FAO-BASED ICELANDIC RESPONSIBLE FISHERY MANAGEMENT (IRFM) CERTIFICATION SURVEILLANCE REPORT

For The

Icelandic Redfish Commercial Fishery (200 nm EEZ)

Facilitated By the

Fisheries Association of Iceland

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Report Code: **ICE/RED/001.1/2015**

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I. Summary and Recommendations

The Fisheries Association of Iceland on behalf of the Federation of Icelandic Fishing Vessel Owners (LÍÚ), the Federation of Icelandic Fish Processing Plants (SF) and the National Association of Small Boat Owners, Iceland (NASBO) requested an assessment of the Icelandic Golden redfish (*Sebastes norvegicus*) commercial fishery to the FAO Based Icelandic Responsible Fisheries Management (IRFM) Certification Program. Certification was granted the 1st of May 2014.

This report is the 1st Surveillance Report (ref: ICE/RED/001.1/2015) for the Icelandic Golden redfish commercial fisheries. The objective of the Surveillance Report is to monitor for any changes/updates (after 12 months) in the management regime, regulations and their implementation, stock assessment and status, and wider ecosystem considerations since the previous assessment and to determine whether these changes and performance and current practices remain consistent with the overall confidence rating scorings of the fishery allocated during initial certification. In addition, any areas reported as "items for surveillance" or corrective action plans (following identified non-conformance) in the previous assessment are reassessed and a new conclusion on consistency of these items with the IRFM Specification is given accordingly.

The unit of certification includes the Icelandic Golden redfish (*Sebastes Norvegicus)* commercial fishery, under state management by the Icelandic Ministry of Industries and Innovation, fished with demersal trawl (main gear), long-line, Danish seine net, gill net, and hook and line by small vessel gear within Iceland's 200 nautical miles Exclusive Economic Zone.

The assessment was conducted according to the Global Trust procedures for FAO – Based IRFM certification using the Fundamental Clauses of the Icelandic Responsible Fisheries Management Specification (Version 1, Revision 1, March 2014) as the base template for surveillance assessment reporting. The IRFM Specification is based on the 1995 FAO Code of Conduct for Responsible Fisheries and on the FAO Guidelines for the Eco-labelling of Fish and Fishery Products from Marine Capture Fisheries adopted in 2005 and amended/extended in 2009, which in turn are based on the current suite of agreed international instruments addressing fisheries, in particular the 1982 UN Convention on the Law of the Sea, the 1995 UN Fish Stocks Agreement, related documentation including the 2001 Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem, as well as various other relevant documents from ISO and other sources.

The Certification and Accreditation Programme is based on internationally accredited, ISO/IEC 17065 Standards, which assure consistent, competent and independent certification practices. Formal ISO/IEC 17065 accreditation by an IAF (International Accreditation Forum) Accreditation body gives the Programme formal recognition (since September 2014) and a credibility position in the International marketplace and ensures that products certified under the Programme are identified at a recognised level of assurance.

Demonstration of compliance is verified through a rigorous assessment by a competent, third party, accredited certification body. The purpose of the Programme is to provide the fishing industry with a 'Certification of Responsible Fisheries Management" at the highest level of market acceptance.

Certification to requirements under the Program demonstrates a commitment that will communicate to customers and consumers the responsibility of fishermen and fisheries management authorities and the provenance of Icelandic fish.

The assessment was conducted by a team of Global Trust appointed Assessors comprising of one externally contracted fishery expert and Global Trust internal staff. Details of the assessment team are provided in Appendix 1. The main Key outcomes have been summarized in Section 5 “Assessment Outcome Summary”

II. Assessment Team Details

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1. Introduction

This Surveillance Report documents the 1st Surveillance Assessment (2015) of the Icelandic Golden Redfish commercial fisheries originally certified in May 2014, and presents the recommendation of the Assessment Team for continued FAO-Based IRFM Certification.

The unit of certification includes the Icelandic Golden redfish (*Sebastes Norvegicus)* commercial fishery, under state management by the Icelandic Ministry of Industries and Innovation, fished with demersal trawl (main gear), long-line, Danish seine net, gill net, and hook and line by small vessel gear within Iceland's 200 nautical miles Exclusive Economic Zone.

This 1st Surveillance Report documents the assessment result for the continued certification of commercially exploited Golden redfish fisheries to the FAO-Based RFM Certification Program. This is a voluntary program that has been supported by Fisheries Association of Iceland and the Iceland Responsible Fisheries Foundation of Iceland who wishes to provide an independent, third-party accredited certification that can be used to verify that these fisheries are responsibly managed according to the FAO-Based IRFM Program.

The Iceland Responsible Fisheries Foundation owns and operates the brand of Iceland Responsible Fisheries. The Foundation was established in February 2011 and took over the operation and management of the IRF certification program from the Fisheries Association of Iceland. The foundation operates on a cost basis, as a non-profit organization.

The assessment was conducted according to the Global Trust procedures for FAO – Based IRFM certification using the Fundamental Clauses of the Icelandic Responsible Fisheries Management Specification (Version 1, Revision 1, March 2014) as the base template for surveillance assessment reporting. The Assessment is based on the 3 major Sections of responsible management derived from the FAO – Based IRFM Specification (Version 1, Revision 1, March 2014); including:

Section 1: Fisheries Management
Section 2: Compliance and Monitoring
Section 3: Ecosystem Considerations

These 3 Sections are supported by 20 fundamental clauses that guide the FAO-Based IRFM Certification Program Surveillance Assessment.

A summary of the site meetings is presented in Section 4. Assessors included both externally contracted fishery experts and Global Trust internal staff (Appendix 1).

1.1. Recommendations of the Assessment Team

The assessment team recommends that the management system of the applicant fishery, the Icelandic Golden redfish (*Sebastes Norvegicus)* commercial fishery under state management by the Icelandic Ministry of Industries and Innovation, fished with demersal trawl (main gear), long-line, Danish seine net, gill net, and hook and line by small vessel gear within Iceland's 200 nautical miles Exclusive Economic Zone, is granted continued certification.

2. Fishery Applicant Details

Applicant Contact Information			
Organization/ Company Name:	**The Federation of Icelandic Fishing Vessel Owners (LÍÚ)**	Date:	**May 2011**
Correspondence Address:	**Landssamband íslenskra útvegsmanna**		
Street :	**Borgartuni 35**		
Country:	**Iceland**		
State:	*N/A*	*Postal Code:*	***IS-105***
Phone:	**(354) 591 0300**	**E-mail Address:**	***ss@liu.is***
Organization/ Company Name:	**The Federation of Icelandic Fish Processing Plants (SF)**	Date:	**8 February 2010**
Correspondence Address:	**Samtök fiskvinnslustöðva**		
Street :	**Borgartuni 35**		
City :	**105 Reykjavik**		
Country:	**Iceland**		
State:	*N/A*	*Postal Code:*	***IS-105***
Phone:	**(354) 591 0350**	**E-mail Address:**	***sf@sf.is***
Organization/ Company Name:	**The National Association of Small Boat Owners, Iceland (NASBO)**	Date:	**8 February 2010**
Correspondence Address:	**Landssamband smabataeigenda**		
Street :	**Hverfisgotu 105**		
City :	**101 Reykjavik**		
Country:	**Iceland**		
State:	*N/A*	*Postal Code:*	***IS-101***
Phone:	**(354) 552 7922**	**E-mail Address:**	***ls@smabatar.is***

3. Unit of Certification

	Fish Species (Common & Scientific Name)	Geographical Location of Fishery	Gear Type	Principal Management Authority
1.	Atlantic Golden Redfish *(Sebastes norvegicus)*	Icelandic Exclusive Economic Zone (200 nm)	Demersal otter trawl [main direct gear (>95% by weight), all others are legal but indirect gears]	Ministry of Industries and Innovation (formerly the Ministry of Industries and Innovation)
2	Atlantic Golden Redfish *(Sebastes norvegicus)*	Icelandic Exclusive Economic Zone (200 nm)	Long-line	Ministry of Industries and Innovation
3	Atlantic Golden Redfish *(Sebastes norvegicus)*	Icelandic Exclusive Economic Zone (200 nm)	Danish Seine net	Ministry of Industries and Innovation
4	Atlantic Golden Redfish *(Sebastes norvegicus)*	Icelandic Exclusive Economic Zone (200 nm)	Gill net	Ministry of Industries and Innovation
5	Atlantic Golden Redfish *(Sebastes norvegicus)*	Icelandic Exclusive Economic Zone (200 nm)	Hook and line by small vessels also termed jigger and hand line	Ministry of Industries and Innovation
6	Atlantic Golden Redfish *(Sebastes norvegicus)*	Icelandic Exclusive Economic Zone (200 nm)	Nephrops trawl	Ministry of Industries and Innovation
7	Atlantic Golden Redfish *(Sebastes norvegicus)*	Icelandic Exclusive Economic Zone (200 nm)	Shrimp trawl	Ministry of Industries and Innovation
8	Atlantic Golden Redfish *(Sebastes norvegicus)*	Icelandic Exclusive Economic Zone (200 nm)	Pelagic Trawl	Ministry of Industries and Innovation

