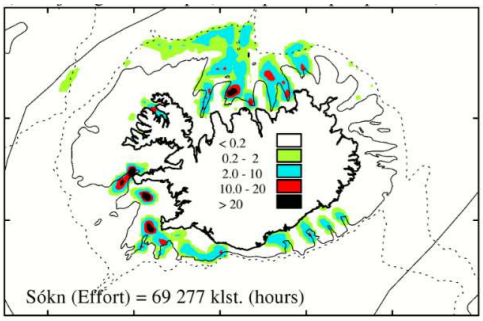
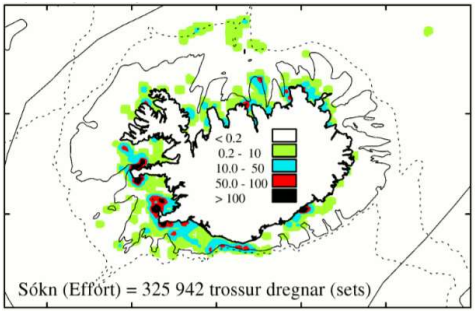
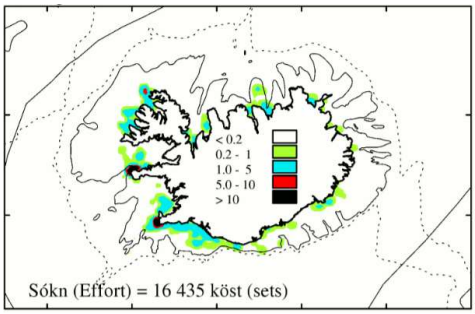
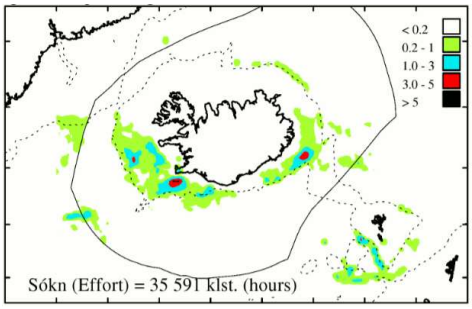
In the following section we will examine the impact of the assessed fisheries upon to specific elements, (i) ***commonly encountered habitats*** and (ii) ***vulnerable marine ecosystems***.

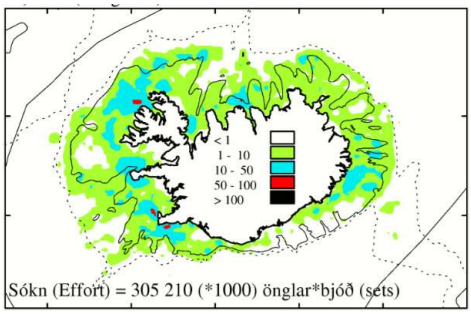
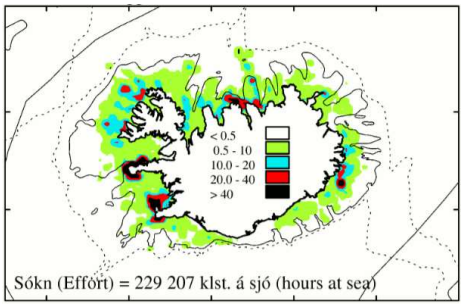
3.4.8.2 Commonly encountered habitats

Commonly encounter habitats are those in which the gear regularly come into contact and are considered separately to the vulnerable marine ecosystems (VMEs) considered next. The benthic habitats around Iceland are characterized by sandy and gravel bottoms in shallow waters and on the ridges, with frequent lava intrusions, but muddy, high organic bottoms in deeper waters. The deeper bottoms may have dense aggregations of mobile megabenthos, particularly in organic matter−rich regions. Dropstones in a muddy or sandy environment were observed to provide a substrate for various diverse sessile epifauna (Meißner *et al*, 2014).

The commonly encountered habitats are briefly considered for each gear type in the table below.

Table 21: Commonly encountered habitats

Gear type (water depth)	***Commonly encountered habitats***	***Fishing intensity distribution***
Bottom trawl (100 – 500 m)	Hard ground, varying from sandy mud to gravel and cobbled areas (Ragnarsson & Steingrímsson, 2003).	
Nephrops trawl (100 – 500 m)	Soft ground, usually soft mud that provides good burrowing habitat for *Nephrops.*	
Gillnet (0 – 100 m)	Largely pelagic habitat, although footrope likely to have contact with the ground. Ground is variable, but these inshore areas can consist of submerged boulder / lava fields, as well as more homogeneous sandy, gravel and cobbled areas and transition zones in between (Grabowski *et al*, 2012).	
Danish seine (40 – 40 m)	Hard ground, varying from sandy mud to gravel and cobbled areas (Thórarinsdóttir *et al*, 2010).	
Pelagic trawl (100 – 600 m)	Essentially a pelagic habitat.	

Gear type (water depth)	*Commonly encountered habitats*	*Fishing intensity distribution*
Longline (50 – 300 m)	Largely pelagic habitat, although may have contact with the ground. Ground is variable, but these inshore areas can consist of submerged boulder / lava fields, as well as more homogeneous sandy, gravel and cobbled areas and transition zones in between (Grabowski *et al*, 2012).	
Hand line (50 – 200 m)	Essentially a pelagic habitat.	

3.4.8.3 Vulnerable Marine Ecosystems (VMEs)

There are three main VMEs that need to be considered in Icelandic waters:

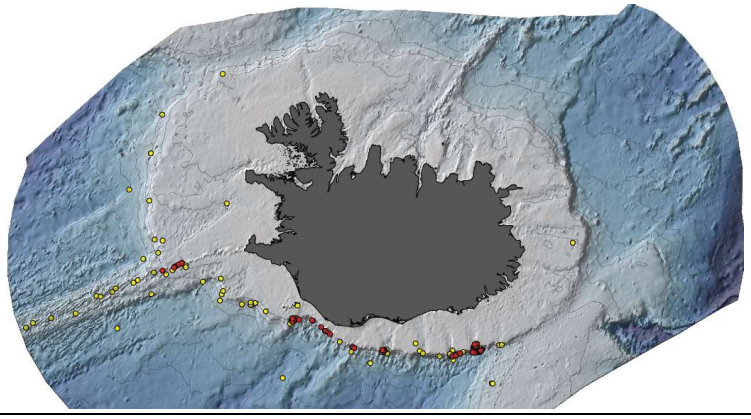
1. Hard corals (*Lophelia pertusa*)
2. Soft corals (*Gorgonacea* & *Pennetulacea*), and
3. Sponges (*ostur*)

In general, vulnerable habitats around Iceland occur in deep waters and are commonly close to the continental shelf break or deeper. However, maerl beds and hydrothermal vents in the Eyjafjörður fjord are examples of vulnerable habitats that occur in coastal waters.

Hard corals: *Lophelia pertusa* is a cold-water, reef-forming coral that has a wide geographic distribution ranging from 55°S to 70°N, where water temperatures typically remain between 4 - 8°C. The larvae settle on hard substrata in relatively deep water and newly formed colonies have been found on the legs of oil platforms. These reefs are generally subject to moderate current velocities (0.5 knots). The biological diversity of the reef community can be three times as high as the surrounding soft sediment (ICES, 1999), suggesting that these cold-water coral reefs may be biodiversity hotspots. Characteristic species include other hard corals, such as *Madrepora oculata* and *Solenosmilia variabilis*, the redfish *Sebastes viviparus* and the squat lobster *Munida sarsi*. *L. pertusa* reefs occur on hard substrata; this may be Lophelia rubble from an old colony or on glacial deposits. For this reason, *L. pertusa* reefs can be associated with iceberg plough-mark zones. The mapping programme from Hornafjarðardjúp shows that three different zones can be distinguished within the coral area, live coral zone, dead coral zone and coral rubble zone. The fauna composition is different between these zones. The diversity is high for the dead coral and coral rubble zones but lower for the live coral zone (Ólafsdóttir, 2009).

Such cold water coral areas in Icelandic waters occur close to the shelf break off the south and west coast of Iceland at 114 – 800 m depth (Copley et al, 1993), mainly along the Reykjanes Ridge, other ridges and the continental shelf foothills. Following a scientific mapping, fourteen coral areas with *Lophelia pertusa* have been closed for all fisheries using bottom contact gear.

Table 22: Cold-water coral (Lophelia pertusa)

Description	*Lophelia pertusa*, a cold-water, reef-forming coral
Occurrence in Icelandic waters	Slope areas off S and W-coast of Iceland and on the Reykjanes Ridge 
Depth range	Found 200-1,400 m, but concentrated 400 – 800 m
Depth range of fishery	100-400 m
Overlap of fishery with habitat	On the continental shelf close to the slope area. Several coral areas are known to be lost. Remaining areas are out of reach for bottom trawling or have been protected (see below).
Protection measures	14 coral areas have been closed for fishing. There is some natural protection along the ridges due to the complex lava rock formations. Included as a threatened or declining species and habitats (OSPAR agreement 2008-6).
References	OSPAR, 2010a; Buhl-Mortensen *et al*, 2014; Burgos *et al*. 2014 (http://www.hafro.is/rad-hafsbotn14/glaerur/Julian%20Burgos.pdf), Ólafsdóttir & Burgos 2012, Steingrímsson & Einarsson 2004, www.fisheries.is, http://www.umhverfisraduneyti.is/frettir/nr/2577

In common with many other corals, *Lophelia* is brittle which makes it vulnerable to physical damage, in particular from fishing gear (ACE, 2002). In the Norwegian EEZ, for example, *L. pertusa* is estimated to cover somewhere between 1,500 and 2,000 km² of seabed, mostly concentrated between depths of 200–400 m (Fosså *et al*., 2002). Analysis of information indicates that one half of the total reef area of Norway has been damaged to an observable extent (Mortensen *et al*., 2002). The current and past distribution of *L. pertusa* reefs around the Faroe Islands also show changes, and these are thought to be due to fishing (ICES, 2001). MRI has an ongoing programme mapping the seabed, including the location and distribution of *Lophelia* reefs. What remains uncertain is the length of time that apparent trawl damage can be identified in reef areas after the incident. At the depths involved it is quite probably decades rather than months. Economic self-interest means that skippers tend to avoid known reef areas due to the potential damage to trawls or loss of nets and lines with concomitant loss of catch and loss of fishing time to repair or recover gear.

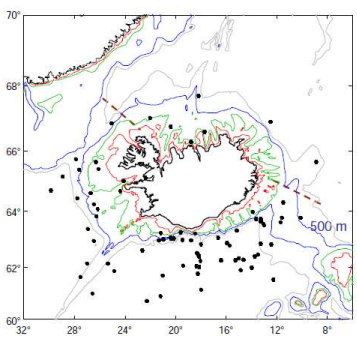
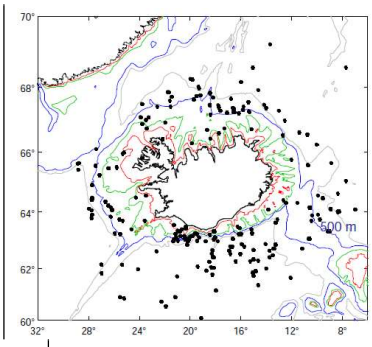
MRI interviewed retired fishermen who fished actively prior to 1970, and carried out a questionnaire to fishermen currently working in the fisheries (Steingrímsson and Einarsson, 2004). This information was used to assess the current status of coral areas by comparing their historical and present distribution off Iceland. It was concluded that during the 1980s and 1990s some relatively large coral grounds vanished, e.g. one on the Reykjanes Ridge (36km²) and two near the Öræfagrunn Bank (68 and 30km², respectively; Garcia *et al*, 2007).

Based on analysis of logbook data about 79 km² were fished with towed bottom fishing gears in 2013, comprising 10% of the ecoregion (MRI, 2016). The total fishing effort by bottom trawls targeting fish and shrimp has decreased between 2000 and 2014 by around 40% while the *Nephrops*

trawling effort has remained at similar level. The decrease in the fishing effort varied locally, with decreases mainly noted on the southern shelf (subarea 1) and on typical shrimp trawling grounds on the northern shelf.

Soft corals: the distribution of soft corals (Gorgonacea and Pennatulacea) off Iceland is not well-known, but several of the gorgonian species, e.g. *Paragorgia arborea* and *Primnoa resedaeformis*, are widely distributed (see figure overleaf) and many of them are associated with the *Lophelia* reefs. The soft corals do not form coral reefs, but where they occur they tend to be in high densities (Tendal 1992; Klitgaard and Tendal, 2001; Klitgaard and Tendal, 2004; Mortensen and Buhl-Mortensen 2004). Gorgonians are found in relatively high numbers in deeper waters (> 500m) off south, west and north Iceland but are relatively uncommon on the shelf (< 500m depth); i.e. their distribution tends not to overlap with typical cod distribution or that of its fisheries. Similarly, the pennatulaceans are relatively rare in water shallower than 500m, but they are more common in deeper waters, especially south of Iceland.

Table 23: Coral garden e.g. soft corals

Description	Relatively dense aggregation of colonies or individuals of one or more coral species of leather corals (Alcyonacea), (Gorgonacea), sea pens (Pennatulacea), black corals (Antipatharia), hard corals (Scleractinia).
Occurrence in Icelandic waters	Found in relatively high numbers in deep waters (> 500m) off the South, West and North Iceland  *Alcyonacea / Gorgonacea (c. 1,300 m)*  *Pennatulacea (c. 800 m)*
Depth range of fishery	100-400 m
Overlap of fishery with habitat	Possibly near the shelf break S of the Vestmannaeyjar islands
Protection measures	None. However, a number of seasonal or annual closures to bottom trawling exist which might have beneficial effects on the coral garden habitats occurring there. However, this has not been assessed.
References	Klitgaard and Tendal, 2004; Garcia et al. 2007, OSPAR 2010b, Ólafsdóttir et al. 2014.

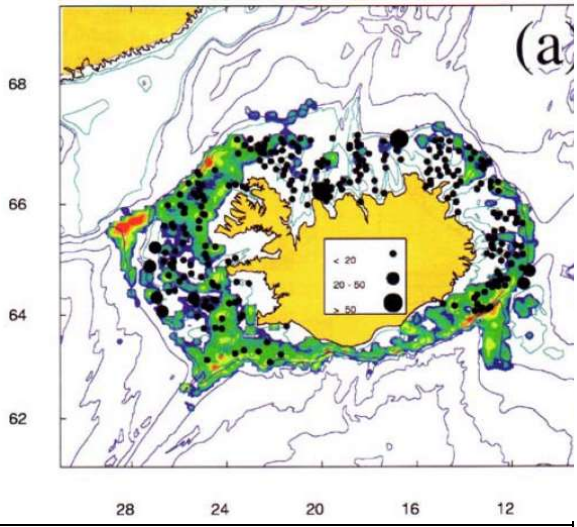
As with the hard-coral reef features such as *Lophelia*, the soft coral species are vulnerable to direct impact damage by trawling, not least from *Nephrops* trawlers which work on mud grounds favoured by soft-coral species. Their vulnerability is tempered, however, by their ability to retract into the sediment or bend if the pressure applied is not too violent.

Sponges: the waters around Iceland, at least down to 500 m depth, are very rich in habitat forming sponge communities, "ostur", dominated by *Geodia* spp. Klitgaard and Tendal (2004) describe the composition of "ostur" from sampling sites all around Iceland, the community south of Iceland being comprising *Geodia atlantica*, *G. mesotriaena* and *G. barretti* as well as *Geodia* (formerly *Isops*) *phlegraei*. Very large catches of sponges (up to >20000 kg) were reported to Klitgaard and Tendal

(2004) from the eastern and western flanks of the northern part of Reykjanes Ridge at more than 1000 m depth in Atlantic water. Bycatch analysis carried out during the 2002 groundfish survey enabled the estimation of the distribution of mass sponge occurrences on the Iceland shelf (Ragnarsson and Steingrimsson, 2003). The authors suspect that sponge bycatch is lower in areas of high fishing effort as indicated in the figure below.

Very few species utilize the sponges as a food source; it is assumed, therefore, that the sponges act as keystone species providing associated species with habitat, refuge from predation or physical strain and enhanced food supply from the surrounding water. Juvenile redfish and other groundfish have been regularly observed in association with large sponges, suggesting that ostur is a suitable feeding ground for particular life-history stages of some fish species (Garcia et al, 2007).

Table 24: Deep-sea sponge aggregations

Description	Principally composed of sponges from two classes: Hexactinellida and Demospongiae. They are known to occur between water depths of 250-1300m
Occurrence in Icelandic waters	Biomass of sponge bycatch in 2002, superimposed on fishing effort as mean annual swept area (nm2 per 1° latitude x 1° longitude cell). Black dots indicate total biomass (kg/h otter trawl haul) of sponges in 2002 groundfish survey by Marine Research Institute OSPAR (2010b) 
Depth range	300-750m
Depth range of fishery	100-400 m
Overlap of fishery with habitat	Possibly NW of Iceland
Protection measures	None
References	Copley *et al*, 1996; Garcia et al. 2007, OSPAR 2010c;

Self-evidently, direct trawl-gear impact will damage and break sponge colonies but aquarium experiments show that damages can be healed relatively fast (Hoffmann et al. 2003). In contrast, all observations point to very slow somatic growth, probably only in the productive time (i.e. summer) of the year. The size structure within sponge populations indicates slow reproduction and recruitment, and high age of the large specimens. No exact aging has so far been done but both size structure and comparable investigations in Antarctica point to decades if not centuries (Dayton 1979; Gatti 2002). Consequently, it will take a long time for a sponge-dominated area to recover even after partial destruction, and repeated disturbance may lead to permanent extirpation of the species in the area. These risks, however, are mitigated by skippers' preference to avoid known areas of ostur for reasons of self-interest economics. If a trawler strays into such an area it is all too easy to fill the net to an extent where it is difficult to haul, can burst the net and will damage the catch to an extent that renders it unsalable (DNV, 2012).

3.4.8.4 Management

The government of Iceland has published an 'Icelandic National Biodiversity Strategy and Action Plan' (Ministry for the Environment, 2008). Some of the key strategies are to:

- protect threatened species in Icelandic waters;
- develop fishing methods with less impact on marine ecosystems and
- protect vulnerable benthic ecosystems.

Large areas of Icelandic waters are closed for fishing, some of them temporarily (hours per day, days in total or seasonal) and others permanently (years). Areas are usually closed for fishing with bottom trawl or longline due to the presence of juvenile fish over extended periods of time or in order to protect spawning grounds. Although area closures are aimed at protecting juvenile fish, the measures have a secondary effect, i.e. protecting seabed habitats from being damaged by fishing activities. The Icelandic Coast Guard monitors fishing activities in Icelandic waters, including surveillance of areas closed for fishing.

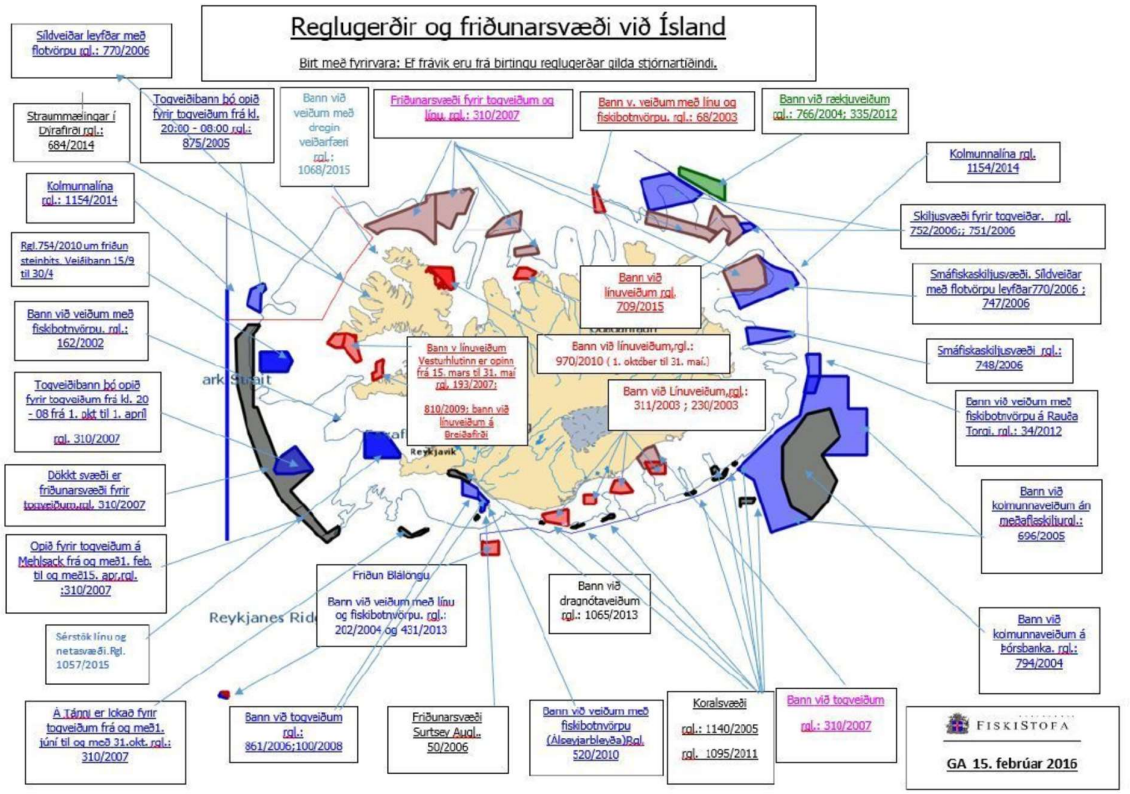


Figure 11: Areas with restricted fishing. Shadings indicate different levels of restriction and type of gear involved, ranging from temporary (e.g. time of day, season) to permanent closure. Source: Directorate of Fisheries (Icelandic version for February 2016: http://www.fiskistofa.is/fiskveidistjorn/veidibann/reglugerdarlokanir/)

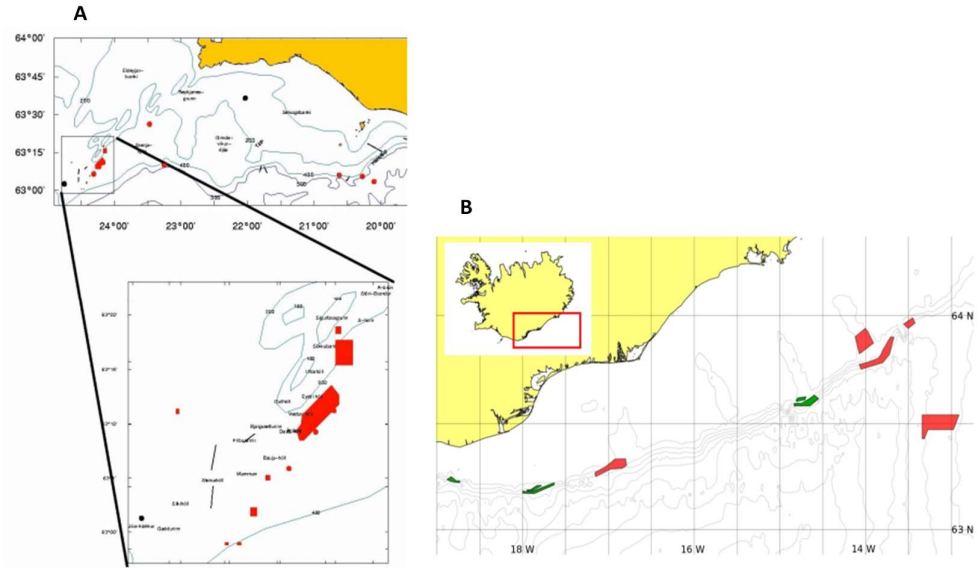


Figure 12: A: Coral areas off the SW coast of Iceland. B: Coral areas off SE Iceland where fishing operations have been banned since 2005 (green) and 2011 (red). Source: Ministry of Fisheries 2004; Ólafsdóttir & Burgos 2012a

3.4.8.5 Information

Since 2000, the Marine Research Institute maintains a programme mapping the seabed habitats and fishing grounds using multibeam echo-sounding in co-operation with other domestic organisations, such as Reykjavík Energy and the Science Institute of the University of Iceland; together, they contribute towards the BIOICE and IceAGE habitat mapping projects. The aim is to compile a comprehensive picture of the entire continental shelf. The Marine Research Institute is also investigating the effects of fishing gear on the seabed and there is a growing focus on habitat studies in keeping with the increased emphasis of the ecosystem approach to marine research (www.hafro.is).

Around 12% of the entire Iceland EEZ habitats has been mapped in detail using multi-beam echo-sounders.

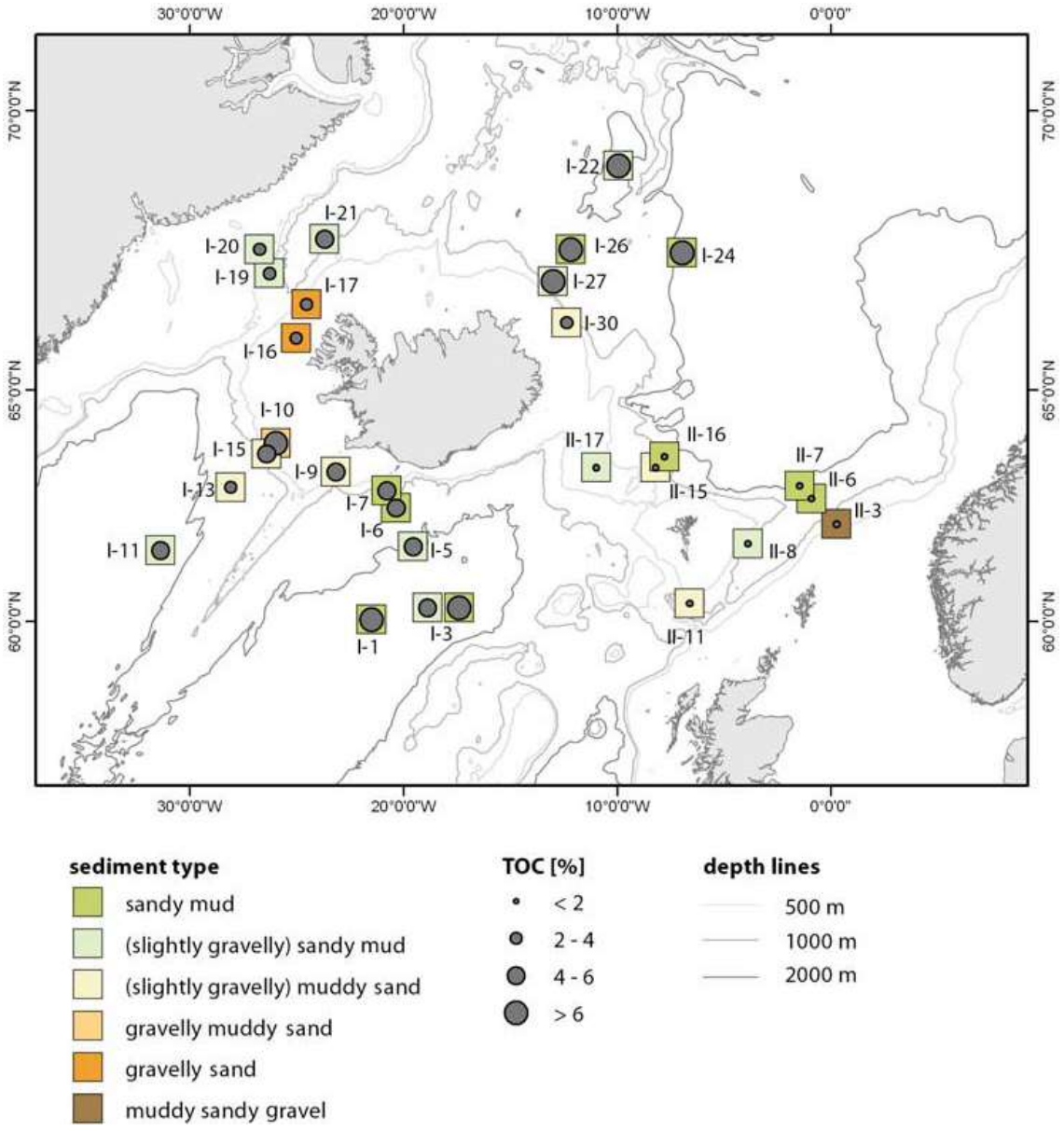


Figure 13: Sediment mapping around Iceland. Source: Meißner et al. 2014

The BIOICE program has been in operation since 1992 with the aim of producing a basic inventory of benthic fauna within Icelandic territorial waters (Figure 14). Benthic samples have been collected from a variety of habitats, ranging widely in depth (<100 to 3100 m) and in temperature conditions (12° to -0.9°C). The Marine Research Institute (MRI) has also identified areas of vulnerable benthic habitats in Icelandic waters (cold water corals, areas with aggregation of large sponge, and maerl beds) in relation to bottom trawl fishing activities (Ministry of Fisheries, 2004). The MRI is currently carrying out research programs in order to map benthic habitats in Icelandic waters (biology and geology, using multibeam echo sounder), including the mapping of cold water corals (*Lophelia pertusa*).

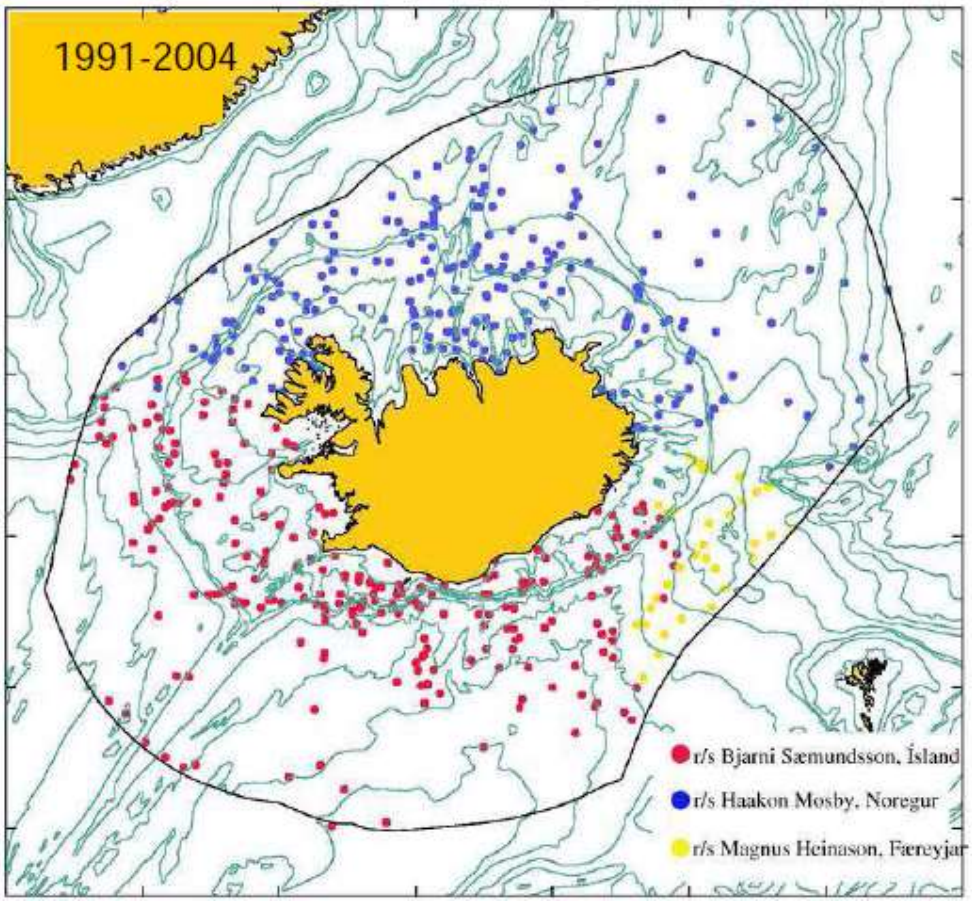


Figure 14: The research programme BIOICE (Benthic Invertebrates of Icelandic Waters): Distribution of sampling stations visited by three research vessels (different colours). Source: Gudmundsson and Helgason, 2014

3.4.9 Ecosystem

3.4.9.1 Outcome Status

Extensive studies on the feeding ecology of a large number of demersal fish species, marine mammals and seabirds have shown that capelin (*Mallotus villosus*) is a key prey species in the Icelandic marine ecosystems (MRI, 2016). The biology of the capelin stock has been studied extensively. Capelin migrates from the deep north of Iceland to spawn on sandy bottoms (30-40m depth) during February-April along the south coast of Iceland and off the west coast from Reykjanes peninsula to Vestfirðir peninsula (Stefánsson & Pálsson, 1998).

Data on the diet composition of Iceland cod were collected in March of the years 1981–2010 and in autumn of the years 1988–2010 (Pálsson and Björnsson, 2011). Capelin, northern shrimp, and euphausiids dominate the diet in all years and may be classified as the stable food of Iceland cod. Overall, total consumption by the smallest cod (20–29 cm) remained stable over the three decades, whereas that of larger fish has declined since the mid-1990s. This decline may explain the reduced growth rate of cod in recent years. Long-term, prey-specific patterns were identified in consumption, and significant trophic links were found between cod consumption and stock sizes of capelin and northern shrimp. In March, the correlation between cod consumption on capelin and capelin stock size was highly significant, but not significant in autumn. The correlation deteriorated in the early to mid-1990s and in the early 2000s. Increased inflow of Atlantic water into north Icelandic waters, and associated changes in capelin distribution may have contributed to this trend. The interaction

between cod consumption on northern shrimp and shrimp stock size showed a highly significant type I functional feeding response in both seasons.

The total annual primary production in Icelandic waters has been estimated to be 1,220 million tonnes or 160gCm^{-2} yr^{-1} (Thordardottir, 1994) and the annual production of *Calanus* (mainly *C. finmarchicus*) has been estimated to be about 7 gCm^{-2} yr^{-1} (other zooplankton 6 gCm^{-2} yr^{-1}). The combined annual production of pelagic fish has been estimated to be about 1.5 Cm^{-2} yr^{-1}, and of cod about 0.04 gCm^{-2} yr^{-1}. In comparison, the production of whales and seabirds is small while their food consumption is large (Astthorsson *et al.,* 2007).

Climate variability during the 20th century has affected the marine ecosystem in Icelandic waters. This was evident during the warm period of 1920-1940, the cold period starting in the late 1960s, and again the warming of the climate observed during the last decade and more. These variations of environmental conditions have caused changes in the abundance and distribution of many fish stocks as well as other components of the Icelandic marine ecosystem. In the waters to the north and east of Iceland, available information suggests the existence of a simple bottom-up controlled food chain, from phytoplankton (mainly *Calanus*), to capelin, to cod (Astthorsson *et al*., 2007). Seasonal migration of the capelin spawning stock from the Iceland Sea to the south and southwest coasts of Iceland transfers zooplankton production to the southern part of the Icelandic marine ecosystem. It has been shown that changes in the capelin biomass causes changes in weight-at-age of cod demonstrating the key role of capelin in the Icelandic marine ecosystem.

Biomass estimates for stocks of fish, whales and seabirds in Icelandic waters and production estimates of *Calanus finmarchicus* and other zooplankton species have been used to calculate the biomass of individual components in the Icelandic marine ecosystem (Astthorsson et al. 2007). In total, the biomass of all the major components is about 56 million tonnes wet weight, phytoplankton being the largest component (29 million tonnes), followed by zooplankton (17 million tonnes, whereof *C. finmarchicus* is about 7 million tonnes), pelagic fish (8.8 million tonnes), demersal fish species (1 million tonnes, i.e. cod, haddock and saithe), baleen whales (900.000 tonnes), seabirds (14,000 tonnes) and seals (2,000 tonnes) (Figure 15).

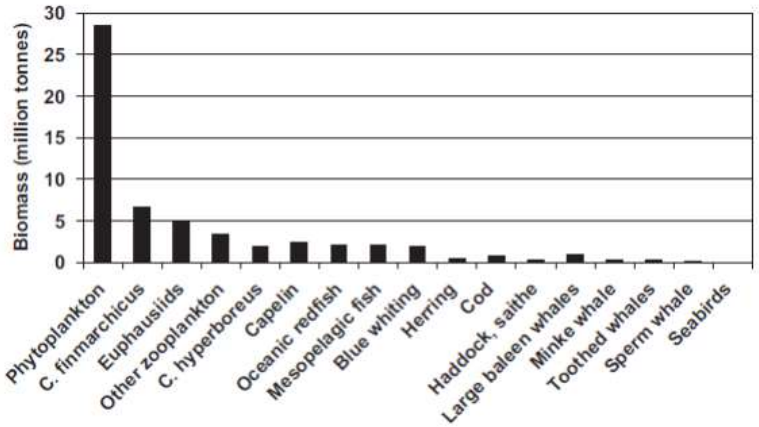


Figure 15: Ecosystem Biomass. Estimated wet biomass of the main components in the Icelandic marine ecosystem. Source: Astthorsson et al. 2007

Long term variability of hydrography and production (primary and secondary) in Icelandic waters is well documented (Astthorsson *et al*., 2007; Valdimarsson & Jónsson, 2007). The feeding habits of demersal fish, marine mammals and seabirds in Icelandic waters were thoroughly studied during a multi species research project in 1992-1995 (MRI, 1997). These studies have shown that capelin (*Mallotus villosus*) is a key prey species and that cod (*Gadus morhua*) is a major fish predator in the

marine ecosystem around Iceland. Other important predators include several whale and seal species as well as seabirds. The data from the multi species project has been used to assess the key factors that determine diet composition in some of the most important demersal fish species in Icelandic waters. Two major feeding guilds were identified among the main predators: (i) species preying mainly on echinoderms, supplemented with fish and other benthic invertebrates; (ii) species preying mainly on crustaceans and fish (Jaworski & Ragnarsson, 2006).

Icelandic waters are an important habitat for some of the largest seabird populations in the Northeast Atlantic, such as razorbills and puffins. Since the early eighties the populations of seabirds have in general reduced in size by 18-43% (Umhverfisráðuneytið, 2011). During the period from 1983-6 until 2005-2008, the population of thick-billed murre dropped from 580,000 to 330,000 pairs; common murre from 990,000 to 690,000 pairs and razorbill from 380,000 to 310,000 pairs (see left-hand figure below). Puffin is the most abundant bird in Iceland, with a population estimated at 8-13 million individuals and a breeding population of 3-4 million pairs (www.puffin.is). Furthermore, in the Látrabjarg sea cliff which is inhabited by the largest breeding colony of seabirds in Iceland (see right-hand figure below), the number of nesting birds declined annually by 7-24% (depending on species) from 2006 to 2009. The main reason for dwindling populations is believed to be caused by changes in food availability, e.g. altered distribution patterns of prey.

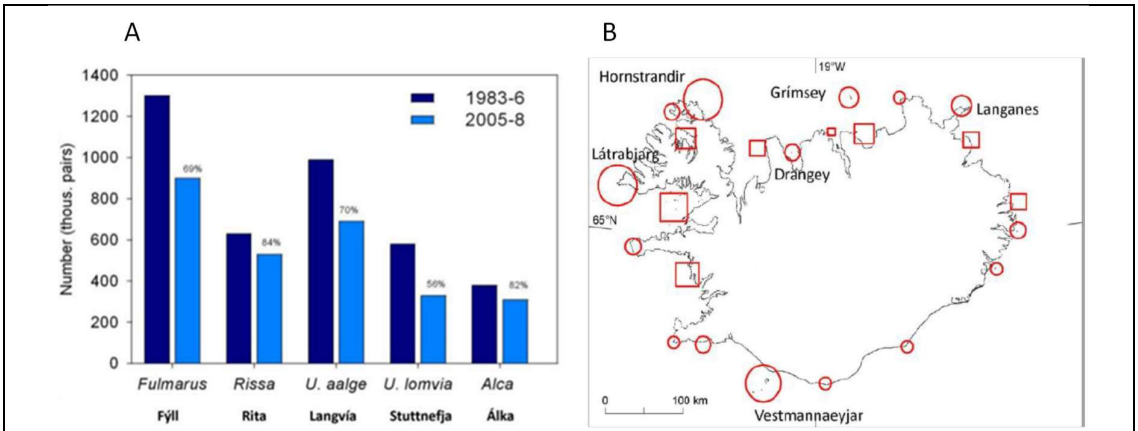


Figure 16: A: Changes in population size of fulmar (Fulmarus), black-legged kittiwake (Rissa tridactyla), common murre (Uria aalge), thick-billed murre (Uria lomvia) and razorbill (Alca torda) from 1983-6 to 2005-2008. B: The distribution of seabird colonies in sea cliffs around Iceland. Source: Umhverfisráðuneytið 2011.

3.4.9.2 Management

The 2001 Reykjavik Conference on 'Responsible Fisheries in the Marine Ecosystem' was the starting point for ecosystem-based fisheries management at a global level and Iceland has been a leading practitioner. Key elements include:

1. Closed areas: closed areas have been long-established for both bottom trawl and longlines fishing fleets
2. Multi-species stock management: trophic relationships between key predatory commercial species such as cod and haddock with commercial prey species such as capelin, sandeel and shrimp are well understood and integrated into fisheries management planning.
3. Key target species management: considerations include discard and other mortality, environmental changes on target stocks, multi-species considerations in mixed fisheries, physical environmental issues related to area and gear; and the understanding of ecosystem components by species / stock complexes.

3.4.9.3 Information

Information on feeding habits has been used in studies on predator-prey interactions and multi-species and ecosystem modelling (Pálsson 1997, Stefánsson 2003, Barbaro et al. 2008). The multi-species programme BORMICON (Stefánsson and Pálsson 1998) is a model for an ecosystem approach to fisheries and was developed in the 90's using information on the Icelandic marine ecosystems, such as feeding habits of demersal fish, migration patterns of predator and prey, predation, mortality and fish growth. The programme was developed for modelling marine ecosystems in a fisheries management and biology context. BORMICON is now developed under the name GADGET[3] (Globally applicable Area-Disaggregated General EcosystemToolbox), which has been applied to various commercial species in Icelandic waters, such as cod (Taylor *et al*, 2007).

3.5 Principle Three: Management System Background

3.5.1 Jurisdiction

The ISF cod fishery takes place in the Icelandic EEZ.

3.5.2 Objectives

The objective of Icelandic fisheries management, as stated in the Fisheries Management Act, is to ensure conservation and efficient utilization of marine living resources in the Icelandic EEZ. The precautionary approach is not mentioned explicitly in the Act, but the requirement to protect marine resources and take the best scientific knowledge into account, e.g. through the use of reference points, equals the requirements of the precautionary approach, as laid out in the FAO Code of Conduct. A further objective, also founded in the Fisheries Management Act, is to ensure stable employment and settlement throughout Iceland.

Iceland is signatory to, and has ratified, the 1995 Fish Stocks Agreement, which requires the use of the precautionary approach.

3.5.3 Legal basis and management set-up

Iceland has a well-established system for fisheries management in place, now codified in the 1990 Fisheries Management Act, amended in 2006. The Act details procedures for the determination of TAC and allocation of harvest rights, including permits and catch quotas. It also lays out the system for individual transferable quotas and procedures for monitoring, control and surveillance and the application of sanctions. Further provisions are provided in a number of other acts, such as the 1997 Act on Fishing in Iceland's Exclusive Fishing Zone and the 1996 Act concerning the Treatment of Commercial Marine Stocks, as well as in regulations at lower levels of the legal hierarchy, issued by the relevant management authorities.

Iceland is also signatory to, and has ratified, the major international agreements pertaining to fisheries management, such as the 1982 Law of the Sea Convention and the 1995 Fish Stocks Agreement.

The Ministry of Industries and Innovation – which has two ministers: one for Industry and Commerce and one for Fisheries and Agriculture – is the policy-making body in Icelandic fisheries management and sets annual TAC based on scientific recommendations from the Marine Research Institute. The Directorate of Fisheries is the implementing body within the management system, formally subordinate to the Ministry as an agency. It issues fishing licenses, allocates annual vessel quotas and oversees the daily operation of the individual transferable quota system. The Directorate is also

[3]See http://www.hafro.is/gadget/

responsible for monitoring, control and surveillance, in cooperation with the Coast Guard, which is a civilian law enforcement agency under the Ministry of the Interior.

Fishing by foreign vessels is regulated by the 1998 Act on Fishing and Processing by Foreign Vessels in Iceland's Exclusive Economic Zone. Icelandic vessels' fishing outside Icelandic the Icelandic EEZ is regulated by the 1996 Act on Fishing outside of Icelandic Jurisdiction.

3.5.4 Stakeholders and consultation processes

Iceland has a consensus-based system for fisheries management and long tradition of continuous consultation and close cooperation between government agencies and user-group organizations. As emphasized by all stakeholders interviewed during the site visit, lines of communication are short and much consultation takes place informally, in direct and often spontaneous contact between representatives of user groups and authorities. At a more formal level, all major interest organizations are regularly invited to sit on committees established to review changes in government, and they meet for regular consultations with the Ministry, the Directorate and the Parliament's (Althing) Permanent Committee for Fisheries and Agriculture. These include, but are not restricted to, Iceland Fisheries (which was established in 2014 as the result of a merger between two of the most influential user-groups in Icelandic fisheries: The Federation of Icelandic Fishing Vessel Owners and the Federation of Icelandic Fish Processing Plants) and the Fisheries Association of Iceland (which also incorporates the two latter as well as the Federation of Owners of Small Fishing Vessels, the Icelandic Seamen's Federation and others). Also local authorities are actively engaged in fisheries management and have easy access to the management system. There are no NGOs that show any interest in fisheries management in Icelandic waters. Major international NGOs that usually engage actively in discussions about fisheries management, such as Greenpeace and WWF, do not have offices in Iceland. Local NGOs are more concerned with nature protection on land.

Consultation processes cover policies and regulatory issues, and also include discussions of the annual scientific recommendations by the Marine Research Institute. Shortly after presenting the recommendations to the Ministry, representatives of the Institute enter into dialogue with the fishing industry regarding the status of the stocks and the nature of the recommendations. The Ministry also consults with the industry before setting the final TACs.

3.5.5 Enforcement and compliance

Monitoring, control and surveillance is taken care of by the Directorate of Fisheries, in collaboration with the Coast Guard, the Marine Research Institute and coastal municipalities. The enforcement system is based on reports from the vessels, physical inspections at sea and weighing in harbour, as well as information exchange with other states' enforcement authorities. The structure and procedures of the enforcement system are codified in the Fisheries Management Act, while requirements to the weighing system are laid out in the Act concerning the Treatment of Commercial Marine Stocks.

Fishing vessels are required to keep a logbook and report catches to the Directorate of Fisheries. Vessels over 6 GT in size are required to keep those electronically, thus allowing for continuous reporting, while smaller vessels are allowed to keep those manually and return to the DF upon completing fishing trip. Vessel monitoring system (VMS) is also required for all UoA vessels, with an AIM (autonomous identification system) applicable to vessels within 30-50 miles off the coastline and an Inmarsat/Standard-C system for vessels further off shore. Inspectors from the Directorate may accompany fishing vessels on voyages or operate from Coast Guard vessels. The Coast Guard has three offshore patrol vessels, as well as a number of smaller boats, helicopters and a surveillance aircraft. At-sea inspections include control of the logbook, catch and gear. Inspections are conducted using a risk-based framework aimed at utilizing resources to optimize compliance at any given moment. Most importantly, 100 % of the landed fish is weighed by an authorized 'weighmaster',

employed by the municipality and hence independent of both buyer and seller. Landing data are immediately added to the Directorate's catch database, where the reported quantities of fish are deducted from the vessel's quota. The Directorate operates a dynamic and interactive website, where stakeholders at all times can monitor the precise quota status for each species and observe the performance of individual vessels, their catch from each fishing trip and vessel quota status.

The sanctioning system in Icelandic fisheries is codified in the Fisheries Management Act and the Act concerning the Treatment of Commercial Marine Stocks. A system for graduated sanctions is applied. For a first-time offence, a warning ('reprimand') is given if the infringement is of a less serious nature. In the other end of the spectrum, serious or repeated deliberate violations can be liable to imprisonment of up to six years. Fines for first offences shall not exceed ISK 4,000,000, depending upon the nature and scope of the violation. Repeated offences shall be fined by a minimum of ISK 400,000 and a maximum of ISK 8,000,000. Withdrawal of fishing permit can be applied in a number of situations. As an example, if information of the Directorate of Fisheries suggests that a vessel has caught in excess of its catch quotas for any species, the Directorate must notify this to the vessel operator and master of the vessel concerned, stating in addition that the vessel's commercial fishing permit is suspended on the fourth working day thereafter unless sufficient catch quotas have been transferred to the vessel within that time. If the recipient of the notification is of the opinion that the information of the Directorate of Fisheries concerning the vessel's catch is incorrect and that the vessel has not caught in excess of its catch quotas, he/she must convey such objections to the Directorate of Fisheries within three days. If a permit is suspended for the second time during the same fishing year due to catch exceeding catch quotas, the Directorate of Fisheries shall suspend a vessel's commercial fishing permit for two weeks in addition to the time resulting from the suspension provided for in the first paragraph, for six weeks if it occurs for the third time and for twelve weeks if it occurs more often. As another example, the Directorate of Fisheries shall suspend the commercial fishing permits of vessels failing to submit catch log books; such suspensions shall remain in force until submissions are received or explanations provided for the reasons for failure to submit.

In the first instance of a violation which is liable to suspension of fishing permit, the suspension shall apply for at least one week and no longer than 12 weeks, depending upon the nature and scope of the violation. In the case of repeated violations, a suspension shall apply for at least four weeks and not longer than one year. If a vessel's commercial fishing permit has repeatedly been suspended, the Directorate of Fisheries may decide that a fishing inspector shall be stationed aboard the vessel at the expense of the vessel operator for a specific period of up to two months. The vessel operation must then pay all cost arising from the presence of the fishing inspector aboard, including salary cost. If there is suspicion of more serious infringements, the case may be transferred to the Ministry or to a court. All decisions on the suspension of harvest rights are to be made publicly available.

The Directorate of Fisheries produces detailed overviews of compliance levels among Icelandic fisheries, in aggregate form in its annual reports and on a running basis on its website. This information suggests that there is a high degree of confidence that fishers comply with regulations. The main infringement is failure to submit the catch log after completion of a fishing trip (which happened in 4% of the instances where the logbook should have been handed in), but that applies only to the small coastal fishing vessels that fish over the summer months, and to the small lumpfish vessels. The bigger vessels all have electronic logbooks, so this problem does not occur there.

In addition to the sophisticated sanctioning system, the social control that exists in a relatively small fishing community as Iceland, as well as the legitimacy of regulations due to the high degree of user-group involvement, are believed to contribute to the high level of compliance in the fishery.

4 Evaluation Procedure

4.1 Harmonised Fishery Assessment

At the time of the assessment there was no other cod fishery in assessment within the Icelandic EEZ for certification against the Marine Stewardship Council's (MSC) Principles and Criteria for Sustainable Fishing. Full reference was made to fisheries for ling, saithe, golden redfish and haddock, which have been certified. Haddock was being recertified at the same time by the same team. In all other cases, common issues relevant to vessel operations and management systems (Principles 2 and 3) were reviewed in the relevant assessment reports. There was no direct harmonization process with other teams. This team came to their own independent conclusions based on the information available, but these were not substantially different to previous teams. Where common conditions could be applied, these were expressly harmonised with conditions already in place on the UoA.

The main difference for Principle 2 was the condition placed in the golden redfish assessment for retained species. For CR2.0, this performance indicator no longer exists. However, more importantly, quantitative information on landings available for this assessment was much improved compared to previous assessments, so the fishery was able to demonstrate low impact when targeting cod on most species for which there was concern.

4.2 Previous assessments

The original assessment of the ISF Iceland cod was initiated in November 2010 and the fishery received its certificate in April 2012. The fishery achieved a score of 80 or more for each of the three MSC principles and did not score below 80 on any of the set MSC criteria. No conditions were therefore set for the fishery.

4.3 Assessment Methodologies

The methodology and standard of the MSC Fisheries Certification Requirements (& Guidance) v2.0 was followed during this re-assessment. The setup of the report follows the "*MSC Full Assessment Reporting Template v2.0".*

The assessment team proposed the use of the Default Assessment Tree. No comments or objections were received in response to the proposed methodology. The Default Assessment Tree was therefore used.

4.4 Evaluation Processes and Techniques

4.4.1 Site Visits

Site visits and stakeholder meetings were conducted as announced in Reykjavík, Iceland, during the period 23rd to 25th of May 2016, see Table 25 below.

4.4.2 Consultations

Stakeholders were invited to submit comments and to consult the assessment team from the onset of the assessment process. Public notification of the assessment, its scope, methodology and assessment team, was issued with an invitation to comment and consult the team, and the same was sent out by e-mail to a list of stakeholders. Meetings were arranged with representatives of the client and key stakeholders, as summarized in Table 25.

On the basis of consultation with key stakeholders and their commitments, the client submitted a Client Action Plan which the assessment team has approved. A Preliminary Draft Report, including four conditions and their milestones, was completed and presented to the Client in October of 2016.

A Peer Review Draft Report was then submitted for peer review in November 2016 and completed in December 2016. Comments made by peer reviewers and the team´s responses are in Appendix 2.

The Public Comment Draft Report was released in January 2017. Comments were received from BirdLife International and Fuglavernd Íslands, as well as from the MSC. Those prompted revisions that led to change in conditions and recommendations and thus also in the action suggested by the Client to address those. The comments received together with the team´s responses are all available for review in Appendix 3 of this report. The Final Report and Determination were approved by the team in March 2017 and subsequently published on MSC´s website. The Public certification report was submitted to the certification committee 11th April 2017 and subsequently published on the MSC's website.

Table 25: Itinerary of site visit and stakeholder consultation in the Icelandic cod fishery assessment.

Meetings with Client and other Stakeholders	***Subjects of Consultation***
23.05.2016: Meeting with the Client (ISF). Kristinn Hjálmarsson (ISF), Members of the Assessment team.	Meeting with the project management of the Client; general discussion on Iceland Sustainable Fisheries (ISF), the fishery practice and its management; relations of the fishery to research, management and control bodies; chain of custody issues.
23.05.2016: Ministry of Industries and Innovation and Directorate of Fisheries. Annas Jón Sigmundsson (MII), Hinrik Greipsson (MII), Þorsteinn Hilmarsson (DF), Áslaug Eir Hólmgeirsdóttir (DF), Members of the Assessment team	Fisheries policy. Management practices and objectives. Ecosystem and habitat protection. Enforcement of fishery policies and management decisions. Monitoring, surveillance and landing statistics.
24.05.2016: Marine Research Institute Þorsteinn Sigurðsson (MRI), Ólafur Ástþórsson (MRI), Members of the Assessment team.	Scientific research and data on the fishery. Bycatch, habitat and ecosystem issues.
24.05.2016: BirdLife International & Fuglavernd Íslands. Erpur Snær Hanssen (BirdLife), Members of the Assessment team.	Bycatch of birds in the fishery and new data on the subject.

4.4.3 Evaluation Techniques

All the required public announcements were published on the website of the MSC and mailed electronically to the client and a list of stakeholders. All stakeholders identified have internet access and access to an email account. This was identified as the most appropriate contact.

A working knowledge of the cod fishery was obtained by literature review and by interviews with key actors and stakeholders in the fishery. Information on this fishery is readily available from the management (DoF) and scientific authorities (MRI, ICES), including complete trip based landings 2011-2015 inclusive.

Each team member was responsible for a single principle to develop scoring justifications, with the team member responsible for Principle 1 also primarily responsible for PI 2.1 (Primary Species). A group consensus was developed for each scoring issue and this determined the final scores for each performance indicator. The standard MSC decision rule was applied for the final recommendation (i.e. aggregate category-level scores must all exceed 80 and each individual PI must score 60 or above).

A total of 108 species scoring elements, evaluated in PI 2.1 – 2.3, were identified. These were clearly separated into Primary, Secondary and ETP. Of the 108 species/stocks identified as potentially

having an interaction with the fishery, 31, including the target species, have been identified as primary species (Table 12). That is, they are subject to some level of management with the general objective of maintaining these stocks as close to MSY level as is feasible. A further 20 species have been identified as ETP mainly based on their presence on international lists of vulnerable and endangered species (CITES Appendix 1, IUCN Redlist Status for out-of-scope species, AEWA table1 column A) that overlap with fishing operations (Table 18). Information was available on ETP from various scientific sources to assess their risks from fishing. All species not allocated to primary or ETP are considered secondary species (

Table 14).

All in-scope species were allocated between main and minor species based on the gear-specific landings data Table 4 - Table 10). This included consideration of their resilience in setting landings references between 2% for less resilient and 5% for more resilient species. Where information was lacking, lower resilience was assumed. The results were not sensitive to this determination.

For all primary species, stock assessment information was used to determine their status. For out-of-scope species (main), information was available to determine risks. All secondary in-scope species were minor components of the landings. Information was lacking on these minor species and this is reflected in the scoring (they did not meet the relevant guideposts). The Risk based Framework was not invoked for this fishery.

One general habitat type (cod habitat) and two VMEs were scored as elements under PI 2.4. The Icelandic marine ecosystem was considered as a whole under PI 2.5.

Scoring elements contributed to the performance indicator score using the standard methodology (FCR 7.10.7.5 Table 4).

Table 26: Scoring elements: see Table 4 - Table 10 for gear specific main/minor allocations of primary and secondary species.

Component	***Scoring elements***	***Main/Not main***	***Data-deficient or not***
P1	Cod (*Gadus morhua*) in Icelandic EEZ	Target species	Not
P2: Primary Species	30 species (see Table 12)	Main	Not
P2: Primary Species		Minor	Not
P2: Secondary Species	57 species (see Table 14)	Main	Not
P2: Secondary Species		Minor	Data-deficient
P2: ETP Species	20 species (see Table 18)	N/A	Not
P2: Habitats	Cod habitat, deepwater coral, sponge aggregations	N/A	Not
P2: Ecosystems	Icelandic Marine Ecosystem	N/A	Not
Principle 3	Icelandic Management Authority	N/A	Not

The assessment team interviewed representatives of the client, Iceland Sustainable Fisheries ehf. The assessment team conducted separate meetings with representatives of the Ministry of Industries and Innovation (MII), of the Marine Research Institute (MRI) and the Directorate of Fisheries (DF) to discuss matters related to marine biological research data, fisheries advice, fisheries management and government policy, as well as the enforcement and monitoring of official regulations.

5 Traceability

5.1 Eligibility Date

The eligibility date (ED) for this fishery was 1 March 2011. For the added unit of certification, i.e. cod caught by *Nephrops* trawl within the Icelandic EEZ, the eligibility date will be the date of publication of the re-assessment Public Comment Draft Report (see *FCRv2.0 7.6.1.2*), i.e. 10 January 2017, a date that is also applicable to Faroese vessels eligible for the sharing of the potential certificate, catching cod by means of any of the seven fishing gears subject to this re-assessment.

The eligibility date and its implications for chain of custody were discussed with the client prior to the launching of the re-assessment and were further underlined in subsequent memos referring to the MSC chain of custody standard. As outlined below there is already in force a robust system of traceability and segregation that gives confidence in the ED set. The catch is recorded at sea and again by certified weighers at landing points by vessel, gear and species.

5.2 Traceability within the Fishery

Traceability within the ISF Iceland cod fishery is established by means of physical segregation and recording of the product at several key points of the chain from fishing to the first point of sale or processing. Vessels fishing within the Icelandic EEZ are subject to a permit issued by the Directorate of Fisheries (DF). Vessels are required to carry a vessel monitoring system (VMS), which is monitored 24hrs a day by the Coast Guard. An AIS system (Autonomous Identification System) applies to vessels while operating within 50 miles and an Inmarsat/Standard-C system for vessels operating further afield.

The DF collects, retains and publishes data on fishing and catches landed by the Icelandic fleet and by other vessels catching within the Icelandic EEZ. The DF monitors compliance with rules on weighing and recording of catches. The DF also collects information about all sales and purchases of unprocessed fish that is traceable to landings, i.e. to vessel, gear and area, which enables DF to monitor potential substitution.

Fishing vessels are required to fill out logbooks to record details of fishing practices, including location, dates, gear, species and catch quantity. Vessels above 6 GT in size are required to do so electronically while smaller vessels may do so manually. Logbooks must be submitted directly to the Directorate of Fisheries. Most fishing is conducted by means of single gear per trip. The use of multiple (more than one) gears during same fishing trip is rare, although this may occur in some cases on smaller vessels simultaneously using handline and longline. However, captains are required to report their catch by type of gear, as well as fishing area. Catch, whether gutted on board or not, is separated by species in large tubs. Tubs carry identification numbers, and vessels conducting multiple-days trips add removable tag to each tub on board to further identify day of catch, both of which are carried through landing, auction and first trading, unless processing is conducted at auction and in that case chain of custody is required. These measures serve to prevent substitution and to ensure segregation of fish of certified units (gears and areas) from fish of non-certified units, up to the point of landing.

Landings of each fishing vessel are monitored by persons officially licenced and employed by local port authorities. These certified weighers are responsible for weighing landed catch, using certified scales, and recording the catch by vessel, species, fishing gear used, and quantities landed. Inspectors from the DF regularly monitor the landing of catches to ensure that catch is weighed and recorded according to precise applicable rules. This provides a check on the accuracy of vessel logbooks for all landings and a support to traceability within the fishery. All fish caught within the Icelandic EEZ must be registered and weighed in Iceland, although DF may, with the Ministry´s permission, authorise derogation from that rule. Also, Faroese vessels may have their catch weighed

and landed directly in the Faroe Islands. In such cases the Faroese Fisheries Inspectorate (Vorn) must report the landing, including information about vessel, species, gear and fishing area, to its Icelandic counterpart (DF) within 24 hours.

Fish catch remains segregated at the point of landing by vessel, species and gear. Identified tubs of landed fish are passed on either directly to first buyer (trader or processor), or to an auction that operates as an electronic facilitator of trade or as a physical facility where tubs received are passed on to first buyer. In the event an auction assembles small lots from more than one small vessels into a single lot, the delivery document specifies the names of the vessels and the gear applied. A few auction houses may perform primary processing (gutting), involving change of tub numbers, which will require the facilities to be chain of custody certified (or registered as processing sub-contractors for CoC certified entities) to assure traceability of fish supplied, back to the unit of certification. At the time of the release of this (Final) report, four auction operations are CoC certified in Iceland.

Fishing companies, especially ones operating large vessels with on-board processing facilities, may use sub-contracted cold storage facilities for storing landed catch prior to first sale or first processing after landing. This may be the case particularly with short-term storing of landed fish-on-ice, or longer-term storing of products frozen, packed and labelled on-board the vessel, typically loaded on pallets which in turn are sometimes loaded into containers. Either way, these are identified and traceable to vessel, catch dates, gear and fishing area.

Cod caught in the under-assessment *Nephrops* trawl is segregated at source and its landing is logged by reference to vessel, date and gear. Similarly, cod caught within the Icelandic EEZ by Faroese vessels is segregated from cod caught by other (Icelandic) vessels at landing and logged by reference to vessel, date and gear, either in Iceland or in the Faroe Islands, with this information submitted to the Icelandic Directorate of Fisheries. The client was made aware of the special requirements set by the MSC´s Chain of Custody standard for the handling and segregation of under-assessment products from those fisheries.

The units of certification allow for catch from the entire Icelandic EEZ to enter chain of custody. All registered fishing vessels (Icelandic vessels, as well as vessels operated by Faroese operations that have joined certificate sharing agreement with the Client), operating bottom trawl, pelagic trawl, Danish seine, gillnet, longline, handline, or *Nephrops* trawl within the Icelandic EEZ are eligible. Fish caught directly or purchased by members of the client group and their certificate sharers from vessels, auctions or processors, is traceable to catch dates, catch areas, fishing gears and vessels.

While the assessment team has confidence in the internal traceability of the ISF Iceland cod fishery, a recommendation will be raised, requesting that the client issues a reminder to all of the client members, including auctions, to observe the following:

- to ensure full segregation of catch of each species by gear in the event more than one gear is applied during the same fishing trip;
- to ensure full segregation of catch of each species by management region, i.e. fish caught inside the Icelandic EEZ is kept separate, in the event a vessel catches the same species on the same trip inside and outside the Icelandic EEZ – and –
- to observe and implement appropriate measures of packing and labelling certified products prior to moving them to sub-contracting cooler or freezer storages upon landing, to ensure client members´ responsibility for product integrity prior to sale or further handling.

Table 27: Traceability Factors within the ISF Iceland cod fishery.

Traceability Factor	***Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)***
Potential for non-certified gear/s to be used within the fishery	Cod is caught as a bycatch in some amount within the Icelandic EEZ in *Nephrops* trawl, a unit subject to current assessment. Risk for traceability is minimal since the vessels are mostly single-gear vessels targeting only *Nephrops*, and the fish is segregated on board, landed and recorded by reference to vessel, date and gear. Cod is also caught in shrimp trawls, purse seine and other gear. Reported catches from these gears combined were 0.77% of the total cod catch in 2010-2015. Most of this is caught in a targeted fishery applying shrimp trawl, and as with *Nephrops*, fish is segregated on board, landed and recorded by reference to vessel, date and gear. The use of certified and non-certified gears during the same fishing trip is considered quite rare and the risk of mixing catch of same species from the two is minimal. Fishing vessels – Icelandic and foreign operating within the Icelandic EEZ – are required to keep logbooks for the recording of fishing by species, gear and area. Furthermore, all landings in Iceland are recorded and monitored by registered weighmasters. Landings of cod from non-certified gear used within the Icelandic EEZ are segregated from cod caught in certified gear, both physically and in records prior to entry into chain of custody.
Potential for vessels from the UoC to fish outside the UoC or in different geographical areas (on the same trips or different trips)	As outlined above, vessels covered by the UoC may catch cod in some small amounts when using non-certified gears (in particular *Nephrops* trawl (under assessment), shrimp trawl and purse seine) while targeting other species. Such bycatch would however also be recorded in vessel logbooks, specified by vessel, date, gear, quantity and fishing region. Vessels may catch cod within and outside the Icelandic EEZ on the same trip. Although not common this is particularly possible in the case of larger trawlers on their return trips from fishing in foreign or international territories (like the Barents Sea). Risk to traceability is mitigated by mandatory segregation on board of catches in foreign area from catches in the Icelandic EEZ, real time electronic logging – and thus monitoring by DF – of catches and labelling of unprocessed and processed fish with reference to fishing dates and/or areas.
Potential for vessels outside of the UoC or client group fishing the same stock	Cod is caught by a large number of vessels, most of them Icelandic ones, that are part of the UoA. A small proportion of cod is caught by foreign vessels – especially Faroese ones – operating within the Icelandic EEZ through bilateral agreements. The team also considered the Faroese vessels as a part of the UoA. They are subject to the monitoring and logging requirements outlined above. Such catch is therefore traceable to vessel, date, gear and region.
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)	Risks of comingling certified and non-certified catch during any kind of handling prior to first sale or processing after landing are primarily associated with the use of post-landing cold storage, the handling of fish at auction, and the landing of fish from foreign vessels. Mandatory on-board segregation and recording of catch, the keeping and submission of logbooks, as well as primarily single-gear trips, minimise risk of comingling on board. This segregation is maintained through the landing process under the management of certified weighers, which furthermore minimises the

	risk of catch from areas outside the UoC are mixed with certified catch. Fishing companies, especially ones operating large vessels with on-board processing facilities, may use sub-contracted cold storage facilities for storing landed catch prior to first sale or first processing after landing. This may be the case particularly with short-term storing of landed fish-on-ice in boxes or tubs, or longer-term storing of products frozen, packed and labelled on-board the vessel, typically loaded on pallets which in turn are sometimes loaded into containers. Either way, these are identified and traceable to vessel, catch dates, gear and fishing area. The risk of comingling at auction is also minimal. A substantial amount of fish is landed and traded via auction. Fish catch remains segregated at the point of landing by vessel, species and gear. Identified tubs of landed fish are passed on either directly to first buyer (trader or processor), or to an auction that operates as an electronic facilitator of trade or as a physical facility where tubs received are passed on to first buyer. However, a few auction houses may perform primary processing (gutting), involving change of tub numbers, which will require the facilities to be chain of custody certified (or registered as processing sub-contractors for CoC certified entities) to assure traceability of fish supplied, back to the unit of certification. At the time of the release of this (Final) report, four auction operations are CoC certified in Iceland. Foreign vessels (potentially eligible or not eligible) may land cod and/or pass cod via auction at the same time as certified cod from already approved vessels is being handled. Again, the risk here of comingling is minimal since there is mandatory segregation and recording of landed catch by reference to vessels. Icelandic regulation require fish from foreign vessels to be kept and processed separate from all other fish throughout the chain of custody. In case fish is landed and possibly also kept in cold storage in a Third Country, traceability is ensured back to unit of certification, since all vessels are obliged to report to Fisheries Directorate landings in foreign ports by type of species, fishing gear, area and quantities. At first point of sale and/or first post-landing processing, i.e. entry into chain of custody, the tracing of the fish back to UoC will require verification by the buyer and its CoC CAB.
Risks of mixing between certified and non-certified catch during processing activities (at-sea and/or before subsequent Chain of Custody)	Chain of Custody is required for all post-landing processing activities. Risk to the integrity of certified fish processed on-board, which would be confined almost solely to large trawlers, may potentially emanate from fishing in areas not identified as part of the UoA during the same fishing trip. This risk is minimised and mitigated by the mandatory logging, as well as physical identification, of fish catch by management regions. 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 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, during which a risk of mixing certified and non-certified catch is considered minimal or none.
Risks of mixing between certified and non-certified catch during	Trans-shipment of catch is not conducted in the Icelandic cod fishery and risk from such activity to certified product integrity is therefore none. The DF monitors, via the vessel monitoring systems (VMS), that trans-shipment of fish is

transhipment	not conducted.
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	None identified.

5.3 Eligibility to Enter Further Chains of Custody

Potential certification will include fish caught by all registered Icelandic vessels, as well as Faroese vessels fishing under terms of bilateral agreement, with valid permit to operate within the Icelandic EEZ. It will also include fish handled by 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 as sub-contractors. A list of vessels with valid licenses for fishing within the Icelandic EEZ is available from the Fisheries Directorate upon request (http://www.fiskistofa.is).

A list of vessels and their quotas can be found on the website of the Directorate of Fisheries, see http://www.fiskistofa.is/veidar/aflaheimildir/uthlutadaflamark/ (*Úthlutun til skipa 2015/2016*).

Fish from eligible fishing vessels, 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 prior to first sale or post-landing processing, may therefore enter into further certified chain of custody and be eligible to carry the MSC eco-label, provided these are sold through a member of the client group, i.e. shareholder of the Iceland Sustainable Fisheries ehf. and/or its registered certificate sharing entities.

Chain of custody will commence as of the first point of sale and/or first processing after landing. Auctions that may or may not take possession of the fish and merely serve as facilitators of trade do not need chain of custody certification. Auctions that are not members of the client group and that either take ownership of the fish, as well as auction houses that engage in processing of the fish after landing, e.g. by gutting or otherwise, must have chain of custody certification.

Operators who do not share the certificate but who take ownership of the fish after landing and 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 Icelandic Consumer Agency (Neytendastofa) issues authorisations to conduct official weighing of fish landed in Icelandic ports. The current list of officially authorised weighmasters is available on https://rafraen.neytendastofa.is/pages/loggiltirvigtarmenn/.

A map of the official points of landing for fish can be found here:

http://gafl.fiskistofa.is/index.php?option=com_content&view=article&id=53:dreifikort&catid=38:kynningarefni&Itemid=62

The Client, 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. A list of current members of the client group can be obtained directly on the ISF website[4] or from the Conformity Assessment Body upon request.

[4] http://www.isf.is/isf-aethildarfyrirtaeligki.html

6 Evaluation Results

6.1 Principle Level Scores

Table 28: Final Principle Scores

Principle		***Score***
Principle 1 – Target Species		95.0
Principle 2 – Ecosystem	Bottom Trawl (TB)	89.7
	Danish Seine (SD)	91.3
	Gillnet (GN)	86.0
	Handline (LH)	93.0
	Longline (LL)	87.3
	Nephrops Trawl (TN)	90.3
	Pelagic Trawl (TP)	93.0
Principle 3 – Management System		96.3

6.2 Summary of PI Level Scores

Table 29: PI level scores by gear
(TB: bottom trawl; SD: Danish seine; GN: gillnet; LH: handline; LL: longline; TN: Nephrops trawl; TP: pelagic trawl)

Principle	*Component*	*PI No.*	*Performance Indicator (PI)*	*Score*						
1	Outcome	1.1.1	Stock status	90						
		1.1.2	Stock rebuilding	NA						
	Management	1.2.1	Harvest strategy	100						
		1.2.2	Harvest control rules & tools	100						
		1.2.3	Information/monitoring	100						
		1.2.4	Assessment of stock status	90						
				TB	**SD**	**GN**	**LH**	**LL**	**TN**	**TP**
2	Primary species	2.1.1	**Outcome**	95	95	100	95	95	95	95
		2.1.2	Management	95	95	95	95	95	95	95
		2.1.3	Information	100	100	100	100	100	100	100
	Secondary species	2.2.1	**Outcome**	90	90	75	90	90	90	90
		2.2.2	Management	90	90	65	90	70	90	90
		2.2.3	Information	85	85	70	85	70	85	85
	ETP species	2.3.1	Outcome	100	100	90	100	90	100	100
		2.3.2	Management	100	100	90	100	85	100	100
		2.3.3	Information	100	100	80	100	80	100	100
	Habitats	2.4.1	Outcome	70	85	85	100	95	80	100
		2.4.2	Management	75	85	85	85	85	75	85
		2.4.3	Information	85	85	85	85	85	85	85
	Ecosystem	2.5.1	Outcome	80	80	80	80	80	80	80
		2.5.2	Management	95	95	100	100	100	95	100
		2.5.3	Information	85	85	90	90	90	85	90
3	Governance and policy	3.1.1	Legal &/or customary framework	100						
		3.1.2	Consultation, roles & responsibilities	100						
		3.1.3	Long term objectives	100						
	Fishery specific management system	3.2.1	Fishery specific objectives	90						
		3.2.2	Decision making processes	100						
		3.2.3	Compliance & enforcement	100						
		3.2.4	Monitoring & Management Performance Evaluation	80						

6.3 Summary of Conditions

Table 30: Summary of Conditions

No.	*Condition*	*Performance Indicator*	*Related to previously raised condition? (Y/N/NA)*
1	Harbour seal must be shown highly likely to be above biologically based limits or that there is either evidence of recovery or a demonstrably effective partial strategy must be put in place for gillnet such that the UoA does not hinder its recovery and rebuilding.	**PI 2.2.1 Secondary species outcome** (Gillnet)	**N**
2	A demonstrably effective partial strategy should be put in place such that the (gillnet) UoA does not hinder recovery and rebuilding of the harbour seal. A demonstrably effective partial strategy should also be put in place for the gillnet and longlines fisheries to ensure that fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot populations are maintained at levels which are highly likely to be within biologically based limits. These strategies should include 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.	**PI 2.2.2 Secondary species management** (Gillnet and longline)	**N**
3	By the fourth surveillance audit necessary conservation and management measures for all vulnerable marine habitats shall be in place and implemented, such that the trawl fishery does not cause serious or irreversible harm to habitat structure, on a regional or bioregional basis, and function. This condition is harmonised with that for ISF Iceland haddock, ISF Iceland golden redfish and the ISF Iceland saithe & ling fisheries.	**PI 2.4.1 Habitats outcome** (Bottom trawl)	**N**
4	By the fourth surveillance audit necessary conservation and management measures for deep-sea sponge aggregation and coral gardens shall be in place and implemented, such that there is a partial strategy in place and implemented for these habitat types specifically, ensuring that the bottom and *Nephrops* trawl fisheries do not cause serious or irreversible harm to habitat structure and function in Icelandic waters. This strategy will include, where necessary, appropriate move-on measures to avoid interactions will ALL forms of VME. This condition may be implemented together with Condition 3. With regard to the bottom trawl fishery, this condition is harmonised with that for ISF Iceland haddock, ISF Iceland golden redfish and the ISF Iceland saithe & ling fisheries.	**PI 2.4.2 Habitats management** (Bottom trawl, *Nephrops* trawl)	**N**
5	By the second surveillance audit electronic logbook reporting provides some quantitative information on of seabird bycatch that is both available and adequate to assess the impact of the UoA on main secondary species with respect to their status.	**PI 2.2.3 Secondary species information** (gillnet, longline)	N

6.4 Recommendations

Table 31: *Recommendations*

Recommendation 1 **UoA: ISF Iceland cod fishery – All gears (except ISF Iceland cod gillnet and longline fisheries)**	
Performance Indicator	**PI 2.2.3 Secondary species information** **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**
Purpose	Interactions with seabird and marine mammals should be recorded in the electronic logbooks of client vessels. However, logbook returns since their introduction in 2009 has indicated very few such entries, which contradicts the results of formal MRI surveys, such as the MRI spring gillnet survey.
Recommendation	The returns from electronic logbooks should be assessed by MRI on a regular basis and compared to survey and ad hoc observer data. Where disparities are determined, efforts should be made to improve accurate logbook returns for the catch of seabird and marine mammals. This recommendation applies to all gears except gillnet and longline (where this issue is covered in Condition 5).

Recommendation 2 **UoA: ISF Iceland cod fishery – All gears**	
Performance Indicator	**Traceability**
Purpose	Management of risks to segregation and traceability within the fishery
Recommendation	The team requests that the client issues a reminder to all of the client members, as well as auctions, to observe the following: - to ensure full segregation of catch of each species by gear in the event more than one gear is applied during the same fishing trip; - to ensure full segregation of catch of each species by management region, i.e. fish caught inside the Icelandic EEZ is kept separate, in the event a vessel catches the same species on the same trip inside and outside the Icelandic EEZ – and – - to observe and implement appropriate measures of packing and labelling certified products prior to moving them to sub-contracting cooler or freezer storages upon landing, to ensure client members´ responsibility for product integrity prior to sale or further handling.

6.5 Determination, Formal Conclusion and Agreement

The assessment team has passed a determination to recommend that the ISF Iceland cod fishery should be re-certified for the scope specified in section 3.1 of this report as a well-managed and sustainable fishery against the MSC fishery standard v2.0.

Vottunarstofan Tún's Certification Committee for sustainable fisheries has met to consider the Public Certification Report. The Committee concurs with the above Determination.

7 References

ACE (2002). Identification of areas where cold-water corals may be affected by fishing. ICES Advisory Committee for Environment Advice to EC-DG Fish. http://www.ices.dk/reports/ACE/2002/coral%20advice.pdf

Andersen, L.W. (1993). The population structure of the harbour porpoise, *Phocoena phocoena*, in Danish waters and part of the North Atlantic. Mar. Biol. 116:1-7.

Andersen, L.W. (2003). Harbour porpoises (*Phocoena phocoena*) in the North Atlantic: Distribution and stock identity. NAMMCO Sci. Publ. 5:11-30.

Anonymous (2013). Nytjastofnar sjávar 2012/2013 — aflahorfur 2013/2014. 2.17. *Langa Molva*. Hafrannsóknastofnunin. Fjölrit nr. 169, p. 57.

Anonymous (2014). Ástand nytjastofna á Íslandsmiðum 2013/2014. Aflahorfur fiskveiðiárið 2014/2015. (State of stocks 2013/2014, Prospects 2014/2015). Hafrannsóknastofnun (Marine Research Institute) Fjölrit nr. 176. http://www.hafro.is/undir_eng.php?ID=26&REF=4

Ashpole, J., Burfield, I., Ieronymidou, C., Pople, R., Tarzia, M., Wheatley, H. & Wright, L. (2015). European shag. IUCN European Red List Assessment.

Astthorsson, O.S., Gislason, A. and Jonsson, S. (2007). Climate variability and the Icelandic marine ecosystem. Deep-Sea Research II, 54:2456-2477.

Barbaro, A.B.T., Einarsson, B., Birnir, B., Sigurðsson, S.Þ., Valdimarsson, H., Pálsson, Ó.K., Sveinbjörnsson, S., Sigurðsson, Þ. (2008). Modeling and simulations of the spawning migration of pelagic fish. Center for Complex and Nonlinear Science. Paper Bio5, 20p.

Berglund, P-A. and J. Hentati-Sundberg (2015). Arctic Seabirds Breeding In The African-Eurasian Waterbird Agreement (AEWA) Area: Status and Trends 2014. CAFF's Circumpolar Seabird expert group (CBird), CAFF Assessment Series Report No. 13, December 2015, CAFF International Secretariat, Akureyri, Iceland. ISBN 978-9935-431-57-8.

Bergstad, O.A, Magnusson, J.V., Magnusson, J., N.-R. Hareide, and J. Reinert. 1998. Intercalibration of age readings of ling (*Molva* L.) blue ling (*Molva dipterygia* Pennant, 1784) and tusk (*Brosme* L.). ICES Journal of Marine Science, 55: 309–318.

BirdLife International (2000). The Development of Boundary Selection Criteria for the Extension of Breeding Seabird Special Protection Areas into the Marine Environment. OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic. Vlissingen (Flushing).

BirdLife International (2012). *Cepphus grylle*. The IUCN Red List of Threatened Species 2012: e.T22694861A38890963. Downloaded on 01 July 2016.

BirdLife International (2015). European Red List of Birds. Luxembourg: Office for Official Publications of the European Communities.

BirdLife International (2016) IUCN Red List for birds. Downloaded from http://www.birdlife.org on 29/06/2016

Björnsson, H., J. Sólmundsson, K. Kristinsson, B. Steinarsson, E. Hjörleifsson, E. Jónsson, J. Pálsson, Ó. Pálsson, V. Bogason and Þ. Sigurðsson (2007). The Icelandic groundfish surveys in March 1985-2006 and in October 1996-2006. Marine Research Institute, Report 131: 220 pp. (in Icelandic, English summary)

Buhl-Mortensen, L., S. Hilma Olafsdottir, P. Buhl-Mortensen, J. Burgos and S. Ragnarsson (2014). Distribution of nine cold-water coral species (*Scleractinia* and *Gorgonacea*) in the cold temperate North Atlantic: effects of bathymetry and hydrography. Hydrobiologia (2015) 759:39–61

Chun Gil, J. 2005. Longline fisheries with special emphasis on bait size and fisheries in DPR of Korea. Iceland Final Project 2005. Sudurnes Comprehensive College.

Clucas, I. A Study of the Options for Utilization of Bycatch and Discards from Marine Capture Fisheries. FAO Fisheries Circular No. 928 FIIU/C928

Copley J.T.P., Tyler P.A., Sheader M., Murton B.J. and German C.R. (1996) Megafauna from sublittoral to abyssal depths along the Mid-Atlantic Ridge south of Iceland. Oceanologica Acta 19, 549–559

Dayton, P.K. (1979). Observations on growth, dispersal, and population dynamics of some sponges in McMurdo Sound, Antarctica. In Biologie des Spongiaires (c. Lévi and N. Boury- Esnault, eds.), pp 272–282. Centre Nationale de Recherche Scientifique; Paris

del Hoyo, J., A. Elliot, and J. Sargatal (1992). Handbook of the Birds of the World, vol. 1: Ostrich to Ducks. Lynx Edicions, Barcelona, Spain.

del Hoyo, J.; Elliott, A.; Sargatal, J. (1996). Handbook of the Birds of the World, vol. 3: Hoatzin to Auks. Lynx Edicions, Barcelona, Spain.

DNV (2012). MSC Fishery Assessment Report - Icelandic Cod Fishery. Final Report for Icelandic Group PLC. Report N0. 2011-0001, Revision NO. 6 – 14.03.2012

Elvarsson, B. Þ., Thordarson, G. 2014. Defining reference points for the Gadget assessment of Ling in Va. February 3, 2014. Working Document 02 for ICES 2014b.

Fosså, J., P. Mortensen, and D. Furevik (2002). The deep-water coral *Lophelia pertusa* in Norwegian waters: distribution and fishery impacts. Hydrobiologia 471, 1–12.

Garcia, E. (Ed)., S. Ragnarsson, S. Steingrímsson, D. Nævestad, H. Haraldsson, J. Fosså, O. Tendal and H. Eiríksson (2007). Bottom Trawling and Scallop Dredging in the Arctic - Impacts of fishing on non-target species, vulnerable habitats and cultural heritage. TemaNord 2006:529 374 pages.

Gaskin, D.E. (1984). The harbour porpoise *Phocoena phocoena* (L.): regional populations, status, and information on direct and indirect catches. Rep. int. Whal. Commn 34:569-586.

Gatti, S. (2002). The role of sponges in the High-Antarctic carbon and silicon cycling – a modelling approach. Berichte zur Polar- und Meeresforschung 434.

Gilles A, Peschko V, Siebert U (2011). Monitoring 2010–2011: Marine mammals and seabirds in the German North and Baltic Sea—visual surveys of harbour porpoises and acoustic detection on the Dogger Bank. Final report for the Federal Agency for Nature Conservation (BfN), Institute for Terrestrial and Aquatic Wildlife Research, p 5–73 [in German with English summary]

Grabowski, T., K. M. Boswell, B. McAdam, D. Wells and G. Marteinsdottir (2012). Characterization of Atlantic Cod Spawning Habitat and Behaviour in Icelandic Coastal Waters. Plos One. December 2012, Volume 7, Issue 12.

Guomundson, G., and G. Helgason (2014). Fjoolbreytni botnlaegra tegunda af hryggleysingjun a Islandsmiðum. Hafrannoknastofnun 2014.

Hall-Spencer, J.M. & K. Stehfest (2009). Assessment of *Lophelia pertusa* reefs in the OSPAR area. JNCC, Peterborough, UK.

Hammond, P.S., Bearzi, G., Bjørge, A., Forney, K., Karczmarski, L., Kasuya, T., Perrin, W.F., Scott, M.D., Wang, J.Y., Wells, R.S. & Wilson, B. (2008). *Phocoena phocoena*. The IUCN Red List of Threatened Species 2008: e.T17027A6734992. Downloaded on 01 July 2016.

Hoffmann, F., Rapp, H.T., Zöller, T. & Reitner, J. (2003). Growth and regeneration in cultivated fragments of the boreal deep water sponge Geodia barrette Bowerbank, 1858 (Geodiidae, Tetractinellida, Demospongiae). Journal of Biotechnology 100: 109–118

ICCAT 2014. Report of the 2014 Atlantic Bluefin Tuna Stock Assessment Session. Madrid, Spain – September 22 to 27, 2014.

ICES 1999. Ecological functioning and integrity of marine ecosystems *L. pertusa* reefs. IMPACT 99/4/Info.3-E. Submitted by Norway. ICES Working Group on Impacts on the Marine Environment. Brest, 15019 November, 1999.

ICES 2001. Report of the Working Group on the Ecosystem Effects of Fishing Activities (WGECO), 23 April – 2 May 2001, Copenhagen, Denmark. ICES CM 2001/ACME: 09. 102 pp.

ICES 2010. Report of the Ad hoc Group on Icelandic Cod HCR Evaluation (AGICOD), 24-26 November 2009 ICES, Copenhagen, Denmark ICES CM 2009\ACOM:56. 89 pp.

ICES 2012. Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP), 28 March–5 April, Copenhagen, Denmark. ICES CM 2012/ACOM: 17. 929 pp.

ICES 2013. Report of the working group on harp and hooded seals (WGHARP), 26-30 August 2013, PINRO, Murmansk, Russia. International Council for Exploration of the Sea CM 2013/ACOM:20

ICES 2014a. Advice basis. In Report of the ICES Advisory Committee, 2014. ICES Advice 2014, Book 1, Section 1.2.

ICES 2014b. Report of the Benchmark Workshop on Deep-sea Stocks (WKDEEP), 3–7 February 2014, Copenhagen, Denmark. ICES CM 2014/ACOM:44.

ICES 2014c. Report of the Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP), 4–11 April 2014, ICES Headquarters, Copenhagen, Denmark. ICES CM 2014/ACOM:17.

ICES 2015. 9.3.17 Herring (*Clupea harengus*) in Subareas I, II, and V and Divisions IVa and XIVa (Northeast Atlantic) (Norwegian spring-spawning herring) ICES Advice, 12 June 2015.

ICES 2015. 9.3.25 Mackerel (*Scomber scombrus*) in Subareas I–VII and XIV and Divisions VIIIa–e and IXa (Northeast Atlantic). ICES Advice, 30 September 2015.

ICES 2015a. Stock Annex for Icelandic cod.

ICES 2015b. Report of the Benchmark Workshop on Icelandic Stocks (WKICE), 26–30 January 2015, Copenhagen, Denmark. ICES CM 2015/ACOM:31. 325 pp.

ICES 2016. 2.3.11 Beaked redfish (*Sebastes mentella*) in Subarea 14 and Division 5.a, Icelandic slope stock (East of Greenland, Iceland grounds). ICES Advice, 10 June 2016.

ICES 2016. 2.3.13 Beaked redfish (*Sebastes mentella*) in ICES subareas 5, 12, and 14 (Iceland and Faroes grounds, north of Azores, east of Greenland) and NAFO Subareas 1 and 2 (shallow pelagic stock < 500 m). ICES Advice, 10 June 2016.

ICES 2016. 2.3.14 Golden redfish (*Sebastes norvegicus*) in subareas 5, 6, 12, and 14 (Iceland and Faroes grounds, West of Scotland, North of Azores, East of Greenland). ICES Advice, 10 June 2016.

ICES 2016. 2.3.15 Saithe (*Pollachius virens*) in Division 5.a (Iceland grounds). ICES Advice, 10 June 2016.

ICES 2016. 2.3.6 Greenland halibut (Reinhardtius hippoglossoides) in Subareas 5, 6, 12 , and 14 (Iceland and Faroes grounds, West of Scotland, North of Azores, East of Greenland). ICES Advice, 10 June 2016.