4. Surveillance Meetings

Date and Location	Organization	Staff Represented	Overview/Key Items
8th June 2015, conference call	Marine Research Institute	Kristjan Kristinsson, Þorsteinn Sigurðsson. Assessment Team (GT): Vito Ciccia Romito, Dankert Skagen	Points discussed: • Any significant changes to the analytical assessment (gadget model) of golden redfish over the last 12 months? • Rules for accounting undersized fish - how does that apply to redfish? Is this an issue? • Area closures: How relevant are they to redfish – any example of temporary closures aimed at protecting juveniles redfish over the last 12 months? • Fishery on the stock outside the Icelandic EEZ - shifts in distribution? • Splitting of redfish species - when and where in the process. • Assessment - we note that there is now an accepted basis for advice and an approved HCR. What is the formal state of the plan at present? - Nationally and with Faroes/Greenland? Are scientists satisfied or are there problem areas? Plans for follow up and further development of assessment and HCR revisions. • How satisfied is the MRI with the assessment data - plans for improvement? • TAC and catch. Since 2011, golden redfish catch has exceeded the TAC, according to ICES. What happened? What is the reason for the overages? • Discards of golden redfish in the fishery? Are they deemed significant or not? • Mapping the distribution of benthic assemblages and habitats in Icelandic waters which are considered to be sensitive to trawling disturbances. Updates on this research effort over the last 12 months? Is it possible to have a map of otter trawl effort in Icelandic waters, with captions, for the 2013/2014 season? • Interactions with Endangered, Threatened, Protected or depleted/low abundance species in Icelandic waters. Recent updates on the status of common skate (Dipturus batis), Atlantic • halibut (Hippoglossus hippoglossus), Greenland shark, spiny dogfish and Atlantic wolfish? • The Icelandic government is in the process of improving data collection relating to fisheries interactions and bycatch of marine mammals and seabirds. Evaluation of this data has been ongoing in 2013-2015. The Steering group is planned to carry out an overall appraisal of the bycatch data recording and report at the end of 2015 along with an estimate of the bycatch of seabirds and marine mammals in the Icelandic

			fishery. Any updates about this process/findings? • Any new or coral and hydrothermal vent closures implemented in the last 12 months?
9th of June 2015, conference call.	Icelandic Coast Guard	Asgrimur L Asgrimsson (ICG) Assessment Team (GT): Vito Ciccia Romito, Dankert Skagen	Points Discussed: • Enforcement Laws and Regulations. Have there been amendments or changes to the Icelandic enforcement laws? • How many boardings and violations (as well as type) have been carried out by the ICG during 2014? • Have there been significant violations which undermined directly the management of the Icelandic cod, haddock, saithe and redfish fisheries in 2014 (i.e. overfishing effects)? • Does the ICG prioritize which vessels to board as for following some type of risk assessment process? Does the ICG board trawlers, longliners, netters and other vessels in equal measures? Also, does the ICG board large and small vessels in equal measure? • How many airborne fisheries patrol hours have been conducted over the 2013/2014 fishery season? • How many prosecutions and reprimands made against skippers did these activities result on? • Have there been changes over 2013/2014 in the systems or patrolling vessels used for enforcement (i.e. new vessels or other)? • Have there been any cases of IUU fishing recorded within the Icelandic EEZ in 2013? • Changes between enforcement activities in 2013 and 2014? Any significant differences?
19th June 2015, conference call	Directorate of Fisheries	Áslaug Eir Hólmgeirsdóttir Assessment Team (GT): Vito Ciccia Romito, Danket Skagen	Points Discussed: • Management: Anything new on organization, responsibilities, legislation? • The rules for accounting for undersized fish - how does that apply to redfish? Is this an issue? • Gear restrictions applicable for redfish. (Mesh sizes, sorting grids?) • Landing in other nations? • Fishery on the stock outside the Iceland EEZ: cooperation between Iceland. Faroes, Greenland. Does Iceland claim the whole advised TAC? • TAC and catch: For what reasons does the catch exceed the TAC?

5. Assessment Outcome Summary

Section 1: Fishery Management

Iceland has a well established marine policy, specified in legislation, on the structure of fisheries management and in practical implementation. The Ministry of Industries and Innovation is the principal management organization responsible for Icelandic fisheries. The Directorate of Fisheries is responsible for the implementation of Fishery Regulations on behalf of the Ministry. The Icelandic Coast Guard performs sea and air patrols of Iceland's 200-mile exclusive economic zone and 12-mile territorial waters, and monitoring of fishing within the zone in consultation with the Marine Research Institute and Ministry of Industries and Innovation. The Marine Research Institute conducts a wide range of marine research and provides the Ministry with scientific advice. The stock is managed according to a management plan, approved by ICES, that has been in place since 2014. The main management measures include TACs in an ITQ system, area closures to protect undersized fish and mesh size regulations.

There is an established assessment method (Gadget) for golden redfish, which is approved by ICES. It uses data on catches and age and/or length distribution from Iceland, Greenland and the Faroes, and results from an extensive Icelandic bottom trawl survey in the spring and a groundfish survey in East Greenland. Supplementary data include age-length keys and other biological data from samples form surveys and landings. Redfish species are separated on board or at landing in the Icelandic fisheries, which is the major fishery, and by samples and information on location and depth in the Greenland and Faroese fisheries.

A limit reference point is defined for the spawning stock biomass. A target reference point is defined for fishing mortality, as part of a harvest rule. The harvest rule is considered precautionary and expected to give a near maximum long term yield. The harvest rule aims at maximizing long term yield with a target fishing mortality, but does not have a specific target biomass. The rule defines actions to be taken in terms of a fishing mortality for all levels of spawning biomass, including those below the limit point. Catches of juveniles are avoided by sorting grids in the shrimp fisheries and area closures if catches reach set levels of juvenile ratio. The harvest rule implies en exploitation below what would lead to growth overfishing.

The assessment of the stock is done by the ICES North Western Working Group (NWWG) where all relevant nations are represented. ICES reviews the NWWG report and provides advice based on the report. TACs are set according to scientific advice from ICES and MRI. The stock is shared between Greenland, Iceland and the Faroes. There is presently no agreement on sharing the stock. However, in the last 20 years at least 90% of the catches (96% in 2013) are in Icelandic waters.

Section 2: Compliance and Monitoring

An effective legal and administrative framework has been established through various fisheries management acts. Compliance is ensured through strict monitoring, control and enforcement carried out by the Directorate and the Icelandic Coastguard.

Vessels must weigh catch within two hours of landing on the quay. The system is developed to standardize weights and tares for ice and tubs (a standard tub is used throughout Iceland for fresh fish such as cod and haddock and has a capacity of 280-300 kg). The weight registration document for each vessel is transmitted to the Directorate, which also receives the e-logbook information. These two sets of information are then compared and the appropriate reduction is made to the vessel quota. Weighed recorded landings are the main source of catch documentation. Logbook data is used as a secondary source to cross check landings. Any transfer under the ITQ system for each vessel is also monitored to ensure that any additional quota requirements are rented from other vessels within a 3 day period.

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The Icelandic Coastguard administers the VMS for all Icelandic vessels and for all foreign vessels (including fishing vessels) that enter Icelandic waters. There is an integrated system for monitoring, control and surveillance (MCS) in Iceland. Iceland presents a unique situation, with the importance of the fisheries sector in a relatively small country and its particular historical evolution and institutional setup, and has at its core an underlying concepts of closer collaboration among related institutions and organizations at the national level through creative and dedicated approaches for fisheries enforcement.

In order to facilitate the matching of the species composition of the catch and the quota portfolio for individual fishing vessels or companies, and also to reduce incentives for discard, a variety of flexibility provisions are in place. Current quota share, allocation and remaining quota can be obtained from the Directorates website for any vessels. The system is very transparent. Rules are enforced by the Directorate and the MRI. There are penalties for serious infractions.

Catch analysis includes the comparison of catch amount with figures for the amounts of sold or exported products in order to ensure independent checking of the accuracy of information about the fish that is brought ashore. If analysis reveals discrepancies between the information stated in the reports and the information received from the harbour weighing, corrective measures are taken as appropriate.

Section 3: Ecosystem considerations

Adverse impacts of the fishery on the ecosystem (e.g. Bycatch, ETP species interactions, habitat and food web interactions) are considered, appropriately assessed and effectively addressed. Gathering knowledge of the marine ecosystem is a key role that has been assigned to the Marine Research Institute. There is also comprehensive research which forms the basis of the fisheries management implemented in Iceland to harvest the stocks in a responsible manner, in order to ensure and maintain maximum long-term productivity of all marine resources. The MRI monitors and researches the marine environment, including the ecosystem components.

Information is available on fishing gear used in the fishery, including the fishing gears' selectivity and its potential impact on the ecosystem. Stocks of non-target species commonly caught in the fisheries for the stock under consideration are monitored and their state assessed as appropriate. Discarding, including discarding of catches from non-target commercial stocks, is prohibited. Non-target catches, including discards, of stocks other than the "stock under consideration" do not pose serious risks of depletion to these stocks.