ICES 2016. 2.3.7 Haddock (*Melanogrammus aeglefinus*) in Division 5.a (Iceland grounds). ICES Advice, 10 June 2016.

ICES 2016. 2.3.8 Herring (*Clupea harengus*) in Division 5.a summer-spawning herring (Iceland grounds). ICES Advice, 10 June 2016.

ICES 2016. 9.3.23 Greater silver smelt (*Argentina silus*) in Subarea 14 and Division 5.a (East Greenland, Iceland Grounds). ICES Advice, 3 June 2016.

ICES 2016. 9.3.3 Blue ling (*Molva dypterygia*) in Subarea 14 and Division 5.a (East Greenland, Iceland grounds). ICES Advice, 3 June 2016.

ICES 2016. 9.3.35 Ling (*Molva molva*) in Division 5.a (Iceland Grounds). ICES Advice, 10 June 2016

ICES 2016. 9.3.47 Tusk (*Brosme brosme*) in Subarea 14 and Division 5.a (East Greenland, Iceland Grounds). ICES Advice, 10 June 2016

ICES 2016. ICES Advice Book 2. 2.3.5 Capelin (*Mallotus villosus*) in subareas 5 and 14 and Division 2.a west of 5°W (Iceland and Faroes grounds, East Greenland, Jan Mayen area). ICES Advice, 19 May 2016.

ICES 2016a. 2.3.2 Cod (*Gadus morhua*) in Division 5.a (Iceland grounds). ICES Stock Advice, 10 June 2016.

ICES 2016b. Report of the North-Western Working Group (NWWG), 27 April- 4 May 2016, ICES HQ, Copenhagen, Denmark. ICES CM 2016/ACOM:08. 703pp.

ICES 2015. 9.3.8 Blue whiting (*Micromesistius poutassou*) in Subareas I–IX, XII, and XIV (Northeast Atlantic). ICES Advice, 30 September 2015.

Jónsson, G. & Pálsson, J. (2013). Íslenskir fiskar. Mál og Mennning. 493 pp.

Jónsson, S.Þ. (1996). Saithe in a shelf. Two studies of *Pollachius virens* in Icelandic shelf waters. Cand. Scient. Thesis. University of Bergen, Norway.

Jónsson, S.Þ. (1997). Fæða ufsa við Ísland (Food of saithe in Icelandic waters). Hafrannsoknastofnunin fjolrit 57: p 45-56. (In Icelandic).

Klitgaard, A.B., and O.S. Tendal (2001). Ostur - "Cheese" bottoms - sponge dominated areas in the Faroese shelf and slope areas. In: Bruntse, G., Tendal, O.S. (Eds.), Marine Biological Investigations and Assemblages of Benthic Invertebrates from the Faroe islands. Kaldbak Marine Biological Laboratory, The Faroe Islands, pp. 13-21.

Klitgaard, A.B., and O.S. Tendal (2004). Distribution and species composition of mass occurrences of large-sized sponges in the Northeast Atlantic. Progress in Oceanography, 61, 57Ð98.

Kovacs, K.M. (2015). *Pagophilus groenlandicus*. The IUCN Red List of Threatened Species 2015: e.T41671A45231087. Downloaded on 01 July 2016.

Kovacs, K.M. (2016). *Cystophora cristata*. The IUCN Red List of Threatened Species 2016: e.T6204A45225150. Downloaded on 01 July 2016.

Lutchman I (2014) A review of best practice mitigation measures to address the problem of bycatch in commercial fisheries. Marine Stewardship Council Science Series 2: 1 – 17.

Meißner, K., N. Brenke and J. Svavarsson (2014). Benthic habitats around Iceland investigated during the IceAGE expeditions. Pol. Polar Res. 35 (2): 179–204, 2014

Ministry of the Environment (2008). Iceland National Biodiversity Strategy.

Mortensen, P. B., Hovland, M.T., Fosså, J. H. & Metvik, D. M. (2001). Distribution, abundance and size of Lophelia pertusa coral reefs in mid-Norway in relation to seabed characteristics. J Marine Biological Association UK 81,: 58 – 597.

MRI 1997. Fjölstofnarannsóknir 1992-1995. (Multi species project 1992-1995). Marine Research Institute. Fjölrit, 57.

MRI 2015. State of stocks 2014/2015 - Prospects 2015/2016. Hafrannsóknir nr. 182.

MRI 2016. State of stocks 2015/2016 - Prospects 2016/2017. Hafrannsóknir nr. 182.

NAMMCO (2016). NAMMCO Annual Report 2015. North Atlantic Marine Mammal Commission, Tromsø, Norway, 374 pp.

NPFC 2015. Report of the 13th Scientific Working Group Meeting. Tokyo, Japan. 28-29 August 2015

Øigård, T.A., Haug, T. and Nilssen, K.T. (2014). Current status of hooded seals in the Greenland Sea. Victims of climate change and predation? Biological Conservation 172: 29-36.

Ólafsdóttir, D., Víkingsson, G. A., Halldórsson, S. D. and Sigurjónsson, J. (2002). Growth and reproduction in harbour porpoises (*Phocoena phocoena*) in Icelandic waters. NAMMCO Sci. Pub. 5:195-210.

Ólafsdóttir, S. (2009). Lífríki á Kaldsjávarkóralsvæðum við Ísland. Hafrannsóknir nr. 145: 31–35. Species diversity and associated fauna composition of cold-water corals in Icelandic waters.

Marine Research in Iceland 145: 31–35. (In Icelandic with English abstract, figure and table legends.) http://www.hafro.is/images/2009/fjolrit-145.pdf

Ólafsdóttir, S., J. Burgos, E. Santos, S. Ragnarssonan (2014). Hvar eru kóralar við Ísland og hvers vegna þar? http://www.hafro.is/rad-hafsbotn14/glaerur/Steinunn%20Hilma%20glaerur.pdf

OSPAR Commission (2010a). Background Document for Lophelia pertusa reefs. Biodiversity Series. 31 pages.

OSPAR Commission (2010b). Background Document for coral gardens. Biodiversity Series. 39 pages.

OSPAR Commission (2010c). Background Document for deep sea sponge aggregations. Biodiversity Series. 46 pages.

Pálsson, Ó and H. Björnsson (2011). Long-term changes in trophic patterns of Iceland cod and linkages to main prey stock sizes. ICES Journal of Marine Science, 68: 1488–1499.

Pálsson, Ó K. 2003. A length based analysis of haddock discards in Icelandic fisheries. Fish. Res. 59: 437-446 (http://www.sciencedirect.com).

Pálsson, Ó. 1997. Predator-prey interactions of demersal fish species and capelin (Mallotus villosus) in Icelandic waters. In: Forage Fishes in Marine Ecosystems, Proceedings of the International Symposium on the Role of Forage Fishes in Marine Ecosystems. Anchorage, Alaska, USA, November 13-16, 1996, 105-126.

Pálsson, Ó. K., H. Björnsson, H. Gísladóttir, S. Guðmundsson, Þ. Ottesen & Ö. Holm (2013). Mælingar á brottkasti þorsks og ýsu 2011. Hafrannsóknir nr. 167.

Pálsson, Ó. K., Þ. Gunnlaugsson and D. Ólafsdóttir (2015). Meðafli sjófugla og sjávarspendýra í fiskveiðum á Íslandsmiðum (By-catch of sea birds and marine mammals in Icelandic fisheries). Hafrannsóknir nr. 178, Reykjavík 2015, 21 pages.

Pálsson, Ó., G. Karlsson, G. Jóhannesson, A. Arason, H. Gísladóttir and Þ. Ottesen (2005). Mælingar á brottkasti botnfiska 2004. Hafrannsóknastofnunin. Fjölrit nr. 116.

Ragnarsson, S., and S. Steingrímsson (2003). Spatial distribution of otter trawl effort in Icelandic waters: comparison of measures of effort and implications for benthic community effects of trawling activities. ICES Journal of Marine Science, 60: 1200–1215. 2003

Sigurjónsson, J. and Víkingsson, G.A. (1997). Seasonal abundance of and estimated food consumption by cetaceans in Icelandic and adjacent waters. J. Northw. Atl. Fish. Sci. 22:271-287.

Stefánsson, G. (2003). Multi-species and ecosystem model in a management context. In: Sinclair M., Grímur Valdimarsson (eds): Responsible Fisheries in the Marine Ecosystem. Rome: FAO, 171-188.

Stefánsson, G. and Pálsson, Ó.K. (1998). A framework for multispecies modelling of Boreal systems. Reviews in Fish Biology and Fisheries, 8: 101-104.

Steingrímsson, S., and S. Einarsson (2004). Kóralsvæði á Íslandsmiðum: Mat á ástandi og tillaga um aðgerðir til verndar þeim (EN: Coral grounds off Iceland: assessment of their status and proposal for mitigating measures). Hafrannsóknastofnunin. Fjölrit, 110: 1-39.

Stenson, G. B. (2003). Harbour porpoise (*Phocoena phocoena*) in the North Atlantic: Abundance, removals, and sustainability of removals. NAMMCO Sci. Publ. 5:271-302.

Stenson, G.B. and Reddin, D.G. MS (1990). Incidental catches of small cetaceans in drift nets during salmon tagging experiments in the Northwest Atlantic. Report of the International Whaling Commission Symposium on mortality of cetaceans in passive fishing nets and traps, La Jolla, California, 20-21 October 1990:46.

Taylor, L., J. Begley, V. Kupca and G. Stefansson (2007). A simple implementation of the statistical modelling framework Gadget for cod in Icelandic waters. African Journal of Marine Science 2007, 29(2): 223–245

Tendal, O.S. (1992). The North Atlantic distribution of the octocoral *Paragorgia arborea* (L., 1758) (Cnidaria, Anthozoa). Sarsia 77: 213–217

Thórarinsdóttir, G., H. Einarsson, S. Ólafsdóttir and S. Ragnarsson (2010). The impact of a fly-dragging fishery on the bottom community in Skagafjörður. Marine Research in Iceland 151, 19

Valdimarsson, H and S. Jónsson (2007). Time series and hydrographic variability in Icelandic waters. CLIVAR Exchanges (Newsletter of the Climate Variability and Predictability Programme). Vol. 12, No. 1., pp. 23-24.

Víkingsson, G., D. Ólafsdóttir and J. Sigurjónsson (2003). Diet of harbour porpoises (Phocoena phocoena) in Icelandic coastal waters. NAMMCO Sci. Publ. 5:243-270.

Vottunarstofan Tún (2014). ISF Iceland Saithe Fishery - Public Certification Report. Prepared for: Iceland Sustainable Fisheries ehf. September 2014. 373 pages.

Appendices

Appendix 1: Scoring and Rationales

Appendix 1.1: Performance Indicator Scores and Rationale

Evaluation Table for PI 1.1.1 – Stock status

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guide post	It is likely that the stock is above the point where recruitment would be impaired (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
	Met?	Y	Y	Y
	Justification	The spawning stock biomass (SSB) has been above the B_{lim} since 1993. The B_{lim} is taken as the PRI for this stock. The stock was relatively low between 1980 and 2005 fluctuating just above the PRI. There was no evidence for a decline in recruitment caused by low SSB during this period, and this is used as the basis for determining B_{lim} (i.e. $B_{lim}=B_{loss}$). The SSB is estimated to be 464,020t in 2016. Confidence intervals are not provided. Assuming a log-normal probability density function and default scale parameter used for the reference points ($\sigma_B=0.15$), the lower range of the 95% confidence interval would be 346,000t, still well above the B_{lim}. Therefore, there is a high degree of certainty that the stock is above its PRI. This meets SG60, SG80 and SG100.		
b	Stock status in relation to achievement of MSY			
	Guide post		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		Y	N
	Justification	The fishery applies the ICES MSY approach in management and defining reference points. The stock has been determined by ICES as meeting all its MSY criteria: fishing pressure is at the MSY level and SSB is well above MSY $B_{trigger}$. B_{MSY} can be defined as the long term SSB resulting from applying F_{MSY}. The harvest ratio (equivalent to fishing mortality) has been at or slightly below the MSY harvest ratio since 2010, which is less than a generation, so more time might be needed to obtain a better estimate of B_{MSY}. F relative to F_{MSY} cannot be used to determine status. There is no single B_{MSY} reference point estimated for this stock. B_{MSY} will depend on the stock-recruit function among other assumptions in the modelling. In simulations estimates varied from 280 – 790 thousand tonnes. MSY $B_{trigger}$ is used by ICES to determine stock status. The spawning stock biomass (SSB) has been above the MSY $B_{trigger}$ since 2006. The MSY $B_{trigger}$ is taken as the lower limit for a stock fluctuating around the B_{MSY}. Based on the 2009 simulation, the lower 90% confidence interval of long-term SSB at HR = HR_{MGT} is 220 kt, so stock sizes above this indicate the stock size is consistent with MSY. This achieves SG80. Since 2010 the SSB has risen from around 300,000t to between 400-500,000t, and recent estimates suggest it may have levelled off or will decline somewhat. Confidence intervals are not provided. The lowest SSB in the last 5 years was 368,000t in 2011. Assuming a log-		

		normal probability density function and default scale parameter used for the reference points (σ_B=0.15), the lower range of the 95% confidence interval would have been 274,000t. This is still well above MSY $B_{trigger}$. Although, B_{MSY} reference have been estimated for various models, it is dependent on various assumptions on the stock recruit relationship. No single B_{MSY} point has been adopted. In the absence of B_{MSY} and because F_{MSY} has been maintained less than a generation, status can only be determined on the basis of the other reference points. The stock size is very substantially higher than B_{pa} or MSY $B_{trigger}$, irrespective of past fishing mortality (see MSC Interpretation Note: Scoring stock status against B_{MSY} for ICES stocks). Therefore, this achieves SG80. Because F_{MSY} has not been maintained for sufficient time, SG100 is not met.
References		ICES 2010. Report of the Ad hoc Group on Icelandic Cod HCR Evaluation (AGICOD), 24-26 November 2009 ICES, Copenhagen, Denmark ICES CM 2009\ACOM:56. 89 pp. ICES 2016. 2.3.2 Cod (*Gadus morhua*) in Division 5.a (Iceland grounds). ICES Stock Advice, 10 June 2016. ICES 2016. Report of the North-Western Working Group (NWWG), 27 April- 4 May 2016, ICES HQ, Copenhagen, Denmark. ICES CM 2016/ACOM:08. 703pp.

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 PRI (SIa)	B_{loss} (lowest observed SSB)	125,000t SSB	B_{2016}/B_{loss} = 464/125 = 3.7
Reference point used in scoring stock relative to MSY (SIb)	Bpa MSY $B_{trigger}$ HR_{MSY}	160,000t SSB 220,000t SSB 20%	B_{2016}/B_{pa} = 464/160 = 2.9 $B_{2016}/B_{trigger}$ = 464/220 = 2.1 HR_{2015}/HR_{MSY} = 0.18/0.20 = 0.9

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

Evaluation Table for 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**
	The stock is not reduced below the target region, so this performance indicator is not scored.

Evaluation Table for 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			
	Guide post	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	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management

			together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	objectives reflected in PI 1.1.1 SG80.
	Met?	Y	Y	Y
	Justification	The harvest strategy consists of annual working group meetings to review the stock assessment and develop the scientific advice and information used to set the TAC. ICES applies a quality assurance process to ensure that the best possible scientific is provided. The harvest strategy aims to maintain the stock at levels consistent with MSY. This is consistent with PI 1.1.1 SG80 objectives. The TAC is adjusted appropriately based on the precautionary approach with the MSY objective. In addition, the fleet capacity has been set at reduced levels commensurate with the cod stock productivity, technical measures have been introduced to improve gear selectivity, and temporary and permanent closed areas have been implemented to protect vulnerable components of the cod population and their habitat. These elements of the harvest strategy have been developed in response to scientific advice over previous decades. Scientific work, including data collection and stock assessment has and is being used to evaluate the strategy. The different elements of the harvest strategy complement each other. Therefore because the harvest strategy is consistent with PI 1.1.1, is responsive to the state of the stock and the elements work together to achieve objectives, SG60 and SG80 are met. There is also evidence that the strategy has been designed to achieve its long term objectives. Most of the harvest strategy of the demersal fishery has been developed to achieve objectives for the cod fishery, which forms the largest, most valuable part of the landings. The various elements have been set to reduce discarding and maintain stable catches and the stock at optimal levels. This has been based on past data, analyses and projections, and has been successful since 2010. Therefore, the fishery meets SG100.		
b	Harvest strategy evaluation			
	Guide post	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	Y	Y	Y
	Justification	The stock status is regularly monitored through the annual stock assessments, and the estimates of fishing mortality and spawning stock biomass indicate that the harvest strategy has been achieving its objectives. The simulation testing of the harvest control rule also indicted that the HCR should achieve its objectives. The evaluation of the harvest strategy is relatively complete. The current strategy has been operating since 2010, including the current harvest control rule, effective monitoring system and regular evaluation giving feedback to the decision-makers. There is clear evidence that it is working, with SSB well within target levels, sustained high recruitment, stable landings and low discarding since 2001. Demonstrable success in implementation and outcome over a significant period of time constitutes full evaluation. Because there is clear evidence that the harvest strategy is achieving its objectives over a considerable period of time and it is maintaining the stock at target levels, the fishery meets SG60, SG80 and SG100.		
c	Harvest strategy monitoring			

	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	Y		
	Justification	Considerable data are collected on the fishery, including data on catches, vessels and abundance. These are sufficient to monitor the stock, vessel operations, and catch by area and time. These, through review and various analyses, provide a strong basis to evaluate all parts of the harvest strategy. This meets SG60.		
d	Harvest strategy review			
	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			Y
	Justification	ICES and MRI provide an annual review of the performance of the harvest strategy. This has directly led to changes in controls, fishing levels, fleet capacity and technical measures to meet objectives and reduce risks of overfishing. The evaluation of the harvest strategy is published in ICES NWWG working group report, benchmark reports and scientific advice. This meets SG100.		
e	Shark finning			
	Guide post	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	Cod is not a shark.		
f	Review of alternative measures			
	Guide post	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?	Y	Y	Y
	Justification	SI.f is scored if there is some non-negligible proportion of the catch that is unwanted, but this is up to the discretion of the assessors (CR2.0 GSA3.5.3). Currently discards are low (estimated to be around 1% of the landings) and are therefore not included in the stock assessment. This could be interpreted as negligible, but this can lead to perverse scoring where a fishery that has significant unwanted catch could score higher than one where the unwanted catch is negligible. Because the low discards are likely partly the result of management initiatives, SI.f is scored. The discards are inferred by comparing at-sea with port length samples, which measures the amount of "highgrading", but not other causes of discarding. Because it is illegal to discard, it is possible that unwanted fish may also be retained. In this context "unwanted" fish is unclear where fishers may have a preference. The primary concern with any review should be discarding and that is what is considered here. There is no dedicated review of unwanted mortality. Unwanted mortality is addressed within the harvest strategy and therefore a review is conducted routinely alongside all		

		other issues pertinent to controlling mortality. This on-going consideration evident in the stock assessment, scientific advice and policy documents is treated as a review. This review occurs annually. We interpret this monitoring of discards as a review of unwanted mortality, and by extension alternative measures to reduce this. There is clear evidence that alternative measures have been adopted to minimize discarding of all species. There is a prohibition on discarding commercial species, although reasonable exceptions are allowed (e.g. to discourage capture of small fish there are upper limits on the percentage weight of fish that can be landed below minimum landing size and any cod, saithe, haddock or redfish which is landed, 50% weight is counted against the individual quota). There is flexibility in the TAC, so a limited 5% overshoot can be can be carried over between years without penalty, and quota can be exchanged among companies and vessels. Technical measures include increasing mesh size in trawls from 120 mm to 155 mm in 1977 (except redfish directed fisheries), an allowable gillnet mesh size range, and real time area closures to reduce the take of undersize fish. In addition, individual boats may be allowed the limited transfer of allowable catch of one species to another. The effect of these measures on the quota system is reviewed. As importantly, the fishing industry have a policy to make best possible use of all product, including bio-medical products and new markets for new products. This converts otherwise unwanted to wanted catch, which is perhaps the most effective way of dealing with this issue. With at least an annual review of unwanted cod catch, and a proven implementation of an array of appropriate measures to reduce this, SG60, SG80 and SG100 are met.
References		ICES 2010. Report of the Ad hoc Group on Icelandic Cod HCR Evaluation (AGICOD), 24-26 November 2009 ICES, Copenhagen, Denmark ICES CM 2009\ACOM:56. 89 pp. ICES 2015. Report of the Benchmark Workshop on Icelandic Stocks (WKICE), 26–30 January 2015, Copenhagen, Denmark. ICES CM 2015/ACOM:31. 325 pp. ICES 2015. Stock Annex for Icelandic cod. ICES 2016. 2.3.2 Cod (*Gadus morhua*) in Division 5.a (Iceland grounds). ICES Stock Advice, 10 June 2016. ICES 2016. Report of the North-Western Working Group (NWWG), 27 April- 4 May 2016, ICES HQ, Copenhagen, Denmark. ICES CM 2016/ACOM:08. 703pp.
OVERALL PERFORMANCE INDICATOR SCORE:		**100**
CONDITION NUMBER (if relevant):		**NA**

Evaluation Table for 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			
	Guide post	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	Y
	Justification	There is a well-defined harvest control rule in place. It has been tested and has been determined as meeting ICES definition of precautionary, and is consistent with ICES MSY approach. The harvest control rule ensures that the exploitation rate is reduced when the biomass falls below the $SSB_{trigger}$ reference point, which is the lower bound for the MSY target (lower 90% confidence interval for SSB when applying the HCR). Cod is not a key LTL species. The HCR therefore meets SG60 and SG80. Based on the simulation, the harvest control rule is expected to keep the stock fluctuating at or above the MSY level. The harvest control rule makes no attempt to take into account the ecological role of the stock, but taking into account the importance of cod in the ecosystem, the target level would still appear to be appropriate. However, the response of recruitment to fluctuations in SSB have been tested within the simulations, and the HCR has been shown to be robust, maintaining the stock at a high level. This has been borne out by recent stock assessments. Therefore, there is sufficient evidence for the fishery to meet SG100.		
b	HCRs robustness to uncertainty			
	Guide post		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	Y
	Justification	The HCR has been tested through a management strategy evaluation, albeit the simulation models have not covered exhaustive range of possibilities, the main uncertainties have been covered. The simulations showed that the HCR should be robust to these. The simulation model accounted for uncertainties, among others, in recruitment, weights, capelin abundance (main prey), and various bias, including implementation error. The available evidence suggests that the harvest control rule has maintained fishing mortality below or around target levels since 2010. This meets SG80. The HCR has not been tested against all uncertainties, but the number of uncertainties considered have been very wide. While not all have been modelled directly in simulation, their implication to the HCR has been considered. Some account was taken of the ecological role of the stock. Cod is a major predator, and cod size has been linked to capelin abundance, capelin being a major prey item. This		

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
		affects weight at age, and the effect of this has been considered in the simulations to test the HCR. The simulations provide evidence that the HCR should be robust to this wide range of uncertainties, so SG100 is met.		
c	HCRs evaluation			
	Guide post	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	Y
	Justification	The tools in use for implementing the HCR are primarily the TAC, which is adjusted in relation to stock size. The TAC has clearly limited exploitation levels effectively since 2010 when the current HCR was implemented. Furthermore, the exploitation rate and fishing mortality have been reduced significantly after the implementation of the catch rule in 1995 compared with the past i.e. management measures by restricting landings based on the HCR are manifested in lower fishing mortality and higher stock biomass for the Icelandic cod. Historically, there has been some overshoot of the TAC (e.g. the overshoot averaged 5.1% (2.2%-8.6%) of the TAC since 2010/11). However the harvest ratio has been slightly below the target level since 2010, so the overshoot has not posed a problem. Furthermore, the overshoot error was included in the simulation modelling that tested the HCR. There is some allowance to exceed the quota to discourage discarding, so small levels of overshoot would not be unusual. Because the evidence clearly shows that the tools in use are achieving the exploitation levels in the HCR, SG60, SG80 and SG100 are met.		
References		ICES 2010. Report of the Ad hoc Group on Icelandic Cod HCR Evaluation (AGICOD), 24-26 November 2009 ICES, Copenhagen, Denmark ICES CM 2009\ACOM:56. 89 pp. ICES 2015. Report of the Benchmark Workshop on Icelandic Stocks (WKICE), 26–30 January 2015, Copenhagen, Denmark. ICES CM 2015/ACOM:31. 325 pp. ICES 2015. Stock Annex for Icelandic cod. ICES 2016. 2.3.2 Cod (*Gadus morhua*) in Division 5.a (Iceland grounds). ICES Stock Advice, 10 June 2016. ICES 2016. Report of the North-Western Working Group (NWWG), 27 April- 4 May 2016, ICES HQ, Copenhagen, Denmark. ICES CM 2016/ACOM:08. 703pp.		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				**NA**

Evaluation Table for 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			
	Guide post	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	Cod is a particularly well studied species both in general, and specifically to Icelandic waters. There is considerable information on growth, length and weight at age, spatial distribution by age, including depth and fecundity. Information on life history is sufficient to model maturity (for calculating SSB), growth and other biological information necessary to conduct an age-structured stock assessment. Information required by the harvest control rule (part of the harvest strategy), including catches and abundance indices, are considered in SI.c. The spatial distribution of the cod stock structure is used in "real-time" to temporarily close areas where the catch composition includes too many small cod. Information on stock structure and stock productivity is therefore comprehensive. Information on the fleet is comprehensive. All vessels are registered and there is complete information on the vessels and fleet dynamics. All vessels have a mandatory VMS for safety purposes, while another system is reserved for fishing vessels. The surveys, as well as estimating changes in abundance of groundfish, collect samples on many aspects of the ecosystem, including the food of cod and haddock, and marine environment contaminants. Habitat mapping, including depth, is currently being undertaken. Physical and biological oceanographic information (temperature, salinity, chlorophil) is collected routinely and is available for research. The distribution of habitats and others species may be particularly useful for developing the harvest strategy further. Because information on stock structure, stock productivity, fleet composition, stock abundance and UoA removals is comprehensive, SG60 and SG80 are met. In addition, other information, including some that may not be directly related to the current harvest strategy, is available for monitoring and strategy development, so SG100 is also met.		

b	Monitoring			
	Guide post	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	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.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Y	Y	Y
	Justification	The harvest control rule depends on output from the stock assessment. Therefore, this scoring issue addresses the adequacy of the stock assessment data. The stock assessment requires catches (including discards), biological sampling and survey data. All landings weights are recorded and considered sufficiently accurate for the stock assessment. Biological sampling is sufficient to estimate length, weight and age compositions also sufficiently accurately for the stock assessment. Two surveys are conducted each year which track abundance. Because the stock abundance and removals are monitored regularly and accurately for the stock assessment, data are sufficient to apply the harvest control rule and therefore SG80 is met. Cod is less likely to be discarded than haddock, but estimates suggest some discarding does occur, and it was a problem before 1990. Estimates are generally currently average of around 1% of the landings. This is considered negligible and discards are not included in the stock assessment. The main sources of uncertainty are the result of differences among the main indicators of stock status, including the two abundance indices and catch composition (age structure etc.). The exact causes for these differences are not fully understood, but this is a common occurrence in this sort of assessment which balances information from several independent sources. The levels of uncertainty are estimated and their effect on the assessment has been explored and is well understood. Management strategy evaluations used to test the harvest control rule, and therefore the management advice, include the various errors (e.g. recruitment, retrospective, autocorrelations) modelled as estimated quantities from the stock assessment. Because all information necessary for the stock assessment is monitored with high frequency and a high degree of certainty, and there is a good understanding of the uncertainties in the data and the robustness of assessment and management to this uncertainty, SG100 is met.		
c	Comprehensiveness of information			
	Guide post		There is good information on all other fishery removals from the stock.	
	Met?		Y	
	Justification	Other removals outside the UoA will be very small. Almost all commercial fisheries operating within Icelandic waters are included in the UoA. Landings for all fisheries are well recorded. The only element of concern would be discards, and this problem would be the same as applied to the UoA in SI.b above. Information on all other removals from the stock is therefore good, meeting SG80.		
References	ICES 2010. Manuals for the Icelandic bottom trawl surveys in spring and autumn. http://www.hafro.is/Bokasafn/Timarit/fjolrit-156.pdf ICES 2015. Report of the Benchmark Workshop on Icelandic Stocks (WKICE), 26–30 January			

	2015, Copenhagen, Denmark. ICES CM 2015/ACOM:31. 325 pp. ICES 2015. Stock Annex for Icelandic cod. ICES 2016. Report of the North-Western Working Group (NWWG), 27 April- 4 May 2016, ICES HQ, Copenhagen, Denmark. ICES CM 2016/ACOM:08. 703pp.
OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	**NA**

Evaluation Table for 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			
	Guide post		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	This stock assessment was benchmarked in 2015 and updated in 2016. The stock assessment used to develop advice, consists of a statistical catch at age model (ADCAM). Statistical catch-at-age models are able to use all standard fisheries data, including landings, biological catch sampling and survey data. The model has been adjusted to account for perceived issues in the data, and includes a random walk constraint on fishing mortality and multivariate normal for the survey residuals. Because the assessment uses the available data appropriately and derives estimates of B_{4+} and harvest ratio used in the harvest control rule, SG80 is met. The model fits to data, estimating the age-structure, recruitment and spawning stock biomass, which are the most important features of the population dynamics. No other major features have been identified which need to be included in the assessment. The implication is that, for this UoA, the assessment takes account of the necessary major features, meeting SG100.		

b	Assessment approach			
	Guide post	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 basis for B_{lim} was B_{loss} defined in 2010 as 125 kt. The basis for the limit reference point also considered the comparison between recruitment from year classes 1952-1984 to 1985 on-wards, as recruitment and SSB was lower in latter period compared with the former period. F_{MSY} or HR_{MSY} point estimates have not been defined for this stock. However, the $B_{trigger}$ and the HR_{HCR} in the HCR are respectively above and below the default candidate PA-reference points and are consistent with the ICES MSY framework, upon which the HCR has been evaluated. The 2016 stock assessment has evaluated the stock status relative to these reference points. The reference points are specific to this stock and have been determined based on recommendations from the NWWG, through simulation testing and review. Because the assessment estimates stock status relative to these reference points, and they are appropriate to the stock and have been estimated, SG60 and SG80 are met.		
c	Uncertainty in the assessment			
	Guide post	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	N
	Justification	Major sources of uncertainty have been identified and these are taken into account in the assessment. Important uncertainties have been reviewed and are outlined in the stock assessment. The main uncertainty identified is that the catch-at-age data indicate a smaller stock size than does the survey data. The two abundance indices show residual patterns, and used separately, they give slightly different results. Retrospective analyses have been run and suggest that the estimates of the most recent indicators are robust. Changes between the current and previous assessments have been small. Probabilistic projections have been used to test the harvest control rule. The statistical model accounts for errors in the fitting process. Because sources of uncertainty have been identified, and these have been addressed through the fitting method and review process, SG60 and SG80 are met. Although the model is fitted to the data based on likelihood, so estimates of variance and confidence intervals for key indices can be reported, these are not applied or reported in any probabilistic way for management advice, the determination of stock status or the various risks to management. The stock status is reported as a point estimate, which may in this case reflect the high degree of confidence in the stock assessment. Nevertheless, because there is no explicit probabilistic assessment of stock status relative to reference points, SG100 is not met.		

d	Evaluation of assessment			
	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			N
	Justification	The assessment has been tested and shown robust. As indicated in SI.e above, uncertainty has been identified and its effect on the stock assessment results has been examined. Based on these results, the benchmark workshop and the NWWG found that the stock assessment was robust. Other assessment approaches have been explored. The last benchmark assessment in 2015 considered a range of options and approaches. The stock assessment underwent its first benchmark in 2015, despite the ADCAM software being in use since 2002. The benchmark workshop has adopted the current "SPALY" model, but NWWG has indicated that it is developing alternate model configurations for the catch-at-age statistical model, which are being tested. The data have been extensively explored using a time series analysis (NWWG 2013), and assessments where the catch and fishing mortality is calculated (ADAPT) and where the fishing pattern is not considered to change each year (SEPARABLE). However, the external reviewers suggested that it would be useful to conduct a wider range of sensitivities both within the adcam model by, for example, adjusting the relative weights of different datasets, and by implementing alternative age-structured models. Since alternative assessment approaches have not been rigorously explored, SG100 is not met.		
e	Peer review of assessment			
	Guide post		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		Y	Y
	Justification	The stock assessment is subject to peer review through the ICES working group system. The findings and conclusions of the North-Western Working Group are published annually and are fully transparent. The assessments include audit reports that ensure the stock assessments that are conducted are consistent with the stock annex. The stock annex documents the available data and defines the stock assessment approach. While the working group system clearly applies peer review, it is arguable that this is internal review only. Working groups consist of scientists appointed by their respective countries. This brings some level of independence to their review. The most recent (and first) 2015 benchmark assessment included three external reviewers invited to a stock assessment workshop. Their report is included in the Iceland benchmark workshop report (WKICE 2015). ICES routinely invites external reviewers to its benchmark workshops. Because internal and external peer reviewers have reviewed this assessment, it meets SG80 and SG100.		
References		ICES 2010. Report of the Ad hoc Group on Icelandic Cod HCR Evaluation (AGICOD), 24-26 November 2009 ICES, Copenhagen, Denmark ICES CM 2009\ACOM:56. 89 pp. ICES 2013. Report of the North Western Working Group (NWWG), 25 April - 02 May 2013, ICES Headquarters, Copenhagen. ICES CM 2013/ACOM:07. 1577 pp. ICES 2015. Report of the Benchmark Workshop on Icelandic Stocks (WKICE), 26–30 January 2015, Copenhagen, Denmark. ICES CM 2015/ACOM:31. 325 pp. ICES 2015. Report of the North-Western Working Group (NWWG), 28 April-5 May, ICES HQ,		

	Copenhagen Denmark. ICES CM 2015/ACOM:07. 717 pp. ICES 2015. Stock Annex for Icelandic cod. ICES 2016. Report of the North-Western Working Group (NWWG), 27 April- 4 May 2016, ICES HQ, Copenhagen, Denmark. ICES CM 2016/ACOM:08. 703pp.
OVERALL PERFORMANCE INDICATOR SCORE:	**90**
CONDITION NUMBER (if relevant):	

Scoring tables 2.1.1-3 and 2.2.1-3 are arranged to minimise repetition and maximise clarity. As a result the formats are different. Scoring tables 2.1.1-3 are arranged by gear based on their landings profiles. However, where the same rationale and scores apply across gears (2.1.2-2.1.3), the tables have been combined into a single "All Gear" category. 2.2.1-3 are arranged primarily to explain scoring of the out-of-scope species, which broadly determine the scores for gears which interact with them.

Evaluation Table for PI 2.1.1 – Primary species outcome: All Gears

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			
	Guide post	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.

	Bottom trawl			
	Met?	Y	Y	3 Y : 1 N
	Justification	There are 4 main stocks: saithe, golden redfish, haddock and deep-water redfish. Saithe, golden redfish and haddock are currently in a good state and are at or above the MSY level (Table 13) with a high degree of certainty. Specifically, based on the stock assessments for these stocks, there is a greater than 80% probability that the stock is above their MSY $B_{trigger}$. This meets the SG100. For deep-water redfish, the catches are predominantly taken to be from the Icelandic slope stock. The stock status is not known. The recent catches since 2009 have been high, and there is a ICES recommendation to reduce them. However, it remains highly likely that the stock is still above its PRI, meeting SG80. Without a MSY reference point it remains unclear whether the stock is at or above MSY level. Furthermore, the implication of a recommendation of catch reduction is that there is a significant chance that the current fishing mortality exceeds F_{MSY}. Therefore, SG100 is not met.		

	Danish seine			
	Met?	Y	Y	2 Y : 2 N
	Justification	There are 4 main primary stocks: haddock, plaice, saithe and Atlantic wolffish. Saithe and haddock are currently at or above their PRI with a high degree of certainty and		

		above their MSY $B_{trigger}$ (Table 13). This meets the SG100 for these stocks. Atlantic wolffish abundance is increasing, although recruitment appears to have been decreasing over recent years. Fishing mortality is below the F_{MSY} proxy. The stock is highly likely to be above its PRI, but until F_{MSY} is applied for a number of years, its relation to MSY is uncertain. This meets SG80, but not SG100. Plaice biomass is increasing as fishing mortality has decreased since 2000. Although stock status is uncertain, the stock is likely to be above PRI. Given that it is increasing, there is evidence that the combined fisheries are not hindering any recovery. Therefore, the fishery will meet SG80, but not SG100.

	Gillnets			
	Met?	Y	Y	Y
	Justification	There is one main stock: saithe. Saithe is currently at or above the MSY level (Table 13) with a high degree of certainty. Specifically, based on the stock assessments, there is a greater than 80% probability that the stock is above its MSY $B_{trigger}$. This meets the SG100 for this stock.		

	Handline			
	Met?	Y	Y	Y
	Justification	There is one main stock: saithe. Saithe is currently at or above the MSY level (Table 13) with a high degree of certainty. Specifically, based on the stock assessments, there is a greater than 80% probability that the stock is above its MSY $B_{trigger}$. This meets the SG100 for this stock.		

	Longline			
	Met?	Y	Y	2 Y : 1 N
	Justification	There are 3 main stocks: haddock, ling and Atlantic wolffish. Haddock and ling are currently at or above their MSY level (Table 13) with a high degree of certainty. Specifically, based on the stock assessments for these stocks, there is a greater than 80% probability that the stock is above their MSY $B_{trigger}$. This meets the SG100 for these stocks. Atlantic wolffish abundance is increasing, although recruitment appears to have been decreasing over recent years. Fishing mortality is below the F_{MSY} proxy. The stock is highly likely to be above its PRI, but until F_{MSY} is applied for a number of years, its relation to MSY is uncertain. This meets SG80, but not SG100.		

	Nephrops trawl			
	Met?	Y	Y	3 Y: 2 N
	Justification	There are 5 main stocks: *Nephrops,* Golden redfish, ling, saithe and witch. Saithe, golden redfish and ling are currently at or above their MSY level (Table 13) with a high degree of certainty. Specifically, based on the stock assessments for these stocks, there is a greater than 80% probability that the stock is above their MSY $B_{trigger}$. This meets the SG100 for these stocks. Witch status is unknown. The stock size has been stable in recent years. Recruitment has been low but this is not linked to low stock size, the implication being that the stock is highly likely above its PRI. This meets SG80. There insufficient evidence that the stock is at the MSY level, so SG100 is not met. For *Nephrops*, the target fishing mortality ($F_{0.1}$) has been achieved since 1995. The stock		

		has declined due to low recruitment, but this is not linked to low biomass levels. Therefore, it is highly likely that the stock is above its PRI, meeting SG80, but this is not with a high degree of certainty, so SG100 is not met.

	Pelagic trawl			
	Met?	Y	Y	3 Y : 2 N
	Justification	There are 5 main primary species/stocks caught alongside cod: capelin, mackerel, herring and golden redfish. For the purposes of this assessment, herring is divided into two stocks, summer and spring spawning. For Iceland capelin, there is a high degree of certainty that the stock is above B_{lim}, but whether this is consistent with MSY is unclear (Table 13). This meets SG80, but not SG100. North-east Atlantic mackerel SSB in 2015 was well above the PRI and above the MSY $B_{trigger}$ meeting SG100. There are several stocks of herring caught around Iceland. Summer spawning herring is above its PRI with a high degree of certainty and is above MSY $B_{trigger}$, which meets SG100. Spring spawning herring was below MSY $B_{trigger}$, but is still well above its PRI, meeting SG80, but not SG100. Golden redfish is well above its MSY $B_{trigger}$, which meets SG100.		

b	Minor primary species stock status			
	Guide post			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

	Bottom trawl			
	Met?			21 Y : 2 N
	Justification	There are 23 minor primary species stocks that are impacted by the fishery (i.e. these species have been recorded in the landings). Of these ling, blue ling, mackerel and blue whiting have stock status that is around the MSY level. Greenland halibut, greater silver smelt, Atlantic wolffish, plaice, lemon sole, Norway redfish, bluefin tuna, anglerfish, witch, tusk, northern shrimp (2 stocks), herring (2 stocks), lumpfish and *Nephrops* have been determined as highly likely to be above their PRI or recovering to the MSY level. For dab and long rough dab, the stock status is not certain. For these stocks, it cannot be determined that the stock is highly likely above their PRI, and there is no evidence of recovery. The landings from this gear is small for dab (2%), but slightly more significant for long rough dab (5%; Table 11). However, the gear may be making a significant contribution to mortality if some discarding occurs, Even if it is likely absolute discard quantities are low, this additional source of mortality may still be significant if the stock is depleted. Therefore there is insufficient evidence that the gear is not preventing any recovery of the stock.		

	Danish Seine			
	Met?			12 Y : 2 N
	Justification	There are 14 minor primary species stocks that are impacted by the fishery (i.e. these species have been recorded in the landings with cod). Of these golden redfish, ling, blue ling and mackerel have stock status that is around the MSY level. Greenland halibut, greater silver smelt, lemon sole, anglerfish, tusk, witch and lumpfish have been determined as highly likely to be above their PRI or recovering to the MSY level. For dab and long rough dab, the stock status is not certain. For these stocks, it cannot be determined that the stock is highly likely above their PRI, and there is no evidence of recovery. Danish seine accounts for the majority of the landings of these species (Dab 79%; Long rough dab 45%; Table 11). Therefore there is insufficient evidence that the gear is not preventing any recovery of the stock.		

	Gillnet			
	Met?			Y
	Justification	There are 21 minor primary species stocks that are impacted by the fishery (i.e. these species have been recorded in the landings with cod). Of these golden redfish, ling, haddock, blue ling and mackerel have a stock status that is around the MSY level. Greenland halibut, plaice, anglerfish, tusk, Atlantic wolffish, lumpfish, lemon sole, witch, herring (2 stocks), deep-water redfish (Iceland stock), greater silver smelt and Norway redfish have been determined as highly likely to be above their PRI or recovering to the MSY level. For dab and long rough dab, the stock status is not certain. For these stocks, it cannot be determined that the stock is highly likely above their PRI, and there is no evidence of recovery. Gillnet only accounts for a very small percentage of the landings (Dab 0.5%; Long rough dab 1.1%; Table 11). Even if there is some discarding, this is clear evidence that this gear would not be contributing to any prevention in recovery, so SG100 is met.		

	Handline			
	Met?			18 Y : 2 N
	Justification	There are 18 minor primary species stocks that are impacted by the fishery (i.e. these species have been recorded in the landings with cod). Of these golden redfish, haddock, ling, blue ling and mackerel have stock status that is around the MSY level. Greenland halibut, plaice, witch, lemon sole, deep-water redfish (Iceland stock), lumpfish, Norway redfish and greater silver smelt have been determined as highly likely to be above their PRI or recovering to the MSY level. For dab, the stock status is not certain. It cannot be determined that the stock is highly likely above their PRI, and there is no evidence of recovery. Handline accounts for a negligible proportion of the landings of this species (Dab <0.5%; Table 11). Even if there is some discarding, this is clear evidence that this gear would not be contributing to any prevention in recovery, so SG100 is met. For longline and handline, bait is considered as primary species. The catch to bait use ratio (<5% landings) indicates bait is a minor component of the landings, particularly taking into account several species might be used for bait. Bait is purchased from a variety of sources dependent on price and availability, so it is not possible to predict the status of various sources. Mackerel is used as bait and the stock status is currently within sustainable levels. Otherwise the main bait is saury mostly from Pacific sources. Because it is not possible to determine the status of potential bait purchases, the SG100 is not met for these elements (assumed to be typically 2 species in addition to the other bycatch species).		

	Longline			
	Met?			17 Y : 2 N
	Justification	There are 17 minor primary species stocks that are impacted by the fishery (i.e. these species have been recorded in the landings with cod). Of these golden redfish, saithe, blue ling and mackerel have stock status that is around the MSY level. Greenland halibut, plaice, witch, lemon sole, anglerfish, tusk, deep-water redfish, lumpfish, Norway redfish and greater silver smelt have been determined as highly likely to be above their PRI or recovering to the MSY level. For dab and long rough dab, the stock status is not certain. For these stocks, it cannot be determined that the stock is highly likely above their PRI, and there is no evidence of recovery. Longline only accounts for a very small percentage of their landings (Dab 0.7%; Long rough dab 2.9%; Table 11). Even if there is some discarding, this is clear evidence that this gear would not be contributing to any prevention in recovery, so SG100 is met. For longline and handline, bait is considered as primary species. The catch to bait use ratio (<5% landings) indicates bait is a minor component of the landings, particularly taking into account several species might be used for bait. Bait is purchased from a variety of sources dependent on price and availability, so it is not possible to predict the status of various sources. Mackerel is used as bait and the stock status is currently within sustainable levels. Otherwise the main bait is saury mostly from Pacific sources. Because it is not possible to determine the status of potential bait purchases, the SG100 is not met for these elements (assumed to be typically 2 species in addition to the other bycatch species).		