The Icelandic authorities have implemented an extensive array of areas closures in national waters. These take the form of permanent, seasonal and periodic closures aimed at protecting both juvenile and spawning fish and are gear or fishery specific. In particular, the permanent closures will also provide wider ecological benefits over and above their intended fisheries management objective. While the majority of temporary closures to protect juveniles are aimed at protecting cod, haddock and saithe, these closures are likely to have a conservation benefit for other species too.

The MRI has studied redfish, and its place in the ecosystem. All the redfish species primarily feed on zooplankton, but also on small fishes such as capelin. The single most important food group, however, is krill. Golden redfish are in turn prey to larger fish including cod, halibut and whales. There is no information to suggest that golden redfish are key species in the food web.

6. Conformity Statement

The assessment team recommends that the management system of the applicant fishery, the Icelandic Golden redfish (*Sebastes Norvegicus)* commercial fishery under state management by the Icelandic Ministry of Industries and Innovation, fished with demersal trawl (main gear), long-line, Danish seine net, gill net, and hook and line by small vessel gear within Iceland's 200 nautical miles Exclusive Economic Zone, is granted continued certification.

7. FAO-Based Icelandic Specification Fundamental Clauses for Surveillance Reporting

Section 1: Fishery Management

FUNDAMENTAL CLAUSE: 1.1 Fisheries Management System and Plan for stock assessment, research, advice and harvest controls				
Clause Guidance: ***There shall be a structured and effective fisheries management system, with objectives including the limiting of total annual catches for the stock under consideration. Accordingly, appropriate management measures for the conservation and management of the stock shall be adopted and effectively implemented by the competent authorities. Fishing for the "stock under consideration" shall be managed by the competent authorities in accordance with a documented and publicly available Fisheries Management Plan.***				
EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**
SUMMARY EVIDENCE: ***Iceland has a well established marine policy, specified in legislation, on the structure of fisheries management and in practical implementation. The Ministry of Industries and Innovation is the principal management organization responsible for Icelandic fisheries. The Directorate of Fisheries is responsible for the implementation of Fishery Regulations on behalf of the Ministry. The Icelandic Coast Guard performs sea and air patrols of Iceland's 200-mile exclusive economic zone and 12-mile territorial waters, and monitoring of fishing within the zone in consultation with the Marine Research Institute and Ministry of Industries and Innovation. The Marine Research Institute conducts a wide range of marine research and provides the Ministry with scientific advice. The stock is managed according to a management plan, approved by ICES, that has been in place since 2014. The main management measures include TACs in an ITQ system, area closures to protect undersized fish and mesh size regulations.***				

EVIDENCE

Iceland has an established Marine Policy. There is a principal Act ***(last amendment No** 116/2006)* *http://eng.atvinnuvegaraduneyti.is/media/acts/Act-no-116-2006-on-Fisheirs-Management.pdf* and a number of supporting Acts and Regulations for the management of the fishery. Article 1 in the principal act states the overall objective for Icelandic fisheries management: *The exploitable marine stocks of the Icelandic fishing banks are the common property of the Icelandic nation. The objective of this Act is to promote their conservation and efficient utilisation, thereby ensuring stable employment and settlement throughout Iceland.*

There is a structured fisheries management system adopted within Iceland for the management of fish species including golden redfish.[1] There are a number of inter-related government agencies within the system under the direction of the Ministry of Industries and Innovation which has ultimate responsibility. Policies incorporate a number of International Agreements, including; UN Convention of the Law of the Sea, Agenda 21 of the Rio Declaration, FAO Code of Conduct for Responsible Fisheries and the International Plan of Action to prevent, deter and eliminate Illegal, Unregulated and Unreported Fishing. [2]

The Ministry of Industries and Innovation has the ultimate responsibility for fisheries management. They act according to law issued by the parliament (Althingi), and according to advice from the Marine Research Institute (MRI). The executive body is the Fisheries Directorate (Fiskistofa). The coast guard is responsible for control at sea, both of the catches and the quality of the vessels.

The Ministry of Industries and Innovation[3] in Iceland is the principal management organization responsible for Icelandic fisheries. Overall responsibilities include[4]:

- Fisheries Management
- Research, conservation and utilization of fish stocks, other living marine resources of the ocean and the seabed and management of areas where these resources can be harvested
- Research and control of production and import of fisheries products
- Mariculture of marine species
- Supporting the research, development and innovation in the fisheries sector

http://www.fisheries.is/management/government-policy/responsible-fisheries/

Limiting the total annual catch of redfish is achieved primarily by an annual TAC. This TAC is distributed on vessels as individual transferable quotas (ITQ), managed by the Directorate.

1 http://www.responsiblefisheries.is/seafood-industry/management-and-control-system/

2 http://www.fisheries.is/management/government-policy/responsible-fisheries/

3 http://eng.atvinnuvegaraduneyti.is/

4 http://eng.sjavarutvegsraduneyti.is/ministry/role-and-function/

In addition, there are area closures (temporary and permanent),and gear restrictions in place, There is extensive control and monitoring of landings. Discards are prohibited, and studies by MRI indicate that discards of redfish are negligible. Management also includes fora for consultation with stakeholders. The Ministry sets the overall TAC for each species, including redfish. The TAC is set taking advice from MRI, which is responsible for collecting and analyzing scientific data on the stock. The MRI advice is based on calculations done within the framework of ICES (The International Council for Exploration of the Sea) ICES provides advice, which normally, but not necessarily is followed by MRI and subsequently by the Ministry. The ministry also seeks advice from ICES on management plans. The management plan for redfish was examined and approved by ICES in 2014.
http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/Special%20Requests/Iceland_Faroe_Islands_Greenland_Evaluation_of_ltmp_for_golden_redfish.pdf

The plan is publicly available and is effective from 2014 onwards.

The Directorate of Fisheries (Fiskistofa) has a HQ in Hafnarfjörður, just outside of Rejkjavik and offices at 6 locations in the country where the staff are in the field of fisheries management and monitoring of fisheries and secretariat, as necessary. A total staff of 70 are involved in fisheries management. They note (in consultation meetings) that the strategy of local, area offices based in the fishing regions provides the best form of intelligence, support from industry to respect and follow the control rules and provide a conduit for information from fishers‘ to government on the performance of fishing at any point in time. Operationally, the Directorate of Fisheries is responsible for the implementation of Fishery Regulations on behalf of the Ministry. A large part of the at sea surveillance falls directly under the responsibility of the Icelandic Coast Guard.

Key functions include:

- Implementation of regulations
- Collection and collation of fishery catch data
- Supporting research, survey work
- Supporting Coastguard and surveillance activities
- Managing and policing the Icelandic ITQ system

All catches of Icelandic fishing vessels must be weighted and recorded at the port of landing by a certified official weigher. The port authorities record the catch in a computer that is directly linked to a centrally located database at the Directorate of Fisheries. Thus 60 ports in Iceland send electronic data daily to the Directorate. A total of approximately 50,000 landings are registered in the system every year. The data is processed in the Directorate´s database and catches are subtracted from the vessel´s quotas. The system is designed so that the Directorate can act quickly if vessels have overfished their quotas. Excess catches can result in a revocation of fishing licenses and fines. Statistics Iceland then receives copies of the data for the production of statistics regarding the economy.

The Icelandic Coast Guard[5]

The Coast Guard performs sea and air patrols of Iceland's 200-mile exclusive economic zone and 12-mile territorial waters, and monitoring of fishing within the zone in consultation with the Marine Research Institute and Ministry of Industries and Innovation. In addition to patrolling the Icelandic EEZ, the Coast Guard performs surveillance and inspection duties in international areas, e.g. the NEAFC Regulatory Area which is the area outside the EEZ towards the SW, S and East of Iceland. The Coast Guard is also responsible for rescue operations in the Icelandic Search and Rescue Region, which is an area of 1.9 million square kilometers, or more than twice the area of the EEZ. The Coast Guard operates the Icelandic Maritime Traffic Service within its operations centre. This centre is a single point of contact for all maritime related notifications, involving, for example, the Maritime Rescue Co-ordination Centre, the Vessel Monitoring Centre and the Fisheries Monitoring Centre. All hydrographic surveys in Icelandic waters are undertaken by them, including the preparation of nautical charts (http://www.fisheries.is/management/Institutes/the-icelandic-coast-guard/).

The Coast Guard received a new flagship vessel named Thor that became active in November 2011. Thor was specially designed for Icelandic conditions, particularly for protection of resources, fisheries monitoring, law enforcement and search & rescue. The ship was designed for rescue and salvaging of much larger ships (which are expected to start traversing the Arctic as ice melts). Thor is also capable of pollution clean-up, fire-fighting and multi-beam underwater research. (http://www.icenews.is/index.php/2011/10/27/new-icelandic-coastguard-cruiser-welcomed-in-reykjavik/).

The Marine Research Institute (MRI) [6]

MRI conducts various marine research and provides the Ministry with scientific advice based on its research on marine resources and the environment. The institute has around 130 employees, 2 research vessels, 5 branches around Iceland and a mariculture laboratory. The main areas of activities of the MRI are:

- to conduct research on the marine environment around Iceland and its living resources,
- to provide advice to the government on catch levels and conservation measures,
- to inform the government, the fishery sector and the public about the sea and its living resources.

Laws and regulations[7]**.**

In addition to the principal Act-no-116-2006-on-Fisheries-Management, several laws and regulations regulate the fisheries, including those for redfish:

The Act concerning the Treatment of Commercial Marine Stocks as subsequently amended No 57/1996.

5 http://www.lhg.is/english

6 http://www.hafro.is/

7 http://eng.atvinnuvegaraduneyti.is/laws-and-regulations/fisheries/

The Act on Fishing in Iceland's Exclusive Fishing Zone as subsequently amended No 79/1997. Regulations are issued annually with amendments.

Regulations are issued annually with amendments. Primary regulations are:
Regulation no 698/2012 on commercial fisheries, which is issued every year with amendments.
Regulation no 810/2011 on utilization of catch and by-products.
Regulation no 557/2007 on logbooks.
Regulation no 224/2006 on weighing of catch as subsequently amended.

This legal framework with regulations and rules is the basis for the management, gives powers to the Ministry, the Directorate, the Coast Guard and the MRI and allows penalties for serious infractions.

Management plan.

A management plan for golden redfish was approved in 2014[8]and is implemented for the fishing year 2014-15, after having been approved by ICES[9]. It sets a TAC according to a fixed fishing mortality, which is reduced if the spawning stock biomass is below a threshold. Stock extends outside the Icelandic EEZ, but the vast majority of the catches are from within the Icelandic EEZ. A final agreement with Greenland and the Faroes is still not in place, but Iceland has in recent years assumed a small fraction is taken outside Iceland when deciding its national TAC.

The plan, as approved by ICES at the request of Iceland, Greenland and the Faroes, states:

The management strategy for golden redfish (Sebastes marinus) in Subareas V, VI, XII and XIV is to maintain the exploitation rate at the rate which is consistent with the precautionary approach and that generates maximum sustainable yield (MSY) in the long term.

In accordance with this strategy, the annual total allowable catch (TAC) will be set by applying the following harvest control rule (HCR):

1. *The annual TAC will be set consistent with the average fishing mortality rate of 0.097 in the advisory year for age-groups 9-19, when the spawning stock biomass (SSB) in the assessment year (SSBy) is estimated to be above 220,000 tonnes (Btrigger).*
2. *When the SSB in the assessment year is estimated to be below 220,000 tonnes (Btrigger), the TAC will be set consistent with a fishing mortality rate in the advisory year equal to 0.097*(SSBy/Btrigger).*

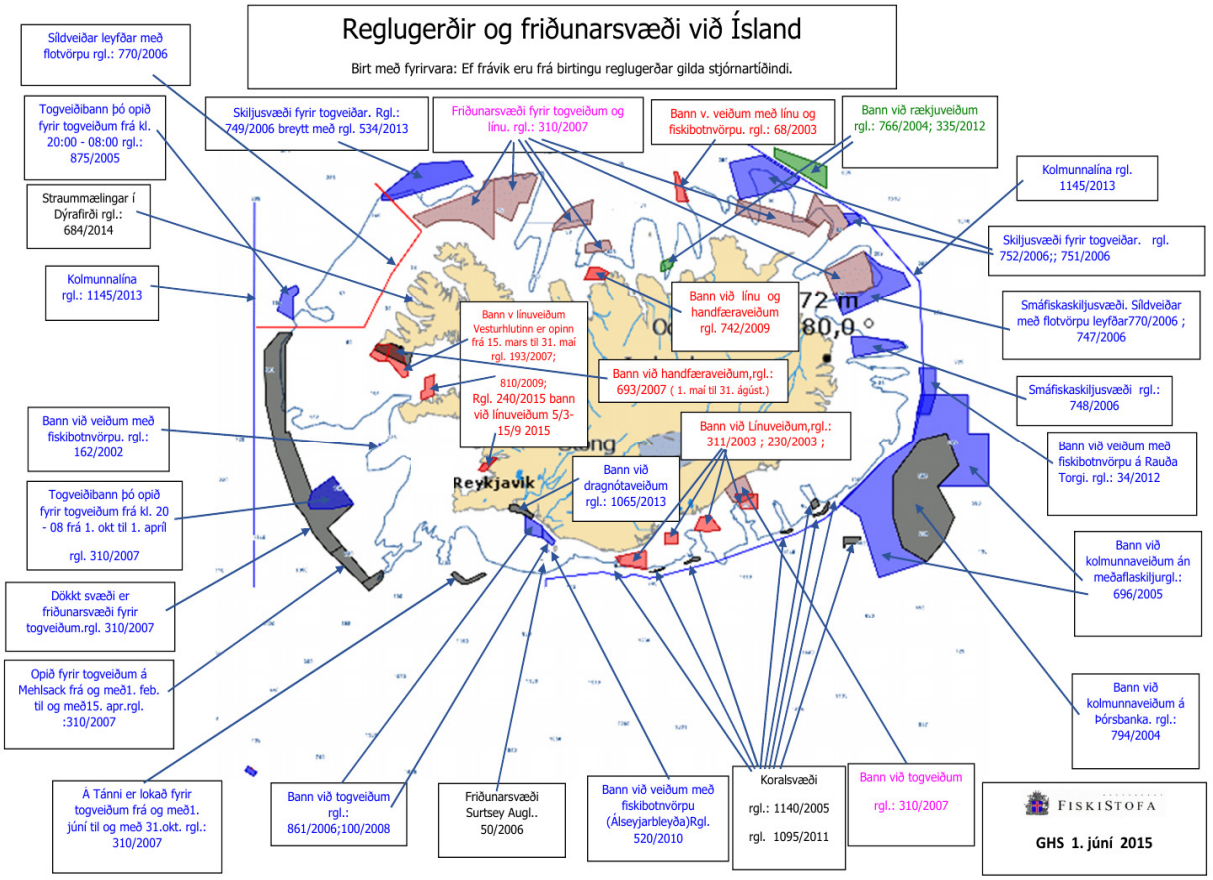
8 http://eng.atvinnuvegaraduneyti.is/publications/news/nr/8105

9 http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/Special%20Requests/Iceland_Faroe_Islands_Greenland_Evaluation_of_ltmp_for_golden_redfish.pdf

Management measures

The redfish stock is primarily managed by a TAC that is distributed on the participating vessels according to an ITQ system that is managed by the Directorate. All landings must be accounted against an individual vessel quota, and each vessel landing redfish must have a quota for that, in addition to a general fishing permit. There are special arrangements for small coastal vessels that can fish under group quotas, these quotas are also part of the overall TAC. Discards are prohibited, and that includes all major species. Landings of undersized golden redfish is very uncommon, and would lead to area closures (clarified at conference with the Directorate). Control of the fishery is largely done through the landings, by the Coast Guard at sea and by remote control and by inspectors from the Directorate of fisheries, both in ports and as observers at sea. VMS is compulsory for all vessels and continuously monitored by the Coast Guard. Other involved institutions also have ample access to the VMS data. Logbooks are compulsory and there is an electronic logbook system in operation that the MRI uses in conjunction with approved landing data. The primary source of catch statistics is the landings data from the certified weighing ports. All fish must be landed in approved ports, and weighed by species by authorized weighers. Most fish is sold in auctions, and there is a nation-wide electronic auction system in place. The sales system is very transparent, detailed data on landings can be publicly accessed in real time online, see http://www.fiskistofa.is/english/quotas-and-catches/total-catches-by-harbours-months-and-vessel-type/bbt.jsp?lang=en.

There is an extensive set of area closure in place, both permanently and temporary. Some area closures aim at protecting vulnerable habitats, others, in particular temporary closures, protect spawning grounds and juvenile areas. For golden redfish, there is a permanent area closure in the West which aims at protecting small redfish (marked with grey on the map, labelled 'Dökkt svæði er friðunarsvæði fyrir togveiðum.rgl. 310/2007'). This is considered a sufficient protective measure at present. If undersized golden redfish should be caught elsewhere, that would lead to area closures, but such closure have not been needed in recent years.



Between 90-95% of the golden redfish catch is taken by bottom trawlers targeting redfish (both fresh fish and factory trawlers; vessel length 48-65 m). The remaining catches are partly caught as by-catch in gillnet, long-line, and lobster fishery. In 2013-14, as in previous years, most of the catches were taken along the shelf southwest, west and northwest of Iceland. A notable change is that a higher proportion of the catches are now taken along the shelf northwest of Iceland and much less south and southwest.