	Nephrops trawl			
	Met?			Y
	Justification	There are 15 minor primary species stocks that are impacted by the fishery (i.e. these species have been recorded in the landings with cod). Of these haddock, blue ling and mackerel have stock status that is around the MSY level. Anglerfish, lemon sole, Atlantic wolffish, plaice, tusk, Norway redfish, greater silver smelt, Greenland halibut and lumpfish have been determined as highly likely to be above their PRI or recovering to the MSY level. For dab and long rough dab, the stock status is not certain. For these stocks, it cannot be determined that the stock is highly likely above their PRI, and there is no evidence of recovery. *Nephrop*s trawls accounts for a negligible proportion of the landings of these species (Dab <0.5%; Long rough dab 0.5%; Table 11). Even if there is some discarding, this is clear evidence that this gear would not be contributing to any prevention in recovery, so SG100 is met.		

	Pelagic trawl			
	Met?			Y
	Justification	There are 20 minor primary species stocks that are impacted by the fishery (i.e. these species have been recorded in the landings with cod). Of these saithe, haddock, blue whiting, ling, and blue ling have stock status that is around the MSY level. Greenland halibut, deep-water redfish (2 stocks), greater silver smelt, lumpfish, Norway lobster, plaice, Atlantic wolffish, Norway redfish, bluefin tuna, anglerfish, lemon sole, witch and tusk have been determined as highly likely to be above their PRI or recovering to the MSY level. This meets SG100.		

References	ICES 2015. 9.3.25 Mackerel (*Scomber scombrus*) in Subareas I–VII and XIV and Divisions VIIIa–e and IXa (Northeast Atlantic). ICES Advice, 30 September 2015. ICES 2016. 2.3.11 Beaked redfish (*Sebastes mentella*) in Subarea 14 and Division 5.a, Icelandic slope stock (East of Greenland, Iceland grounds). ICES Advice, 10 June 2016.

	ICES 2016. 2.3.13 Beaked redfish (*Sebastes mentella*) in ICES subareas 5, 12, and 14 (Iceland and Faroes grounds, north of Azores, east of Greenland) and NAFO Subareas 1 and 2 (shallow pelagic stock < 500 m). ICES Advice, 10 June 2016. ICES 2016. 2.3.14 Golden redfish (*Sebastes norvegicus*) in subareas 5, 6, 12, and 14 (Iceland and Faroes grounds, West of Scotland, North of Azores, East of Greenland). ICES Advice, 10 June 2016. ICES 2016. 2.3.15 Saithe (*Pollachius virens*) in Division 5.a (Iceland grounds). ICES Advice, 10 June 2016. ICES 2016. 2.3.2 Cod (*Gadus morhua*) in Division 5.a (Iceland grounds). ICES Advice, 10 June 2015. ICES 2016. 2.3.6 Greenland halibut (*Reinhardtius hippoglossoides*) in Subareas 5, 6, 12 , and 14 (Iceland and Faroes grounds, West of Scotland, North of Azores, East of Greenland). ICES Advice, 10 June 2016. ICES 2016. 2.3.7 Haddock (*Melanogrammus aeglefinus*) in Division 5.a (Iceland grounds). ICES Advice, 10 June 2016. ICES 2016. 2.3.8 Herring (*Clupea harengus*) in Division 5.a summer-spawning herring (Iceland grounds). ICES Advice, 10 June 2016. ICES 2015. 9.3.17 Herring (*Clupea harengus*) in Subareas I, II, and V and Divisions IVa and XIVa (Northeast Atlantic) (Norwegian spring-spawning herring) ICES Advice, 12 June 2015. ICES 2016. 9.3.23 Greater silver smelt (*Argentina silus*) in Subarea 14 and Division 5.a (East Greenland, Iceland Grounds). ICES Advice, 3 June 2016. ICES 2016. 9.3.3 Blue ling (*Molva dypterygia*) in Subarea 14 and Division 5.a (East Greenland, Iceland grounds). ICES Advice, 3 June 2016. ICES 2016. 9.3.35 Ling (*Molva molva*) in Division 5.a (Iceland Grounds). ICES Advice, 10 June 2016 ICES 2016. 9.3.47 Tusk (*Brosme brosme*) in Subarea 14 and Division 5.a (East Greenland, Iceland Grounds). ICES Advice, 10 June 2016 ICES 2016. ICES Advice Book 2. 2.3.5 Capelin (*Mallotus villosus*) in subareas 5 and 14 and Division 2.a west of 5°W (Iceland and Faroes grounds, East Greenland, Jan Mayen area). ICES Advice, 19 May 2016. ICES. 2015. 9.3.8 Blue whiting (*Micromesistius poutassou*) in Subareas I–IX, XII, and XIV (Northeast Atlantic). ICES Advice, 30 September 2015. MRI 2015. State of stocks 2014/2015 - Prospects 2015/2016.

OVERALL PERFORMANCE INDICATOR SCORE:		
	Bottom trawl **Main species: 3 reach 100, 1 reaches 80** **Minor species: 21 reach 100, 2 do not**	**95**
	Danish Seine **Main species: 2 reach 100, 2 reach 80** **Minor species: 12 reach 100, 2 do not**	**95**
	Gillnet **Main species: 1 reaches 100** **Minor species: 21 reach 100**	**100**
	Handline **Main species: 1 reaches 100** **Minor species: 18 reach 100, 2 do not**	**95**

	Longline **Main species: 2 reach 100, 1 reaches 80** **Minor species: 17 reach 100, 2 do not**	**95**
	***Nephrops* trawl** **Main species: 3 reach 100, 2 reach 80** **Minor species: 15 reach 100**	**95**
	Pelagic trawl **Main species: 3 reach 100, 2 reach 80.** **Minor species: 20 reach 100.**	**95**
CONDITION NUMBER (if relevant):		

Evaluation Table for PI 2.1.2 – Primary species management strategy: All Gears

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			
	Guide post	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 following scoring applies to all gears. For all main primary species of all gears, they are managed through standard harvest strategy applicable to stocks under significant fishing pressure. This consists of process described in Principle 1. Standard monitoring procedures provide data for stock assessment. The majority of stock assessments are reviewed by ICES, which provides the scientific advice, specifically the TAC. Stock assessments not reviewed through ICES are conducted by the same scientists and follow the same principles. The scientific advice has been followed for these stocks, limiting exploitation to sustainable levels. Additional controls are applied, such as seasonal closure of spawning areas. Generic controls, notably mesh size for net gears, have been chosen to protect the most important commercial species, particularly cod, but should also reduce mortality on juveniles of other species. The system takes into account the multispecies nature of these fisheries, so different parts of the harvest strategy work together to maintain all main species stocks above their PRI. This meets SG80. For these gears, all have minor species in their catches which are also managed as above through the Iceland/ICES system. The remaining species are managed by Iceland through advice from MRI. However, these follow very similar procedures and similar objectives analogous to the ICES system. The data are collected in the same way using the same system, some sort of assessment is conducted and TAC is adjusted, or closed areas implemented if appropriate. This also constitutes a full strategy for all minor primary species to maintain stocks at MSY (or equivalent reference with the same intent). Because all primary stocks have a harvest strategy with TACs set based on scientific monitoring, SG100 is met for all gears.		
b	Management strategy evaluation			
	Guide post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	N

	Justification	All primary species are monitored and all undergo an annual assessment of stock status. This tests whether the harvest strategy is working in each case. The assessments and scientific advice are published annually by MRI and ICES. This constitutes testing of the strategy. For many primary stocks subject to full stock assessment, testing supports high confidence that the harvest strategy will work. For several minor stocks (common dab, long rough dab, witch, Norway redfish, lemon sole, megrim) there is confidence that the stocks can be rebuilt to MSY or equivalent level, but there has been no testing that this will be achieved. The confidence that current limits on fishing mortality have been reduced to sustainable levels is based on reported catches and trends in abundance and their life history characteristics. This meets SG80. However, because the harvest strategy has not been tested for all primary stocks, SG100 is not met.		
c	Management strategy implementation			
	Guide post		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 evidence for successful implementation consists of landings, which can be compared to TAC, and assessments of abundance. Estimates of discarding are made for haddock and cod. Discards are estimated to be very low (essentially negligible for stock assessment purposes), although discards are not estimated for all stocks. Given the regulation prohibiting discarding, it is likely discards are equally low across all primary stocks. This meets SG80. Stock assessments and the abundance indices are being used to assess whether target fishing mortality is limited to sustainable levels for primary stocks, and whether objectives maintaining or rebuilding biomass is being achieved. There is sufficient information to evaluate this for all stocks. This meets SG100.		
d	Shark finning			
	Guide post	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	This scoring issue is not scored because no primary species are sharks.		
e	Review of alternative measures			
	Guide post	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	As for the Principle 1 species (PI 1.2.1.f), because the low discards are likely partly the result of management initiatives, SI.e is scored. See PI 1.2.1.f for an interpretation of the scoring guideposts.		

		There is no dedicated review of unwanted mortality. Unwanted mortality is addressed within the harvest strategy and therefore a review is conducted routinely alongside all other issues pertinent to controlling mortality. This on-going consideration evident in the stock assessments, scientific advice and policy documents is treated as a review. This review occurs annually. There is clear evidence that alternative measures have been adopted to minimize discarding of all species. There is a prohibition on discarding commercial species, although reasonable exceptions are allowed. There is flexibility in TAC, so a limited 5% overshoot can be can be carried over between years without penalty, and quota can be exchanged among companies and vessels. Technical measures include increasing mesh size in trawls from 120 mm to 155 mm in 1977 (except redfish directed fisheries), an allowable gillnet mesh size range, and real time area closures to reduce the take of undersize fish. In addition, individual boats may be allowed the limited transfer of allowable catch of one species to another. The effect of these measures on the quota system is reviewed. As importantly, the fishing industry have a policy to make best possible use of all product, including bio-medical products and new markets for new products (such as developing markets for dried starry ray, dried cod heads, and encouraging restaurants to use more unusual species). This converts otherwise unwanted to wanted catch, which is perhaps the most effective way of dealing with this issue. With at least an annual review of unwanted catch across main primary species, and implementation of an array of appropriate measures to reduce this and discarding of all species where appropriate and possible, SG60, SG80 and SG100 are met.
References		Clucas, I. A Study of the Options for Utilization of Bycatch and Discards from Marine Capture Fisheries. FAO Fisheries Circular No. 928 FIIU/C928 ICES 2015. 9.3.25 Mackerel (*Scomber scombrus*) in Subareas I–VII and XIV and Divisions VIIIa–e and IXa (Northeast Atlantic). ICES Advice, 30 September 2015. ICES 2016. 2.3.11 Beaked redfish (*Sebastes mentella*) in Subarea 14 and Division 5.a, Icelandic slope stock (East of Greenland, Iceland grounds). ICES Advice, 10 June 2016. ICES 2016. 2.3.13 Beaked redfish (*Sebastes mentella*) in ICES subareas 5, 12, and 14 (Iceland and Faroes grounds, north of Azores, east of Greenland) and NAFO Subareas 1 and 2 (shallow pelagic stock < 500 m). ICES Advice, 10 June 2016. ICES 2016. 2.3.14 Golden redfish (*Sebastes norvegicus*) in subareas 5, 6, 12, and 14 (Iceland and Faroes grounds, West of Scotland, North of Azores, East of Greenland). ICES Advice, 10 June 2016. ICES 2016. 2.3.15 Saithe (*Pollachius virens*) in Division 5.a (Iceland grounds). ICES Advice, 10 June 2016. ICES 2016. 2.3.2 Cod (*Gadus morhua*) in Division 5.a (Iceland grounds). ICES Advice, 10 June 2015. ICES 2016. 2.3.6 Greenland halibut (*Reinhardtius hippoglossoides*) in Subareas 5, 6, 12 , and 14 (Iceland and Faroes grounds, West of Scotland, North of Azores, East of Greenland). ICES Advice, 10 June 2016. ICES 2016. 2.3.7 Haddock (*Melanogrammus aeglefinus*) in Division 5.a (Iceland grounds). ICES Advice, 10 June 2016. ICES 2016. 2.3.8 Herring (*Clupea harengus*) in Division 5.a summer-spawning herring (Iceland grounds). ICES Advice, 10 June 2016. ICES 2015. 9.3.17 Herring (*Clupea harengus*) in Subareas I, II, and V and Divisions IVa and XIVa (Northeast Atlantic) (Norwegian spring-spawning herring) ICES Advice, 12 June 2015. ICES 2016. 9.3.23 Greater silver smelt (*Argentina silus*) in Subarea 14 and Division 5.a (East Greenland, Iceland Grounds). ICES Advice, 3 June 2016. ICES 2016. 9.3.3 Blue ling (*Molva dypterygia*) in Subarea 14 and Division 5.a (East Greenland, Iceland grounds). ICES Advice, 3 June 2016. ICES 2016. 9.3.35 Ling (*Molva molva*) in Division 5.a (Iceland Grounds). ICES Advice, 10 June

	2016 ICES 2016. 9.3.47 Tusk (*Brosme brosme*) in Subarea 14 and Division 5.a (East Greenland, Iceland Grounds). ICES Advice, 10 June 2016 ICES 2016. ICES Advice Book 2. 2.3.5 Capelin (*Mallotus villosus*) in subareas 5 and 14 and Division 2.a west of 5°W (Iceland and Faroes grounds, East Greenland, Jan Mayen area). ICES Advice, 19 May 2016. ICES 2015. 9.3.8 Blue whiting (*Micromesistius poutassou*) in Subareas I–IX, XII, and XIV (Northeast Atlantic). ICES Advice, 30 September 2015. MRI 2015. State of stocks 2014/2015 - Prospects 2015/2016.
OVERALL PERFORMANCE INDICATOR SCORE: All Gears	**95**
CONDITION NUMBER (if relevant):	

Evaluation Table for PI 2.1.3 – Primary species information: All Gears

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			
	Guide post	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 adequate 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 susceptibility 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	Full quantitative information, in the form of landings, to measure the impact of each gear on each stock is available. In addition, there are demersal surveys (*Nephrops*, shrimp, spring and autumn surveys), and catch composition sampling (length, age) for both surveys and commercial catches covering all main species. These data are suitable for quantitative stock assessment and risk-based assessments are not required. These data are sufficient to determine status of these stocks and the impact of each fishing gear (in terms of fishing mortality) with a high degree of certainty, meeting SG100.		
b	Information adequacy for assessment of impact on minor primary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			Y
	Justification	All minor species, like the main species, have accurate landings recorded for all gears. These species are also assessed with respect to status. In all cases reference points are available and used to assess status, at least in the form of trends. These assessments are used to advise on adjustments in TAC for each species. This meets SG100 for all gears.		

c	Information adequacy for management strategy			
	Guide post	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	Information to main species in all gears is sufficient to support stock assessment, estimate biomass and adjust the TAC accordingly. This is the standard harvest strategy and is implemented for each primary species. Because the stock status of all main and minor primary species is evaluated each year, the strategy for each species is under constant re-evaluation, determining whether objectives are being achieved in each case. Because all primary species have information sufficient to evaluate the harvest strategy, SG100 is met for all gears.		
References	ICES 2010. Manuals for the Icelandic bottom trawl surveys in spring and autumn. http://www.hafro.is/Bokasafn/Timarit/fjolrit-156.pdf ICES 2015. 9.3.25 Mackerel (*Scomber scombrus*) in Subareas I–VII and XIV and Divisions VIIIa–e and IXa (Northeast Atlantic). ICES Advice, 30 September 2015. ICES 2016. 2.3.11 Beaked redfish (*Sebastes mentella*) in Subarea 14 and Division 5.a, Icelandic slope stock (East of Greenland, Iceland grounds). ICES Advice, 10 June 2016. ICES 2016. 2.3.13 Beaked redfish (*Sebastes mentella*) in ICES subareas 5, 12, and 14 (Iceland and Faroes grounds, north of Azores, east of Greenland) and NAFO Subareas 1 and 2 (shallow pelagic stock < 500 m). ICES Advice, 10 June 2016. ICES 2016. 2.3.14 Golden redfish (*Sebastes norvegicus*) in subareas 5, 6, 12, and 14 (Iceland and Faroes grounds, West of Scotland, North of Azores, East of Greenland). ICES Advice, 10 June 2016. ICES 2016. 2.3.15 Saithe (*Pollachius virens*) in Division 5.a (Iceland grounds). ICES Advice, 10 June 2016. ICES 2016. 2.3.2 Cod (*Gadus morhua*) in Division 5.a (Iceland grounds). ICES Advice, 10 June 2015. ICES 2016. 2.3.6 Greenland halibut (*Reinhardtius hippoglossoides*) in Subareas 5, 6, 12 , and 14 (Iceland and Faroes grounds, West of Scotland, North of Azores, East of Greenland). ICES Advice, 10 June 2016. ICES 2016. 2.3.7 Haddock (*Melanogrammus aeglefinus*) in Division 5.a (Iceland grounds). ICES Advice, 10 June 2016. ICES 2016. 2.3.8 Herring (*Clupea harengus*) in Division 5.a summer-spawning herring (Iceland grounds). ICES Advice, 10 June 2016. ICES 2015. 9.3.17 Herring (*Clupea harengus*) in Subareas I, II, and V and Divisions IVa and XIVa (Northeast Atlantic) (Norwegian spring-spawning herring) ICES Advice, 12 June 2015. ICES 2016. 9.3.23 Greater silver smelt (*Argentina silus*) in Subarea 14 and Division 5.a (East Greenland, Iceland Grounds). ICES Advice, 3 June 2016. ICES 2016. 9.3.3 Blue ling (*Molva dypterygia*) in Subarea 14 and Division 5.a (East Greenland, Iceland grounds). ICES Advice, 3 June 2016. ICES 2016. 9.3.35 Ling (*Molva molva*) in Division 5.a (Iceland Grounds). ICES Advice, 10 June 2016 ICES 2016. 9.3.47 Tusk (*Brosme brosme*) in Subarea 14 and Division 5.a (East Greenland, Iceland Grounds). ICES Advice, 10 June 2016 ICES 2016. ICES Advice Book 2. 2.3.5 Capelin (*Mallotus villosus*) in subareas 5 and 14 and Division 2.a west of 5°W (Iceland and Faroes grounds, East Greenland, Jan Mayen area).			

	ICES Advice, 19 May 2016. ICES. 2015. 9.3.8 Blue whiting (*Micromesistius poutassou*) in Subareas I–IX, XII, and XIV (Northeast Atlantic). ICES Advice, 30 September 2015. MRI 2015. State of stocks 2014/2015 - Prospects 2015/2016. Hafrannsóknir nr. 182.
OVERALL PERFORMANCE INDICATOR SCORE (All Gears):	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table for 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			
	Guide-post	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?												
	TB	Y	TP	Y	TB	Y	TP	Y	TB	Y	TP	Y
	TN	Y	LL	Y	TN	Y	LL	Y	TN	Y	LL	Y
	GN	Y	HL	Y	GN	N	HL	Y	GN	N	HL	Y
	SD	Y			SD	Y			SD	Y		

Justification	**Species**	**TB**	**TN**	**GN**	**SD**	**TP**	**LL**	**HL**
	Harbour porpoise			80				
	Harbour seal			60				
	Harp seal			100				
	Fulmar			100			100	
	Northern gannet						100	
	Shag			100			100	
	Great black-backed gull						100	
	Common guillemot			80				
	Gillnets and longlines: there are no secondary species of finfish or shark which are main species. The following out-of-scope species are main secondary species which may have							

		interactions with the fishing gears in this assessment. Harbour porpoise (gillnet): In Iceland, harbour porpoises are mainly caught in gillnets as by-catch in the lumpfish fishery (NAMMCO, 2016), rather than the cod-directed fisheries that are within this assessment. The estimated population size of harbour porpoise in Icelandic waters is estimated at 43,179 animals (95% confident interval: 31,1755 – 161,899 animals) and is considered stable and highly likely to be above biologically-based limits. Abundance has been estimated at 27,000 in Iceland (Stenson 2003) but current population trend is unknown. The IUCN considers the harbour porpoise to be of 'least concern' (Hammond *et al*, 2008). Harbour porpoises are covered by the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS), but Iceland is not a signatory. It is not considered an ETP for this assessment. Harbour seal (gillnet): Due to insufficient funding and thus limited coverage, the 2014 harbour seal survey did not produce a new reliable population estimate for the Icelandic harbour seal population. However, the results show a severe reduction in the surveyed areas since the last full count in 2011 (e.g. a considerable reduction from the 11,000 animals found in 2011), implying that the population size is likely to be smaller than the 12,000 animals defined in the management objectives by the Icelandic government, and thus below biological limits. There is no evidence of recovery or a, demonstrably effective strategy for this species' recovery. Catch levels by this fishery suggest that current management strategies e.g. avoidance of high risk areas ensures that the UoA does not hinder recovery and rebuilding. Harp seal (gillnet): Due to its large population size, and the increasing trend in two the 'West Ice' population group, the harp seal should continue to be classified by IUCN as 'Least Concern'. (Kovacs, 2015). Therefore there is a high degree of certainty that the population Therefore the population is above any candidate biologically based limit. Fulmar (gillnet and longline): Around 1 - 2 million fulmar breed in Iceland where it is considered a common species. Despite the fluctuations in the fulmar population, it remains a common breeder in Iceland, not least in eastern Iceland, where numbers are increasing. Therefore there is a high degree of certainty that the population is above any biologically based limit. Historically 3,300 and 10,500 fulmars were hunted annually in Iceland, but this practise is far less frequently nowadays. Pálsson et al (2015) estimate that cod longlines and gillnets account for around 2,019 and 1,100 fulmar deaths a year. It is considered that fisheries are not a threat to the population status of this species because this source of mortality remains relatively low (Dr. Erpur Snær Hansen, Náttúrustofa Suðurlands / South Iceland Nature Research, pers. comm., 24 May 2016). Northern gannet (longline): Pálsson et al (2015) estimate that cod longlines account for around 164 northern gannet deaths a year. It is considered that these longline fisheries are not a threat to the population status of this species (Dr. Erpur Snær Hansen, Náttúrustofa Suðurlands / South Iceland Nature Research, pers. comm., 24 May 2016). Del Hoyo et al. estimated the global population to number 526,000 individuals and the population is increasing (Birdlife International, 2016). Therefore there is a high degree of certainty that the population is above any biologically based limit. Shags and cormorants: Pálsson et al (2015) estimate that cod longlines account for around 109 cormorant / shag deaths a year. It is considered that fisheries are not a threat to the population status of these species (Dr. Erpur Snær Hansen, Náttúrustofa Suðurlands / South Iceland Nature Research, pers. comm., 24 May 2016). The population of the cormorants has gradually increased in some periods in Iceland and Norway - numbers in Iceland increased from 2,350 nests in 1995 to 4,500 nests in 2007. However shags numbers are in decline – IUCN state that the decline is not believed to be sufficiently rapid to approach the thresholds for 'Vulnerable' under the population trend criterion (>30% decline over ten years or three generations) and for this reason the species is evaluated as 'Least Concern' in Europe. Therefore there is a high degree of certainty that the population of both species are above any biologically based limit. Great black-backed gull (longline): The overall abundance of this species is increasing, although some populations are stable (Birdlife International 2016). In Iceland they are common all along the coast, but more common in the south. However this species is in decline

		in Iceland, possibly due to the declining availability of discarded offal and land-based waste (Dr. Erpur Snær Hansen, Náttúrustofa Suðurlands / South Iceland Nature Research, pers. comm., 24 May 2016). However this is likely to be a short-term readjustment and the wider population increase suggests that there is a high degree of certainty that the population is above any biologically based limit. Pálsson et al (2015) estimate that cod longlines account for around 109 great black-backed gull deaths a year. Common guillemot (gillnet): Pálsson et al (2015) estimate that cod gillnets account for around 4,400 common guillemot deaths a year. Whilst the population may be declining, it is not currently considered that mortality due to the gillnet fisheries are a threat to the population status of this species (Dr. Erpur Snær Hansen, Náttúrustofa Suðurlands / South Iceland Nature Research, pers. comm., 24 May 2016). The gradually increasing abundance of this species in the wider Atlantic area (Berglund, P-A. & J. Hentati-Sundberg, 2015) suggests that there is a high degree of certainty that the population is above any biologically based limit. **Other gears**: there are no significant interactions recorded between bottom trawl, *Nephrops* trawl, Danish Seine, Pelagic trawl and handline with out-of-scope species, and any such interactions are therefore considered negligible. All other secondary species are minor (see SI2.2.1b). Because there are effectively no main secondary species for these gears, they meet the SG100.		
b	**Minor secondary species stock status**			
	Guide post			Minor secondary species are highly likely to be above 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?			N
	Justification	**All gears**: status of secondary species is not certain. The only evidence is the low level of landings. This is not sufficient to demonstrate whether minor secondary species are above any biologically based limits. No ecological risk assessment has been undertaken. There is evidence that Atlantic halibut has been reduced below biologically based limits (its PRI), but that the stock has been recovering over the last few years. There is prohibition on retaining viable halibut and landings have been very low. Because the abundance indices suggest that the stock has been increasing, the current fisheries are not preventing stock recovery. Although there is evidence for Atlantic halibut meets SG100, the status of other 11 to 30 species (dependent on gear) cannot be determined, so SG100 is not met.		
References		Pálsson et al (2015) Ashpole, J., Burfield, I., Ieronymidou, C., Pople, R., Tarzia, M., Wheatley, H. & Wright, L. (2015). Berglund, P-A. & J. Hentati-Sundberg, 2015 NAMMCO, 2016 Ólafsdóttir et al., 2002 Stenson 2003 Stenson and Reddin, 1990 Hammond et al, 2008 Kovacs, 2015 MRI 2015. State of stocks 2014/2015 - Prospects 2015/2016. Hafrannsóknir nr. 182. Víkingsson et al. 2003 Dr. Erpur Snær Hansen, Náttúrustofa Suðurlands / South Iceland Nature Research, pers. comm.,		

	24 May 2016

OVERALL PERFORMANCE INDICATOR SCORE:	
Bottom trawl	**90**
Danish Seine	**90**
Gillnet	**75**
Handline	**90**
Longline	**90**
***Nephrops* trawl**	**90**
Pelagic trawl	**90**
CONDITION NUMBER (if relevant):	**1**

Evaluation Table for 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**			
	Guide post	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?												
TB	Y	TP	Y	TB	Y	TP	Y	TB	N	TP	N
TN	Y	LL	Y	TN	Y	LL	N	TN	N	LL	N
GN	Y	HL	Y	GN	N	HL	Y	GN	N	HL	N
SD	Y			SD	Y			SD	N		

Justification	**Species**	**TB**	**TN**	**GN**	**SD**	**TP**	**LL**	**HL**
	Harbour porpoise			**80**				
	Harbour seal			**60**				
	Harp seal			**100**				
	Fulmar			**80**			**60**	
	Northern gannet						**60**	
	Shag			**80**			**60**	
	Great black-backed gull						**60**	
	Common guillemot			**60**				
	Minor species	**80**	**80**	**80**				

Gillnets and longlines (main species):

Harbour porpoise (GN): All cod fisheries are closed within 12 miles along the south and west coast and within 6 miles along the north and east coast over 8-16 April (6 nm) and 17-30 April (12 nm) each year. Harbour porpoise are primary found in inshore waters and would therefore be outside the operational limits of the fishery. The partial strategy of area closures is expected to hinder interaction of the fishery with harbour porpoise, and therefore reach SG80.

Harbour seal (GN): Although catches are low, and there are some measures in place (all cod fisheries are closed within 12 miles along the south and west coast and within 6 miles along the north and east coast in April each year), thus meeting SG 60. However this does not amount to a partial strategy and does not meet SG 80, thus resulting in **Condition 2**.

Harp seal (GN): No management interventions for this species is required because impacts of the fisheries are negligible. This meets SG 100.

Fulmars, shags, cormorants, Northern gannet / Great black-backed gull / Common

		guillemot (GN & LL): The Directorate of Fisheries require **longliners** to take all reasonable measures to avoid seabirds taking bait or catch. [It is an offence in Iceland to catch a seabird with hooks (Reg. 456, 1994).] Longliners use either bird-scaring buoy lines or a gas alarm which is sounded when the line is shot. During the winter time, the lines are often shot in the dark, which also reduces the possible bycatch of seabirds. There is some monitoring in place to determine whether the resulting impact on seabird populations is low enough not to reduce populations significantly. Whilst these measures allow the fishery to achieve SG 60, they do not represent a partial or full strategy, such as demonstrated in ACAP's best practise in bycatch mitigation in longlines, fails to achieves SG 80. **Condition 2** is therefore imposed on the longline UoA. For fulmars, shags and cormorants, northern gannet / great black-backed gull, **gillnet** fishermen do not adopt any measures to reduce seabird bycatch, as it is believed that the relatively low number of birds caught does not warrant this. Except for common guillemot, available evidence supports this and thus SG 80 is met. However, common guillemot - the most frequently caught seabird species - is in decline, so this assumption is questionable in this case and a partial strategy may be warranted. Therefore SG 80 is not reached for this species, resulting in **Condition 2** for the gillnet UoA. **All gears (major and minor species) (TB, TN & GN)**: there is no strategy to manage major and minor secondary species directly. They benefit from some management actions (closed areas, technical measures on mesh size, limits on fishing effort and catches of target species). Measures are in place to allow Atlantic halibut to recover, but otherwise there is no strategy in place for all major and minor species. Because there is no strategy to manage all minor species, SG100 is not met.

b	Management strategy evaluation											
	Guide post	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?	TB	Y	TP	Y	TB	Y	TP	Y	TB	N	TP	N
		TN	Y	LL	Y	TN	Y	LL	N	TN	N	LL	N
		GN	Y	HL	Y	GN	N	HL	Y	GN	N	HL	N
		SD	Y			SD	Y			SD	N		
	Justification	**Gillnets and longlines (main 'out of scope' species):** Harbour porpoise / Harbour seal / Harp seal (GN): Gillnet-related mortality has dropped historically, also reflecting the decline in effort by this gear type. The restriction on coastal fishing is likely to have reduced seal mortality in particular. Despite this, there is insufficient confidence that the partial spatial protection will work in protecting harbour seals and thus this does not achieve SG 80. Fulmar & Shags and cormorants (GN & LL); Northern gannet / / Great black-backed gull / Common guillemot (LL): Both the longline and gillnet-related measures are well-proven in a number of different temperate region. However, given the limited measures involved (see previous scoring issue) there is insufficient objective evidence that these measures will work, and whilst meeting SG 60, fails to meet SG 80. **All gears:** Minor species: there is no strategy to manage major and minor secondary species directly. They benefit from some management actions (closed areas, technical measures on mesh size, limits on fishing effort and catches of target species). Measures are in place to allow Atlantic halibut to recover, but otherwise there is no strategy in place for all major and minor species. Because there is no direct strategy on minor species and the effect of the											

		current harvest strategy on them has not been tested, SG100 cannot be met.								
c	Management strategy implementation									
	Guide post		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?		TB	Y	TP	Y	TB	Y	TP	Y
			TN	Y	LL	Y	TN	Y	LL	N
			GN	Y	HL	Y	GN	N	HL	Y
			SD	Y			SD	Y		
	Justification	Gillnets and longlines (main 'out of scope' species): Harbour porpoise / Harbour seal / Harp seal (GN): The available evidence indicates that spatial / temporal measures in place are being implemented successfully. However, there is no evidence that these actions are achieving objectives of maintaining populations above biologically based limits. More monitoring of populations would be required to assess this. Fulmar & Shags and cormorants (GN & LL); Northern gannet / / Great black-backed gull / Common guillemot (LL): MRI bycatch observer data indicate that long-line catches of seabirds are low. Evidence from management authorities show that spatial/temporal measures are in place and implemented. Low bycatch observations indicate the that the partial strategy is achieving objectives, therefore longline reaches SG80. Minor species: the status of most minor finfish is effectively unknown. Therefore, evidence is lacking to be sure that they are achieving the objectives of maintaining stocks above biologically based limits. Gillnet fisheries-related measures (e.g. spatial / temporal protection) are well known to be effective. Gillnet-related mortality on seabirds has dropped historically, also reflecting the decline in effort by this gear type. The restriction on coastal fishing is likely to have reduced seal mortality in particular. The one exception could be for common guillemot. Although this fishery is not thought to threaten the population of this species, and there is some evidence of spatial zonation of this gear, overall there is insufficient evidence that objectives are being met. This meets SG80, but not SG100. Longline-related measures are well-proven in a number of different temperate regions. Although this fishery is not thought to threaten the populations of out of scope species, evidence is insufficient to ensure objectives are being met. This meets SG80, but not SG100. Other gears: for bottom trawl, *Nephrops* trawl, Danish seine, pelagic trawl and handline interactions with both major and minor secondary species are considered negligible. This is due to the successful implementation of management measures (closed areas, technical measures on mesh size, limits on fishing effort and catches of target species), and therefore SG100 is met for these gears.								
d	Shark finning									
	Guide post	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?	Y		Y		Y				
	Justification	There are several species of shark caught in these fisheries (Greenland shark, spiny dogfish, porbeagle, black dogfish). All gears, except pelagic trawl, report landing shark species. Prohibition in discarding would make finning illegal. There is no local market for fins alone, but a limited market for whole sharks does exist. With very low quantities caught, there is								

		no incentive to land fins separate from sharks themselves. There is no direct evidence of finning. As a result, there is a high degree of certainty shark finning is not taking place, so SG100 is met.

e Review of alternative measures to minimise mortality of unwanted catch

Justification	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?	TB	Y	TP	Y	TB	Y	TP	Y	TB	Y	TP	Y
	TN	Y	LL	Y	TN	Y	LL	Y	TN	Y	LL	N
	GN	Y	HL	Y	GN	N	HL	Y	GN	N	HL	Y
	SD	Y			SD	Y			SD	Y		

Guide post

In-scope Species

All gears: unwanted mortality is addressed within the harvest strategy for all species and therefore a review is conducted routinely by MRI alongside all other issues pertinent to controlling mortality. There is no dedicated review of unwanted mortality. This on-going consideration evident in the stock assessments, scientific advice and policy documents is treated as a review. This review occurs annually.

There is evidence that the strategy to avoid unwanted catch is successful. Landings of in-scope secondary species that have market value are very low. This is at least partly due to improvements in technology that allow better targeting of fish to fill quotas. This will also increase avoidance of unwanted species.

The fishing industry have a policy to make best possible use of all products, including bio-medical products and new markets for new products (such as developing markets for dried starry ray, dried cod heads, and encouraging restaurants to use more unusual species). This converts otherwise unwanted to wanted catch, which is perhaps the most effective way of dealing with this issue.

Out-of-scope Species

Although there is evidence of past reviews of the potential effectiveness of, and practicality of, alternative measures to minimise the **gillnet** mortality of main secondary species, it is not clear that these have been implemented, especially in the case of harbour seal. That is, there are further measures used in other fisheries which could be appropriate for gillnets in this case (e.g. limits to area, season or times, pingers or weak lines to allow escape from entanglement), and no evidence was found to indicate that they should not be used. As such, gillnets fail to achieve SG 80.

In the case of **longlines** there have been similar reviews in the past, but lower levels on longline related mortality suggest that the implementation of alternative measures are appropriate, and thus this achieves SG 80, but not SG 100.

For **other gears** excluding gillnet and longline, with at least an annual review of unwanted finfish catch across main primary finfish species, and implementation of an array of appropriate measures to reduce this and discarding of all species where appropriate and possible, SG60, SG80 and SG100 are met for the secondary minor species.

References	Pers. comm. Gunnlaugur Eiriksson, ISF Pálsson et al (2015) Vottunarstofan Tún 2011 MRI 2015. State of stocks 2014/2015 - Prospects 2015/2016. Hafrannsóknir nr. 182. Lutchman (2014)

OVERALL PERFORMANCE INDICATOR SCORE:	
Bottom trawl	**90**
Danish Seine	**90**
Gillnet	**65**
Handline	**90**
Longline	**70**
***Nephrops* trawl**	**90**
Pelagic trawl	**90**
CONDITION NUMBER(S)	**2**

Evaluation Table for PI 2.2.3 – Secondary species information

<table>
<tr><td colspan="2">PI 2.2.3</td><td colspan="12">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.</td></tr>
<tr><td colspan="2">Scoring Issue</td><td colspan="4">SG 60</td><td colspan="4">SG 80</td><td colspan="4">SG 100</td></tr>
<tr><td>a</td><td colspan="13">Information adequacy for assessment of impacts on main secondary species</td></tr>
<tr><td rowspan="6"></td><td>Guide post</td><td colspan="4">Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status.</td><td colspan="4">Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status.</td><td colspan="4">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.</td></tr>
<tr><td rowspan="4">Met?</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>N</td><td>TP</td><td>N</td></tr>
<tr><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>Y</td><td>LL</td><td>N</td><td>TN</td><td>N</td><td>LL</td><td>N</td></tr>
<tr><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>N</td><td>HL</td><td>Y</td><td>GN</td><td>N</td><td>HL</td><td>N</td></tr>
<tr><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>N</td><td colspan="2"></td></tr>
<tr><td>Justification</td><td colspan="12">Harbour porpoise / Harbour seal / Harp sea (GN): During June-August 2015, the MRI participated in a large scale cetacean sightings survey (NASS-2015) conducted in cooperation with the Faroes, Greenland and Norway under coordination of the NAMMCO Scientific Committee. The Icelandic part of the survey was conducted from two research vessels and one aircraft (NAMMCO, 2016). The registration of marine mammals caught in the MRI spring gillnet survey was initiated in 1997. The MRI spring gillnet survey is equivalent to 2% of the total cod gillnet fishing effort in April. The first year's the gillnet survey was only conducted in the south and west of the country but since 2002 it is also done in the north.

Fulmar & Shags and cormorants (GN & LL); Northern gannet / / Great black-backed gull / Common guillemot (LL): The registration of seabirds caught in the MRI spring gillnet survey was initiated in 2009. The MRI spring gillnet survey is equivalent to 2% of the total cod gillnet fishing effort in April. The first year's the gillnet survey was only conducted in the south and west of the country but since 2002 it is also done in the north. Icelandic regulations that say all bycatch should be recorded. The registration of bird bycatch in commercial cod gillnets (other than lumpfish) started in 2002. Bycatch registration was received from 5% of the cod gillnet vessels until 2009. No birds were registered. In 2009 they switched to electronic logbooks and after that no information on marine mammals or bird bycatch has been returned. Unlike in gillnets, longline interactions with seabirds are not routinely surveyed by MRI, but would be included in ad hoc observer surveys and electronic logbook entries. Whilst there is some quantitative information available e.g. from *ad hoc* surveys and e-logbook entries, it is recognised that the recording of both seabird and marine mammal bycatch in electronic logbooks has been poor over recent years and that this is particularly important for longline and gillnet, which may have significant interactions with seabirds and marine mammals. Thus this fails to meet SG 80 and **Condition 5** for better reporting is made for the gillnet and longline UoAs. A recommendation for improved secondary species and ETP reporting is also made for the other gears.

All gears: therefore, as there is a recurrent scientific survey system in place to estimate the trend and relative quantities of marine mammal and seabird bycatch this reaches the SG80. This does not meet SG100 however because current recording of bycatch appears to have deteriorated somewhat and is therefore incomplete. The new electronic logbook recording system appears to have been under-estimating seabird and marine mammal bycatch, but MRI is undertaking further action to improve reporting, which should be</td></tr>
</table>

		monitored in future surveillance audits.		
b	**Information adequacy for assessment of impacts on minor secondary species**			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			Y
	Justification	**All gears**: all finfish are considered minor secondary species. There is quantitative information on landings. Discard levels are generally low. There are strong disincentives to discard and therefore landings are good measures of mortality. Species are also monitored in the surveys, even if this information is not used. For example, closer monitoring of Atlantic halibut has been initiated because management has intervened to reduce mortality, and information is sufficient to evaluate the effect of this intervention. Therefore, SG100 is met.		
c	Information adequacy for management strategy			
	Guide post	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	N
	Justification	**Gillnets and longlines only**: Harbour porpoise / Harbour seal / Harp seal (GN only): During June-August 2015, the MRI participated in a large scale cetacean sightings survey (NASS-2015) conducted in cooperation with the Faroes, Greenland and Norway under coordination of the NAMMCO Scientific Committee. The Icelandic part of the survey was conducted from two research vessels and one aircraft (NAMMCO, 2016). The registration of marine mammals caught in the MRI spring gillnet survey was initiated in 1997. The MRI spring gillnet survey is equivalent to 2% of the total cod gillnet fishing effort in April. The first year's the gillnet survey was only conducted in the south and west of the country but since 2002 it is also done in the north. Therefore, as there is a recurrent scientific survey system in place to estimate the trend and relative quantities of all seabird bycatch this reaches the first part of SG100. However, it cannot be said that there is a high degree of certainty whether the strategy is achieving its objective. Fulmar & Shags and cormorants (GN & LL); Northern gannet / Great black-backed gull / Common guillemot (LL): The registration of seabirds caught in the MRI spring gillnet survey was initiated in 2009. The MRI spring gillnet survey is equivalent to 2% of the total cod gillnet fishing effort in April. The first year's the gillnet survey was only conducted in the south and west of the country but since 2002 it is also done in the north. Icelandic regulations that say all bycatch should be recorded. The registration of bird bycatch in commercial cod gillnets (other than lumpfish) started in 2002. Bycatch registration was received from 5% of the cod gillnet vessels until 2009. No birds were registered. In 2009 they switched to electronic logbooks, thus covering both GN and LL) and after that no information on marine mammals or bird bycatch has been returned. Therefore, as there is a recurrent scientific survey system in place to estimate the trend and relative quantities of seabird bycatch this reaches the SG80. **Other gears (minor species only)**: All minor species, like the main species, have accurate landings recorded. These species are also assessed with respect to status, at least in the		

		form of trends. This meets SG100 for all gears.
References		NAMMCO, 2016 Pálsson et al., 2015 MRI 2015. State of stocks 2014/2015 - Prospects 2015/2016. Hafrannsóknir nr. 182. ICES 2010. Manuals for the Icelandic bottom trawl surveys in spring and autumn. http://www.hafro.is/Bokasafn/Timarit/fjolrit-156.pdf Pálsson et al (2015)
OVERALL PERFORMANCE INDICATOR SCORE:		
	Bottom trawl	**85**
	Danish Seine	**85**
	Gillnet	**70**
	Handline	**85**
	Longline	**70**
	Nephrops trawl	**85**
	Pelagic trawl	**85**
CONDITION NUMBER		**5**

Evaluation Table for PI 2.3.1 – ETP species outcome

<table>
<tr><td colspan="2">PI 2.3.1</td><td colspan="12">The UoA meets national and international requirements for the protection of ETP species
The UoA does not hinder recovery of ETP species</td></tr>
<tr><td colspan="2">Scoring Issue</td><td colspan="4">SG 60</td><td colspan="4">SG 80</td><td colspan="4">SG 100</td></tr>
<tr><td rowspan="5">a</td><td colspan="13">Effects of the UoA on population/stock within national or international limits, where applicable</td></tr>
<tr><td>Guide post</td><td colspan="4">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.</td><td colspan="4">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.</td><td colspan="4">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.</td></tr>
<tr><td>Met?</td><td colspan="4">Not relevant</td><td colspan="4">Not relevant</td><td colspan="4">Not relevant</td></tr>
<tr><td>Justification</td><td colspan="12">This SI is not scored as there are no national or international requirements that set limits for ETP species.</td></tr>
<tr><td colspan="13"></td></tr>
<tr><td rowspan="7">b</td><td colspan="13">Direct effects</td></tr>
<tr><td>Guide post</td><td colspan="4">Known direct effects of the UoA are likely to not hinder recovery of ETP species.</td><td colspan="4">Known direct effects of the UoA are highly likely to not hinder recovery of ETP species.</td><td colspan="4">There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.</td></tr>
<tr><td rowspan="5">Met?</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td></tr>
<tr><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>Y</td><td>LL</td><td>N</td></tr>
<tr><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>N</td><td>HL</td><td>Y</td></tr>
<tr><td>SD</td><td>Y</td><td></td><td></td><td>SD</td><td>Y</td><td></td><td></td><td>SD</td><td>Y</td><td></td><td></td></tr>
<tr><td colspan="12"></td></tr>
<tr><td colspan="2"></td><td colspan="12">Gillnets and longlines:
<u>Black guillemot</u>: Although the black guillemot population in Iceland is in decline. Birdlife International (2015) report that the Icelandic population is decreasing at a moderate rate (e.g. 20 – 49%), MRI gillnet surveys and longline observer data suggest that bycatch incidence is at a very low rate. Therefore this achieved SG 80 but fails to achieve the high degree of confidence required for SG 100.
<u>Hooded seal</u>: The hooded seal population is also in decline and models suggest a continued decline of approximately 7% per year in the coming decade (Øigård et al. 2014). Whilst hunting has historically been a major cause of mortality, climate change-included induced alternation of its sea ice breeding habitat and increased predation by polar bears and killer whales in the pupping areas (Øigard et al., 2014) but prey availability might also be an issue. However, MRI gillnet surveys and longline observer data suggest that bycatch incidence is at a very low rate (one animal in 18 years observation). Therefore this achieves SG 100.
<u>Other gears</u>: there are no significant interactions recorded between bottom trawl, Nephrops trawl, Danish Seine, Pelagic trawl and handline with ETP species, and any such interactions are therefore considered negligible. As a result, they meet the SG100.</td></tr>
</table>

c	Indirect effects												
	Guide post				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?	TB	Y	TP	Y	TB	Y	TP	Y	TB	Y	TP	Y
		TN	Y	LL	Y	TN	Y	LL	Y	TN	Y	LL	Y
		GN	Y	HL	Y	GN	Y	HL	Y	GN	Y	HL	Y
		SD	Y			SD	Y			SD	Y		
	Justification	**All gears**: there are no apparent significant indirect effects of any of these gears on black guillemot and hooded seal populations, so all gears meet the SG 100.											
References		Birdlife International, 2012 Kovacs, 2016 Øigård et al. 2014 ICES, 2013											

OVERALL PERFORMANCE INDICATOR SCORE:	
Bottom trawl	**100**
Danish Seine	**100**
Gillnet	**90**
Handline	**100**
Longline	**90**
***Nephrops* trawl**	**100**
Pelagic trawl	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table for PI 2.3.2 – ETP species management strategy

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)											
	Guide post	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 UoAs 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 UoAs 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?	Not relevant				Not relevant				Not relevant		
	Justification	This scoring issues is not scored because there are no requirements for protection or rebuilding provided through national ETP legislation or international agreements.										
b	Management strategy in place (alternative)											
	Guide post	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?	TB	Y	TP	Y	TB	Y	TP	Y	TB	Y	TP	Y
		TN	Y	LL	Y	TN	Y	LL	Y	TN	Y	LL	N
		GN	Y	HL	Y	GN	Y	HL	Y	GN	N	HL	Y
		SD	Y			SD	Y			SD	Y		
	Justification	**Gillnets and longline**: the strategy in place is to monitor interactions of ETP species with the fishery and other sources of mortality, and respond with interventions as appropriate. Based on MRI observer data, interactions of **longline** and **gillnet** with black guillemot and hooded seal are so rare that intervention is not currently required, which meets SG 80. However, this strategy does not meet the SG100 for both these gears because it is not considered to be comprehensive. **Other gears**: there have been no interactions with these species, which meets SG100.										