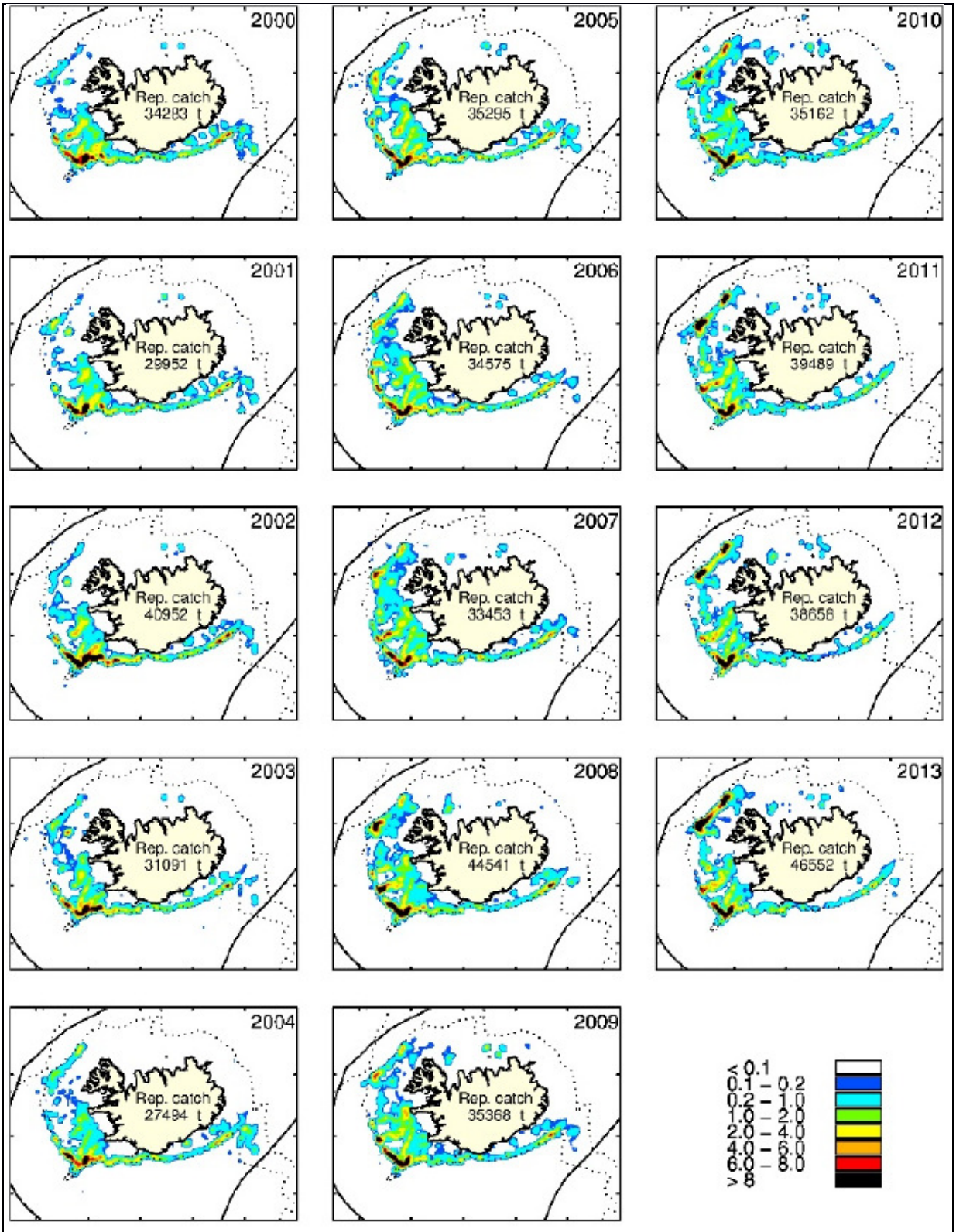


Figure 1. Area distribution of bottom trawl catches of golden redfish in Iceland [10]

10 http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2014/NWWG/01%20NWWG%20Report%202014.pdf

FUNDAMENTAL CLAUSE: 1.2 Research and Assessment

Clause Guidance:

The relevant data collected/compiled by the relevant authorities shall be appropriate to the chosen method of stock assessment and sufficient for its execution, in line with assessing the size and/or productivity of the fish stock(s) under consideration. The determination of suitable conservation and management measures shall include or take account of total fishing mortality from all sources (including discards, incidental mortality and catches in other fisheries). Furthermore, there shall be active collaboration with international scientific organizations for stock assessment activities and review, and, in cases where the stock under consideration is a shared stock or a straddling stock or a highly migratory stock, there shall be scientific cooperation at the relevant bilateral, regional or international level for obtaining data and/or conducting stock assessments and/or providing advice, as appropriate.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

There is an established assessment method (Gadget) for golden redfish, which is approved by ICES. It uses data on catches and age and/or length distribution from Iceland, Greenland and the Faroes, and results from an extensive Icelandic bottom trawl survey in the spring and a groundfish survey in East Greenland. Supplementary data include age-length keys and other biological data from samples form surveys and landings. Redfish species are separated on board or at landing in the Icelandic fisheries, which is the major fishery, and by samples and information on location and depth in the Greenland and Faroese fisheries.

EVIDENCE

Assessment method. The method for assessing the abundance and exploitation of the golden redfish in Iceland-East Greenland has evolved over several years and was approved by ICES in 2014[11]. It uses the Gadget software, which has a combined age-length disaggregated forward projecting population model that is fitted to observations by the maximum likelihood approach. As such, it is versatile with respect to which data to use, but the data must be sufficient to reliably estimate the key model parameters that characterize the time course of stock abundance and mortality. The model operates on 3 commercial fleets, for which there are data on the length distribution and total landings. One survey index series is used, as a length disaggregated abundance indices.

11 http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/Special%20Requests/Iceland_Faroe_Islands_Greenland_Evaluation_of_ltmp_for_golden_redfish.pdf

The survey series is a combination of the Icelandic Spring groundfish survey (IS-SMB) and German Groundfish Survey in East Greenland. Age-length keys are obtained from the Icelandic Groundfish survey in October and from samples from commercial catches in the Icelandic fishery.

The specific data that are used are:

- Length distributions from the commercial catches (Greenland, Iceland and the Faroese) and the surveys (the Icelandic Spring groundfish survey (IS-SMB) and German Groundfish Survey in East Greenland combined) in two cm length groups.
- Length disaggregated survey indices in two cm length group 19–54 cm
- Age–length keys and mean length-at-age from the Icelandic groundfish survey in October (IS-SMH): 1996–recent year. Based on two cm length groups.
- Age–length keys and mean length-at-age from the Icelandic commercial catch 1995–recent year. Based on two cm length groups.
- Mean length-at-age in IS-SMH.
- Mean length-at-age in Icelandic commercial catches.
- Landings by six month period.

Further, a fixed natural mortality (0.05 for most lengths, but 0.10 for the largest (oldest)) fish is assumed. The model estimates the following parameters:

- The number of fish when simulation starts.
- Recruitment each year.
- Two parameters for the growth equation.
- Parameter β of the beta-binomial distribution controlling the spread of the length distributions.
- The selection pattern for the commercial catches. Two parameters for each fleet.

Catch data:

Iceland: The majority of the catches are taken by Icelandic vessels in Icelandic waters. Landings in Iceland are restricted to authorized ports where the amounts landed are recorded by authorized weighers. ***Splitting of catches*** on species is now (since 2010/11) done routinely at sea in the Icelandic fishery, and redfish is landed by species. Previously, redfish was landed as such, and split by species by a quite complex procedure based on samples. The split as it is done now has been verified by the previous procedure, and found to be satisfactory[12]. There is documentation that while the official landings were 42937 tonnes, a split based on samples would have given 42153 tonnes.

The landings data are managed by the Directorate of Fisheries and used as catch data in the assessment.

Greenland: Management of redfish in Greenland waters is by the Greenland Ministry of Fisheries, Hunting and Agriculture. The catches of redfish in Greenland waters has varied over the years. There was a substantial fishery by foreign fleets around 1980, amounting to 15-30 000 tonnes. Since 1995 the catches in Greenland waters were very small and there was no directed fishery for redfish. A directed fishery was opened in 2008 in restricted areas and/or seasons, with restrictions aiming at protecting juvenile cod. So far, the estimated catches of Golden redfish has amounted to about 1700 tonnes, which is 3-4% of the total catch. Catch statistics are based on logbooks that are reported to

12 Kristján Kristinsson, Fishery of Golden Redfish (Sebastes marinus) in ICES Division Va in 2012 WD#15 to NWWG 2013. Provided by IMR.

the Greenland Institute of Natural Resources.

The Greenland authorities operate the quota uptake with three types of redfish[13]:

- Fish caught by bottom trawl and longlines on the bottom are named *Sebastes norvegicus*;
- Fish caught pelagic in the Irminger Sea are named *Sebastes mentella*;
- Fish caught as bycatch in the shrimp fishery are named *Sebastes sp*. 20% of these are regarded as *S. norvegicus*.

Faroes: For the Faroese catches, this split is based on data from Research Vessel surveys on horizontal and vertical distribution of the two species, from regular biological sampling of the redfish landings by fleet, and from logbooks (information on the location of each haul, effort, depth of trawling and how much redfish was caught).[14]

Discards are not included in the assessment, but are considered to be minor. In Iceland, discards are prohibited. Regular estimates of discards in Icelandic fisheries do not reveal measurable discards of golden redfish[15]. The area where small redfish is found is permanently closed.
Bycatch of small redfish is not regarded as significant after sorting grids were introduced in the shrimp fishery in 1992. [16]

International cooperation and review:

The assessment is done by the ICES North-Western Working Group, where all interested nations participate, including Iceland, Greenland and the Faroes. ICES advices on catches based on the assessment of the NWWG. Since 2014, when the harvest rule was approved, the advice is given according to the rule. [17]

13 http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2014/NWWG/20%20NWWG%20Report%20-%20Sec%2018%20Golden%20redfish%20%28Sebastes%20marinus%29%20in%20Subareas%20V,%20VI%20and%20XIV.pdf , page 846

14 Same as above.

15 http://www.hafro.is/Bokasafn/Timarit/fjolr.htm , nos. 171 and 178

16 http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2014/NWWG/20%20NWWG%20Report%20-%20Sec%2018%20Golden%20redfish%20%28Sebastes%20marinus%29%20in%20Subareas%20V,%20VI%20and%20XIV.pdf , page 592

17 http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/smr-5614.pdf

FUNDAMENTAL CLAUSE: 1.3.1 The precautionary approach

Clause Guidance

The precautionary approach shall be implemented, as specified in the Fisheries Management Plan, to effectively protect the stock under consideration. Accordingly, relevant uncertainties shall be taken into account through a suitable method of risk assessment, appropriate reference points shall be determined, relevant uncertainties shall be taken into account through a suitable method of risk assessment, and specified remedial actions shall be taken if reference points are approached or exceeded.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

A limit reference point is defined for the spawning stock biomass. A target reference point is defined for fishing mortality, as part of a harvest rule. The harvest rule is considered precautionary and expected to give a near maximum long term yield.

EVIDENCE

A precautionary limit biomass is defined at 160 000 tonnes SSB. According to the rule, a defined fishing mortality is defined for all levels of SSB; for SSB at the limit it will be 0.0705. The rule has been tested by simulations, taking uncertainties in future recruitment, growth and maturity, as well as assessment uncertainty into account. It was concluded that the risk of reaching the limit biomass was <5%. Accordingly, in 2014, ICES considered the rule to be in accordance with the precautionary approach[18].

18 http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/Special%20Requests/Iceland_Faroe_Islands_Greenland_Evaluation_of_ltmp_for_golden_redfish.pdf

FUNDAMENTAL CLAUSE: 1.3.2.1 Harvesting rate and fishing mortality

Clause Guidance

The management target for fishing mortality (or its proxy) and the associated limit reference point, as well as the management action to be taken when the limit reference point is exceeded, shall be stated in the Fisheries Management Plan. If fishing mortality (or its proxy) is above the limit reference point, management actions shall be taken to decrease the fishing mortality (or its proxy) below the limit reference point.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

A limit reference point is defined for the spawning stock biomass. A target reference point is defined for fishing mortality, as part of a harvest rule. The harvest rule is considered precautionary and expected to give a near maximum long term yield.

EVIDENCE

The relevant reference points as defined by ICES are[19]:

Reference points

	Type	Value	Technical basis
Management plan	F_{target}	0.097	F_{MSY} (ICES, 2014b).
	$B_{trigger}$	220 kt	Safe distance above B_{lim} (ICES, 2014b).
MSY approach	F_{MSY}	0.097	Average of ages 9–19. F_{max} in the 2012 Gadget run, leading to < 1% probability of going below B_{lim}, under recruitment patterns seen since 1975 and with large assessment uncertainty (ICES, 2014b).
Precautionary approach	B_{lim}	160 kt	Lowest SSB in the 2012 Gadget run (ICES, 2014b).

(Last changed in: 2014)

The management plan specifies a target fishing mortality at 0.097 for ages 9-19, and a reduction of the fishing mortality if the spawning stock biomass is below a Btrigger threshold of 200 000 tonnes spawning stock biomass (SSB). According to the rule, the fishing mortality below Btrigger shall depend on the actual SSB as: F = 0.097*Actual SSBs/Btrigger.

A precautionary limit biomass is defined at 160 000 tonnes SSB. According to the rule, a defined fishing mortality is defined for all levels of SSB; for SSB at the limit it will be 0.0705. The rule has been tested by simulations, taking uncertainties in future recruitment, growth and maturity, as well as assessment uncertainty into account. It was concluded that the risk of reaching the limit biomass was <5%. Accordingly, ICES considered the rule to be in accordance with the precautionary approach.

19 http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/smr-5614.pdf

FUNDAMENTAL CLAUSE: 1.3.2.2 Stock biomass

Clause Guidance

The long term management target for stock size (biomass), either explicit or implicit depending on management approach, and limit reference points consistent with the objective of promoting optimum utilization, shall be specified. Furthermore, limits or directions for stock size (or its proxy), consistent with avoiding recruitment overfishing shall be specified and should the estimated stock size approach Blim (or its proxy), then appropriate management action shall be taken with the objective of restoring stock size to levels above Blim (or its proxy) with high probability within a reasonable time frame.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE

The harvest rule aims at maximizing long term yield with a target fishing mortality, but does not have a specific target biomass. The rule defines actions to be taken in terms of a fishing mortality for all levels of spawning biomass, including those below the limit point.

EVIDENCE

A long term target for the stock biomass is not defined explicitly, However, the expected long term yield by following the rule was tested by the simulations and found to be near the maximum obtainable. A precautionary limit biomass is defined at 160 000 tonnes SSB. This is the lowest SSB observed in the historic data (SSB = Bloss). At that level of SSB, there are no indications of impaired recruitment, as shown in Figure 2 below.

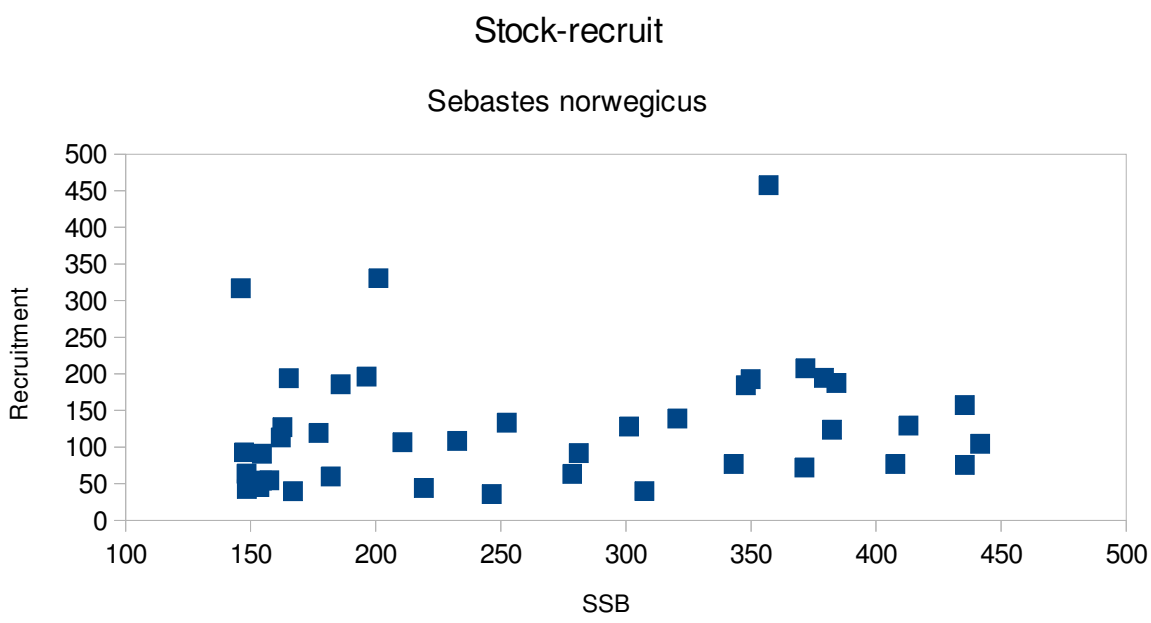


Figure 2. Stock - recruit pairs, reproduced from Table 2.3.13.3 in the 2014 ICES advice[20]

Reference points

	Type	Value	Technical basis
Management plan	F_{target}	0.097	F_{MSY} (ICES, 2014b).
	$B_{trigger}$	220 kt	Safe distance above B_{lim} (ICES, 2014b).
MSY approach	F_{MSY}	0.097	Average of ages 9–19. F_{max} in the 2012 Gadget run, leading to < 1% probability of going below B_{lim}, under recruitment patterns seen since 1975 and with large assessment uncertainty (ICES, 2014b).
Precautionary approach	B_{lim}	160 kt	Lowest SSB in the 2012 Gadget run (ICES, 2014b).

(Last changed in: 2014)

According to the rule, the fishing mortality below Btrigger shall depend on the actual SSB as: F = 0.097*Actual SSBs/Btrigger.