<table>
<tr><td>c</td><td colspan="12">Management strategy evaluation</td></tr>
<tr><td></td><td>Guide post</td><td colspan="4">The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).</td><td colspan="4">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.</td><td colspan="4">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.</td></tr>
<tr><td></td><td rowspan="5">Met?</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td></tr>
<tr><td></td><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>Y</td><td>LL</td><td>N</td></tr>
<tr><td></td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td></tr>
<tr><td></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>Y</td><td colspan="2"></td></tr>
<tr><td></td><td>Justification</td><td colspan="12">Gillnets and longlines: The strategy in place is to monitor interactions of ETP species with the fishery and other sources of mortality, and respond with interventions as appropriate. Based on MRI observer data, interactions of longline and gillnet with black guillemot and hooded seal are so rare that intervention is not currently required. This is justified by the monitoring data, observations on population size and life history characteristics. Because there is an objective basis for confidence that the current measures are working, it meets SG 80. Observer data from MRI over 1997-2014 for marine mammals and 2009 – 2015 for seabirds suggests that in the case of gillnets there is a high confidence that the strategy is working and thus meets SG 100. With data only from 2014 for longlines and higher interactions rates, longline only meets SG 80.
Other gears: as there are no significant recorded interactions with these species, the other fisheries met SG100.</td></tr>
<tr><td>d</td><td colspan="12">Management strategy implementation</td></tr>
<tr><td></td><td>Guide post</td><td colspan="4"></td><td colspan="4">There is some evidence that the measures/strategy is being implemented successfully.</td><td colspan="4">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).</td></tr>
<tr><td></td><td rowspan="5">Met?</td><td colspan="4" rowspan="5"></td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td></tr>
<tr><td></td><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>Y</td><td>LL</td><td>N</td></tr>
<tr><td></td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td></tr>
<tr><td></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>Y</td><td colspan="2"></td></tr>
<tr><td></td><td>Justification</td><td colspan="12">Gillnets and longlines: The current strategy in place is to monitor interactions of ETP species with the fishery and other sources of mortality, and respond with interventions as appropriate. Based on MRI observer data, interactions of longline and gillnet with black guillemot and hooded seal are so rare that intervention is not currently required. This is evidenced by the monitoring results. Because there is an objective basis for confidence that the current measures are working, it meets SG 80. Observer data from MRI over 1997-2014 for marine mammals and 2009 – 2015 for seabirds suggests that in the case of gillnets there is a high confidence that the strategy being implemented successfully and thus meets SG 100. With data only from 2014 for longlines and higher interactions rates, longline only meets SG 80.
Other gears: as there are no significant recorded interactions with these species, the other fisheries met SG100.</td></tr>
</table>

e	Review of alternative measures to minimize mortality of ETP species												
	Guide post	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?	TB	Y	TP	Y	TB	Y	TP	Y	TB	Y	TP	Y
		TN	Y	LL	Y	TN	Y	LL	Y	TN	Y	LL	Y
		GN	Y	HL	Y	GN	Y	HL	Y	GN	Y	HL	Y
		SD	Y			SD	Y			SD	Y		
	Justification	Review of the MRI observer data represents an ongoing review of the effectiveness of current measures to minimise unwanted ETP interactions. **Gillnets and longlines**: based on MRI observer data, interactions with black guillemot and hooded seal from these two fisheries has been so rare that UoA-related mortality is minimised. As a result, there are no additional appropriate measures identified which need to be implemented. The evaluation of the performance of the current measures occurs annually, and therefore this met SG100. **Other gears**: there are no significant recorded interactions with these species, the other fisheries also met SG100.											
References		NAMMCO, 2016 Dr. Erpur Snær Hansen, Náttúrustofa Suðurlands / South Iceland Nature Research, pers. comm., 24 May 2016											

OVERALL PERFORMANCE INDICATOR SCORE:	
Bottom trawl	**100**
Danish Seine	**100**
Gillnet	**90**
Handline	**100**
Longline	**85**
***Nephrops* trawl**	**100**
Pelagic trawl	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table for PI 2.3.3 – ETP species information

<table>
<tr><td colspan="2">PI 2.3.3</td><td colspan="12">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.</td></tr>
<tr><td colspan="2">Scoring Issue</td><td colspan="4">SG 60</td><td colspan="4">SG 80</td><td colspan="4">SG 100</td></tr>
<tr><td rowspan="7">a</td><td colspan="13">Information adequacy for assessment of impacts</td></tr>
<tr><td>Guide post</td><td colspan="4">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.</td><td colspan="4">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.</td><td colspan="4">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.</td></tr>
<tr><td rowspan="4">Met?</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td></tr>
<tr><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>Y</td><td>LL</td><td>N</td></tr>
<tr><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>N</td><td>HL</td><td>Y</td></tr>
<tr><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>Y</td><td colspan="2"></td></tr>
<tr><td>Justification</td><td colspan="12">Black guillemot: The registration of seabirds caught in the MRI spring gillnet survey was initiated in 1997. The MRI spring gillnet survey is equivalent to 2% of the total cod gillnet fishing effort in April. The first year's the gillnet survey was only conducted in the south and west of the country but since 2002 it is also done in the north. Icelandic regulations that say all bycatch should be recorded. Bycatch registration was received from 5% of the cod gillnet vessels until 2009. In 2009 they switched to electronic logbooks and after that no information on sea birds and marine mammals has been returned.

Hooded seal: The registration of marine mammals caught in the MRI spring gillnet survey was initiated in 2009. The registration of marine mammal bycatch in commercial cod gillnets (other than lumpfish) started in 2002.

Gillnets and longlines: as there is a recurrent scientific survey system in place to estimate the trend and relative quantities of seabird and marine mammal bycatch, this reaches the SG80. However, given the lack of information on out of scope bycatch, including ETP species, in the electronic logbooks, this did not reach SG 100.

Other gears: as there are no significant recorded interactions with these species, the other fisheries met SG100.</td></tr>
</table>

b	Information adequacy for management strategy												
	Guide post	Information is adequate to support measures to manage the impacts on ETP species.				Information is adequate to measure trends and support a strategy to manage impacts on ETP species.				Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.			
	Met?	TB	Y	TP	Y	TB	Y	TP	Y	TB	Y	TP	Y
		TN	Y	LL	Y	TN	Y	LL	Y	TN	Y	LL	N
		GN	Y	HL	Y	GN	Y	HL	Y	GN	N	HL	Y
		SD	Y			SD	Y			SD	Y		
	Justification	**Gillnets and longlines:** These gears have some risk of interacting with ETP. Information on longline is currently provided through MRI's annual gillnet surveys, and for longlines, from MRI observer data, and is adequate to measure trends and support a strategy to manage impacts on ETP species and thus meets SG80. However, given the lack of information on out of scope bycatch, including ETP species, in the electronic logbooks, these gears did not reach SG100. **Other gears**: information is obtained from observers, VMS and other sources that indicate these gears are very low risk. Monitoring of much of this information is complete. As there are no significant recorded interactions with these species, these gears met SG100.											
References	MRI Gillnet survey (Pálsson et al, 2015) MRI Observer data Dr. Erpur Snær Hansen, Náttúrustofa Suðurlands / South Iceland Nature Research, pers. comm., 24 May 2016											

OVERALL PERFORMANCE INDICATOR SCORE:	
Bottom trawl	**100**
Danish Seine	**100**
Gillnet	**80**
Handline	**100**
Longline	**80**
***Nephrops* trawl**	**100**
Pelagic trawl	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table for PI 2.4.1 – Habitats outcome

<table>
<tr><td colspan="2">PI 2.4.1</td><td colspan="12">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.</td></tr>
<tr><td colspan="2">Scoring Issue</td><td colspan="4">SG 60</td><td colspan="4">SG 80</td><td colspan="4">SG 100</td></tr>
<tr><td rowspan="6">a</td><td colspan="13">Commonly encountered habitat status</td></tr>
<tr><td>Guide post</td><td colspan="4">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.</td><td colspan="4">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.</td><td colspan="4">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.</td></tr>
<tr><td rowspan="4">Met?</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>N</td><td>TP</td><td>Y</td></tr>
<tr><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>N</td><td>LL</td><td>Y</td></tr>
<tr><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td></tr>
<tr><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>Y</td><td colspan="2"></td></tr>
<tr><td>Justification</td><td colspan="12">Bottom trawl (80): Commonly encountered habitats tend to be hard ground, varying from sandy mud to gravel and cobbled areas (Ragnarsson & Steingrímsson, 2003). They tend to be resilient, more dynamic areas and it is highly unlikely that this gear will reduce their structure and function to the point where there would be serious irreversible harm, as they have been fished for many years and still provide productive over the long-term, so meets SG 80. There is no evidence that this is high unlikely, so does not meet SG100

Nephrops trawl (80): Commonly encountered habitats tend to be soft ground, usually soft mud that provides good burrowing habitat for Nephrops. Typically, such habitat does not foster vulnerable fauna. Furthermore, studies on the impact of Nephrops trawling indicate that fishing intensity is the major factor controlling long-term negative trends in the benthos, rather than the direct impact from passage of the gear (Ball et al. 2000). The Nephrops trawl used in Icelandic waters has a ground rope but is not fitted with bobbins or tickler chain (www.fisheries.is). Therefore, it is highly unlikely that the fishery will reduce key habitat forming species to a point where there would be serious or irreversible harm, so meets SG 80. There is no evidence that this is highly unlikely, so does not meet SG100

Gillnets (100): Static fishing gear, such as set nets, handline and longlines do not affect large areas of seabed and are not thought to cause serious or irreversible harm to habitat structures (Jennings et al., 2001) and thus meets SG 80. Scientific evidence indicates that it is highly unlikely that gillnets reduce habitat structure and function to a point where there would be serious or irreversible harm (Ball et al. 2000, Jennings et al. 2001, Thorarinsdóttir et al. 2010), so meets SG 100

Danish seine (100): A 2010 study on the impact of the Danish seine on benthos showed that it has limited negative impact on benthic habitats (Thorarinsdóttir et al. 2010). Danish seines can only be used in areas of relatively smooth bottom, which are not likely to be vulnerable to fishing gear impacts in any case and meets SG 80. Scientific evidence indicates that it is highly unlikely that the Danish seine would reduce habitat structure and function to a point where there would be serious or irreversible harm (Ball et al. 2000, Jennings et al. 2001, Thorarinsdóttir et al. 2010).

Pelagic trawl (100): The pelagic trawl does not have contact with bottom habits and thus this meets SG 100

Longlines (100): Static fishing gear, such as set nets, handline and longlines do not affect large areas of seabed and are not thought to cause serious or irreversible harm to habitat</td></tr>
</table>

structures (Jennings et al., 2001) and thus meets SG 80. Scientific evidence indicates that it is highly unlikely that gillnets reduce habitat structure and function to a point where there would be serious or irreversible harm (Ball et al. 2000, Jennings et al. 2001, Thorarinsdóttir et al. 2010), so meets SG 100

Handlines (100): Static fishing gear, such as set nets, handline and longlines do not affect large areas of seabed and are not thought to cause serious or irreversible harm to habitat structures (Jennings et al., 2001) and thus meets SG 80. Scientific evidence indicates that it is highly unlikely that gillnets reduce habitat structure and function to a point where there would be serious or irreversible harm (Ball et al. 2000, Jennings et al. 2001, Thorarinsdóttir et al. 2010), so meets SG 100

b VME habitat status

Guide post	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?

TB	Y	TP	Y	TB	N	TP	Y	TB	N	TP	Y
TN	Y	LL	Y	TN	Y	LL	Y	TN	N	LL	Y
GN	Y	HL	Y	GN	Y	HL	Y	GN	N	HL	Y
SD	Y			SD	Y			SD	N		

Justification

Gear	Hard corals	Soft corals	Sponges
Bottom trawl	60	60	60
Nephrops trawl	80	80	80
Gillnets	80	100	100
Danish seine	80	80	80
Pelagic trawl	100	100	100
Longline	100	100	100
Handline	100	100	100

Bottom trawl (60): In Icelandic waters, most fishing with otter trawls (around 70%) takes place at depths between 100 and 500 m. The slope areas off the south coast of Iceland are very steep, with depths descending from around 400 m to more than 1500 m within few nautical miles, and parts of the slope areas are considered difficult for trawling. Therefore, vulnerable habitats have some depth refuge from fisheries impacts in Icelandic waters. In the past, the bottom trawl fishery has reduced coral habitat structure and the present fishing patterns of the cod fishery overlap with vulnerable habitats of corals and aggregation of large sponges. Coral areas have been closed which will prevent further damage to such biogenic habitats. However, comparable efforts to protect other biogenic habitats, i.e. aggregation of large sponges, are not planned. In addition, no recording of benthic bycatch is in place. A single contact by the bottom trawl has a significant impact on corals and sponges, both of which have slow recovery rates. Therefore, adverse impacts by bottom trawling is significant. It cannot be concluded that the assessed bottom trawl fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. Therefore a score of 80 is not achieved for bottom trawl. This has been harmonised with the saithe and golden redfish fisheries where there is a condition for this PI.

***Nephrops* trawl** (80): Whilst *Nephrops* trawls avoid the harder substrates where hard corals are likely to occur, they may have some interaction with soft corals and sponges that occur on the softer muddy habitats favoured by *Nephrops*. However, given that the main *Nephrops* fishing areas tend to be in shallower waters, and that they actively avoid areas

		with soft corals and sponges as these clog the nets and complicate catch handling, this meets SG 80. There is no evidence that this is high unlikely, so does not meet SG100. **Gillnets** (95): Gillnets are used in shallower waters and thus rarely come into contact with any of these VMEs when actively fished. However, it is possible that lost gillnets could have some impact on VMEs in certain current conditions. Static fishing gear, such as set nets, handline and longlines do not affect large areas of seabed and are not thought to cause serious or irreversible harm to VME structures and thus meets SG 80. Scientific evidence indicates that it is highly unlikely that gillnets reduce VME structure and function to a point where there would be serious or irreversible harm, so meets SG 100 for soft corals and sponges. However lost gillnets may smother and break some hard corals, thus does not achieve SG 100. **Danish seine** (80): A 2010 study on the impact of the Danish seine on benthos showed that it has limited negative impact on benthic habitats. Danish seines can only be used in areas of relatively smooth bottom, which are not likely to be vulnerable to fishing gear impacts in any case and meets SG 80. Scientific evidence indicates that it is highly unlikely that the Danish seine would reduce habitat structure and function to a point where there would be serious or irreversible harm, but this has not been proven, so fails to reach SG 100. **Pelagic trawl** (100): The pelagic trawl does not have contact with bottom habits and thus this meets SG 100 **Longline** (100): Static fishing gear, such as longline, do not affect large areas of seabed and are not thought to cause serious or irreversible harm to habitat structures and thus meets SG 80. Scientific evidence indicates that it is highly unlikely that longlines reduce habitat structure and function to a point where there would be serious or irreversible harm so meets SG 100. **Handline** (100): handline gear is very light and small in footprint, and whilst might have a momentary contact with the seabed, is highly unlikely to cause serious or irreversible harm to habitat structures

c	**Minor habitat status**						
	Guide post			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?			TB	N	TP	Y
				TN	N	LL	N
				GN	N	HL	Y
				SD	N		
	Justification	**Bottom trawl** (NA): there is no specific evidence that this gear is highly unlikely to reduce the structure and function of minor habitats to a point where here would be serious or irreversible harm so this fails to meet SG 100. ***Nephrops* trawl** (NA): There is no specific evidence that this gear is highly unlikely to reduce the structure and function of minor habitats to a point where here would be serious or irreversible harm so this fails to meet SG 100. **Gillnets** (NA): There is no specific evidence that this gear is highly unlikely to reduce the structure and function of minor habitats to a point where here would be serious or irreversible harm so this fails to meet SG 100. **Danish seine** (NA): There is no specific evidence that this gear is highly unlikely to reduce the structure and function of minor habitats to a point where here would be serious or irreversible harm so this fails to meet SG 100.				

		Pelagic trawl (100): The pelagic trawl does not have contact with bottom habits and thus this meets SG 100. **Longline** (NA): There is no specific evidence that this gear is highly unlikely to reduce the structure and function of minor habitats to a point where here would be serious or irreversible harm so this fails to meet SG 100. **Handline** (100): The handline fishery does not have significant contact with bottom habits and thus this meets SG 100.
References		Ball et al. 2000; Jennings et al. 2001; Thorarinsdóttir et al. 2010; Ragnarsson & Steingrímsson 2003

OVERALL PERFORMANCE INDICATOR SCORE:	
Bottom trawl	**70**
Danish Seine	**85**
Gillnet	**85**
Handline	**100**
Longline	**95**
***Nephrops* trawl**	**80**
Pelagic trawl	**100**
CONDITION NUMBER (if relevant):	**3**

Evaluation Table for PI 2.4.2 – Habitats management strategy

<table>
<tr><td colspan="2">PI 2.4.2</td><td colspan="12">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.</td></tr>
<tr><td colspan="2">Scoring Issue</td><td colspan="4">SG 60</td><td colspan="4">SG 80</td><td colspan="4">SG 100</td></tr>
<tr><td rowspan="7">a</td><td colspan="13">Management strategy in place</td></tr>
<tr><td>Guide post</td><td colspan="4">There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.</td><td colspan="4">There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.</td><td colspan="4">There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.</td></tr>
<tr><td rowspan="4">Met?</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>P</td><td>TP</td><td>Y</td><td>TB</td><td>N</td><td>TP</td><td>N</td></tr>
<tr><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>P</td><td>LL</td><td>Y</td><td>TN</td><td>N</td><td>LL</td><td>N</td></tr>
<tr><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>N</td><td>HL</td><td>N</td></tr>
<tr><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>N</td><td colspan="2"></td></tr>
<tr><td>Justification</td><td colspan="12">
<table>
<tr><th>Gear</th><th>Hard corals</th><th>Soft corals</th><th>Sponges</th></tr>
<tr><td>Bottom trawl</td><td>80</td><td>60</td><td>60</td></tr>
<tr><td>Nephrops trawl</td><td>80</td><td>60</td><td>60</td></tr>
<tr><td>Gillnets</td><td>80</td><td>80</td><td>80</td></tr>
<tr><td>Danish seine</td><td>80</td><td>80</td><td>80</td></tr>
<tr><td>Pelagic trawl</td><td>80</td><td>80</td><td>80</td></tr>
<tr><td>Longline</td><td>80</td><td>80</td><td>80</td></tr>
<tr><td>Handline</td><td>80</td><td>80</td><td>80</td></tr>
</table>
Bottom and Nephrops Trawls (TB & NT): The Icelandic management strategy for marine habitats in general, and VMEs in particular, is mainly implemented through a system of closed areas which effectively prevent both bottom trawl (and in some cases, other gears such as longline) from being used in known areas of cold-water coral concentrations along the edge of the continental shelf. This represents a partial strategy for cold water corals, but is not yet in place for soft coral or sponge concentrations, and does not meet SG80 for these two VME types. Most vessels have move-on rules when encountering VMEs in these areas, but these are informal and voluntary. As a result Condition 4 has been imposed.

Other gears (GN, SD, TP, LL & HL): Large areas of Icelandic waters are closed for fishing, some of them temporarily (hours per day, days in total or seasonal) and others permanently (years). Areas are usually closed for fishing with different gear types due to the presence of juvenile fish over extended periods of time or in order to protect spawning grounds. Although area closures are aimed at protecting juvenile fish, the measures have a secondary effect, i.e. protecting seabed habitats from being damaged by fishing activities. Given the low impact of these gears on bottom habitats, no specific strategy is considered necessary in these cases and thus they meet SG80. However, it is not a full strategy with a comprehensive management plan based upon full EEZ habitat mapping, and therefore fails to reach SG100.
</td></tr>
</table>

<table>
<tr><td>b</td><td colspan="13">Management strategy evaluation</td></tr>
<tr><td></td><td>Guide post</td><td colspan="4">The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).</td><td colspan="4">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.</td><td colspan="4">Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.</td></tr>
<tr><td></td><td rowspan="4">Met?</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>N</td><td>TP</td><td>N</td></tr>
<tr><td></td><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>N</td><td>LL</td><td>N</td></tr>
<tr><td></td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>N</td><td>HL</td><td>N</td></tr>
<tr><td></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>N</td><td colspan="2"></td></tr>
<tr><td></td><td>Justification</td><td colspan="12">Bottom and Nephrops Trawls (TB & NT): the measures in place for cold water corals e.g. closed areas for bottom gears are well proven to be effective, providing objective evidence that the partial strategy will work. Whilst it is acknowledged that this partial strategy is currently inadequate for soft corals and sponges (see 2.4.1a above), it is being expanded and a condition would be put in place to ensure this happens (again, see 4.2.1a). Therefore it is considered that this met SG80. However, it is not a full strategy with a comprehensive management plan, and therefore fails to reach SG100.

Other gears (GN, SD, TP, LL & HL): Large areas of Icelandic waters are closed for fishing, some of them temporarily (hours per day, days in total or seasonal) and others permanently (years). Areas are usually closed for fishing with different gear types due to the presence of juvenile fish over extended periods of time or in order to protect spawning grounds. Although area closures are aimed at protecting juvenile fish, the measures have a secondary effect, i.e. protecting seabed habitats from being damaged by fishing activities. This is considered to be a partial strategy for all three VME types and meets SG80. However, it is not a full strategy with a comprehensive management plan based upon full EEZ habitat mapping, and therefore fails to reach SG 100.</td></tr>
<tr><td>c</td><td colspan="13">Management strategy implementation</td></tr>
<tr><td></td><td>Guide post</td><td colspan="4"></td><td colspan="4">There is some quantitative evidence that the measures/partial strategy is being implemented successfully.</td><td colspan="4">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).</td></tr>
<tr><td></td><td rowspan="4">Met?</td><td colspan="4" rowspan="4"></td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>N</td><td>TP</td><td>N</td></tr>
<tr><td></td><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>N</td><td>LL</td><td>N</td></tr>
<tr><td></td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>N</td><td>HL</td><td>N</td></tr>
<tr><td></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>N</td><td colspan="2"></td></tr>
<tr><td></td><td>Justification</td><td colspan="12">All gears: VMS and other effort distribution information confirms that bottom trawlers avoid closed areas and thus these are not subject to disturbance and thus there is some quantitative information that this is achieving its objective, especially for hard coral areas. Whilst it is acknowledged that this partial strategy is currently inadequate for soft corals and sponges (see 2.4.1a above), it is being expanded and a condition would be put in place to ensure this happens (again, see 4.2.1a). Therefore it is considered that this met SG 80. However, as yet there is not clear quantitative evidence that it is being implemented successfully for <u>all</u> habitat types e.g. that closures have led to the recovery of habitats and thus fails to reach SG100.</td></tr>
</table>

d	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs												
	Guide post	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?	TB	Y	TP	Y	TB	Y	TP	Y	TB	N	TP	N
		TN	Y	LL	Y	TN	Y	LL	Y	TN	N	LL	N
		GN	Y	HL	Y	GN	Y	HL	Y	GN	N	HL	N
		SD	Y			SD	Y			SD	N		
	Justification	**Bottom and *Nephrops* Trawls (TB & NT)**: VMS and other effort distribution information confirms that fishing vessels avoid closed areas and thus these are not subject to disturbance. Whilst it is acknowledged that this partial strategy is currently inadequate for soft corals and sponges (see 2.4.1a above), it is being expanded and a condition would be put in place to ensure this happens (again, see 4.2.1a). Therefore it is considered that this meets SG80. Whilst there is full VMS coverage of all gear types impacting these habitats (handlines are unlikely to have any impact on these), and that known cold water coral areas are now well protected, there is not clear quantitative evidence that this, or any other similar MSC UoAs (e.g. golden redfish, saithe, ling), fully complies with both its management requirements and with protection measures afforded to soft coral and sponge VMEs, and therefore failed to reach SG100. **Other gears (GN, SD, TP, LL & HL)**: given the known levels of effort, and the low levels of observed impact on habitats, this achieved SG80. However, there is not sufficient clear quantitative evidence that this, or any other similar MSC UoAs (e.g. golden redfish, saithe, ling), fully complies with both its management requirements and with protection measures for all habitats and therefore failed to reach SG100.											
References	Vottunarstofan Tún, 2014 Directorate of Fisheries (Icelandic version for February 2016: http://www.fiskistofa.is/fiskveidistjorn/veidibann/reglugerdarlokanir/) Ministry of Fisheries 2004; Ólafsdóttir & Burgos 2012a												

OVERALL PERFORMANCE INDICATOR SCORE:	
Bottom trawl	**75**
Danish Seine	**85**
Gillnet	**85**
Handline	**85**
Longline	**85**
***Nephrops* trawl**	**75**
Pelagic trawl	**85**
CONDITION NUMBER (if relevant):	**4**

Evaluation Table for PI 2.4.3 – Habitats information

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			
	Guide post	The types and distribution of the main habitats are broadly understood.	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.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	Y	Y	N
	Justification	**All gears** (80): The BIOICE program has been in operation since 1992 with the aim of producing a basic inventory of benthic fauna within Icelandic territorial waters. Benthic samples have been collected from a variety of habitats, ranging widely in depth (<100 to 3100 m) and in temperature conditions (12° to -0.9°C). The MRI has also identified areas of vulnerable benthic habitats in Icelandic waters (cold water corals, areas with aggregation of large sponge, and maerl beds) in relation to bottom trawl fishing activities (Ministry of Fisheries 2004). MRI is currently carrying out research programs in order to map benthic habitats in Icelandic waters (biology and geology, using multibeam echo sounder), including the mapping of cold water corals (*Lophelia pertusa*). To date around 12% of the entire Iceland EEZ habitats has been mapped in detail using multi-beam echo-sounder and the intention is to map the entire EEZ by 2026. Models have been developed to predict the distribution of corals on the Icelandic shelf (Burgos et al, 2014), and the nature, distribution and vulnerability of the main habitats are well understood, so this meets SG 80, but is not known for the whole EEZ, so fails to meet SG 100		
b	Information adequacy for assessment of impacts			
	Guide post	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.	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.	The physical impacts of the gear on all habitats have been quantified fully.
	Met?	Y	Y	N
	Justification	**All gears** (80): VMS and other tools can provide spatial and temporal information on fishing effort for all gear types, and identify the main impacts on the main habitats, so meets SG80. However, the physical impacts of the gear on some habitats, especially the soft corals and sponges, are yet to be fully quantified, and thus this fails to meet SG100.		

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.		
c	Monitoring			
	Guide post		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	Y
	Justification	**All gears** (100): The spatio-temporal monitoring of fishing effort in Iceland is comprehensive and continuing. Combined with MRIs benthic survey work and the mapping of the seabed habitats and fishing grounds using multibeam echo-sounding in co-operation with other domestic organisations means that SG 100 is also met.		
References		Meißner et al. 2014; Ministry of Fisheries, 2004; Gudmundsson and Helgason, 2014		
OVERALL PERFORMANCE INDICATOR SCORE: ALL GEARS				85
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 2.5.1 – Ecosystem outcome

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			
	Guide post	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	N
	Justification	**All gears** (90): over the past 50 to 60 years the cod fishery has ranged from 500 kt to (more recently) 100 kt. Over the same period spawning stock biomass has ranged from almost 1 mill tonnes (1955) to less than 200 kt (1993). Despite this five-fold variation in both stock and catch no clear evidence has been established that the Icelandic marine ecosystem *per se* has suffered any significant, lasting or irreversible effects. Insofar as there may have been any significant ecosystem variations over this period it seems more probable that they are function of climatic variation e.g. North Atlantic Oscillation (NAO) and more recently the overall trend towards warmer water around Iceland. From this it might be inferred that there is evidence that it is highly unlikely that the cod fishery, particularly at its recent and anticipated levels, has an adverse effect. The absence of explicit evidence to this effect means the score of 100 cannot be justified.		
References		MRI, 2016; Stefánsson & Pálsson, 1998; Thordardottir, 1994; Astthorsson *et al.,* 2007; Valdimarsson & Jónsson, 2007; MRI, 1997; Jaworski & Ragnarsson, 2006; Umhverfisráðuneytið, 2011		
OVERALL PERFORMANCE INDICATOR SCORE: ALL GEARS				**80**
CONDITION NUMBER (if relevant):				

Evaluation Table for PI 2.5.2 – Ecosystem management strategy

<table>
<tr><td colspan="2">PI 2.5.2</td><td colspan="12">There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.</td></tr>
<tr><td colspan="2">Scoring Issue</td><td colspan="4">SG 60</td><td colspan="4">SG 80</td><td colspan="4">SG 100</td></tr>
<tr><td rowspan="6">a</td><td colspan="13">Management strategy in place</td></tr>
<tr><td>Guide post</td><td colspan="4">There are measures in place, if necessary which take into account the potential impacts of the fishery on key elements of the ecosystem.</td><td colspan="4">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.</td><td colspan="4">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.</td></tr>
<tr><td>Met?</td><td colspan="4">Y</td><td colspan="4">Y</td><td colspan="4">Y</td></tr>
<tr><td>Justification</td><td colspan="13">All gears (100): the strategy is provided by the Fisheries Management Act. The objective of the Act is to promote conservation and efficient utilization of marine stocks. The Icelandic strategy is composed of three main elements: (1) closed areas: closed areas have been long-established for both bottom trawl and longlines fishing fleets, which has provided protection for VMEs in particular; (2) multi-species stock management: trophic relationships between key predatory commercial species such as cod and haddock with commercial prey species such as capelin, sandeel and shrimp are being understood and integrated into fisheries management planning; and (3) key target species management: considerations include discard and other mortality, environmental changes on target stocks, multi-species considerations in mixed fisheries, physical environmental issues related to area and gear; and the understanding of ecosystem components by species / stock complexes. In particular the stock status of capelin, cod's main prey item, is regularly monitored, and biomass estimates for stocks of fish, whales and seabirds in Icelandic waters and production estimates of Calanus finmarchicus and other zooplankton species have been used to calculate the biomass of individual components in the Icelandic marine ecosystem.</td></tr>
<tr><td rowspan="6">b</td><td colspan="13">Management strategy evaluation</td></tr>
<tr><td>Guide post</td><td colspan="4">The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ ecosystems).</td><td colspan="4">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</td><td colspan="4">Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved</td></tr>
<tr><td rowspan="4">Met?</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>N</td><td>TP</td><td>Y</td></tr>
<tr><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>N</td><td>LL</td><td>Y</td></tr>
<tr><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td></tr>
<tr><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>N</td><td colspan="2"></td></tr>
<tr><td>Justification</td><td colspan="13">All gears: The main measures - closed areas, multi-species stock management and key target species management - are all widely adopted and proven methods. Given the importance of cod, and lesser extent haddock, to Iceland, the majority of these measures are orientated at supporting cod/haddock stock management, and much of MRI's work is conducted to evaluate and refine the effectiveness of these measures. Climate variability during the 20th century has affected the marine ecosystem in Icelandic waters and variations of environmental conditions have caused changes in the abundance and</td></tr>
</table>

		distribution of many fish stocks as well as other components of the Icelandic marine ecosystem. This is understood and its impact on species such as capelin - and the consequences for cod - are an ongoing area of research. Testing (e.g. benthic surveys, stock assessments, primary productivity surveys, etc., as well as ecosystem modelling) indicated there is a high degree of confidence in the overall strategy. However, there is still some uncertainty over the effectiveness in protecting soft coral and sponge communities, so does not quite meet SG 100 for the gears which impact these habitats (bottom trawl TB, *Nephrops* trawl TN).		
c	**Management strategy implementation**			
	Guide post		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	**All gears** (100): the main measures - closed areas, multi-species stock management and key target species management - have all been implemented though various means, such as regulation (esp. closed areas), a ban on most discards, strictly implemented, real time quotas for key species. Control and enforcement of these measures is also strong, with widespread use of VMS, at sea and port surveillance and controls, with resultant levels of high compliance. Clear evidence is provided in the form of regular stock assessments, MCS review and compliance levels.		
References		Astthorsson *et al*. 2007; MRI (Þorsteinn Sigurðsson & Ólafur Ástþórsson) pers. comm., on 24 May 2016		
OVERALL PERFORMANCE INDICATOR SCORE:				
CONDITION NUMBER (if relevant):				

OVERALL PERFORMANCE INDICATOR SCORE:	
Bottom trawl	**95**
Danish Seine	**95**
Gillnet	**100**
Handline	**100**
Longline	**100**
***Nephrops* trawl**	**95**
Pelagic trawl	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table for PI 2.5.3 – Ecosystem information

<table>
<tr><td colspan="2">PI 2.5.3</td><td colspan="12">There is adequate knowledge of the impacts of the UoA on the ecosystem.</td></tr>
<tr><td colspan="2">Scoring Issue</td><td colspan="4">SG 60</td><td colspan="4">SG 80</td><td colspan="4">SG 100</td></tr>
<tr><td rowspan="6">a</td><td colspan="13">Information quality</td></tr>
<tr><td>Guide post</td><td colspan="4">Information is adequate to identify the key elements of the ecosystem.</td><td colspan="4">Information is adequate to broadly understand the key elements of the ecosystem.</td><td colspan="4"></td></tr>
<tr><td>Met?</td><td colspan="4">Y</td><td colspan="4">Y</td><td colspan="4"></td></tr>
<tr><td>Justification</td><td colspan="12">All gears: extensive studies have been conducted on the marine ecosystems of Icelandic waters (e.g. Astthorsson et.al. 2007, Valdimarsson & Jónsson 2007). Studies on the feeding ecology of a large number of fish species, marine mammals and seabirds has provided information on the ecological function of most of the species caught by the assessed fisheries. These studies have shown that capelin is a key prey species in the Icelandic waters ecosystems. Biomass estimates for stocks of fish, whales and seabirds in Icelandic waters and production estimates of Calanus spp. and other zooplankton species have been used to calculate the biomass of individual components in the Icelandic marine ecosystem. As a result, there is a comprehensive understanding about the key elements of the ecosystems of Icelandic waters, and this information is used in multi species modelling (e.g. GADGET models) for MRI assessments. The models have been used to evaluate interactions between fisheries and key ecosystem elements. Information about these interactions has been taken into account for management purposes. This meets SG80.</td></tr>
<tr><td colspan="13"></td></tr>
<tr><td rowspan="6">b</td><td colspan="13">Investigation of UoA impacts</td></tr>
<tr><td>Guide post</td><td colspan="4">Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.</td><td colspan="4">Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail.</td><td colspan="4">Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and have been investigated in detail.</td></tr>
<tr><td rowspan="4">Met?</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>N</td><td>TP</td><td>N</td></tr>
<tr><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>N</td><td>LL</td><td>N</td></tr>
<tr><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>N</td><td>HL</td><td>N</td></tr>
<tr><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>N</td><td colspan="2"></td></tr>
<tr><td>Justification</td><td colspan="12">All gears: The main impacts of these fisheries (e.g. on bottom habitats, non-target species, ETP species and the trophic structure) have been identified and investigated in some detail, so meets SG 80. Many interactions have been investigated in detail, especially trophic interactions with key predator - prey relationships, and with bottom substrates. In particular, there is a high level of spatial and temporal information on most forms of fishing and captures. However it cannot be said that all the main interactions have been investigated in detail, and thus this does not meet SG 100.</td></tr>
</table>

<table>
<tr><td>c</td><td colspan="10">Understanding of component functions</td></tr>
<tr><td></td><td>Guide post</td><td></td><td colspan="4">The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known.</td><td colspan="4">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.</td></tr>
<tr><td></td><td rowspan="4">Met?</td><td rowspan="4"></td><td>TB</td><td>Y</td><td>TP</td><td>Y</td><td>TB</td><td>N</td><td>TP</td><td>Y</td></tr>
<tr><td></td><td>TN</td><td>Y</td><td>LL</td><td>Y</td><td>TN</td><td>N</td><td>LL</td><td>Y</td></tr>
<tr><td></td><td>GN</td><td>Y</td><td>HL</td><td>Y</td><td>GN</td><td>Y</td><td>HL</td><td>Y</td></tr>
<tr><td></td><td>SD</td><td>Y</td><td colspan="2"></td><td>SD</td><td>N</td><td colspan="2"></td></tr>
<tr><td></td><td>Justification</td><td colspan="9">All gears: The main functions of the components are well understood. The relationships between predators, prey and habitats are known, especially for cod. For example, abundance distribution can be linked to habitat and localised prey abundance or depletion, particularly in inshore areas. The distribution of fishing effort and landings are recorded accurately. There is greater uncertainty regards the actual impact with possible discarding and unrecorded impact on seabed habitat. The main impacts of these fisheries e.g. on bottom habitats, non-target species and ETP species have been identified and investigated in some detail, so meets SG 80.

In many cases the interactions and their impacts have been investigated in detail, especially on cold water corals but as the impacts on soft corals and sponges have yet to be studies in detail, so does not quite meet SG 100 for the gears which impact these habitats (TB, TN, SD). For the other gears (GN, TP, LL & HL), there is a comprehensive understanding about the key elements of the ecosystems of Icelandic waters, and this information is used in multi-species modelling (BORMICON and GADGET models) for MRI assessments. The models have been used to evaluate interactions between fisheries and key ecosystem elements and information about these interactions have been taken into account for management purposes (e.g. Pálsson 1997, Stefánsson and Pálsson 1998, Stefánsson 2003, Barbaro et al. 2008).</td></tr>
<tr><td>d</td><td colspan="10">Information relevance</td></tr>
<tr><td></td><td>Guide post</td><td></td><td colspan="4">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.</td><td colspan="4">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.</td></tr>
<tr><td></td><td>Met?</td><td></td><td colspan="4">Y</td><td colspan="4">Y</td></tr>
<tr><td></td><td>Justification</td><td colspan="9">All gears: information on the impacts - in terms of severity, duration and spatial location - of all these fisheries is recorded and their direct consequences well understood, so meets SG 80. The consequences for the main elements (non-target catch, habitats, ETPs) and the wider ecosystem impacts are recognised and thus meets SG100.</td></tr>
</table>

e	Monitoring			
	Guide post		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	N
	Justification	**All gears** (80): Iceland has a comprehensive set of on-going research and monitoring programmes. Management measures to disincentives discarding results in a good estimates of overall fishing mortality for both target and non-target species, MRI is now sampling benthic bycatch levels on a regular basis and there is a commitment to map the entire EEZ seabed in the next 10 years. There is also regular stock assessment of key commercial species, including main prey items such as capelin and northern shrimp, as well as regular estimates of primary productivity. There is also a good understanding of environmental forcing pressures, such as climate change, that might be driving short- and long-term changes in the marine ecosystem. It is considered that this information will be adequate to support the development of strategies, but information is not yet complete. With detailed data being collected on species abundance, fishing activity and habitat, SG80 is met. However, because the information is incomplete, the fishery does not quite meet SG 100.		
References	Astthorsson et.al. 2007; Valdimarsson & Jónsson 2007; MRI, 1997; Stefánsson & Pálsson 1998, Stefánsson 2003; Pálsson, 1997; Barbaro et al., 2008			

OVERALL PERFORMANCE INDICATOR SCORE:	
Bottom trawl	**85**
Danish Seine	**85**
Gillnet	**90**
Handline	**90**
Longline	**90**
***Nephrops* trawl**	**85**
Pelagic trawl	**90**
CONDITION NUMBER (if relevant):	

Evaluation Table for 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			
	Guide post	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	Iceland has a well-established system for fisheries management in place, now codified in the 1990 Fisheries Management Act, amended in 2006. The Act details procedures for the determination of TAC (Art. 3) and allocation of harvest rights, including permits and catch quotas (Art. 4–14). It also lays out the system for individual transferable quotas in some detail (Art. 15), as well as procedures for monitoring, control and surveillance (Art. 16–18) and the application of sanctions (Art. 24–27). Further provisions are provided in a number of other acts, such as the 1997 Act on Fishing in Iceland's Exclusive Fishing Zone and the 1996 Act concerning the Treatment of Commercial Marine Stocks, as well as in regulations at lower levels of the legal hierarchy, issued by the relevant management authorities. Iceland is also signatory to, and has ratified, the major international agreements pertaining to fisheries management, such as the 1982 Law of the Sea Convention and the 1995 Fish Stocks Agreement. The Ministry of Industries and Innovation – which has two ministers: one for Industry and Commerce and one for Fisheries and Agriculture – is the policy-making body in Icelandic fisheries management and sets annual TAC based on scientific recommendations from the Marine Research Institute. The Directorate of Fisheries is the implementing body within the management system, formally subordinate to the Ministry as an agency. It issues fishing licenses, allocates annual vessel quotas and oversees the daily operation of the individual transferable quota system. The Directorate is also responsible for monitoring, control and surveillance, in cooperation with the Coast Guard, which is a civilian law enforcement agency under the Ministry of the Interior. Fishing by foreign vessels is regulated by the 1998 Act on Fishing and Processing by Foreign Vessels in Iceland's Exclusive Economic Zone. Icelandic vessels' fishing outside Icelandic the Icelandic EEZ is regulated by the 1996 Act on Fishing outside of Icelandic Jurisdiction Through the Fisheries Management Act, other relevant acts and regulations issued by the Ministry and the Directorate, binding procedures for cooperation between the different governmental agencies involved are in place, able to provide management outcomes that are consistent with MSC Principles 1 and 2.		

b	Resolution of disputes			
	Guide post	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.
	Met?	Y	Y	Y
	Justification	There is an effective, transparent dispute resolution mechanism in place in Iceland, as fishers can take their case to court if they do not accept the rationale behind an infringement accusation by enforcement authorities or the fees levied against them. Verdicts at the lower court levels can be appealed to higher levels. The proceedings of the courts are open to the public and the rulings are easily accessible on the internet. Although rare, there have been examples of fishers taking their case to court, and the system has proven effective in resolving disputes in a timely manner. In practice, however, the vast majority of disputes are resolved within the management system, which incorporates ample formal and informal opportunities for fishers and other stakeholders to interact with the authorities (see 3.1.2), e.g. to clear out disagreement and conflict among users and between users and authorities.		
c	Respect for rights			
	Guide post	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	Y
	Justification	Iceland is highly dependent on fisheries, and the rights of traditional users were in the main secured when individual transferable quotas were introduced on the basis of historical fishing. One of the main objectives of Icelandic fisheries management, in addition to conservation and efficient utilization of marine living resources (see 3.1.3), is to ensure stable employment and settlement throughout Iceland. According to the Fisheries Management Act (Art. 10), the Minister of Fisheries each fishing year shall have available harvest rights amounting to up to 12,000 tonnes which he or she may use to offset major economic or social disturbances that may occur in times of sizeable fluctuations in catch quotas, or for regional support to smaller communities that have experienced significant reduction in employment as a result of unexpected cutbacks in quotas. Such additional quotas can be allocated for up to three years at a time. The Act (Art. 6) further grants all citizens the right to fish in Icelandic waters provided the catch is for their own consumption. Overall, distribution of harvest rights is considered to be consistent with the social and cultural context of Icelandic fisheries.		
References	Act on Fishing in Iceland's Exclusive Fishing Zone No. 79/1997. Act on Fisheries Management No. 38/1999, amended as Act No. 116/2006.			