Accordingly, the rule defines a fishing mortality at all levels of SSB, including levels below the limit. Whether that would be sufficient if the SSB drops below Blim depends on the cause of the reduced SSB. This has not been explicitly tested, as the rule according to the simulations imply a very low risk of reducing the SSB to that level. The Minister of fisheries has a suite of measure to take additional action if needed [21]

20 http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/smr-5614.pdf

21 http://eng.atvinnuvegaraduneyti.is/media/acts/Act-no-79-1997-Fishing-in-Iceland-Exclusive-Fishign-Zone.pdf

FUNDAMENTAL CLAUSE: 1.3.2.3 Stock biology and life-cycle (Structure and resilience)

Clause Guidance

Information on the biology, life-cycle and structure of the stock shall be taken into account and consideration shall be given to measures designed to avoid excessive exploitation of spawning components at spawning time, as appropriate, especially at times when biomass (SSB) may approach the level of the limit reference point (Blim). Relevant gear selectivity properties for the protection of juvenile fish shall be specified, as appropriate. Consideration shall also be given to measures designed to limit fishing mortality of juvenile fish, e.g. through temporary closures to fishing of areas containing a high proportion of juveniles of stock under consideration, with the objective of reducing the likelihood of growth overfishing and increasing the contribution of year classes to the spawning stock.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

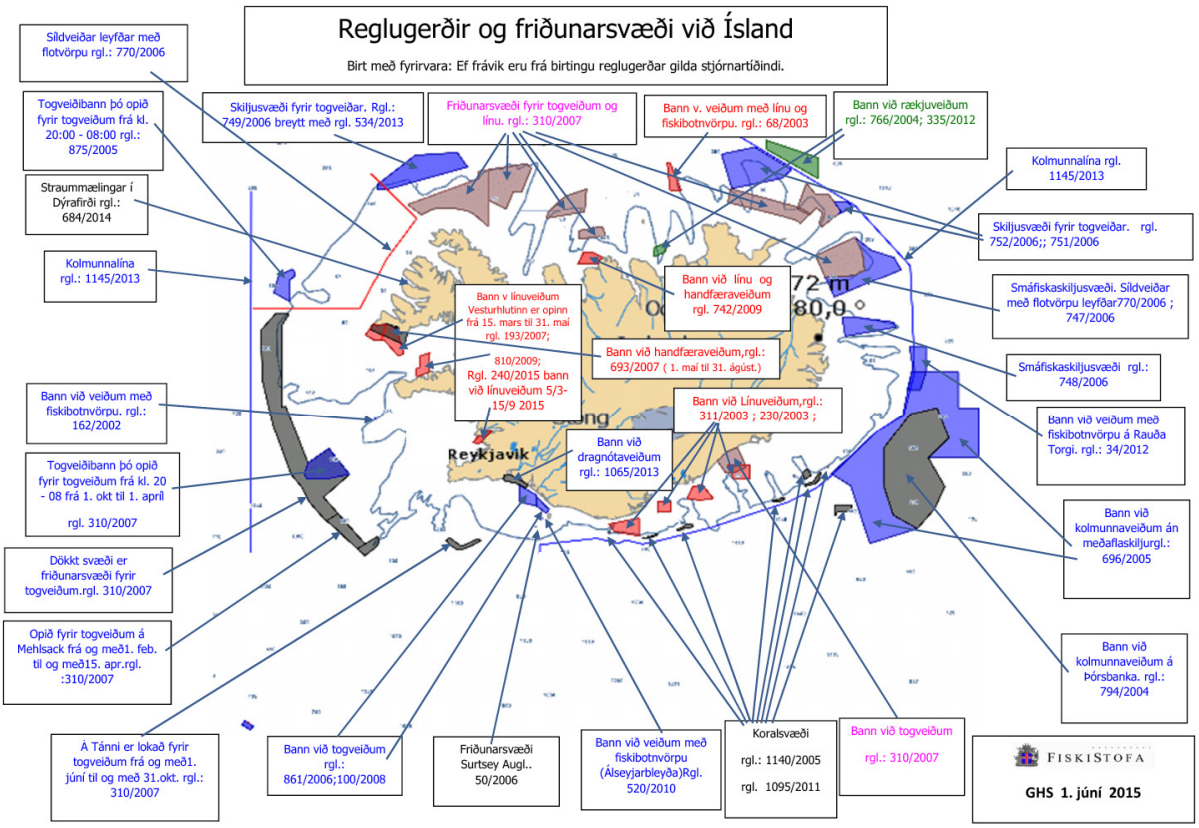
SUMMARY EVIDENCE:
Catches of juveniles are avoided by sorting grids in the shrimp fisheries and area closures if catches reach set levels of juvenile ratio. The harvest rule implies en exploitation below what would lead to growth overfishing.

EVIDENCE
S. norwegicus in East Greenland, Iceland and the Faroes is considered a unit stock[22], with no known distinct subpopulations. East Greenland is largely a nursery area, Icelandic waters are the main fishing area. Very old (large) fish also appear in Faroese waters. The migrations and area distribution is stable. However, within Icelandic waters, a more Northerly distribution has been observed in recent years. The catches in East Greenland are small. The only fishery that might exploit juvenile redfish is the shrimp fishery. Here, sorting grids are mandatory, and believed to be effective. When sorting grids were introduced, the bycatch in the shrimp fishery was reduced drastically.

In Icelandic waters, *S. norwegicus* is caught mostly by trawlers in the Western and Southern part of the shelf break (see map), and to a small extent by long-liners and by the coastal small boat fishery. The minimum mesh size in the trawl fishery is 135 mm. However, the major tool to protect juveniles is area closures. For golden redfish, there is a permanent area closure in the West which aims at protecting small redfish (marked with grey on the map, labelled 'Dökkt svæði er friðunarsvæði fyrir togveiðum.rgl. 310/2007'). This is considered a sufficient protective measure at present. If

22 http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2014/NWWG/20%20NWWG%20Report%20-%20Sec%2018%20Golden%20redfish%20%28Sebastes%20marinus%29%20in%20Subareas%20V,%20VI%20and%20XIV.pdf , page 839

undersized golden redfish should be caught elsewhere, that would lead to area closures, but such closures have not been needed in recent years.



The current target fishing mortality is somewhat below Fmax, and the harvest rule is designed to give a long term yield near the maximum with low risk of recruitment overfishing. Hence, the risk of growth overfishing has been considered and is accounted for.[23]

23 http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2014/WKREDMP/wkredmp_2014.pdf

FUNDAMENTAL CLAUSE: 1.4 External scientific review

Clause Guidance

For the stock under consideration the harvesting policy (including its consistency with the precautionary approach), stock assessments and advice shall be reviewed, by request from the fisheries management authorities at appropriate, regular intervals as well as when substantive changes are made in harvesting policy by an appropriate international scientific body or committee. Following external scientific review, the competent fisheries management authority shall review and/or revise the harvesting policy, taking into consideration the external review, as appropriate.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

The assessment of the stock is done by the ICES North Western Working Group (NWWG) where all relevant nations are represented. ICES reviews the NWWG report and provides advice based on the report.

EVIDENCE

The assessment of the stock is done by the ICES North Western Working Group (NWWG) where all relevant nations are represented. ICES reviews the NWWG report and provides advice based on the report.

FUNDAMENTAL CLAUSE:	***1.5 Advice and Decisions on TAC***			
Clause Guidance ***Appropriate scientific advice shall be provided to the competent fisheries management authority including on the appropriate value(s) for precautionary reference points. For shared stocks the setting of TAC shall take into consideration international agreements and scientific advice. Decisions on TAC shall be made and implemented in such a way as to ensure that the actual catch is as close to the intended catch as practically possible.***				
EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**
SUMMARY EVIDENCE: ***TACs are set according to scientific advice from ICES and MRI. The stock is shared between Greenland, Iceland and the Faroes. There is presently no agreement on sharing the stock. However, in the last 20 years at least 90% of the catches (96% in 2013) are in Icelandic waters.***				
EVIDENCE Iceland: The TAC is set by the Ministry of Fisheries and Innovation based on advice from the MRI. The MRI advice normally follows the advice from ICES, unless there are good reasons to deviate from it. In recent years (since 2011) the TAC has been identical to the MRI advice (see table below). The annual TAC may deviate from the sum of individual fishing rights because there is some opportunity for transfer between years.				

TAFLA 2.4.1
GULLKARFI. Tillögur Hafrannsóknastofnunar um aflahámark, ákvörðun stjórnvalda um aflamark og afli (þús. tonn).
GOLDEN REDFISH. TAC recommended by the Marine Research Institute, national TAC, and landings (thous. tonnes).