	Act on Fishing and Processing by Foreign Vessels in Iceland's Exclusive Economic Zone No. 28/1998. Act concerning the Treatment of Commercial Marine Stocks No. 57/1996. Arnason, R. (2005), 'Property rights in fisheries: Iceland's experience with ITQs', Review of Fish Biology and Fisheries 15: 243–264. Danielsson, A. (1997), 'Fisheries management in Iceland', Ocean & Coastal Management 35: 121–135. Eythórsson, E. (2000), 'A decade of ITQ-management in Icelandic fisheries: consolidation without consensus', Marine Policy 24: 483–492. Interviews with representatives of the Directorate of Fisheries, Icelandic Sustainable Fisheries and the Ministry of Industry and Innovation during the site visit. UN Fish Stocks Agreement, 1995. UN Law of the Sea Convention, 1982.
OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table for 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			
	Guide post	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 functions, roles and responsibilities of all actors in the Icelandic system for fisheries management are explicitly defined in the Fisheries Management Act and supporting legislation and are, according to our interviews during site visit, well understood for all areas of responsibility and interaction. As laid out under 3.1.1 a), governance functions are split between the Minister of Fisheries, the Directorate of Fisheries, the Marine Research Institute and the Coast Guard. Different user groups are well integrated in the management process; see 3.1.2 b).		
b	Consultation processes			
	Guide post	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	Iceland has a consensus-based system for fisheries management and long tradition of continuous consultation and close cooperation between government agencies and user-group organizations. As emphasized by all stakeholders interviewed during the site visit, lines of communication are short and much consultation takes place informally, in direct and often spontaneous contact between representatives of user groups and authorities. At a more formal level, all major interest organizations are regularly invited to sit on committees established to review changes in government, and they meet for regular consultations with the Ministry, the Directorate and the Parliament's (Althing) Permanent Committee for Fisheries and Agriculture. These include, but are not restricted to, Iceland Fisheries (which was established in 2014 as the result of a merger between two of the most influential user-groups in Icelandic fisheries: The Federation of Icelandic Fishing Vessel Owners and the Federation of Icelandic Fish Processing Plants) and the Fisheries Association of Iceland (which also incorporates the two latter as well as the Federation of		

		Owners of Small Fishing Vessels, the Icelandic Seamen's Federation and others). Also local authorities are actively engaged in fisheries management and have easy access to the management system. There are no NGOs that show any interest in fisheries management in Icelandic waters. Major international NGOs that usually engage actively in discussions about fisheries management, such as Greenpeace and WWF, do not have offices in Iceland. Local NGOs are more concerned with nature protection on land. Consultation processes cover policies and regulatory issues, and also include discussions of the annual scientific recommendations by the Marine Research Institute. Shortly after presenting the recommendations to the Ministry, representatives of the Institute enter into dialogue with the fishing industry regarding the status of the stocks and the nature of the recommendations. The Ministry also consults with the industry before setting the final TACs. Stakeholders report consultation processes to be inclusive and transparent, with management authorities displaying consideration of the information obtained from stakeholders and explaining how it is used or not used, mostly in direct communication via email, telephone or informal personal meetings.		
c	Participation			
	Guide post		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
	Met?		Y	Y
	Justification	As follows from 3.1.2 b), the consultation processes provide ample opportunity for all interested and affected parties to be involved in discussions about fisheries management in Iceland. Authorities invite relevant stakeholders to meetings and seminars and actively seek their opinion on management measures. The level of active encouragement is considered appropriate to the scope and context of the fishery.		
References		Act on Fisheries Management No. 38/1999, amended as Act No. 116/2006. Arnason, R. (2005), 'Property rights in fisheries: Iceland's experience with ITQs', *Review of Fish Biology and Fisheries* 15: 243–264. Eythórsson, E. (2000), 'A decade of ITQ-management in Icelandic fisheries: consolidation without consensus', *Marine Policy* 24: 483–492. Interviews with representatives of the Directorate of Fisheries, Icelandic Sustainable Fisheries and the Ministry of Industry and Innovation during the site visit. Kokorsch, M., Karlsdóttir, A. and Benediktsson, K. (2015), 'Improving or overturning the ITQ system? Views of stakeholders in Icelandic fisheries', *Maritime Studies* 14:15.		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				

Evaluation Table for 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			
	Guide post	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	The objective of Icelandic fisheries management, as stated in the Fisheries Management Act (Art. 1), is to ensure conservation and efficient utilization of marine living resources in the Icelandic EEZ. The precautionary approach is not mentioned explicitly in the Act, but the requirement to protect marine resources and take the best scientific knowledge into account (Art. 3), e.g. through the use of reference points, equals the requirements of the precautionary approach, as laid out in the FAO Code of Conduct. Since these principles are codified in formal law, their application is required by management policy. Iceland is also signatory to, and has ratified, the 1995 Fish Stocks Agreement, which requires the use of the precautionary approach.		
References		Act on Fisheries Management No. 38/1999, amended as Act No. 116/2006. FAO Code of Conduct for Responsible Fisheries, 1995. UN Fish Stocks Agreement, 1995.		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				

Evaluation Table for 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			
	Guide post	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	Partial
	Justification	Well defined and measurable short and long-term objectives consistent with achieving the outcomes of MSC Principle 1 are explicit in the Fisheries Management Act and supporting legislation on the Icelandic cod fishery, such as the overarching objective to maintain fish stocks at sustainable levels and the specific objectives defined in the management plans for these fisheries. Objectives related to P2 issues exist (see P2 above), but are less well defined, which warrants a partial score for this PI.		
References		Act on Fishing in Iceland's Exclusive Fishing Zone No. 79/1997. Act on Fisheries Management No. 38/1999, amended as Act No. 116/2006. Act on Fishing and Processing by Foreign Vessels in Iceland's Exclusive Economic Zone No. 28/1998. Act concerning the Treatment of Commercial Marine Stocks No. 57/1996.		
OVERALL PERFORMANCE INDICATOR SCORE:				**90**
CONDITION NUMBER (if relevant):				

Evaluation Table for 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			
	Guide post	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	Established decision-making procedures in the Icelandic fisheries management system – evolved over several decades and now codified in the Fisheries Management Act and supporting legislation – ensure that strategies are produced and measures taken to achieve the fishery-specific objectives. This applies to the cod fishery as it does to Icelandic fisheries in general; see 3.1.1 and 3.1.2 above. Measures include, among other things, the establishment of TACs on the basis of scientific advice, technical regulation of the fisheries (such as gear regulations) and closure of areas; cf. P1 and P2 above.		
b	Responsiveness of decision-making processes			
	Guide post	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	Y
	Justification	According to our interviews during the site visit, the established decision-making procedures at national level in Iceland respond to all issues identified in research, monitoring, evaluation or by groups with an interest in the fishery. This is ensured through the formal and informal arenas for regular and ad hoc consultations between governmental agencies and the industry. In addition, there is close contact between authorities and scientific research institutions. Both scientists and user-group representatives claim that the relevant government agencies are open to any kind of input at any time. They feel that the authorities' response is transparent and timely and that the ensuing policy options take adequate account of their advice. From the authorities' point of view, these consultations contribute to enhanced quality of decision-making and also to the legitimacy of the regulations.		

c	Use of precautionary approach			
	Guide post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Y	
	Justification	Decision-making processes are based on relevant scientific research by the Marine Research Institute, as well as ICES assessments. National legislating requires the use of the precautionary approach (see 3.1.3), and the management plans for cod and haddock have been reviewed by ICES and found to be consistent with the precautionary principle.		
d	Accountability and transparency of management system and decision-making process			
	Guide post	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	Y
	Justification	The Directorate of Fisheries and the Marine Research Institute produce annual reports that are available to the public on request and via their website. In these reports, actions taken or not taken by the relevant authority are accounted for, including those proposed on the basis of information from research, monitoring, evaluation and review activity. More importantly, this information is conveyed at the frequent meetings between authorities and all interested stakeholders, which in the opinion of the assessment team counts as formal reporting appropriate to the context of this fishery.		
e	Approach to disputes			
	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Y	Y	Y
	Justification	The national management authority is not subject to continuing court challenges. When occasionally taken to court by fishing companies, the management authority complies with the judicial decision in a timely manner. The management authority works proactively to avoid legal disputes through the tight cooperation with user-groups at the regulatory level, ensuring as high legitimacy as possible for regulations and other management decisions. Regulatory and enforcement authorities offer advice to the fleet on how to avoid infringements. Only the most serious cases go to prosecution by the police and possible transfer to the court system.		

References	Act on Fisheries Management No. 38/1999, amended as Act No. 116/2006. Interviews with representatives of the Directorate of Fisheries, Icelandic Sustainable Fisheries and the Ministry of Industry and Innovation during the site visit.
OVERALL PERFORMANCE INDICATOR SCORE:	**100**
CONDITION NUMBER (if relevant):	

Evaluation Table for 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			
	Guide post	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	Monitoring, control and surveillance is taken care of by the Directorate of Fisheries, in collaboration with the Coast Guard, the Marine Research Institute and coastal municipalities. The enforcement system is based on reports from the vessels, physical inspections at sea and weighing in harbour, as well as information exchange with other states' enforcement authorities. The structure and procedures of the enforcement system are codified in the Fisheries Management Act (Art. 17–18), while requirements to the weighing system are laid out in the Act concerning the Treatment of Commercial Marine Stocks (Art. 5–12). Fishing vessels are required to keep a logbook and report catches to the Directorate of Fisheries on a daily basis. Some vessels have electronic logbooks, but not all. Vessel Monitoring System of one kind or another is obligatory for all UoA vessels. Inspectors from the Directorate may accompany fishing vessels on trips or operate from Coast Guard vessels. The Coast Guard has three offshore patrol vessels, as well as a number of smaller boats, helicopters and a surveillance aircraft. At-sea inspections include control of the logbook, catch and gear. Inspections are conducted using a risk-based framework aimed at utilizing resources to optimize compliance at any given moment. Most importantly, 100 % of the landed fish is weighed by an authorized 'weighmaster', employed by the municipality and hence independent of both buyer and seller. Landing data are immediately added to the Directorate's catch database, where the reported quantities of fish are deducted from the vessel's quota. The Directorate operates a dynamic and interactive website, where stakeholders at all times can monitor the precise quota status for each species and observe the performance of individual vessels, their catch from each fishing trip and vessel quota status. The fact that the vast majority of fish is exported provides a further control mechanism enabling a mass balance comparison of fish in (i.e. landing declarations) with fish out (i.e. production or export volumes). Hence, Iceland has a comprehensive and transparent system for monitoring, control and surveillance, and there are a number of possibilities for enforcement authorities to physically check whether the data provided by fishers through self-reporting are indeed correct. In addition, VMS data enables control of whether area restrictions are observed, among other things.		

b	Sanctions			
	Guide post	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	The sanctioning system in Icelandic fisheries is codified in the Fisheries Management Act (Art. 24–27) and the Act concerning the Treatment of Commercial Marine Stocks (Art. 13–24). A system for graduated sanctions is applied. For a first-time offence, a warning ('reprimand') is given if the infringement is of a less serious nature (Fisheries Management Act, Art. 24). In the other end of the spectrum, serious or repeated deliberate violations can be liable to imprisonment of up to six years (Art. 25). Fines for first offences shall not exceed ISK 4,000,000, -, depending upon the nature and scope of the violation. Repeated offences shall be fined by a minimum of ISK 400,000 and a maximum of ISK 8,000,000, - (Art. 25). Withdrawal of fishing permit can be applied in a number of situations. As an example (cf. the Act concerning the Treatment of Commercial Marine Stocks, Art. 14), if information of the Directorate of Fisheries suggests that a vessel has caught in excess of its catch quotas for any species, the Directorate must notify this to the vessel operator and master of the vessel concerned, stating in addition that the vessel's commercial fishing permit is suspended on the fourth working day thereafter unless sufficient catch quotas have been transferred to the vessel within that time. If the recipient of the notification is of the opinion that the information of the Directorate of Fisheries concerning the vessel's catch is incorrect and that the vessel has not caught in excess of its catch quotas, he/she must convey such objections to the Directorate of Fisheries within three days. If a permit is suspended for the second time during the same fishing year due to catch exceeding catch quotas, the Directorate of Fisheries shall suspend a vessel's commercial fishing permit for two weeks in addition to the time resulting from the suspension provided for in the first paragraph, for six weeks if it occurs for the third time and for twelve weeks if it occurs more often. As another example (Fisheries Management Act, Art. 17), the Directorate of Fisheries shall suspend the commercial fishing permits of vessels failing to submit catch log books; such suspensions shall remain in force until submissions are received or explanations provided for the reasons for failure to submit. In the first instance of a violation which is liable to suspension of fishing permit, the suspension shall apply for at least one week and no longer than 12 weeks, depending upon the nature and scope of the violation. In the case of repeated violations, a suspension shall apply for at least four weeks and not longer than one year (Act concerning the Treatment of Commercial Marine Stocks, Art. 15). If a vessel's commercial fishing permit has repeatedly been suspended, as provided for in Articles 14 and 15 of this Act, the Directorate of Fisheries may decide that a fishing inspector shall be stationed aboard the vessel at the expense of the vessel operator for a specific period of up to two months. The vessel operation must then pay all cost arising from the presence of the fishing inspector aboard, including salary cost (Art. 16). If there is suspicion of more serious infringements, the case may be transferred to the Ministry (Art. 18) or to a court (Art. 20). All decisions on the suspension of harvest rights are to be made publicly available (Art. 21). Based on information in the annual report of the Directorate of Fisheries and information gained through interviews during the site visit, sanctions are consistently applied. The comprehensive enforcement system (see 3.2.3 a)) combined with the high level of compliance (see 3.2.3 c)) makes it reasonable to assume that the system provides effective deterrence.		

c	Compliance			
	Guide post	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	As follows from 3.2.3 a) above, Iceland has a comprehensive system for physical inspection of catches, through observers and spot checks at sea and, not least, 100 % coverage of independent landing checks. The Directorate of Fisheries produces detailed overviews of compliance levels among Icelandic fisheries, in aggregate form in its annual reports and on a running basis on its website. This information suggests that there is a high degree of confidence that fishers comply with regulations. The main infringement in Icelandic fisheries is failure to submit the catch log after completion of a fishing trip (which happened in 4% of the instances where the logbook should have been handed in), but that applies only to the small coastal fishing vessels that fish over the summer months, and to the small lumpfish vessels. This problem does not occur in the case of vessels above 6 GT of size since those are required to keep electronic logbooks. While smaller vessels may keep logbooks manually, increasing number of those keep them electronically and transfer of the whole small vessel fleet to electronic logging is under way. In addition to the sophisticated sanctioning system (see 3.2.3 b)), the social control that exists in a relatively small fishing community as Iceland, as well as the legitimacy of regulations due to the high degree of user-group involvement, are believed to contribute to the high level of compliance in the fishery.		
d	Systematic non-compliance			
	Guide post		There is no evidence of systematic non-compliance.	
	Met?		Y	
	Justification	According to the Directorate of Fisheries, there is no evidence of systematic non-compliance in the fishery. The assessment team has not come across information indicating that this is not the case.		
References		Act on Fisheries Management No. 38/1999, amended as Act No. 116/2006. Act concerning the Treatment of Commercial Marine Stocks No. 57/1996. Annual reports for the Directorate of Fisheries, 2014 and 2015. Email correspondence with representatives of the Directorate of Fisheries. Interviews with representatives of the Directorate of Fisheries, Icelandic Sustainable Fisheries and the Ministry of Industry and Innovation during the site visit. Regulation No. 224, 14 March 2006, on Weighing and Recording of Catch Website of the Icelandic Coast Guard (www.lhg.is).		
OVERALL PERFORMANCE INDICATOR SCORE:				**100**
CONDITION NUMBER (if relevant):				

Evaluation Table for 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			
	Guide post	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	N
	Justification	The Ministry of Industries and Innovation and the Fisheries Directorate report that there is a constant process of internal review and consultation, including of scientific advice, and that there is a patchwork review of technical regulations. Key aspects of the fisheries management system are continuously reviewed by the Icelandic Parliament, in committee hearings but more often at ad hoc meetings, which reflects that Iceland is a small and fishery-dependent country, with short lines of communication. The scientific basis of the management system is evaluated by ICES, while the financial side of the system is reviewed by the Icelandic National Audit Office. Hence, key parts of the management system are subject to review, but there is no holistic evaluation of the management system as such.		
b	Internal and/or external review			
	Guide post	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	As follows from 3.2.4 above, the fishery-specific management system is subject to regular internal review. Parts of the system, mainly the scientific side of it, are also externally reviewed, which provides an independent assessment of the performance of the fishery management system as a whole in terms of its outcomes, although this does not cover all aspects of the management system. Therefore, with the Icelandic Government's internal review of all its activity and some external review of performance SG80 is met. However, it is difficult to conclude that there is a regular external evaluation of the Icelandic system for management of cod and haddock because each external review is incomplete and therefore only constitutes an occasional review over time. Therefore, SG100 is not met.		
References		Interviews with representatives of the Directorate of Fisheries, Icelandic Sustainable Fisheries and the Ministry of Industry and Innovation during the site visit.		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				

Appendix 1.2: Risk Based Framework (RBF) Outputs

This re-assessment applied the default assessment tree as outlined in MSC´s Fisheries Standard v2.0. There was not a need to apply the Risk Based Framework.

Appendix 1.3: Conditions, Recommendations and Client Action Plan

No conditions have been carried over from the previous assessment and no new conditions relate to previous conditions (FCR 7.24.2.2, 7.23.13.1, 7.23.13.2 (except 7.23.13.2.b)). However, conditions as well as two recommendations have been raised which should harmonise with other assessments. These have been identified in the condition text.

The conditions were forwarded to the Client who has submitted a plan of action to address those during the certification period. Some amendments were made in response to stakeholder comments on the PCDR, including the adding of condition 5 and recommendation 2, and appropriate amendment of previous plan of action has been submitted by the Client.

Table A1.3.1: Condition 1 (Gillnet fishery only)

Condition 1 **UoA: ISF Iceland cod gillnet fishery**	
Performance Indicator	**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.**
Score	Scoring Issue (a) (harbour seal/gillnet): 60
Rationale	**Harbour seal:** Due to insufficient funding and thus limited coverage, the data provided by this survey will not produce a new reliable population estimate for the Icelandic harbour seal population. However, the results show a severe reduction in the surveyed areas since the last full count in 2011 (e.g. a considerable reduction from the 11,000 animals found in 2011), implying that the population size is likely to be smaller than the 12,000 animals defined in the management objectives by the Icelandic government.
Condition	Harbour seal must be shown highly likely to be above biologically based limits or there is evidence of recovery or a demonstrably effective partial strategy must be put in place for gillnet such that the UoA does not hinder its recovery and rebuilding.
Milestones	Year 1: Develop and propose a partial or full strategy that ensures that the (gillnet) UoA does not hinder any recovery and rebuilding of the harbour seal. Resulting score: 70 Year 2: Consult with industry and all stakeholders on the proposed strategy and amend accordingly. Resulting score: 70 Year 3: Formally commit to the new strategy and, with industry, commence its implementation. Resulting score: 70 Year 4: Demonstrate that the adopted strategy has been fully adopted and is being implemented in an effective manner. Resulting score: 80
Client action plan	**Year 1** Harbour seal*:* ***Improve on board logging:*** Engage with fishery operators in order to improve logbook recording of harbour seal interaction. Harbour seal*:* ***Evaluate need for partial strategy***: Consult with the Directorate of Fisheries and the Marine Research Institute and/or other parties with the objective to determine if recording and monitoring of harbour seal interaction is at a level that is sufficient to detect increased risk to the population. Harbour seal*:* ***Evaluate impacts:*** Consult with the Directorate of Fisheries, the Marine Research Institute and/or other institutions with the objective of evaluating the risk to harbour seal interaction in the fishery or engage with independent parties to evaluate the risk to harbour seal by the fishery. ISF will call for recommendations for methods from the fishermen to a prevent harbour seal coming to the gillnets.

	ISF will form a stakeholder panel to mitigate information on progress and to channel tasks regarding the condition to representative stakeholders within or outside of ISF. The panel will convene twice a year during the lifetime of the certificate, or as needed, and be comprised of ISF representatives and from other stakeholders as fitting for each condition. ***Improvements expected::*** Better information on interaction with harbour seal is expected. ***Auditing:*** At the Year 1 audit; , ISF will present i) Results from further research of harbour seal interaction; ii) an analysis of available data on the interaction in gill nets fishery and iii) any available data giving an indication of population trends in harbour seal. **Year 2** Harbour seal: ***Improve on board logging:*** Continue engagement with fishery operators to ensure adequate logbook recording interaction. Harbour seal: ***Evaluate need for partial strategy:*** Continue engagement with the Directorate of Fisheries and the Marine Research Institute to promote monitoring harbour seal interaction in the fishery and to determine if logbook recording and monitoring is adequate. Harbour seal: ***Evaluate need for partial strategy:*** Continue consultation with the Marine Research Institute (MRI) and/or other institutions with the objective to continue evaluating the risk to harbour seal in the fishery or continue engagement with independent parties to continue evaluation of the risk to harbour seal in the fishery. Harbour seal: ***Evaluate impacts:*** Present a preliminary assessment of measures that could be included in a partial strategy to prevent the fishery from posing a risk of serious or irreversible harm to harbour seal, if necessary. In year 2 ISF will have a report from the industry what have been done and success of it. ***Improvements expected:*** Continued information on interaction with harbour seal is expected. ***Auditing:*** At the Year 2 audit, ISF will present i) Suggestions on methods been to be done to prevent harbour seal as interaction; ii) an initiative to work with authorities on a partial strategy. **Year 3** Harbour *seal*: ***Improve on board logging:*** Prepare a written report (or commission such a report) during Year 3 on the reliability of logbook recordings and monitoring. Harbour seal: ***Evaluate need for partial strategy:*** Present a draft plan for addressing impacts on harbour seal, if necessary depending on research results. Harbour seal: ***Evaluate impacts:*** Present evidence of ongoing consultation with relevant parties to address problems and areas for further action, e.g. work with the Small boat association and net locations and with MRI on same matter. ***Improvements expected:*** An outline for a partial strategy addressing solutions to interaction. ***Auditing:*** At the Year 3 audit, ISF will present i) a completed report on logbook reliability; ii) a draft partial strategy to address interaction; iii) evidence of cooperation between ISF, NASBO (National Association of Small Boat Owners) and MRI on solutions. **Year 4** The strategies established in year 3 shall be in implementation by year four, if necessary. ISF will meet with MRI to evaluate the progress, meet with the MII to follow up on MRI findings and discuss progress and the commitment to the implemented strategies. In year 4, ISF is monitoring the effectiveness of plans, actions and strategies implemented in first 4 years, and base further actions on results from previous years, to fulfil the condition. ***Improvements expected:*** An outline for a partial strategy addressing solutions to interaction. ***Auditing:*** At the Year 4 audit, ISF will present i) evidence of implementation of the

	strategy ii) a review of the effectiveness of plans, actions and strategies implemented in first 4 years with recommendations for further actions.
Consultation on condition	Consultation between the fishing industry SFS, NASBO, fishermen, the Directorate of Fisheries as well as the Marine Research Institute will be necessary as part of fulfilment of this condition.

Table A1.3.2: Condition 2 (Gillnet and longline fisheries only)

Condition 2 **UoA: ISF Iceland cod gillnet and longline fishery**	
Performance Indicator	**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.**
Score	Scoring Issue (a): 60 Scoring Issue (b): 60 Scoring Issue (e): 60
Rationale	Scoring issue (a): ● Harbour seal (GN): Although catches are low, and there are some measures in place (all cod-directed gillnet fisheries are closed within 12 miles along the south and west coast and within 6 miles along the north and east coast in April each year), a partial strategy is required to manage this vulnerable species. ● Fulmars, shags, cormorants, Northern gannet / Great black-backed gull / Common guillemot (GN & LL): Gillnet and longline fishermen do not adopt any measures to reduce seabird bycatch, as it is believed that the relatively low number of birds caught does not warrant this. However, given that common guillemot - the most frequently caught seabird species - is in decline, it would suggest that measures may be warranted for this species. Scoring issue (b): ● Harbour seal (GN): Gillnet-related mortality has dropped historically, also reflecting the decline in effort by this gear type. The restriction on coastal fishing is likely to have reduced seal mortality in particular. However, an investigation into further measures for protecting harbour seals is warranted (see condition 1). ● Fulmars, shags, cormorants, Northern gannet / Great black-backed gull / Common guillemot (GN & LL): Both the longline and gillnet-related measures are well-proven in a number of different temperate region. However, given the limited measures involved there is insufficient objective evidence that these measures will work. Scoring issue (e): ● MRI monitors the bycatch of unwanted species on an annual basis (GN). This is considered periodically by the overall Icelandic fisheries management system. However, there is no regular review of the potential effectiveness of, and practicality of, alternative measures to minimise the UoA-related mortality of main secondary species.
Condition	A demonstrably effective partial strategy should be put in place such that the (gillnet) UoA does not hinder recovery and rebuilding of the harbour seal. A demonstrably effective partial strategy should also be put in place for the gillnet and longlines fisheries to ensure that fulmar, shag, cormorant, Northern gannet, great black-

	backed gull and common guillemot populations are maintained at levels which are highly likely to be within biologically based limits. These strategies should include 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.
Milestones	Year 1: Develop and propose a partial or full strategy that ensures that the (gillnet) UoA does not hinder recovery and rebuilding of the harbour seal and the common guillemot. Initiate a regular review process to identify and evaluate alternative measures that would reduce unwanted catch. Develop and propose a partial or full strategy that ensures that the (gillnet and longline) UoAs do not hinder recovery and rebuilding of fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot populations. Initiate a regular review process to identify and evaluate alternative measures that would reduce unwanted catch. Resulting score: 70 Year 2: Consult with industry and all stakeholders on the proposed strategies and amend accordingly. Resulting score: 70 Year 3: Formally commit to the new strategies and, with industry, commence their implementation. Resulting score: 70 Year 4: Demonstrate that the adopted strategies have been fully adopted and are being implemented in an effective manner. Demonstrate that at least one review (of a regular process) to reduce unwanted catch has taken place. Resulting score: 80
Client action plan	**Year 1** Harbour seal (GN) and fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot (GN & LL)*:* ***Improve on board logging:*** Engage with fishery operators in order to improve logbook recording of harbour seal and the 6 abovementioned auk bird species bycatch. Harbour seal (GN) and fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot (GN & LL) *:* ***Evaluate need for partial strategy***: Consult with the Directorate of Fisheries and the Marine Research Institute and/or other parties with the objective to determine if recording and monitoring of harbour seal and the 6 abovementioned auk bird species bycatch is at a level that is sufficient to detect increased risk to the population. Harbour seal (GN) and fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot (GN & LL)*:* ***Evaluate impacts:*** Consult with the Directorate of Fisheries, the Marine Research Institute and/or other institutions with the objective of evaluating the risk to harbour seal and 6 abovementioned auk bird species bycatch in the fishery or engage with independent parties to evaluate the risk to harbour seal and the 6 abovementioned auk bird species by the fishery. ISF will call for recommendations for methods from the fishermen and the industry to a prevent harbour seal and the 6 abovementioned auk bird species coming to the gillnets and long line. ISF will form a stakeholder panel to mitigate information on progress and to channel tasks regarding the condition to representative stakeholders within or outside of ISF. The panel will convene twice a year during the lifetime of the certificate, or as needed, and be comprised of ISF representatives and from other stakeholders as fitting for each condition. ***Improvements expected::*** Better information on bycatch of harbour seal and fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot is

	expected. ***Auditing:*** At the Year 1 audit; , ISF will present i) Results from further research of harbour seal and fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot bycatch; ii) an analysis of available data on the bycatch in gill nets and long line fishery and iii) any available data giving an indication of population trends in harbour seal and the 6 abovementioned auk bird species. **Year 2** Harbour seal (GN) and fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot (GN & LL): ***Improve on board logging:*** Continue engagement with fishery operators to ensure adequate logbook recording interaction & bycatch. Harbour seal (GN) and fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot (GN & LL): ***Evaluate need for partial strategy:*** Continue engagement with the Directorate of Fisheries and the Marine Research Institute to promote monitoring harbour seal and the 6 abovementioned auk bird species bycatch in the fishery and to determine if logbook recording and monitoring is adequate. Harbour seal (GN) and fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot (GN & LL): ***Evaluate need for partial strategy:*** Continue consultation with the Marine Research Institute (MRI) and/or other institutions with the objective to continue evaluating the risk to harbour seal and the 6 abovementioned auk bird species in the fishery or continue engagement with independent parties to continue evaluation of the risk to harbour seal and the 6 abovementioned auk bird species in the fishery. Harbour seal (GN) and fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot (GN & LL): ***Evaluate impacts:*** Present a preliminary assessment of measures that could be included in a partial strategy to prevent the fishery from posing a risk of serious or irreversible harm to harbour seal and the 6 abovementioned auk bird species, if necessary. In year 2 ISF will have a report from the industry what have been done and success of it. ***Improvements expected:*** Continued information on interaction with harbour seal and bycatch of fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot is expected. ***Auditing:*** At the Year 2 audit, ISF will present i) Suggestions on methods been to be done to prevent harbour seal and the 6 abovementioned auk bird species as bycatch; ii) an initiative to work with authorities on a partial strategy. **Year 3** Harbour seal (GN) and fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot (GN & LL): ***Improve on board logging:*** Prepare a written report (or commission such a report) during Year 3 on the reliability of logbook recordings and monitoring. Harbour seal (GN) and fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot (GN & LL): ***Evaluate need for partial strategy:*** Present a draft plan for addressing impacts on harbour seal and 6 abovementioned auk bird species as bycatch, if necessary depending on research results. Harbour seal (GN) and fulmar, shag, cormorant, Northern gannet, great black-backed gull and common guillemot (GN & LL): ***Evaluate impacts:*** Present evidence of ongoing consultation with relevant parties to address problems and areas for further action, e.g. work with the Small boat association and net locations and with MRI on same matter. ***Improvements expected:*** An outline for a partial strategy addressing solutions to bycatch. ***Auditing:*** At the Year 3 audit, ISF will present i) a completed report on logbook reliability; ii) a draft partial strategy to address bycatch; iii) evidence of cooperation between ISF, NASBO (National Association of Small Boat Owners) and MRI on solutions. **Year 4**

	The strategies established in year 3 shall be in implementation by year four, if necessary. ISF will meet with MRI to evaluate the progress, meet with the MII to follow up on MRI findings and discuss progress and the commitment to the implemented strategies. In year 4, ISF is monitoring the effectiveness of plans, actions and strategies implemented in first 4 years, and base further actions on results from previous years, to fulfil the condition. ***Improvements expected:*** An outline for a partial strategy addressing solutions to bycatch. ***Auditing:*** At the Year 4 audit, ISF will present i) evidence of implementation of the strategy ii) a review of the effectiveness of plans, actions and strategies implemented in first 4 years with recommendations for further actions.
Consultation on condition	Consultation between the fishing industry SFS, NASBO, fishermen the Directorate of Fisheries as well as the Marine Research Institute will be necessary as part of fulfilment of this condition

Table A1.3.3: Condition 3 (Bottom trawl fishery only)

Condition 3 **UoA: ISF Iceland cod bottom trawl fishery**	
Performance Indicator	**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.**
Score	Scoring issue (b): 60
Rationale	In Icelandic waters, most fishing with otter trawls (around 70%) takes place at depths between 100 and 500m (Ragnarsson & Steingrímsson 2003). The slope areas off the south coast of Iceland are very steep, with depths descending from around 400m to more than 1500m within few nautical miles, and parts of the slope areas are considered difficult for trawling (Ragnarsson & Steingrímsson 2003). Therefore, vulnerable habitats have some depth refuge from fisheries impacts in Icelandic waters. In the past, the bottom trawl fishery has reduced coral habitat structure and the present fishing patterns of the fishery overlap with vulnerable habitats of corals and aggregation of large sponges. Coral areas have been closed which will prevent further damage to such biogenic habitats. However, comparable efforts to protect other biogenic habitats, i.e. aggregation of large sponges, are not planned. In addition, no recording of benthic bycatch is in place. A single contact by the bottom trawl has a significant impact on corals and sponges, both of which have slow recovery rates. Therefore, adverse impacts by bottom trawling could be significant. It cannot be concluded that the assessed bottom trawl fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. Therefore, a score of 80 is not achieved for bottom trawl. This has been harmonised with the ISF Iceland haddock, ISF Iceland redfish and the ISF Ling and saithe fisheries where there is a condition for this PI.
Condition	By the fourth surveillance audit necessary conservation and management measures for all vulnerable marine habitats shall be in place and implemented, such that the trawl fishery does not cause serious or irreversible harm to habitat structure, on a regional or bioregional basis, and function. This condition is harmonised with that for ISF Iceland haddock, ISF Iceland golden redfish and the ISF Iceland saithe & ling fisheries.
Milestones	Year 1:There shall be evidence of the Client's plan to evaluate potential damage to deep-sea sponge aggregations and corals appropriate to this UoA. There shall be evidence of engagement with the Marine Research Institute (MRI) with the goal of evaluating potential damage to all vulnerable habitats by fishing activities. If MRI is unable to provide support for the implementation of the plan, the fishery shall prepare

	the plan on the basis of other means (e.g. independent consultants or scientists or other means as appropriate). The plan may include an Environmental Impact Assessment or other similar analysis. Score 75 Year 2: By the end of Year 2 there shall be evidence of ongoing work towards the implementation of the plan; i.e. developing options for conservation and management measures to all vulnerable habitats, such that the fishery does not cause serious or irreversible harm to habitat structure, on a regional or bioregional basis, and function. These options may be developed with the support of MRI, or may be developed within the client group, as appropriate. Options may include closed areas, move on thresholds or other actions as appropriate, but should be sufficient to ensure that there serious and irreversible harm to sponges and coral gardens is highly unlikely. Score 75 Year 3: Evaluate the options developed in year 2. Consider suggested modifications, if needed and finalise and agree on conservation and management measures. By the end of the year a partial strategy for the protection of deep-sea sponge aggregations and coral gardens from trawling shall be agreed upon, either at client group level or at a higher level. Score 75 Year 4: Implement the agreed upon partial strategy. Score 80. A formal commitment to the agreed upon conservation and management measures shall remain in place for the duration of the certification period.
Client action plan	**Year 1** Based on work done pilot project with HB Grandi ISF will meet with MRI and request an engagement by MRI to conserve vulnerable habitats and ask for options and plans to prevent serious or irreversible harm to habitat structures, if necessary. ISF will engage their members to agree upon and implement methods of benthic bycatch monitoring by ISF member vessels, as agreed with WWF during the objections process ***Improvements:*** Implementation of a monitoring plan will have begun to monitor impacts on coral gardens and sponges and reduce them to acceptable levels as required. ***Auditing:*** At the Year 1 audit, ISF will present evidence from the monitoring efforts. ISF will form a stakeholder panel to mitigate information on progress and to channel tasks regarding the condition to representative stakeholders within or outside of ISF. The panel will convene twice a year during the lifetime of the certificate, or as needed, and be comprised of ISF representatives and from other stakeholders as fitting for each condition. **Year 2** ISF will meet with MRI to discuss findings from annual research on sponge and coral incidents. The meeting is intended to review statistics and discuss alternative actions, if needed. ISF will meet with members of the client group to discuss the condition and ask for feedback on actions made by each member to address the condition. The actions will be formalized into a plan, intended for engagement by members of the client group to meet the condition. The purpose is to ensure that bottom trawling is highly unlikely to cause serious or irreversible harm **to sponges and coral gardens.** ***Improvements:*** The plan, if required, is updated according to the results of ongoing monitoring, and agreed by ISF and all relevant parties. ***Auditing:*** At the Year 2 audit, ISF will present an action plan, with evidence that it has been agreed by all participating parties (e.g. a signed agreement, meeting minutes, letters of support etc.) **Year 3** ISF will meet with members from the client group to discuss effects of actions taken in year 2 and adjust for improved efficiency, as needed. The goal is to protect deep sea sponge aggregations and coral gardens from impacts of trawling and seek an agreement among the members of the client group for this type of conservation. The actions of Year 3 are contingent on the outcome of findings showing whether and how

	conservation actions are required. If a plan has been proven necessary and agreed upon in year three, ISF will monitor the implementation of the plan in year 4 in cooperation with the members of the client group. ***Improvements:*** If required, the plan is implemented; it is updated as new information is available. ***Auditing:*** At the Year 3 audit, ISF will present the updated plan if necessary, with evidence of implementation (e.g. benthic logbook data, MRI report or other similar).
Consultation on condition	Consultation between the fishing industry (SFS and HB Grandi) and Marine Research institute as well as the Directorate of Fisheries will be necessary as part of fulfilment of this condition.

Table A1.3.4: Condition 4 (Bottom trawl and *Nephrops* trawl fisheries only)

Condition 4 **UoA: ISF Iceland cod bottom trawl & *Nephrops* trawl fisheries**	
Performance Indicator	**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**
Score	Scoring issue (a): 60
Rationale	The Icelandic management strategy for marine habitats in general, and VMEs in particular, is mainly implemented through a system of closed areas which effectively prevent both bottom trawl (and in some cases, other gears such as longline) from being used in known areas of cold-water coral concentrations along the edge of the continental shelf. This represents a partial strategy for cold water corals, but is not yet in place for soft coral or sponge concentrations, and does not meet SG80 for these two VME types. Most vessels have move-on rules when encountering VMEs in these areas, but these are informal and voluntary. It should be noted that the redfish assessment includes a condition (the same as for 2.4.1) that addresses this weakness, although it should specifically include soft corals and sponges.
Condition	By the fourth surveillance audit necessary conservation and management measures for deep-sea sponge aggregation and coral gardens shall be in place and implemented, such that there is a partial strategy in place and implemented for these habitat types specifically, ensuring that the bottom and *Nephrops* trawl fisheries do not cause serious or irreversible harm to habitat structure and function in Icelandic waters. This strategy will include, where necessary, appropriate move-on measures to avoid interactions with ALL forms of VME. This condition may be implemented together with Condition 3. With regard to the bottom trawl fishery, this condition is harmonised with that for ISF Iceland haddock, ISF Iceland golden redfish and the ISF Iceland saithe & ling fisheries.
Milestones	Year 1: There shall be evidence of the Client's plan to evaluate potential damage to deep-sea sponge aggregations and corals appropriate to this UoA. There shall be evidence of engagement with the Marine Research Institute (MRI) with the goal of evaluating potential damage to all vulnerable habitats by fishing activities. If MRI is unable to provide support for the implementation of the plan, the fishery shall prepare the plan on the basis of other means (e.g. independent consultants or scientists or other means as appropriate). The plan may include an Environmental Impact Assessment or other similar analysis. In addition, measures to repeatedly avoid interactions with VMEs will be developed and formalised within the UoAs. Score 75 Year 2: By the end of Year 2 there shall be evidence of ongoing work towards the implementation of the plan; i.e. developing options for conservation and management measures to all vulnerable habitats, such that the fishery does not cause serious or

	irreversible harm to habitat structure, on a regional or bioregional basis, and function. These options may be developed with the support of MRI, or may be developed within the client group, as appropriate. Options may include closed areas, move on thresholds or other actions as appropriate, but should be sufficient to ensure that there serious and irreversible harm to sponges and coral gardens is highly unlikely. Score 75 Year 3: Evaluate the options developed in year 2. Consider suggested modifications, if needed and finalise and agree on conservation and management measures. By the end of the year a partial strategy for the protection of deep-sea sponge aggregations and coral gardens from trawling shall be agreed upon, either at client group level or at a higher level. Score 75 Year 4: Implement the agreed upon partial strategy. Score 80. A formal commitment to the agreed upon conservation and management measures shall remain in place for the duration of the certification period.
Client action plan	**Year 1** Based on work done pilot project with HB Grandi, ISF will meet with MRI and request an engagement by MRI to conserve vulnerable habitats and ask for options and plans to prevent serious or irreversible harm to habitat structures, if necessary. ISF will engage their members to agree upon and implement methods of benthic bycatch monitoring by ISF member vessels, as agreed with WWF during the objections process ***Improvements:*** Implementation of a monitoring plan will have begun to monitor impacts on coral gardens, sponges and other VMEs and reduce them to acceptable levels as required. ***Auditing:*** At the Year 1 audit, ISF will present evidence from the monitoring efforts. ISF will form a stakeholder panel to mitigate information on progress and to channel tasks regarding the condition to representative stakeholders within or outside of ISF. The panel will convene twice a year during the lifetime of the certificate, or as needed, and be comprised of ISF representatives and from other stakeholders as fitting for each condition. **Year 2** ISF will meet with MRI to discuss findings from annual research on all VMEs incidents. The meeting is intended to review statistics and discuss alternative actions, if needed. ISF will meet with members of the client group to discuss the condition and ask for feedback on actions made by each member to address the condition. The actions will be formalized into a plan, intended for engagement by members of the client group to meet the condition. The purpose is to ensure that bottom trawling is highly unlikely to cause serious or irreversible harm to all VMEs. ***Improvements:*** The plan, if required, is updated according to the results of ongoing monitoring, and agreed by ISF and all relevant parties. ***Auditing:*** At the Year 2 audit, ISF will present an action plan, with evidence that it has been agreed by all participating parties (e.g. a signed agreement, meeting minutes, letters of support etc.) **Year 3** ISF will meet with members from the client group to discuss effects of actions taken in year 2 and adjust for improved efficiency, as needed. The goal is to protect deep sea sponge aggregations, coral gardens and other VMEs from impacts of trawling and seek an agreement among the members of the client group for this type of conservation. The actions of Year 3 are contingent on the outcome of findings showing whether and how conservation actions are required. If a plan has been proven necessary and agreed upon in year three, ISF will monitor the implementation of the plan in year 4 in cooperation

	with the members of the client group. ***Improvements:*** If required, the plan is implemented; it is updated as new information is available. ***Auditing:*** At the Year 3 audit, ISF will present the updated plan if necessary, with evidence of implementation (e.g. benthic logbook data, MRI report or other similar).
Consultation on condition	Consultation between the fishing industry (SFS and HB Grandi or other ISF member) and Marine Research institute as well as the Directorate of Fisheries will be necessary as part of fulfilment of this condition.

Table A1.3.5: Condition 5 (Gillnet and Longline fisheries only)

Condition 5 **UoA: ISF Iceland cod gillnet and longline fisheries**	
Performance Indicator	**PI 2.2.3 Secondary species information** **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**
Score	Scoring issue (a): 60
Rationale	Fulmar & Shags and cormorants (GN & LL); Northern gannet / / Great black-backed gull / Common guillemot (LL): The registration of seabirds caught in the MRI spring gillnet survey was initiated in 2009. The MRI spring gillnet survey is equivalent to 2% of the total cod-directed gillnet fishing effort in April. The first year's the gillnet survey was only conducted in the south and west of the country but since 2002 it is also done in the north. Icelandic regulations that say all bycatch should be recorded. The registration of bird bycatch in commercial cod gillnets (other than lumpfish) started in 2002. Bycatch registration was received from 5% of the cod gillnet vessels until 2009. No birds were registered. In 2009 they switched to electronic logbooks and after that no information on marine mammals interaction or bird bycatch has been returned. Unlike in gillnets, longline interactions with seabirds are not routinely surveyed by MRI, but would be included in ad hoc observer surveys and electronic logbook entries. Whilst there is some quantitative information available e.g. from ad hoc surveys and e-logbook entries, it is recognised that the recording of both seabird bycatch and marine mammal interaction in electronic logbooks has been poor over recent years and that this is particularly important for longline and gillnet, which may have significant interactions with seabirds and marine mammals. Thus this fails to meet SG 80 and Condition 5 for better reporting is made.
Condition	By the second surveillance audit electronic logbook reporting provides some quantitative information on of seabird bycatch that is both available and adequate to assess the impact of the UoA on main secondary species with respect to their status.
Milestones	Year 1: There shall be evidence of the Client's plan to encourage and enable fishing vessels to record all seabird bycatch in electronic logbook systems. Score 75 Year 2: By the end of Year 2 there shall be evidence that some quantitative information on of seabird bycatch is both available and adequate to assess the impact of the UoA on main secondary species with respect to their status. Score 80
Client action plan	**Year 1** <u>Data recording</u>: Consult with the Directorate of Fisheries, the Marine Research Institute and/or other institutions to improve reporting in to the e-logbooks on both seabird

	bycatch and marine mammal interaction. ***Improvements:*** ISF will present an introduction of data and information being collected for the first year. ***Auditing:*** At the audit, ISF will present progress on logbook reporting of seabird bycatch and its adequacy to assess the impact of the UoA with respect to their status. **Year 2** Data collection: Continue engagement with the Directorate of Fisheries and the Marine Research Institute to promote monitoring of seabird bycatch and mammal interaction in the fishery and to determine if logbook recording and monitoring is adequate. ***Improvements:***. ISF will present an introduction of data and information being collected for the first 2 years. ***Auditing:*** At the audit, ISF will present progress on logbook reporting of seabird bycatch and its adequacy to assess the impact of the UoA with respect to their status. **Year 3** Data collection: Prepare a written report (or commission such a report) during Year 3 on the reliability of logbook recordings and monitoring. ***Improvements:*** ISF will present a report addressing the accuracy of logbooks with respect to to their adequacy to assess the impact of the UoA with respect to the status of seabird species. ***Auditing:*** At the Year 3 audit, ISF will present a written report on logbooks, addressing possible solutions and actions.
Consultation on condition	Consultation between the fishing industry (SFS and HB Grandi or other ISF member) and Marine Research institute as well as the Directorate of Fisheries will be necessary as part of fulfilment of this condition.

Table A1.3.6: Recommendations

Recommendation 1 **UoA: ISF Iceland cod fishery – All gears (except ISF Iceland cod gillnet and longline) fisheries)**	
Performance Indicator	**PI 2.2.3 Secondary species information** **Information on the nature and the 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.**
Purpose	Interactions with seabird and marine mammals should be recorded in the electronic logbooks of client vessels. However, logbook returns since their introduction in 2009 has indicated very few such entries, which contradicts the results of formal MRI surveys, such as the MRI spring gillnet survey.
Recommendation	The returns from electronic logbooks should be assessed by MRI on a regular basis and compared to survey and ad hoc observer data. Where disparities are determined, efforts should be made to improve accurate logbook returns for the catch of seabird and marine mammals. This recommendation applies to all gears except gillnet and longline (where this issue is covered in Condition 5).
Client Action Plan	
Consultation on recommendation	

Recommendation 2 **UoA: ISF Iceland cod fishery – All gears**	
Performance Indicator	**Traceability**
Purpose	Management of risks to segregation and traceability within the fishery
Recommendation	The team requests that the client issues a reminder to all of the client members, as well as auctions, to observe the following: - to ensure full segregation of catch of each species by gear in the event more than one gear is applied during the same fishing trip; - to ensure full segregation of catch of each species by management region, i.e. fish caught inside the Icelandic EEZ is kept separate, in the event a vessel catches the same species on the same trip inside and outside the Icelandic EEZ – and – - to observe and implement appropriate measures of packing and labelling certified products prior to moving them to sub-contracting cooler or freezer storages upon landing, to ensure client members´ responsibility for product integrity prior to sale or further handling.
Client Action Plan	
Consultation on recommendation	

Appendix 2: Peer Review Reports

Peer Reviewer 1

Summary of Peer Reviewer Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes**	**CAB Response**
Justification: Overall, the assessment team arrived at an appropriate conclusion in its assessment. The background is comprehensive and the scores well supported by the rationales. It is a well-organized, articulated and comprehensive assessment. Principle 1: The PI scores are appropriate with only a small set of suggested changes. Principle 2: Overall, the PI scores are appropriate and well justified. The definitions of the primary, secondary and ETP species are thorough and compliant with the CR2.0. The scoring rationales and their organization are comprehensive. Scoring issues are noted in specific PIs (2.1.1, 2.3.2, 2.4.2, 2.5.2 and 2.5.3) and editorials on some of the other PIs. Principle 3: It would be prudent to cross-check with the P3 scores of other assessments in the Icelandic zone (e.g. saithe) to ensure harmonization of scoring. Overall though, the scores here are appropriate with no issues identified.		No CAB response is required. Individual issues raised are dealt with under each performance indicator below.

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**	**CAB Response**
Justification: The four conditions, two of which are harmonized with other assessments, are well articulated and will ensure achievement of SG80 as per the scheduled milestones.		No response required.

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**	**CAB Response**
Justification: The CAPs associated with the four conditions are comprehensive and address their milestones. They are comprehensive and are well articulated and will ensure achievement of SG80 as per the scheduled milestones.		No response required.

Performance Indicator Review

Table 32 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
1.1.1	Yes	Yes	NA	SIa: Minor issue: SSB_{2016} = 464 kt as stated here but it is stated as 469 kt in text. SIb: it would be useful to more explicitly state that the 2009 simulation indicated the 95% lower CI of long-term SSB at HR = HR_{MGT} as 220 kt. HR has been at or below HR_{MGT} = HR_{MSY} for less than half a generation, so more time might have been expected to achieve SSB at HR_{MSY}. Having the results of the simulation validates the scoring, so being more specific is helpful. PI scores 100 (agreed); should add HR_{MSY} to reference point table	For SIa, the text has been corrected. For SIb, text has been added as suggested. The HR_{MSY} has been added to the reference point table.
1.1.2	NA	NA	NA	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
1.2.1	Yes	Yes	NA	SIa: One of the main issues with this SI is whether or not the components of the strategy are working together. Given that TACs are close to advice and landings marginally above TACs due to discard management, this appears to be the case. SIb and SId: while there has been only one evaluation of the harvest strategy (2009), it has not been modified since then, so no need to additional review. It is generally the case that harvest strategies are reviewed as and when they are changed. No issues with other SIs. PI scores 100 (agreed)	For SIa, the reviewers comments are agreed and stated in the justification text. For SIb and SId, the harvest strategy is effectively under constant review as the working group reports what is being observed in the fishery and what the outcome from current management actions. As indicated by the reviewer, an additional independent evaluation would only be necessary should the harvest strategy change. The 2009 evaluation was more a prospectus for the HCR rather than the harvest strategy as a whole.

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	SIa: from figure 2.3.3.1.1 in 2010 advisory report, it looks like 220 kt may be the 95% CI. Should confirm. SIb: generally agree with score as 2015 benchmark recommended that the cod-capelin interaction continue to be explored. Should note in the scoring though that this was a significant feature of the 2009 MSE. SIc: minor issue: 2009 simulation explored assessment, not implementation, error as the latter was assumed to be low (good regulatory compliance). PI scores 100 (agreed)	For SIa, the HCR evaluation states there is a 5% chance being below the $B_{trigger}$, so the justification text is correct. For SIb, this comment has been noted in the text. For SIc, the HCR evaluation did consider (i.e. discussed) implementation error (higher Fs than target) and indicated that the HCR was robust to these.
1.2.3	Yes	Yes	NA	No issues with any of the SIs. PI scores 100 (agreed)	No response necessary.

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	Yes	Yes	NA	No issues with any of the SIs. PI scores 90 (agreed)	No response necessary.

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	Maybe	Maybe	NA	SIa: It was often difficult to follow the scoring of each of the primary species. While there is information on each species in Table 12, it was sometimes not clear how the score related to this information. It would help to take a more systematic approach in considering biomass in relation to RPs and length of time the stock has been exploited at or below target F. An example of this is provided as Table 2.1.1 at the bottom of this review. Based upon using biomass and F RPs, score changes in nine of the species are indicated. It is not suggested that the scoring rationale in Table 2.1.1 be adopted. Rather, it is an illustration of more explicit scoring based upon the information that is required. Also, make sure that species in Table 12 are same in in scoring tables e.g. deepwater redfish and herring indicate two stocks SIb: same issue as SIa. Need to confirm minor species scores. PI scores 95 – 100 (assuming check of scores provided in PRR, overall approach is appropriate)	The scoring follows the MSC CR2.0 methodology for scoring elements. The summary table provided by the reviewer does not differentiate between main and minor species which have different scoring guideposts. Effectively, with respect to status, SG80 for main species is the SG100 for a minor species, therefore minor species only affect scores above 80. Table 12 is the information used for scoring. The scores themselves are explained in the justification text. Sufficient information has been provided to justify the scores, but more explanation has been added to explain how this information has been used to derive the final score. It is not always clear which stock herring and deepwater redfish may have come from. More information has been added on redfish. Information in the text indictes that the resulting scores are robust to this uncertainty.

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
2.1.2	Yes	Yes	NA	SIa: scores 100 (agreed) SIb: Agree with score but don't agree that assessment is equivalent to testing of the strategy. This is rather evidence as scored in SIc. Testing is broader than assessment which is only one element of the strategy. Editing of scoring text is indicated. No issues with the other SIs. PI scores 95 (agreed)	For SIb, the issue here may be semantics. The evaluation of stock status is the measure of performance most relevant for this MSC assessment as it determines whether the strategy ultimately is achieving the objectives required by PI 2.1.1. The reviewer is correct in pointing out this does not constitute the entire strategy, but the full stock assessments still cover a broad range of issues evaluating management performance as well as determining stock status. Therefore we do not feel changes are required.
2.1.3	Yes	Yes	NA	No issues with any of the SIs. This was a complicated PI to score given the range of species and gears. The scoring and the rationales were well organized and articulated. PI scores 100 (agreed)	No response necessary.

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	Yes	No issues with any of the SIs. PI scores range 75 - 90 (agreed).	No response necessary.
2.2.2	Yes	Yes	Yes	SIa: The scoring of the seabirds was a bit confusing. A score of 80 is indicated in the rationale but the table indicates 80 for GN and 90 for LL. This is likely an issue of presentation rather than substance but need to check. No issues with any of the SIs. PI scores range 65 - 90 (agreed). The scoring appears to be consistent with the CR but having text which summarizes the basis of each gear-specific score, as per PI 2.1.1, would assist readership.	The text has been clarified to distinguish the long-line interactions with common guillemot as opposed to the other species and gear types. The scoring rationale has been reviewed and where necessary, clarified.

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	Yes	NA	SIc: is this a formal recommendation? It is not indicated as such later in the report. If so, it should be added to the recommendations section. No issues with the other SIs. PI scores 85 (agreed).	This recommendation has now been formalised.
2.3.1	Yes	Yes	NA	No issues with any of the SIs. PI scores range 90 - 100 (agreed). The scoring appears to be consistent with the CR but having text which summarizes the basis of each gear-specific score, as per PI 2.1.1, would assist readership.	The scoring rationale has been reviewed and where necessary, clarified.

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
2.3.2	Yes	No	NA	SIb: The scores do not seem consistent with those of PI 2.2.2. There, it states that the GN strategy for common guillemot is not working but here it is working for black guillemot. It is hard to imagine that there would be two separate strategies for these similar bird species. If there are species-specific differences, these should be highlighed. SId: are these scores consistent with those of PI 2.2.2? Same issue as SIb. No issues with other SIs. PI scores range 85 - 100 (generally agree but need to confirm consistency of GN and LL scores with those of PI 2.2.2).	SIb: The difference between the common and the black guillemot scoring lies in the level of encounterability with the gillnet and longlines. In the case of the common guillemot, whilst overall numbers are low, it is higher relative to the other bird species, and has thus been scored lower (failing to meet SG80). In the case of the black guillemot, interactions are so rare that a specific strategy is not required. This has been clarified in the text. SId: The scores cannot be fully harmonised with PI 2.2.2 as the species are different. See above.

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	NA	SIa: PI 2.2.3 states that the registry started in 2009 while here it is 1997. Need to check. SIb: No issues PI scores range 80 - 100 (agreed as there is limited interaction with ETP species).	The MRI registry was started in 1997 and electronic logbook reporting was introduced in 2009. The MRI registry continues, but only based on survey data.
2.4.1	Yes	Yes	Yes	No issues with any of the SIs. PI scores range 70 - 100 (agreed). The scoring appears to be consistent with the CR. For SIb, having the scores by species element and gear facilitated understanding of the rationale for the scores.	No response necessary.

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
2.4.2	Yes	No	Yes	SIa: no issues SIb: Shouldn't score based on assumed strategy for soft coral and sponges from PI 2.4.1. This should score on basis of what exists now (likely 60) with PI receiving same condition as indicated in PI 2.4.1 SIc: for TB and TN, it is correct to state that the measures in place are being implemented successfully, scoring SG80. Rather, what exists for soft corals and sponges does not constitute a partial strategy, consistent with SIb. SId: same comment as SIc. PI scores range 75 – 85 (for TB and TN, scores should be lower due to lack of soft coral and sponge partial strategy).	This has been harmonised with the Saithe TB fishery, which gave a condition for 2.4.1, but not 2.4.2. As above. As above.
2.4.3	Yes	Yes	NA	No issues with any of the SIs. PI scores 85 (agreed).	No response necessary.

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
2.5.1	Yes	Yes	NA	SIa: There has been GADGET modelling of a subset of the species in the ecosystem with plans for an Atlantis model. There is some reporting of these activities in the text. Although it is unlikely that the GADGET models could provide the evidence required under SG100, they are worthwhile to mention in the report. PI scores 80 (agreed).	Further text on GADGET has been added to the report.
2.5.2	Yes	No	NA	SIa: 100 score seems high. A EBM strategy needs to address both P1 and P2 issues. The SG100 scoring appears to be based on mostly P1 initatives. More justification for the 100 score is required. No issues with the other SIs. PI scores range 95 - 100 (need to re-consider SIa score).	This has been harmonised with the Saithe fisheries. More justification for the P2 elements have been added.

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
2.5.3	Yes	No	NA	SIb: It does not appear that the main interactions have been investigated in detail as required by SG100 and suggesting a score of 80. This score needs further support. SIc: These are not full scale ecosystem models as per EwE or Atlantis but are more closely related to Minimal Realistic Models. As such, they don't describe all ecosystem interactions but only those relevant to the species in the model. Scores seem high with further justification required. No issues with other SIs. PI score range 90 – 95 (appear to be high and require further justification).	This has been rescored at 80. This was harmonised with the ISF saithe multi-gear fishery which scored 95 - 100 for PI 2.5.3 for all gears. Our approach has been more precautionary for the ground gears e.g. TB, TN, SD.
3.1.1	Yes	Yes	NA	No issues with SI scores. PI scores 100 (agreed)	No response necessary.

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
3.1.2	Yes	Yes	NA	SIc: saithe fishery scored this as 80. Useful to check. PI scores 100 (agreed)	No response necessary.
3.1.3	Yes	Yes	NA	SIa: Saithe fishery scored this at SG80 although the score here appears to be more appropriate PI scores 100 (agreed)	No response necessary.
3.2.1	Yes	Yes	NA	SIa: Saithe fishery scored this as 100 but again the score here appears to be more appropriate PI scores 90 (agreed)	No response necessary.
3.2.2	Yes	Yes	NA	No issues with SI scores. PI scores 100 (agreed; note that saithe fishery scored this 100 but the scores here are appropriate)	No response necessary.

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	Yes	Yes	NA	No issues with SI scores. PI scores 100 (agreed)	No response necessary.
3.2.4	Yes	Yes	NA	No issues with SI scores. PI scores 80 (agreed note that saithe fishery scored this 100 but the scores here are appropriate)	No response necessary.

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

Table 2.1.1. Potential scores of primary species using biomass and fishing mortality reference points; in cases where biomass is stated as being above the indicated reference point, Y is indicated and otherwise N or ?. If B is greater than B_{LIM}, SG60 scores and if greater than B_{MSY}, SG100 scores. For SG80, either $B_{TRIGGER}$ or F less than F_{MSY} for over a generation was used. Using this approach, score changes for nine of the species (saithe, blue whiting, witch, golden redfish, spotted wolffish, lumpfish, smelt and both stocks of herring) are indicated. In the case of shrimp, the score rationale would need to depend on the management response, which is provided in Table 12; information from Table 12 of background section.

CAB response:

This general approach has a lot of merit and could bring the scoring more into line with Principle 1. However, it is not what the P2 scoring guideposts require. The scores suggested require more reference points rather than just a PRI and seem to raise the bar in terms of what might be required. Any scoring here needs to be consistent with Principle 1 and with secondary species. Finally, while check box approach is easier for certifiers, there is always a problem of how to score when precise information is unavailable.

Stock	Pr(B>=PRI) = 70%	Pr(B>=PRI) = 80%		Pr(B>=PRI) = 90%	Scores	
	B>=BLIM	B>=BTRIGGER	F<=FMSY for >1 gen	B>=BMSY	PRR	Reviewer
Cod	Y	Y	N	Y	100	100
Haddock	Y	Y	N	Y	100	100
Saithe	Y	Y	N	?	100	80
Blue Ling	Y	Y	N	Y	100	100
Ling	Y	Y	N	Y	100	100
Blue Whiting	Y	Y	N	?	100	80
Plaice	Y	?	Y	?	80	80
Witch	Y	?	?	?	80	60
Lemon Sole	Y	Y	?	?	80	80
Common Dab	Y	?	N	N	60	60
Long Rough Dab	Y	?	?	N	60	60
Greenland Halibut	Y	Y	Y	?	80	80
Deepwater Redfish (slope)	Y	Y	?	?	80	80
Deepwater Redfish (pelagic)	Y	Y	?	?	80	80
Small Redfish	Y	Y	?	?	80	80
Golden Redfish	Y	Y	N	?	100	80
Atlantic Wolffish	Y	Y	N	?	80	80
Spotted Wolffish	Y	?	?	?	80	60
Lumpfish	Y	?	?	?	80	60
Monkfish	Y	Y	?	?	80	80
Tusk	Y	Y	N	?	80	80
Bluefin Tuna	Y	Y	N	?	80	80
Silver Smelt	Y	?	?	?	80	60
Mackerel	Y	Y	?	Y	100	100
Pearlside	Y	Y	N	?	80	80
Capelin	Y	Y	?	?	80	80
Herring (Summer)	Y	Y	?	Y	80	100
Herring (Spring)	Y	N	N	N	80	60
Nephrops	Y	Y	Y	?	80	80
Shrimp (inshore)	?	?	?	?	80	?
Shrimp (Offshore)	Y	Y	?	?	80	80
Sea Cucumber	Y	Y	?	?	80	80

Peer Reviewer 2

Summary of Peer Reviewer Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes/No**	**CAB Response**
Justification: For P1 and P3 I would say that this is a comprehensive report, well structured, easy to read and correctly referenced. Scores are well addressed, based on the available literature and they are adequately justified and easy to understand. I have included some minor comments for the assessment team to consider. However, I have some major concerns for P2. Some important information is missing or it has not been adequately presented. Moreover, I consider that the rationale used in some sections is too general and not well justified (bait species, PI 2.5.1, PI 2.2.2, etc). My main concerns are for the following species (see also my comments in the correspondent section): • Harbor seals. In http://www.hafro.is/Astand/2015/summary_2015.pdf I have found some references to a management plan for harbor seals in Iceland. However, I cannot find any reference to this plan in this report (except in Table A1.3.1 when setting Condition 1). I understand that this information is too important to be missed. It seems that the main aim of the management plan is to maintain the harbor seal population at around 12 000 animals. This information needs to be taken into consideration when assessing all the scoring issues in this PI for harbor seals and probably condition 1 and 2 need to be rethought. • Harbor porpoises. According to Gunnlaugsson et al. 2014 (http://www.hafro.is/~thg/NAMMCO/sc21/SC21-11bycatch.pdf) the cod gillnet fishery represents 80% of the by-catch of harbor porpoises (1450-1650 animals per year). The by-catch of this species may be exceeding the ICES reference point that should be considered while there is no assessment of sustainability. So, I consider that this species should be also included in Condition 1 and 2. • Atlantic halibut. I consider that this species could be classified as ETP species under MSC protocols. • Common guillemot. It seems that the mortality of common guillemot in cod gillnets is high (4.675 individuals in 2014 (Gunnlaugsson et al. 2014). So, I understand that this species needs to be explicitly named in condition 2. • Deepwater redfish. I have got lost in the deepwater redfish complex. Please, could you check the information provided in table 12? Which is the impact of the fishery on the deep pelagic stock > 500m, which is below Blim? • Blue skate. In the previous assessment, a recommendation was made for Blue skate. In the 4th surveillance audit the assessment team made specific reference to this species. However, in this report I cannot find any information about it. I think that it should be interested to know what happened with the species.		Harbour seals and porpoises: See Table 1 below. Atlantic halibut: As far as we can see, this species is correctly defined as a secondary species based on MSC CR2.0 methodology. The reviewer has not provided any information to contradict this view. However, there is considerable evidence that Atlantic halibut is overfished, although its precise status is highly uncertain. There is no real opportunity within the MSC methodology to support or require rebuilding of this species, and perhaps it is with the methodology that the reviewer has a problem. In any case, the Icelandic regulation appears to be successful in rebuilding and perhaps the MSC methodology might be enhanced to encourage adoption of this regulation across the species' range. Common guillemot: This species is now explicitly included in Condition 2. Deepwater redfish: The relevant stocks and scoring rationale have been clarified in the text. Blue skate: Information is in the report. Along with many other species it is listed in the catch profile table. It does not exceed 2% of the landings for any gear, so it is treated as one of the minor secondary species. One reason for the discrepancy between the previous assessment and this one is that the previous fishery was scored under FCR v1.3, and this new assessment is under FCR v2.0. With respect to the MSC process helping the fishery become more sustainable, the

One last comment. I consider that it is quite remarkable that when the haddock fishery was first assessed five years ago, only one condition was set for P1 and any for P2. Instead, in this report the fishery gets four conditions for P2 though the assessed gears and elements are practically the same (except for the nephrops trawl). I understand that the impact, knowledge and management of the fishery, related to P2 issues has not worsened in the last years. So, I think that the first assessment team was too benevolent when scoring some of the elements in P2, such the impact of the fishery on ETP species or the habitat. In my opinion it is a shame that the MSC program has failed in helping the fishery to be sustainable and reaching at least an 80 score in all performance indicators during the first certification period, which is the main objective of the program	reviewer's conclusion that the process has not helped is incorrect. The various issues raised in this assessment have been raised in surveillance audits and in the assessment of other stocks by the same vessels. Considerable progress has already been made on most of the conditions raised here. The reviewer should note that much of the information made available for this assessment was much improved (e.g. much more quantitative information), so this assessment should be more reliable. However, it should be noted that many of these improvements will take a long time to work through. For example, benthic habitat mapping will likely take many years, and may lead to more conditions,

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**	**CAB Response**
Justification: In my opinion Condition 1 and 2 should be rewritten to include the information about harbor seal (is it a management plan already in place?), harbor porpoise (mortality is above the recommended limit) and common guillemot (this last species is interesting because it is explicitly named in the Client action plan but no in the condition set by the assessment team) (see also my comments above). When you clarified the issue about the redfish complex maybe a condition or at least a recommendation should be done to be sure that the fishery is not threatening the species. In 2.2.3a the assessment team explains that recording of bycatch has deteriorated somewhat and is therefore incomplete. How is it possible? If information on by-catch species is not being adequately recorded and provided by the client, this section should be penalized in some way and a condition or at least a recommendation set for this PI. I understand that one of the main objectives of the MSC certification program is to improve knowledge about the impacts of the certified fishery, not to make it worse. Finally, the assessment team states in 2.5.3b that Danish Seine has an impact on soft coral and sponges. If it is correct, this gear should be included in Condition 4.		Condition 1 has been re-written to include the information on the management objectives for harbour seal. Condition 2 has also been re-written to specifically include the common guillemot which was previously omitted. For harbour porpoise, see Table 1. For the beaked redfish complex, the stock definitions currently used by ICES and the rationale in the text have been clarified. Neither a condition nor recommendation is required as current information is sufficient to indicate that these Iceland fisheries are not threatening these stocks. This statement in 2.5.3b on Danish seine has been removed.

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**	**CAB Response**
Justification: I think that the action plan would be adequate if it addresses the new information for harbor porpoises and harbor seals. However, I have a concern about the auditing outputs specified in the client		The audit information was not changed from year 3, being presumed to be an update on plans. The client has now proposed more specific audit material to

action plan. In the milestones set in year 4 for condition 1 and 2 the assessment team states: “Demonstrate that the adopted strategy has been fully adopted and is being implemented in an effective manner” (Condition 1) plus “Demonstrate that at least one review (of a regular process) to reduce unwanted catch has taken place” (Condition 2). However, the client action plan states that at the Year 4 audit, ISF will present: ii) a draft partial strategy to address bycatch. I understand that at year four the adopted strategy should be already implemented or being implemented and reviewed (C2) and I am not sure if a DRAFT partial strategy for year 4 is enough to meet this milestone.	evaluate the condition in year 4.

Performance Indicator Review

Table 33 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
1.1.1	Yes	Yes	N/A	All scoring issues of this PI are satisfactorily explained. No further comments are necessary.	No response necessary.
1.1.2	N/A	N/A	N/A		
1.2.1	Yes	Yes	Yes	The harvest strategy of the demersal fishery has been developed to achieve objectives for the cod fishery. Due to this reason it gets a better score than the haddock fishery.	No response necessary.
1.2.2	Yes	Yes	N/A	All scoring issues of this PI are satisfactorily explained. No further comments are necessary.	No response necessary.
1.2.3	Yes	Yes	N/A	All scoring issues of this PI are satisfactorily explained. No further comments are necessary.	No response necessary.
1.2.4	Yes	Yes	N/A	All scoring issues of this PI are satisfactorily explained. No further comments are necessary.	No response necessary.

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	No	No	N/A	2.1.1a Bottom trawl Deepwater redfish. In Table 11 (primary species) you list two substocks of S. mentella: deepwater redfish (Icelandic Slope) and deepwater redfish (International stocks). However in Table 12 when "scoring" this species you use the following names: deepwater redfish (Icelandic Slope), which seems to be correct; and deepwater redfish (Deep pelagic >500m Southeast Greenland), a name which does not exactly match any of the substocks/names used by ICES: Beaked redfish (Sebastes mentella) in Division 14.b, demersal (Southeast Greenland); Beaked redfish (Sebastes mentella) in ICES subareas 5, 12, and 14 (Iceland and Faroes grounds, north of Azores, east of Greenland) and NAFO subareas 1+2 (deep pelagic stock > 500 m); Beaked redfish (Sebastes mentella) in ICES subareas 5, 12, and 14 (Iceland and Faroes grounds, north of Azores, east of Greenland) and NAFO subareas 1 and 2 (shallow pelagic stock < 500 m) and beaked redfish (Sebastes mentella) in Subarea 14 and Division 5.a, Icelandic slope stock (East of Greenland, Iceland grounds). The information that you provide there seem not to correspond to any of them.	Deepwater redfish: The relevant stock outside the Icelandic slope should have been ICES 2016. 2.3.13 Beaked redfish (*Sebastes mentella*) in ICES subareas 5, 12, and 14 (Iceland and Faroes grounds, north of Azores, east of Greenland) and NAFO Subareas 1 and 2 (shallow pelagic stock < 500 m) (ICES Advice, 10 June 2016). The correct reference was given, but the table label and information was incorrect. The cod and haddock do not operate below 500m, so the deeper stock is not relevant. The relevant footprint between this fishery and the deepwater pelagic fishery are catches with ICES area 5a, which are miniscule. The relevant stock for scoring was the Icelandic slope stock and the information for this was correct. In retrospect, the pelagic stock outside Iceland should not have been included in Table 12 at all, and instead some text has been added explaining the treatment of the redfish catch within this assessment.
2.1.1 (cont)				Blim. ICES advises that when the MSY approach is	

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
				applied, there should be zero catch in each of the years 2017 and 2018. So, I think that this score of 80 would be incorrect. If I am not wrong, the information about S. mentella in table 12 refers to Division 14.b, demersal (Southeast Greenland) but it is also wrong, the catch advice for 2017 was a reduction to half of the 2016 catch, from 2240 to 1120 tonnes. When scoring this specie in 2.1.1 the assessment team states that catches of deepwater redfish are predominantly from the Icelandic slope stock but there is not any justification for this statement. So, please could you clarify that? Which is the impact of the fishery on the deep pelagic stock > 500m, which is threatened? 2.1.1b Handline and longline. Again I think that the assessment team approach to bait species is too general and it is not properly justified (Please, see my comments in the generals comments section below).	For 2.1.1b bait species, the information was not quantitative and generally complex as described in the relevant section. A reference has been added. While more and better information might be desirable, in our view it was sufficient to determine that bait use was a low risk factor for sustaining these fisheries. The only way to improve information would be a condition or recommendation for the client to assess bait use and perhaps apply any findings in a code of practice. This does not seem justified at present given herring and mackerel are from MSC certified fisheries. Saury and squid may come from different fisheries in future, but are resilient species and unlikely to be anymore than a minor proportion of the catch. However, the issue raised by the reviewer is noted. The current finding on bait use will be monitored and could be revisited in future.

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 (cont)				I miss a table in the introduction section showing the percentage of each species caught by gear. With the information provided in that section, it is difficult to double check that the percentages of dab or long rough dab caught by gear indicated in this PI are correct. As the assessment team states when listing the weaknesses of the fishery, some species are at risk of unsustainable fishing mortality and need to be closely monitored by the team during the next years to be sure that they do not fall below the PRI (dab, long rough dab, spotted wolffish or the redfish complex).	Tables 4-10 in the main section provided full information on catch profiles for each gear 2011-2015. Another table 11 has been added to show landings among gears by selected species as requested here. It is true that some species are at risk of over-exploitation, but this would be true for all multi-species fisheries. This wll be monitored in surveillance audits.
2.1.2	Yes	Yes	N/A	The rationale supports the given score	No response necessary.
2.1.3	Yes	Yes	N/A	The rationale supports the given score	No response necessary.
2.2.1	No	No	No	Harbour seals. I have found some references (http://www.hafro.is/Astand/2015/summary_2015.pdf) to a management plan for harbour seal drafted in Iceland in 2010 and recently adopted. However, I cannot find any reference to	Harbour seals: the plan is mentioned, although the target of 12,000 animals was omitted, and has now been added. We agree that the last (2014) survey results were unable to provide a reliable new population

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
				this plan in this report. The main aim of the management plan is to maintain the harbour seal population at around 12000 animals. However, in it's advice to the government in 2015 the MRI declared that in the absence of new abundance estimates it was unable to evaluate whether the existing management objectives of grey seals and harbour seals are being met (NAMMCO 2016). This information needs to be taken into consideration when assessing all the scoring issues in this PI for harbour seals. 2.2.1a Habour porpoise (Gillnet). In this section the assessment team states that harbour porpoises are mainly caught in gillnets as by-catch in the lumpfish fishery (Pálsson et al, 2015). However, table 3 of the original report shows that the number of harbor porpoises caught from 2003 to 2008 by the cod gillnet fishery was 1250 whereas the number of harbor porpoises caught from 2011 to 2013 by the lumpfish fishery was 351. Gunnlaugsson et al. 2014 (http://www.hafro.is/~thg/NAMMCO/sc21/SC21-11bycatch.pdf) calculated that from 2009 the estimated annually by-catch of harbor porpoises by the cod gillnet fishery is in the range 1450-1650 animals per year which represents 3.7 – 9.6% of the estimated population of 27,000 in 1987, well above the precautionary reference point recommended by	estimate, but it was able to show a severe reduction in the surveyed areas. We consider this information sufficient to support a partial strategy to manage main secondary species, thus meeting SG 80 for SIc. The wording of Condition 1 has been changed to reflect the above. Harbour porpoise. We chose to use the MRI survey data rather than the 2003 – 2008 cod net fishery data as it is both more robustly assessed and recent. The gillnet fishery effort has reduced substantially since 2008, so interactions are also much lower. The NAMMCO Scientific Committee confirmed in 2015 that "In Iceland, harbour porpoises are mainly caught in gillnets as by-catch in the lumpfish fishery" (NAMMCO, 2016).

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
				ICES (1.7%) for the species. So, harbor porpoise mortality in cod gillnet fisheries seems to be more important than in the lumpfish fishery. And I understand that it is why the by-catch in gillnet has decreased in line with decreased cod net effort. So, I think that SG80 is not met and this species should be included in the rationale of the condition.	
2.2.1 (cont)				Just a short note about cormorants/shags. Although the population of P. Carbo is increasing, the population of *P. aristotelis* is decreasing (decline estimated to be >10% in ten years). Gunnlaugsson et al. 2014 specifically states in his reports that among the seabirds the by-catch of the smallest stocks, such as black guillemot and cormorants, is of concern, but I understand that he refers more to the lumpfish fishery. 2.2.1b Atlantic halibut I have some concerns about the inclusion of Atlantic halibut as a secondary species. It seems that there are not either limit or target reference points set for the species but due to the poor state of the stock, it is within a rebuilding plan in Iceland since 2012 (Regulation 470/2012). So, at least I would consider that management tools and measures are in place to manage the stock. However, the species is listed as endangered by the	The point about comorants/shags is noted. 2.2.1b Atlantic halibut is correctly designated a secondary species following the MSC CR2.0 methodology. Overriding this as a special case is not justified in our opinion. It would not be appropriate to designate the species as ETP. The

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
				IUCN red list and if I am not wrong, it was included as a ETP species in both the MSC assessment for the ISF saithe and golden redfish fisheries undertaken in 2014. So, I really think that PI 2.2.1 is not the right place for the species.	most appropriate would be primary main species, but it meets none of the criteria. If it was designated as a primary main species, it would likely meet SG80 for PI 2.1.1 as there is clear evidence for recovery. As a separate point, the IUCN designation appears to date from 1996 (needed to be updated), and we were unable to find the explanation for it.
2.2.2	No	No	No	2.2.2a Habour porpoise. The main aim of the closures was to protect the spawning stock of cod and plaice. So, although it is true that this mesure may contribute to reduce the catch of harbour porpoises, the regulation was not set with this purpose. So, I am not sure if it can considered a partial strategy to protect this species. In my opinion the score should be reduced from 80 to 60. 2.2.2a Common guillemot. In the rationale section this species is included in the longline section for seabirds but in the table it is scored for gillnets. I have not found a value for the longline fishery, but according to Gunnlaugsson et al. 2014, 4675 common guillemots were caught in cod gillnets in 2014. I do not consider that it is a low	The saithe multi-gear fishery assessment (inc. gillnets) did not consider porpoise interactions to be significant, and therefore did not consider a strategy to be required. Our assessment was more detailed. We recognise the coastal spatial closures were not set specifically to reduce marine mammal interactions, but we do consider that this is acknowledged to reduce interactions, and therefore constitutes a 'partial strategy, thus meeting SG 80. We also included the figure of around 4,400 common guillemots in the main text of the report. We mainly used the MRI survey data, rather than the estimates in Gunnlaugsson et al.

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
				number of birds.	2014 (essentially the same paper as Pálsson et al, 2015) as our main mammal / seabird bycatch resource. We note that the common guillemot catch by gillnets scores <80 (resulting in Condition 2), but this is not fully reflected in the rationale and this has been corrected. This issue was also picked up by the other peer reviewer.
2.2.3	No	No	N/A	2.2.2e I consider that the justification in this section is too general and needs to be referenced and explained. When the assessment team states: "there are further measures used in other fisheries which could be appropriate for gillnets in this case". Which measures? In which fisheries are being used? 2.2.3a Seabirds In this case the rationale refers entirely to GN, but in the title LL appears for some species (e.g: Fulmar & Shags and cormorants (GN & LL). Is there any specific information about seabird bycatch in long-line fisheries? For gillnets the assessment team explains: "Bycatch registration was	2.2.2e An example and reference has been added. This is primarily concerned with harmonisation for similar certified fisheries and a review of possible mitigation measures, such as pingers. Further information has been provided, especially on longline interactions with seabirds. A formal recommendation has been given to regularly review electronic logbook returns on seabird and marine mammal bycatch and to compare these to survey and other observed information Where disparities are determined, efforts would have to be made to improve

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
				received from 5% of the cod gillnet vessels until 2009 […] In 2009 they switched to electronic logbooks and after that no information on marine mammals or bird bycatch has been returned". Therefore, although this fishery has been certified as sustainable since 2012, recording of bycatch has deteriorated and it is incomplete. How is it possible? Information on by-catch species is not being adequately recorded and provided by the client? If so, I really think that this section should be penalized in some way and a condition or at least a recommendation should be raised.	accurate logbook returns for the catch of seabird and marine mammals. Whilst this applies to all gears, there is particular focus on long line vessels in the UoA.
2.3.1	Yes	Yes	N/A	The rationale supports the given score	No response necessary.
2.3.2	Yes	Yes	N/A	The rationale supports the given score	No response necessary.
2.3.3	No	Yes	N/a	According to the MRI and the ISC (Icelandic Seal Center), although the reporting of by-catch, including marine mammals, is mandatory according to Icelandic law, the realized reporting is not considered reliable (NAMMCO 2016). Therefore, all the	This fishery does not have the level of observer coverage suggested by Babcock and Pikitch, but does have adequate quantitative information to assess the UoA related mortality and impact and

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
				information based on this data seems to be unreliable. It would be interesting to know the level of observer coverage in Icelandic fishing vessels to know if this coverage is enough to adequately estimate bycatch in the assessed fishery. According to Babcock & Pikitch undated (http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.201.3575&rep=rep1&type=pdf) , if the observer samples are an unbiased sample of the fishery, coverage levels of at least 20 percent for common species, and 50 percent for rare species, would give reasonably good estimates of total bycatch. Has the Icelandic haddock fishery got this level of coverage?	to determine whether the UoA may be a threat to protection and recovery of the ETP species, thus meeting SG 80. Please note that the recommendation pertaining to the better recording of seabirds and marine mammals in electronic logbooks is equally relevant for ETP species under this PI.
2.4.1	Yes	Yes	Yes	2.4.1b Gillnets: I think that it is unclear why gillnets have a score of 80 for hard corals and 100 for both soft corals and sponges. Is it because lost gillnets can impact hard coral? If so, I think that the same rationale could be used for longlines. 2.4.1b Longliners: In the same section, the information used to justify the score for longlines seems to be a bit mixed with the information used for gillnets. This subcomponent performs much better than in the previous assessment (100 instead of 90) but it is unclear	2.4.1b Gillnets: This is correct, and the text has been adjusted to clarify this. Large gillnets have the potential ability to smother and break hard corals. We accept that lost longlines / snoods might also impact hard corals, but their relative lightness means this will probably still meet SG 100, Longline: The longline text was poorly written and had been improved. The uplift in the score

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
				which is the reason, it is because the number of vessels using this gear has been reduced (the previous report talks about 300 longliners) or because the protected areas have been extended? 2.4.1b Nephrops trawl The difference in the score between BT and NT wich leads to setting a condition for the former gear but no for the latter seems to be adequately justified. However, is there any available map showing fishing intensity distribution for NT and distribution of soft corals and sponges to be sure that they do not overlap? 2.4.1c Nephrops trawl The same rationale is used for BT and NT, but BT gets a score of 80 whereas NT gets a score of 90. I think that it is a typo.	has indeed been due to an increase in the protected areas, esp. for hard corals. Nephrops trawl: Although we have not seen any specific maps overlaying spatial nephrops trawl effort intensity with soft corals and sponges, we have visually compared gear effort intensity maps with mapping of these VMEs (e.g. Ólafsdóttir *et al* 2014) to judge overlap levels, as well as consulting with MRI and the industry on this issue. 2.4.1c: Yes, this is an error, and the score has been reduced to 80.
2.4.1				2.4.1. Danish seine As a general comment, I would like to say that there is very few studies/scientific literature about the impact of Danish seine on the habitat.	Agreed. There is one useful study by Thorarinsdóttir et al. 2010.

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
2.4.2	Yes	No	Yes	2.4.2a Bottom trawl and Nephrops trawl. The information provided for the saithe fishery refers to the current expedited assessment? (the previous assessment has one condition for 2.4.1 but no for this PI). 2.4.2a Danish seine In 2.5.3b the assessment team states "However, there is still some uncertainty over the effectiveness in protecting soft coral and sponge communities, so does not quite meet SG 100 for the gears which impact these habitats (bottom trawl TB, Nephrops trawl TN, Danish seine SD)", and this last gear gets the same score than TB and NT. I understand that it is a bit contradictory. If DS impacts on soft corals and sponge communities maybe this gear should get the same score than TB and NT in this section (2.4.2a) and it should be included in Condition 4. 2.4.2a and b. Other gears As in 2.2.2, I understand that the existence of closed areas in Iceland waters aimed to protect habitats and VME's can be considered as a partial strategy. However, in my opinion, it is too benevolent to consider short-term (hours) temporal	This is correct. The reference to the 2014 saithe PCR has been removed. This is indeed contradictory. We have removed the reference to DS in the last sentence of PI 2.5.3b, as we do not consider this gear to have the bottom impact that TB or TN potentially have. 2.4.2a & b We accept that this may not represent a specific partial strategy as such. We consider this still meets SG 80, and no partial strategy for these other gears is required. We have updated

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
				closures (aimed to protect the presence juveniles in an area) as a partial strategy for this PI.	the rationale to make this clearer.
2.4.3	Yes	Yes	N/A	All scoring issues of this PI are satisfactorily explained. No further comment are necessary.	No response necessary.
2.5.1	No	No	N/A	Again this justification seems to be too general and poor documented. The same rationale has been used for the cod fishery. The values shown there for the fishery catch and the stock biomass refer to haddock?	The incorrect text was used for the haddock report and has been replaced with the correct landings data (e.g. for haddock). This peer review is for cod, and the existing text in the report is correct.
2.5.2	Yes	Yes	N/A	The rationale supports the given score	No response necessary.

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
2.5.3	Yes	No	N/A	2.5.3b and c I think that SG100 is not met for GN and LL due to the lack of a reliable reporting of bycatch ETP species which difficults the improvement in the knowledge about the real impact of the fishery on these species. The score should be reduced for these gears. 2.5.3b See my comment about SD in 2.4.2	We have reduced the scores for SIb (the other peer reviewer had the same concern). We think the scoring for SIc should remain unaltered, as the impacts have been identified (if not quantified in the case of LL) and the main functions of these components are understood. The reference to SD has been removed.

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
3.1.1	Yes	Yes	N/A	One general comment for P3. Iceland is not a signatory party to the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS) which protects ETP species such as harbor porpoise. I really think that this particular should be reflected in a lower score at some point in P3. If we do not take it into consideration, this can lead to perverse scoring as the countries which do not signed any international agreement get better scores in some sections because their lack of commitment to protect ETP species. 3.1.1 The rationales supports the given score. Only a short comment. I think that it is always interesting to compare scores between diferent MSC assessments. For example, the MSC ISF Iceland Capelin Fishery assessment, which has been recently published, scores this PI as 85. In that case, the assessment team considers that SG100 is not met in 3.1.1b and c. So, the same management system gets a score of 85 or 100 depending on the assessment team's opinion, which is quite a big difference.	The team maintains its 100 score for this PI as all criteria for this score are met, which the reviewer does not dispute. The ISF Iceland capelin fishery scored lower on the international component of the fishery, which is not at issue here.

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
3.1.2	Yes	Yes	N/A	The rationale supports the given score. I think that it is a shame that there are no NGOs that show any interest in fisheries management in Icelandic waters. Maybe the participation of NGO in the consultation process for fisheries is not sufficiently encouraged by the authorities (if it was the case, SG100 in 3.1.2c would not met).	The Icelandic NGOs have focused on other issues than fisheries. The team considers that Icelandic fisheries management authorities cannot be punished for that.
3.1.3	Yes	Yes	N/A	The rationale supports the given score. No further comments are necessary.	No response necessary.
3.2.1	Yes	Yes	N/A	I agree that short and long-objetives for P2 are not well defined. So, the score is adequate.	No response necessary.
3.2.2	Yes	Yes	N/A	All scoring issues of this PI are satisfactorily explained. No further comments are necessary.	No response necessary.

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	Yes	No	N/A	3.2.3c As in PI 2.3.3, according to the MRI and the ISC (Icelandic Seal Center), although the reporting of by-catch, including marine mammals, is mandatory according to Icelandic law, the realized reporting is not considered reliable (NAMMCO 2016). So, I consider that SG100 is not met in 3.2.3c (There is NOT a high degree of confidence that fishers comply with ALL the aspects of the management system under assessment, including, providing information of importance to the effective management of the fishery).	SG 100 requires that there is a high degree of confidence that fishers comply with the management system under assessment. The guidepost does not say 'ALL the aspects of the management system', as the peer reviewer indicates. It is the expert opinion of the assessment team that the level of confidence in a high degree of compliance is exemplary in this fishery. The second peer reviewer agrees with the team on this issue.
3.2.4	Yes	Yes	N/A	The rationale supports the given score.	No response necessary.

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

Other minor comments

Page 8 and 78. The scores for pelagic trawls (P2) in both lists are different. In page 8 says 93.3 and in page 78, 93.7. Please, correct that.

Page 31. Table 10. I find very interesting the important differences in the landing profile between pelagic trawls for the haddock and the cod fisheries.

Page 36. The last paragraph in the Atlantic wolffish rationale is unclear and I think it needs to be rephrased: "*As the stock is highly likely to be above its PRI, but because FMSY has only recently been applied, its relation to MSY is uncertain, the stock is highly likely above its PRI, but it is not clear whether it is at the MSY level yet*".

Page 38. In my opinion, section 3.4.5 Bait Species is too general and it needs a clearer approach. Some statements such as "There is a commercial directed fishery at these stocks and an intention (or there should be) to manage them to sustainable levels", "The most common bait size is 30 g/hook compared to current reported catch rates of around 700g/hook" or "All main bait stocks are described are in good condition, although the status of some is highly uncertain or has not been formally determined", need to be referenced or at least explained. The current stock status of the bait species should be included in the report.

Page 40. Table 13. Scientific names for skate species are not updated (*Dipturus flossata, Rajella lintea. Leucoraja fullonica*, *Amblyraja radiata*).

Page 42. The global population size of Northern gannet seems to be around 950,000-1,200,000 individuals, much higher than the values estimated by del Hoyo et al. 1996.

Page 44. The number of harbor porpoises caught as a by-catch that the assessment team shows in table 16 (data from the MRI gillnet survey) is a bit misleading as the number of individuals caught by cod gillnet fisheries was four times greater in a shorter period of time. At some point the assessment team states that the MRI spring gillnet survey is equivalent to 2% of the total cod gillnet fishing effort in April. So, the numbers show by the survey don't seem representative of the entire fishery.

Page 57. Figure 11 (areas with restricted fishing) is also available in English. I think that it should be changed to improve understanding.

There are some formatting problems when the tables are cited in the text (e.g: page 32, page 33, page 39).

Bibliography. This report would have been easier to review if you had included links in the reference section.

CAB response:

Appropriate minor edits have been made to the text in response to these observations.

Appendix 3: Stakeholder submissions

Appendix 3.1:
Pre-site visit submission of information and comments from BirdLife International and Fuglavernd Íslands

Pre-Site Visit Submission to Vottunarstofan Tún
Marine Stewardship Council Re-assessment Icelandic Sustainable Fisheries Cod and Haddock
BirdLife International and Fuglavernd Islands

Many thanks to the assessment team at Vottunarstofan Tún for the opportunity to submit comments on the reassessment of the Icelandic cod and haddock fisheries under the Marine Stewardship Council certification scheme. BirdLife International and Fuglavernd were closely involved in the recent assessment of the Icelandic lumpfish fishery, and are keen to maintain helpful input into the assessments of other key Icelandic fisheries. Fuglavernd will be represented at the site visit by Erpur Snær Hansen, a seabird biologist on the Fuglavernd Board.

Our primary expertise in relation to fisheries lies in seabird bycatch - our comments therefore pertain largely to this particular subject area. Noting the overlap in fishing areas, gear types and certificate sharers between the cod and haddock re-assessments, our comments are collated here and are considered relevant across both fisheries (with both species presumably captured by the same vessels). Further, as the gear types most likely to interact with seabirds in this region, our comments focus largely on longlines and gillnets.

Previous certification reports
The most recent certification assessment of the cod fishery highlighted that there was previously no statutory requirement for vessels to record seabird and marine mammal bycatch; this has, of course, changed in the intervening period. The previous assessment of the longline and gillnet components rather underplays the situation with regard to bird and marine mammal bycatch. While there is perhaps less concern about bird bycatch in the cod fishery compared to the lumpfish fishery, recent figures (presented below), along with low levels of observer coverage and limited self-reporting demand closer scrutiny of bycatch in longlines and gillnets in this re-assessment. While mitigation measures are used in the longline fishery (gas cannons and a bird-scaring device towed behind vessels), these measures do not comply with international best practice for minimising seabird bycatch (see Agreement for the Conservation of Albatrosses and Petrels advice here). This is discussed further below.

Non-target bycatch information
The recent Hafro report (Pálsson et al., 2015) used data from observers, the scientific cod gillnet surveys (conducted in April each year) and self-reported data to estimate bycatch in Icelandic waters. It should be noted that while bycatch reporting is now mandatory, returns of electronic log books have been low. In addition, some differences have been observed between observer-collected data and self-reported data on bycatch, which are important to understand and explore in the context of this re-assessment. Irrespective, the Hafro report (for gillnets) and personal communication with Hafro (for longlines, from soon to be published observer data, coverage of ~1% of the fleet) gives the following estimates of annual mortality rates:

Cod longlines
Fulmar - 4,037/year
Northern gannet - 327/year
Black guillemot - 327/year
Cormorant - 218/year

Great black-backed gull - 218/year

Cod gillnets
Common guillemot - 4,400/year
Fulmar - 1,100/year
Harbour porpoise - 1,600/year

Further to this, Erpur Snær Hansen (Fuglavernd Islands Board Member) has undertaken additional analysis of the bycatch data from the cod gillnet fishery from the Hafro report (Pálsson et al., 2015) in an attempt to account for seasonal differences in bycatch (which peaks in spring when birds congregate at colonies) and fishing effort. The monthly distribution of bycatch was taken from (Petersen 2002), allowing for a bycatch estimate more attuned to seasonal differences rather than extrapolation from a single month (April, the timing of the scientific cod surveys). Using the gillnet survey data 2009-2015 from MRI (which, as a scientific survey, is considered accurate), mean and SD bycatch per net per species was calculated over the period. The mean monthly bycatch (0.5298) over all months reported as proportion of bycatch in April (P April) provides a way to estimate the total annual catch corrected for the high seasonality in effort and bycatch by multiplying the gillnet survey CPUE. The total bycatch is the sum of: the product; the total number of 'pulled nets' (i.e. effort), mean survey bycatch per net (per spp.), and the mean monthly bycatch. These results have been extrapolated backwards in time using data on pulled nets (Fig. 1, which includes estimates for lumpsucker bycatch using the same method), which suggests that while seabird bycatch seems to have declined in recent years (perhaps a symptom of effort reduction), it remains in the high thousands of birds.

Further explanation of this analysis will be available, as required, from Dr. Snær Hansen at the site visit.

Table 1. *Monthly bycatch for sale in fish markets 1993-1994 (Petersen 2002). P April: monthly bycatch as a proportion of April's bycatch (the MRI gillnet survey time).P total: monthly proportion of total annual bycatch.*

	Bycatch (80% comm guilkemots)	**P_April**	**P_total**
Jan	378	0.192562	0.03028603
Feb	808	0.411615	0.0647384
Mar	1524	0.776363	0.1221056
Apr	1963	1	0.15727906
May	4335	2.208355	0.34732794
Jun	1178	0.600102	0.09438346
Jul	7	0.003566	0.00056085
Aug	54	0.027509	0.00432658
Sep	51	0.025981	0.00408621
Oct	193	0.098319	0.0154635
Nov	437	0.222618	0.03501322
Dec	1553	0.791136	0.12442913
Total	**12481**	**0.529844**	**1**

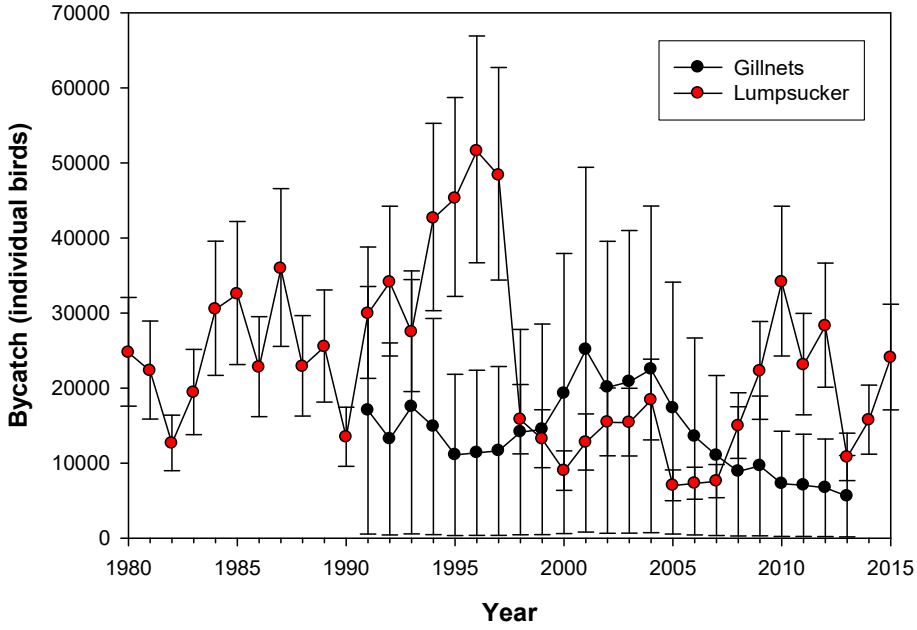


Figure 1. *Total estimated bycatch in cod and lumpsucker gillnets ± S.D.*

An assessment of the impacts of these estimated takes on seabird and harbour porpoise populations should be undertaken as part of the re-assessment process, particularly in the context of the decline of many seabird species in Iceland in response to oceanographic change and other pressures. Harbour porpoise bycatch is notably high and is beyond precautionary limits (according to the Potential Biological Removal approach) (Hafro, pers comm.). Further, effective mitigation can substantially reduce seabird bycatch rates to minimal levels in longline fisheries, which suggests there is more to be done in this gear type. Additionally, the accuracy of these estimates needs to be better verified with improved observer coverage that fully records bycatch and allows for verification of self-reported data. This should inform any required adjustments to the existing monitoring/reporting regime for bycatch to meet MSC requirements. BirdLife are happy to assist in bycatch data collection protocol design as required.

Mitigation measures

As noted above, the gas cannons and towed bird-scaring devices deployed by Icelandic longline vessels do not follow international best practice for minimising seabird bycatch. While they may be effective, there is no published scientific literature assessing this. In order to demonstrate that the fishery has an effective strategy in place to reduce seabird bycatch, the relative efficacy of these measures in reducing bycatch needs to be compared, through robust experimentation, to the known best practice of night setting, line weighting and bird-scaring lines. Further, it is not clear whether the existing mitigation measures are legally mandated - the previous assessment report says vessels are 'expected' to use these measures. Compliance with mitigation should be explicitly considered in the reassessment.

Spatial/temporal closures aside, there is not a suite of best practice mitigation measures available for gillnet fisheries. Evidence from the scientific cod surveys in Iceland indicate that bycatch levels of seabirds and marine mammals can be high, particularly in the Breidafjördur area and in the south east of the country. Preliminary data from our observations on lumpfish vessels in Breidafjördur suggest that, while the existing temporal closure offers some protection from bycatch for eiders, there is still high bycatch outside of this closure area, and inside it after the area opens. The existing closed area network should not be viewed as a comprehensive management strategy for tackling the

issue of seabird bycatch, and concerted effort should be made to explore further options, including technical measures.

Recent work (Martin and Crawford, 2015; Ortiz et al, 2016) indicates that there are mitigation measures worth exploring, with some promising preliminary results. BirdLife and Fuglavernd are happy to explore such options and offer advice on mitigation trials that might inform a strategy for minimising non-target bycatch in these fisheries. Further, it is worth noting the efficacy of pingers in reducing harbour porpoise bycatch (especially given the high levels of bycatch in the cod gillnet fishery), and easy to handle and maintain models have been developed (see Fishtek's Banana Pinger).

Notably, fulmar bycatch could presumably be completely avoided in the cod gillnet fishery if discarding was not allowed during hauling. Discarding attracts birds to the vessels, and if this is done during hauling, birds may become entangled in the net (as recorded in the lumpfish fishery - BioPol, pers. obs). Such a measure should be straightforward to implement.

Overall comments
It is vital that non-target bycatch is fully considered in this re-assessment of the Icelandic cod and haddock fisheries, not least because improvements made in the coming years will make future re-assessments under the more stringent v2.0 of the certification requirements more straightforward. The key areas for improvement are around **monitoring of bycatch levels** in the longline and gillnet sectors, the **adequacy of existing management strategies** for tackling bycatch, and attempting to **understand the potential impact on seabird and marine mammal populations** of existing bycatch estimates (while being mindful of the issues with the existing data). It would seem plausible, if these issues have not been tackled since the last assessment, that they can be addressed through conditions under this re-assessment.

Rory Crawford (BirdLife International), Erpur Snær Hansen (Fulgavernd Islands) and Hólmfríður Arnardóttir (Fuglavernd Islands).

References:

Pálsson, Ó. K., Gunnlaugsson, o. & Ólafsdóttir, D. 2015. Meðafli sjófugla og sjávarspendýra í fiskveiðum á Íslandsmiðum. By-catch of sea birds and marine mammals in Icelandic fisheries. *Hafrannsóknir.* Icelandic Marine Research Institute, Reykjavik.

Petersen, Æ. 2002. Fugladauði í veiðarfærum í sjó við Ísland. *Náttúrufræðingurinn* 71: 52-61.

Appendix 3.2:
Comments from BirdLife International and Fuglavernd Íslands on the Public Comment Draft Report and Responses by the Assessment Team

PI	Comment by BirdLife & Fuglavernd Íslands	Assessment Team Response
2.2.1	**Nature of comment:** I do not believe all the relevant information[5] available has been used to score this performance indicator. **Justification:** Under scoring issue (a), it is important to differentiate between shag and cormorant, which in the present assessment are lumped together. There is fair amount of confidence that cormorants are increasing in Iceland, but shags are in decline - being able to clearly define species has an impact on the ability to determine population-level impacts of the fishery, as required by the MSC standard. If observers are unable to make this distinction, it is important to improve the observer programme and skill-up both observers and skippers in order to identify birds correctly (see more detailed comments on adequacy of observer coverage and logbook returns below). The population trend of Harbour Porpoise is unknown, and the abundance are quite out of date (14 years old now) - so the ability to determine population-level impacts is effectively impossible at present, with limit logbook returns and observer data across the season in addition to limited population data.	***Phalacrocorax* spp**.: Observer data from MRI mentions only cormorants, but it is assumed that this combines cormorants (*Phalacrocorax carbo*) and the common shag (*P. aristotelis*) (see Gunnlaugsson *et al*, 2014). Whilst these are differentiated in the main text, we have further differentiated them in the revised scoring text. The issue of observer differentiation of these species is addressed further below. **Harbour porpoise**: we agree with this, but, based on the most recent IUCN assessment (Hammond *et al,* 2008), this species is "*widespread and abundant*" and thus considered to meet SG 80 (but not 100).
2.2.2	**Nature of comment:** I do not believe the information and/or rationale used to score this performance indicator is adequate to support the given score[6]. **Justification:** There are several scoring issues where the available evidence does not warrant the scores awarded under this performance indicator. **Longlines**: For the longline sector, the existing seabird bycatch mitigation measures have been viewed as adequate to meet SG80 for scoring issues (a), (b), (c) and (e) - we do not agree with the CAB's assessment. As stated in our written submission to the site visit, only one of the measures deployed (night-setting) is considered 'best practice' for reducing the bycatch of seabirds in longline fisheries (as defined by the Agreement on the Conservation of Albatrosses and Petrels (ACAP)): http://acap.aq/en/resources/bycatch-mitigation/mitigation-advice/198-acap-review-of-mitigation-measures-and-summary-advice-for-reducing-the-impact-of-demersal-longlines-on-seabirds/file. The use of buoy lines and gas cannons has not been assessed or tested for efficacy in reducing bird bycatch, and these should not be considered adequate elements of a partial strategy for bycatch reduction. ACAP recommends using at least 2 of 3 out of night setting, bird-scaring lines (properly designed - see above	LL: We have added the LL UoA to Condition (#3), to include all seabird species in a requirement for the fleet to improve seabird bycatch mitigation in the longline UoA.

[5] MSC Fisheries Certification Requirements, v2.0 section 7.10
[6] MSC Fisheries Certification Requirements, v2.0 section 7.10

PI	Comment by BirdLife & Fuglavernd Íslands	Assessment Team Response
	link - to eliminate bird captures) and a line weighting regime that sinks hooks quickly. Night setting can be a highly effective measure, but is less effective around a full moon, when lines are deployed around dusk and dawn, and when deck lighting means birds can still see baited hooks. With this in mind, the score for (a) should be revised to less than 80, as the single best practice mitigation measure deployed is not viewed as fully effective in bycatch reduction when used alone. Since fulmars are in decline in Iceland (40% decline in south/west Iceland, home to the majority of the population - see Arnþór Garðarsson, Guðmundur A Guðmundsson & Kristján Lilliendahl 2011. Numbers of Northern Fulmars Fulmarus glacialis in Iceland: notes on early records, and changes between 1983-86 and 2005-09. Bliki 31: 1-10.), it is not clear that bycatch in longlines (estimated by MRI to be >4,000 birds/year) is not affecting the population, especially as fulmars are a very long-lived seabird (>50 years), and adult mortality can have far-reaching consequences for the population. Similarly, the score for (b) is too high. The text claims that the measures taken are 'well-proven' in temperate regions, but no references are provided to peer-reviewed literature demonstrating the efficacy of the Icelandic 'buoy lines' or gas cannons. In contrast to this, there is a substantial body of evidence demonstrating the efficacy of bird-scaring lines and line-weighting regimes that quickly sink hooks beyond the diving depths of foraging seabirds (see ACAP advice above; specific papers can be provided if requested). There is good evidence for night-setting, but as noted above, best practice highlights that this should be deployed alongside either line weighting or a well-designed bird-scaring line to ensure bycatch is minimised in all circumstances. Therefore, the score should be lower than 80 - there is an objective basis for confidence in night-setting, but not in buoy lines or gas cannons, for which we are not aware of any published evidence of efficacy. Given the above issues, the score for (c) should also be reconsidered. For scoring issue (e), the lack of compliance with ACAP's regularly updated best practice in seabird bycatch mitigation in longlines (which is specifically referenced in MSC's Certification Requirement guidance) demonstrates that adequate or regular review has not been conducted for tackling out-of-scope species bycatch in this fishery. Even a quick and basic review of the literature would clearly highlight that the alternative measures of bird-scaring lines and line-weighting have been demonstrated as effective and easily-implemented solutions to seabird bycatch. The fishery has clearly been over-scored for this scoring issue, and at best could expect a score of 60 for what must have been a cursory review of the bird bycatch mitigation literature. Note that we are open-minded about the potential efficacy of the buoy lines and gas cannons - but there appears to have been little work conducted to indicate how effective these measures are in reducing bycatch compared to existing best practice. We propose that a condition to either adjust the bird bycatch mitigation measures in the longline sector to bring them into line with ACAP best practice, or at very least to conduct paired trials	This has been remarked at 60 for LL and included in the new condition (#3) mentioned above. We consider the score to be appropriate, but have included the need for a regular review of alternative measures (pertaining to longlines) in Condition 3. The summary (Condition #4) has been improved.

PI	Comment by BirdLife & Fuglavernd Íslands	Assessment Team Response
	to determine the efficacy of the gas cannon and buoy-line techniques compared to line weighting and bird-scaring lines (as well as a control with no mitigation measures) is a minimum to bring the fishery up to SG80 standard. **Gillnets**: For gillnets, we are pleased to see that a condition has been raised to examine the issue of bycatch impacts and any management that might be required in response. It is presumably a mistake, but the common guillemot element of this condition is not captured in the brief summary of the conditions in the main body of the PCDR under section 1.6 (though is in place in the detailed client action plan etc). We do, however, believe that it is important to ensure that this condition is adjusted to specifically reference the need to compare the data collected through improved self-reporting with independent bycatch observation of the fleet by MRI/Fiskistofa/other independent agencies. There is some significant work to do to bring self-reported and observed bycatch rates in-line, and simply increasing logbook returns will not achieve this. A scheme of observations throughout the season/regions (beyond the scientific 'cod rallies' in April) would help to cross-check submitted logbooks with observed data. Alongside a programme of work to engage fishermen in developing bycatch mitigation solutions for gillnets, this would help to cultivate a collaborative atmosphere, rather than fear of punitive measure for returning logbooks that highlight seabird bycatch is occurring. We are actively engaged with similar work with the lumpfish gillnet fleet to this end, and believe ISF and NASBO to be open-minded and supportive of following a similar approach. Embedding it in the conditions would doubtless help to drive action. The low numbers of seabirds recorded in gillnets may be a function of low observer effort (and low logbook returns) in the fishery; so while we agree that concerns about common guillemot bycatch have meant sub-80 scores on several scoring issues, it should be recognised that expanded observer effort may uncover other species bycatch issues - including bycatch of Harbour Porpoise.	
2.2.3	**Nature of comment:** I do not believe the information and/or rationale used to score this performance indicator is adequate to support the given score[7]. **Justification:** Adequate information to underpin bycatch interventions is a key issue for both the longline and gillnet sectors. As the PCDR highlights at the outset (under 'weaknesses'), the collected data is not adequate to show that guillemots are not significantly affected by gillnets. We argue this is also the case for northern fulmar in longlines, which, while numerous in terms of overall numbers, is under severe decline in Iceland (40% decline in south/west Iceland, home to the majority of the population - see Arnþór Garðarsson, Guðmundur A Guðmundsson & Kristján Lilliendahl 2011. Numbers of Northern Fulmars Fulmarus glacialis	The score for gillnets and longlines for PI 2.2.3 (SIa) has been reduced to achieving SG 60 and the recommendation has been developed into Condition 5.

[7] MSC Fisheries Certification Requirements, v2.0 section 7.10

PI	Comment by BirdLife & Fuglavernd Íslands	Assessment Team Response
	in Iceland: notes on early records, and changes between 1983-86 and 2005-09. Bliki 31: 1-10.). This issue is picked up by one of the peer reviewers, commenting on the limited logbook returns and the disparity between observed bycatch and self-reported bycatch in both fleet sectors; we do not believe a non-enforceable recommendation is enough to remedy this. This issue also extends to Harbour Porpoise bycatch - the abundance data for this species is quite old (2003) and the population trend is unknown; coupled with poor logbook returns, this is not adequate to determine that the fishery is not having an impact on this species. Improved monitoring all round would pick up bycatch issues across taxa groups. Given that seabird bycatch observations in the longline sector are referred to as 'ad hoc', and that the observed bycatch in the gillnet fleet is skewed towards the scientific 'rallies' in April start of the season, we consider that the information collected is not adequate to inform a partial strategy (scoring issue (c)), as there is seasonally and temporally limited observer coverage, and very poor returns of logbooks (which are additionally not considered to be a reliable source of bycatch data). In fact, existing information indicates that bycatch in the cod gillnet fishery is highly seasonal, and is highest in May, which is not covered by the existing observations (see Aever Petersen (2002). Seabird bycatch in fishing gear in Iceland. Náttúrufraedingurinn 71(1-2): 52-64). Given that the partial strategy for longlines is also out-of-step with best practice, and unable to demonstrate the effectiveness of the mitigation measures used in this fleet sector, we believe a score of 80 is too high for the gillnet and longline sectors and should be adjusted to below 80 to account for the level of uncertainty around the data. Recommendation 1 (to examine logbook accuracy) should be upgraded to a condition, and needs to include specific requirements on improving the independent observer work on both longliners and gillnetters to allow for robust comparisons between self-reported and observed bycatch (as per comments above on the existing condition on bird bycatch). Given that large number of porpoise are caught in the gillnet fishery, this should clearly be recorded as well; the current approach (which suggests action is not required because there is more bycatch in the lumpfish fishery) is not appropriate for a fishery seeking MSC certification - the aim (as enshrined in the standard) is to minimise non-target catch, and this should particularly be the case for marine mammals, seabirds, and other bycaught animals.	
	Nature of comment: I do not believe all the relevant information[8] available has been used to score this performance indicator. Other. – I wish to comment on other portions of the report (e.g. background information, species biology, peer review reports and CAB responses, list of consultees, etc.). **Justification:** In the main body of the report, two tables (16 and 20) are	Some text summarising annual estimates by HAFRO have been to the main text. The stakeholder comments were much appreciated and

[8] MSC Fisheries Certification Requirements, v2.0 section 7.10

PI	Comment by BirdLife & Fuglavernd Íslands	Assessment Team Response
	presented to show the numbers of observed bird bycatch. While these raw figures are perhaps of some interest, it would be much more instructive/useful to show these figures in relation to fishing effort - i.e. what number of trips or percentage of fishing effort did these figures come from? Therefore, what was the bycatch rate? And scaled across the fishery, what is the estimated level of bird bycatch? The tables should be adjusted accordingly so that the bycatch in these fishing gears can be understood in relation to other, similar fisheries. BirdLife and Fuglavernd submitted stakeholder comments at the site visit stage which have not been included in the 'Stakeholder submission' section - it would seem relevant to include this submission here.	were followed up with a face to face meeting with BirdLife International & Fuglaverndarfélag Íslands: as represented by Dr. Erpur Snær Hansen. Appendix 3 has been updated with BirdLife International & Fuglaverndarfélag Íslands' submission

Added note:
Besides the comments above, BirdLife and Fuglavernd Íslands submitted the following separately in an email dated 6 February 2017. The subject matter was taken into account by the assessment team when addressing the comment on PI 2.2.1.

NAMMCO/23/5 (report of 21 SC meeting) -2014

By-catch
In Iceland it is mandatory to report all by-catch of seabirds and marine mammals. Some reporting of marine mammals in the bottom set gill net fishery started in early 2002 covering about 5% of the cod gill net fleet and continued up to 2009 when a new electronic log-book system was implemented. No records have been received from the new system. Main sources of information are the annual cod gill net survey that is about 2% of the fleet effort in April and is distributed in line with the fleet effort by area. Recent reports have been received from the lumpsucker net fishery and the inspectors from the Directorate of Fisheries and scientists that reported by-catches and these data were compared to log-book records from the fleet to estimate the proportion of by-catch reported. The harbour porpoise is the most commonly bycaught marine mammal and according to the calculations the by-catch in gill nets has decreased since 2003, from 7,300 animals to about 1,600 animals in 2009–2013, in line with decreased cod net effort. With 400 in lumpsucker nets, the total has likely been about 2,000 animals from 2009 or 1.2–6.5% of the abundance estimate range calculated from an aerial survey.

*The SC **noted** that the lack of by-catch recording in the gill net fishery from the log-book system implemented in 2009 in Iceland is of great concern. A functioning by-catch recording system is of high priority.*

Appendix 3.3:
Comments from the Marine Stewardship Council on the Public Comment Draft Report and Responses by the Assessment Team

Marine House
1 Snow Hill
London EC1A 2DH
United Kingdom
Tel: +44 (0)20 7246 8900
Fax: +44 (0)20 7246 8901

Date: 09/02/2017

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

Dear Paul Medley

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

CAB	Vottunarstofan Tún EHF (V Tun)
Lead Auditor	Paul Medley
Fishery Name	ISF Iceland Cod
Document Reviewed	Public Comment Draft Report

Ref	Type	Page	Requirement	Reference	Details	PI
25862	Major	89	FCR-7.10.6 v.2.0	To contribute to the scoring of any PI, the team shall verify that each scoring issue is fully and unambiguously met.	For scoring issue 1.1.1 (b): The rationale states that Bmsy is determined as the long term SSB resulting from applying Fmsy, but it appears this value is not estimated for the stock. While MSY Btrigger may be a lower bound for a stock fluctuating around Bmsy, it is a trigger reference point and not a target point. In the absence of a biomass target against which to judge stock status, the fishing mortality (harvest rate) should be used consistent with the guidance below. The harvest rate has only been below HRmsy (Fmsy) in recent years, and less than a generation time and there is no justification for why this is low enough for long enough to ensure the stock is at or fluctuating around Bmsy.	1.1.1

					MSC guidance on F reads: GSA2.2.4 Scoring stock status using fishing mortality rate (F) ▲ Clause SA2.2.4 also allows the use of fishing mortality as a means of scoring PI 1.1.1 when biomass information is not available. Obviously, a fishery that is currently at or below the point at which recruitment is impaired will not suddenly be at MSY if fishing mortality is reduced to FMSY. The history of fishing mortality should be examined to determine whether the stock biomass could be assumed to be at the required level for each SG. Obviously this depends on the starting status for stock biomass, the trajectory of fishing mortality and the length of time that fishing mortality has been at a certain level. The following expectations should be applied if the starting biomass is unknown: ‖ At least a 60 score is justified if F is likely to have been at or below FMSY for at least one generation time of the species (or for at least two years, if greater). This level of F is generally expected to be able to recover, or maintain, a population to be "likely" above its PRI. ‖ At least an 80 score is justified (B highly likely above the PRI and at or fluctuating around BMSY) if F is likely to have been at or below FMSY for at least two generation times (or for at least four years, if greater). ‖ A 100 score is justified if F is highly likely to have been below FMSY for at least two generation times (or for at least four years, if greater).	

Response to Comment 25862:
The MSC´s comment states the following:

"For scoring issue 1.1.1 (b): The rationale states that Bmsy is determined as the long term SSB resulting from applying Fmsy, but it appears this value is not estimated for the stock. While MSY Btrigger may be a lower bound for a stock fluctuating around Bmsy, it is a trigger reference point and not a target point. In the absence of a biomass target against which to judge stock status, the fishing mortality (harvest rate) should be used consistent with the guidance below. The harvest rate has only been below HRmsy (Fmsy) in recent years, and less than a generation time and there is no justification for why this is low enough for long enough to ensure the stock is at or fluctuating around Bmsy."

The team admits being at a loss as to what the problem is here. HR_{MSY} was not used to determine status, except in terms of being used in projections. That B_{MSY} is related to F_{MSY} is a statement of fact, and could be used to estimate B_{MSY} in the stock assessment. Therefore, HR_{MSY} will define B_{MSY} in each simulation.

There is no requirement to use F_{MSY} if a target reference point is not provided in the stock assessment reports. The guidance on application of F_{MSY} as a proxy for status (SA2.2.4) as it states, is only useful if the F_{MSY} has been maintained for long enough to imply the stock is around the long term required level. As indicated in the text, this is not true, so the fact that F_{MSY} has been applied for the last 5 years is insufficient to justify 1.1.1a SG60 and the stock would fail on status. Therefore, F is not used as a determinant of status in either 1.1.1a or b. I thought this had been made clear in the text.

There is no requirement for the management system or for the stock assessment scientists to estimate B_{MSY}. This requirement was present in CR1.3 and removed in CR2.0 with good reason. B_{MSY} has been estimated under different assumptions and estimates vary widely.

SA2.2.3 states that "Where information is not available on the stock status relative to the Point of Recruitment Impairment (PRI) or MSY levels, proxy indicators and reference points may be used to score PI 1.1.1." This intends to give reasonable leeway in interpreting status. It is importance to distinguish between guidance and requirements.

Guidance to SA2.2.3 specifically states that in ICES assessments, fisheries with $B>B_{MSYtrigger}$ may be regarded as "fluctuating around BMSY". So MSY $B_{trigger}$ can be used to determine status. Using the lower 90% confidence interval for the lowest SSB in the last 5 years in relation to $B_{MSYtrigger}$ for meeting SG100 seems consistent with this guidance, requirements and the SG wording. If it is not, then we require more explanation why not and what to do instead.

Some additional text has been added to the justification hopefully clarifying the reasoning. However, the fundamental argument has not changed.

www.msc.org

25872	Major	117	FCR-7.10.6 v.2.0	To contribute to the scoring of any PI, the team shall verify that each scoring issue is fully and unambiguously met.	2.2.1a. Common guillemot (gillnet): Score of 80 determined, however, there is limited information provided on relative bycatch of UoC compared to total population estimates to support this score (ie. there is just one personal communication). See also Guidance 3.2.3.	

Response to Comment 25872:

Additional information has been added to the main text and the scoring commentary. The personal communication was with Dr. Erpur Snær Hansen, who represented BirdLife International & Fuglaverndarfélag Íslands on the site visit.

25873	Major	138	FCR-7.10.6 v.2.0	To contribute to the scoring of any PI, the team shall verify that each scoring issue is fully and unambiguously met.	2.4.2.a. Bottom Trawls. "Measures" as defined in SA3.14.2.3b. need to include "move-on rules" for UoAs which interact with VMEs. There is no detail presented of the nature/type of these move-on rules, including when/how they are triggered.	

Response to Comment 25873:

It has been confirmed with industry stakeholders that these move-on rules are informal and voluntary. Therefore, existing condition #4 has been revised to require formalisation of these rules.

26876	Guidance	73-75	FCR-7.12.1.3 v.2.0	The CAB shall determine if the systems of tracking and tracing in the UoA are sufficient to ensure all fish and fish products identified and sold as certified by the UoA originate from the appropriate Unit of Certification (UoC). The CAB shll document the risk factors outlined in the "MSC Full Assessment Reporting Template", identifying any areas of risk for the integrity of certified products and how they are managed and mitigated.	The report identifies risks of UoC vessels catching cod using non-certified gears. Although every catch and records at landing is traceable back to individual vessel and gear type, there is no clear description on the measures taken by the fishery to separate certified catch against non-certified, especially at point of landing. In short, there is no clear segregation system to prevent mixing between certified and non-certified product before the start of CoC.	

Response to Comment 26876:
Section 5.2 on traceability within the fishery has been revised. Measures to segregate catch from certified and non-certified (and under-assessment) gears applied within the fishery, in particular, at landing and during handling prior to entry into Chain of Custody, are outlined in paragraphs 3-7, as well as in row 4 of Table 27.

26879	Minor	72	FCR_7.12.1.3 v.2.0	7.12.1 The CAB shall determine if the systems of tracking and tracing in the UoA are sufficient to ensure all fish and fish products identified and sold as certified by the UoA originate from the appropriate Unit of Certification (UoC). 7.12.1.3 The CAB shall document the risk factors outlined in the "MSC Full Assessment Reporting Template", identifying any areas of risk for the integrity of certified products and how they are managed and mitigated.	Row 4 on Table 27 states that a 'substantial amount of fish is landed and traded via auction.' However, the report does not provide a description of how traceability is maintained while at the auction facilities since non-certified product caught by non-certified gear is one of the identified risks as well as non-certified product from Faroese vessels. Further, the report does not include a description of traceability for other activities which may be included in the fishery certificate (e.g. cold storage facilities - row 4, paragraph 1) which are activities prior to when CoC begins.	

Response to Comment 26879:
Section 5.2 on traceability within the fishery has been revised. The specific point raised regarding maintenance of traceability of catch during post-landing activities, such as at auction and in storage facilities, and with respect to under-assessment products from *Nephrops* trawl as well as caught by Faroese vessels, are specifically addressed in paragraphs 5-7. The subject is also addressed in detail in row 4 of Table 27.

26880	Minor	74	FCR_7.12.2.1 v.2.0	The CAB shall determine and document the scope of the fishery certificate, including the parties and categories of parties eligible to use the certificate and the point(s) at which chain of custody is needed	The report states that CoC should begin at point of landing (Table 27, row 1). However, under Eligibility to enter CoC, the report states that CoC will commence "as of the first point of sale, change of ownership and/or processing after landing." The report mentions several on-land activities that can be included in the fishery certificate such as auctions, storage, subcontractors. Please clarify.	

Response to Comment 26880:
The text of Table 27 and of section 5.3 on required entry of fish from the certified fishery into Chain of Custody has been reviewed to ensure better clarity and consistency, see rows 4 and 5 of Table 27, and paragraphs 4-5 of section 5.3. Chain of custody will be required as of the first point of sale and/or processing after landing.

26881	Minor	74-75	FCR-7.12.1.1 v.2.0	7.12.1 The CAB shall determine if the systems of tracking and tracing in the UoA are sufficient to ensure all fish and fish products identified and sold as certified by the UoA originate from the appropriate Unit of Certification (UoC). ■ 7.12.1.1 Systems shall allow the UoA to trace any fish or fish products sold as MSC-certified back to the UoC.	It is not clear from the report how certified product (from the certified gear types) is currently being segregated from non-certified product (under-assessment product from the nephrops trawl), and how the traceability system mitigates any risk(s).	

Response to Comment 26881:

Description of the risk within the fishery of co-mingling fish caught in certified gear with fish (of same or similar species) caught in non-certified (or under-assessment) gear has been revised and re-written, see f.e. paragraphs 3 and 7 of section 5.2. Mitigation of such limited risk is outlined f.e. in rows 1-2 of Table 27.

While the assessment team has confidence in the internal traceability of the ISF Iceland cod fishery, it has, as a precaution, raised a recommendation to request that the client communicates to its members, as well as auctions, the main potential factors of risk to segregation by gears within the fishery.

26883	Major	124	FCR-7.10.6 v.2.0	To contribute to the scoring of any PI, the team shall verify that each scoring issue is fully and unambiguously met.	2.2.3a.Common Guillemot (longline). The basis for determining score needs to consider critical guidance GSA3.6.3. The rationale provided does not support this guidance. For SG80, GSA3.6.3 states that "..having only one form of data collection with a high level of potential bias or other limitation (e.g. logbooks or interviews with fishermen) by itself should not be enough to meet SG80 - additional information sources that compensate for the limitations would also need to be provided an assessed.."	

This report is provided for action by the CAB and ASI in order to improve consistency with the MSC scheme requirements; MSC does not review all work products submitted by Conformity Assessment Bodies and this review should not be considered a checking service. If any clarification is required, please contact the relevant Fisheries Assessment Manager for more information.

If you have any questions regarding this response, please do not hesitate to contact the relevant Fisheries Assessment Manager for this fishery.

Marine Stewardship Council
cc: Accreditation Services International

Response to Comment 26883:

The score for gillnets and longlines for PI 2.2.3 (SIa) has been reduced to achieving SG 60 and the recommendation has been developed into Condition 5.

Appendix 3.4:
Comment from the Marine Stewardship Council on the Final Report and Response by the Assessment Team

Marine House
1 Snow Hill
London EC1A 2DH
United Kingdom
Tel: +44 (0)20 7246 8900
Fax: +44 (0)20 7246 8901

Date: 03/04/2017

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

Dear Paul Medley

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

CAB	Vottunarstofan Tún EHF (V Tun)
Lead Auditor	Paul Medley
Fishery Name	ISF Iceland Cod
Document Reviewed	Final Report Submitted

Ref	Type	Page	Requirement	Reference	Details	PI
26950	Major	89	FCR-7.10.6 v.2.0	To contribute to the scoring of any PI, the team shall verify that each scoring issue is fully and unambiguously met.	The requirement for scoring issue (b) in PI 1.1.1 v2.0 is that stock status (biomass) is fluctuating around a level consistent with MSY. The outcome requirement in version 1.3 was the same. It has not changed between version 1.3 and version 2.0. ICES has not defined Bmsy for this stock and without the explicit reference point defined and against which the Assessment Team can judge stock status, the assessment team needs to consider other factors. In this case Fmsy is defined, and therefore would be the most appropriate means to judge status in relation to the target. As the team acknowledges in their response to MSC TO – the fact that the Fmsy has been applied for the last 5 years is insufficient to judge meeting the requirements of PI 1.1.1. However, there is biomass status and a biomass	

					limit against which to judge this status for scoring issue (a), allowing the fishery to meet the scoring guideposts. However, there is no biomass target and therefor the AT cannot determine that the fishery meetings SI(b) at the SG80 without more evidence. The AT quotes the guidance for SA 2.2.3 that fisheries with B> MSY B trigger, may be regarded as fluctuating around. But being above MSY Btrigger is not enough in itself to judge a stock as fluctuating around MSY, especially if MSY Btrigger is set equal to Bpa and not otherwise calculated. There is also a difference between rebuilding towards Bmsy (where a stock is above MSY Btrigger) and having fluctuated around a level consistent with Bmsy. Again, in the absence of that target defined, considering F is fundamental in determining the outcome for PI 1.1.1 scoring issue (b).	

This report is provided for action by the CAB and ASI in order to improve consistency with the MSC scheme requirements; MSC does not review all work products submitted by Conformity Assessment Bodies and this review should not be considered a checking service. If any clarification is required, please contact the relevant FAM for more information.

If you have any questions regarding this response, please do not hesitate to contact the relevant Fisheries Assessment Manager for this fishery.

Marine Stewardship Council
cc: Accreditation Services International

Response to Comment 26950:

The TO and interpretation note provided some clarity. If MSY $B_{trigger}$ is not suitable for defining an MSY "region", then we must resort to using the fact that the current biomass is substantially larger than the MSY $B_{trigger}$, which meets SG80. The scores and justification changed accordingly. However, it may be worth noting that MSY $B_{trigger}$ is not the same as B_{pa}, but estimated separately as the 5th percentile on the distribution of SSB when the TAC is based on HRMGT and BMSY points have been estimated for a wide range of assumptions and this does inform on the MSY region. In addition, to our knowledge the MSY approach at least in this case is in line with with MSC's MSY definition and intent even if no single BMSY point has been adopted. So, it is not clear that automatically applying the interpretation note to all ICES stocks is appropriate.

_____

Appendix 4: Surveillance Frequency

Table A4.1 : *Surveillance level rationale*

Year	***Surveillance activity***	***Number of auditors***	***Rationale***
Year 1 (2018)	Off-site audit	2 auditors	Any new information on harbour seal and common guillemot, whether it is research or new bycatch information, is easily available online, on websites or directly from the appropriate stakeholder (e.g. client, MRI or DF). Progress on conditions regarding habitat, the potential damage to deep-sea sponges, corals and other vulnerable marine habitats can likewise be evaluated by information provided remotely. Any new information is usually available online and the MRI and DF can easily be contacted for remote meetings if needed. The CAB concludes that an off-site surveillance is therefore sufficient.
Year 2 (2019)	On-site	2 auditors	Although most relevant documents can be obtained online or electronically, an on-site audit for year 2 is considered to provide more detailed information on the methods that the client will propose to reduce bycatch and the action plan for vulnerable habitats.
Year 3 (2020)	Off-site	2 auditors	See above. Information is readily available online, stakeholder cooperation is good, they are easy to contact via e-mail or phone and can be reached for remote meetings. Off-site surveillance would therefore suffice for this fishery.
Year 4 (2021)	On-site surveillance audit	2 auditors	As year 4 marks the starts of re-assessment an on-site surveillance is recommended. Although most of relevant documents can be obtained online or electronically, face-to-face meetings would provide more detailed status of the fishery before re-assessment.

Table A4.2: *Timing of surveillance audit*

Year	***Anniversary date of certificate***	***Proposed date of surveillance audit***	***Rationale***
Year 1	April/May 2018	May 2018	Surveillance audit conducted at the anniversary of the certificate.
Year 2	April/May 2019	May 2019	Surveillance audit conducted at the anniversary of the certificate.
Year 3	April/May 2020	May 2020	Surveillance audit conducted at the anniversary of the certificate.
Year 4	April/May 2021	May 2021	Surveillance audit conducted at the anniversary of the certificate.

Table A4.3: *Fishery Surveillance Program*

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

Table A4.4: *Table G13 in FCR 2.0 for assessing the information available to determine surveillance level.*

	Ability to verify remotely is low	***Ability to verify remotely is high***	***CAB evaluation***
Client and stakeholder input	Electronic forms of communication and other mechanisms to engage with clients and stakeholders (such as video conferencing, phone conferencing, email, phone) are absent, limited or inefficient and ineffective in providing the information required for an audit in the particular circumstances of the fishery.	There are ample opportunities and mechanisms to engage with clients and stakeholders including electronic forms of communication, such as videoconferencing phone conferencing, email, phone. The mechanisms are effective in the particular circumstances of the fishery.	Electronic forms of communication are widely available throughout Iceland. Ability to verify remotely: <u>High</u>
Fishery reports, government documents, stock assessment reports and/or other relevant reports	Fishery reports and other types of reports required for the surveillance, and to demonstrate fishery performance in relation to any relevant conditions and on-going performance against the MSC's standard are not available publicly and cannot be transmitted electronically. There is no remote access to the information and there are none, or very limited other sources available to triangulate and confirm status of the fishery with respect to the MSC standard.	Fishery reports and other documented evidence that can be used to demonstrate progress against conditions and other issue relevant to the MSC Principles and criteria can be easily and transparently checked remotely, due to such information being available publically, such as being available on a website or having been widely distributed and made publically available to several stakeholders. The reports can be transmitted electronically and veracity easily confirmed.	All document relating Icelandic fisheries advice, research and management are available online or can be obtained electronically. Both the MRI and the Directorate of Fisheries publish relevant documents online. Ability to verify remotely: <u>High</u>

Information appropriate to determination	Information from electronic monitoring of position, observer data, logbooks, fisher interviews, dockside monitoring etc. is required for audits but cannot be easily transmitted to a remote auditor in a form that can be easily interpreted.	Where Information from electronic monitoring of position, observer data, logbooks, fisher interviews, dockside monitoring etc. is required to verify performance against MSC standard, this information is available to be transmitted electronically to auditors in a form that can be easily interpreted.	The Directorate of Fisheries publishes data on landings/electronic logbooks online in real time. Information on infringements are also published online, in addition to annual reports. Ability to verify remotely: High
Transparency of the management system	Level of transparency of information by management is low such that information about performance of the fishery is generally not easily and widely available.	There is a high level of transparency in management, such that information on the fishery is widely and publicly available or known to the wider group of stakeholders. Any information provided on the fishery can be easily verified	Information on fisheries is transparent and widely available online and public. Information provided by the fishery can easily be verified by checking online sources or through direct contact with relevant officials. Ability to verify remotely: High
Vessels, gear or other physical aspect of the fishery	There are milestones and conditions that require inspection of vessels or other physical aspects of the fishery during the audit and there are no reliable mechanisms for verifying these aspects of the fishery from a remote location.	There are no milestones that require investigation of physical aspects of the fishery or if there are, there are reliable mechanisms to enable verification of developments with respect to that milestone from a remote location.	Milestones in the cod fishery do not require investigation of physical aspects of the fishery and can easily be verified by documentation or remote meetings. Ability to verify remotely: High

Appendix 5: Objections Process

Objection was not raised to Determination and Final Report for this re-assessment.