Ár *Year*	Tillaga *Rec. TAC*	Aflamark *National TAC*	Afli á Íslandsmiðum *Landings from Icelandic waters*	Afli á öðrum miðum[1)] *Landings (other areas)*[1)]	Heildar-afli *Total landings*
1994/95	25	77[2)]	40	3	43
1995/96	25	65[2)]	37	2	39
1996/97	30	65[2)]	36	3	39
1997/98	35	65[2)]	35	3	38
1998/99	35	65[2)]	41	1	42
1999/00	35	60[2)]	37	2	39
2000/01	35	57[2)]	37	2	39
2001/02	30	65[2)]	46	2	48
2002/03	35	60[2)]	42	2	44
2003/04	35	57[2)]	30	1	31
2004/05	35	57[2)]	40	3	43
2005/06	35	57[2)]	38	1	39
2006/07	35	57[2)]	42	1	43
2007/08	35	57[2)]	35	1	36
2008/09	30	50[2)]	44	1	45
2009/10	30	50[2)]	36	2	38
2010/11	30	37.5	39	2	41
2011/12	40	40	44	2	46
2012/13	45	45	46	2	48
2013/14	52	52			
2014/15	48[3)]				

[1)] Almanaksárið. *Calendar year.*
[2)] Sameiginlega fyrir gull- og djúpkarfa. *Both* Sebastes norvegicus *and demersal* S. mentella.
[3)] Aflaregla. *Harvest control rule.*

The ICES advice as well as the MRI advice includes fishery in all areas. There is ongoing negotiations between Iceland, Greenland and the Faroes on sharing the golden redfish stock, but at present no final agreement has been reached.

Annual landings in Greenland increased from over 200 tonnes in 2009 to about 1 700 tonnes from 2010–2013, which is the largest catch since the early 1990s. Annual landings in the Faroe Islands have decreased considerably in recent years to 400–600 tonnes from 2006–2013. There are also very small catches from the EU zone. Altogether, the Icelandic fishery took 96% of the catch in 2013, and that percentage has been over 90 for the last 20 years. [24]

24 http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/smr-5614.pdf

SECTION 2: COMPLIANCE AND MONITORING

FUNDAMENTAL CLAUSE: 2.1 Implementation, compliance, monitoring, surveillance and control

Clause Guidance

An effective legal and administrative framework at the local, national or regional level, as appropriate, shall be established for the fishery, and compliance shall be ensured through effective mechanisms for monitoring, surveillance, control and enforcement.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

An effective legal and administrative framework has been established through various fisheries management acts. Compliance is ensured through strict monitoring, control and enforcement carried out by the Directorate and the Icelandic Coastguard.

EVIDENCE

The principal Act (**Fisheries Management Act No.116/2006**)[25] which supersedes the Fisheries Management Act 1990 establishes the requirements for vessel permits (the initial legal requirement) without which a vessel is not entitled to obtain quota to fish for Icelandic stocks, such as Golden redfish and fish, accordingly. Two permits are possible; a general permit with quota and a general permit with a hook-and-line quota.

The Maritime Division of the Icelandic Transport Authority maintains a Register of all vessels fishing in Icelandic waters. The Act on Fishing in Iceland's Exclusive Fishing Zone No. 79/1997[26] establishes the Icelandic ITQ system giving powers to the Minister for its administration, fees, provision of powers to the Directorate, penalties for violations and temporary provisions. This Act also provides for the efficient utilisation of commercial stocks, specifies the Icelandic EEZ and prohibits foreign vessels from fishing within Iceland's EEZ (unless by Agreement). Vessels are classified under 3 classes. The Act, among other things, makes provisions for the Minister to limit certain gear types, fishing areas, fishing for certain stocks, prevent harmful fishing (fishing where undersize fish in the catch exceeds the reference levels determined by the Minister), and set rules for minimum size of marine animals.

The Act also specifies the sanctions for violations against the Act including imprisonment for up to 6 months, gear and catch confiscation, suspension of licenses and fines for violations (ISK 4,000,000) and repeat violations (>ISK 400,000 < ISK 8,000,000).

[25] http://eng.atvinnuvegaraduneyti.is/media/acts/Act-no-116-2006-on-Fisheirs-Management.pdf

[26] http://eng.atvinnuvegaraduneyti.is/media/acts/Act-no-79-1997-Fishing-in-Iceland-Exclusive-Fishign-Zone.pdf

The Act concerning the Treatment of Commercial Marine Stocks No 57/1996 establishes the principle requirement of no discarding and that fishing cannot take place unless the vessel has sufficient quota. Also, the Act establishes the requirement for the landing of fish from the Icelandic EEZ (or in part thereof) at Icelandic ports and for official weighing or in foreign ports officially recognised by the Directorate. Act No. 55 respecting Control and Inspection of Fish and Fish Produce 1968, establishes the hygiene conditions and the provisions for catch separation, recording, tracking of quota allocations, to accredited weighing stations within 2 hours of landing (**Regulation No 224/2006** on Weighing and Recording of Catch)[27], exemptions for in-house and auction weighing permission, processing at sea weight registration, and transfer of quotas is included in the Act.[28]

During the site visits to Iceland, the assessors witnessed fish landing, transfer to the auction, weighing, tipping and re-icing and sales of fish across the electronic auction system. Labelling of catch for traceability was also reviewed. Sold and registered weights are the official weights across the calibrated scales which are submitted to the central database.

Each vessel weighing generates a weighing receipt containing the following information:

- Name of Vessels, registration number and district number;
- Port of landing and date of landing;
- Name of seller, buyer and recipient of the catch or fish auction;
- Weighted quantity of catch by species;
- Undersize in catch;
- Number, type and weight of tubs, boxes, barrels;
- Fishing gear;
- Total number of Pallets of platforms;
- Registration number and tare of transport vehicle;
- Whether catch is to be re-weighted;
- Whether any un-gutted catch will be weighed after gutting or converted using coefficients provided by Directorate.

The scale operator must enter the information within the Directorates catch registration system without delay. Operationally, the Directorate of Fisheries is responsible for the implementation of Fishery Regulations although a large part of the at sea surveillance falls directly under the responsibility of the Icelandic Coast Guard.

The Directorate has a HQ in Hafnarfjörður and offices at 6 locations in the country. Where the staff are in the field of fisheries management and monitoring of Fisheries and secretariat, as necessary. A total staff of 70 are involved in fisheries management.

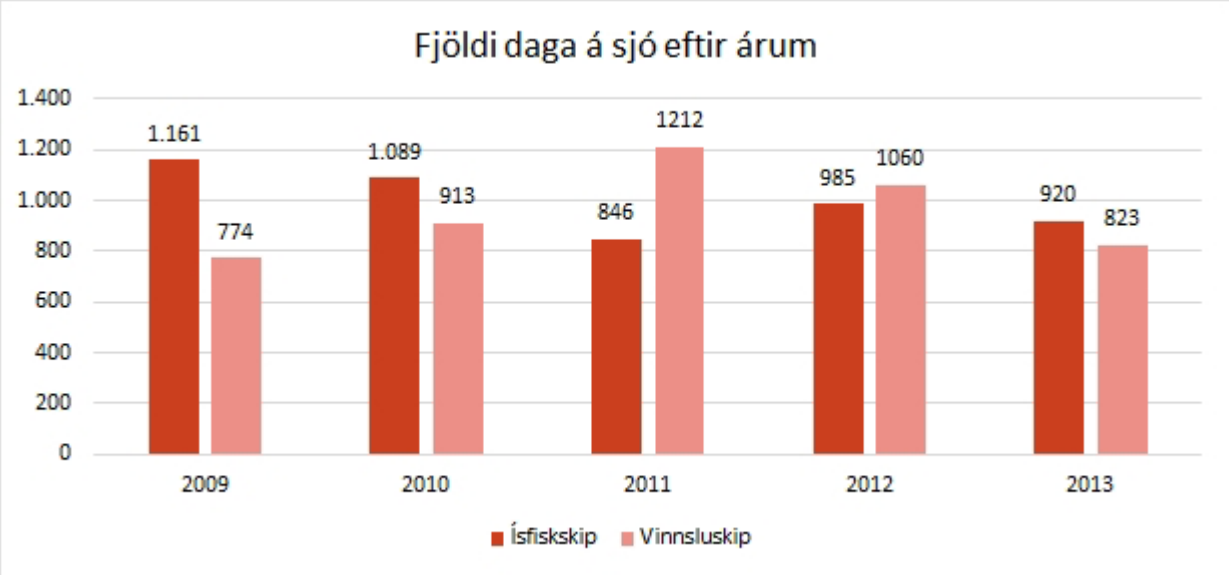
[27] http://eng.atvinnuvegaraduneyti.is/laws-and-regulations/fisheries/

[28] http://www.fisheries.is/management/fisheries-management/the-fisheries-management-act/

Surveillance is a big part of the Directorate works and play key role in monitoring fisheries. The project is comprehensive and includes the monitoring of fishing, processing fish on board, quotas position of ships, weighing and recording of catch, fish, whales, salmon and trout fishing and gravel income. Monitoring takes place either on the ground, sea and land, or electronically at the Directorate.

In 2013, inspectors from the Directorate took part on a total of 395 trips (405 in 2012), and stayed 1743 days on-board of fishing vessels (2045 in 2012). Inspectors took 40 trips with processing vessels a total of 823 days and 355 trips on-board other ships lasting a total of 920 days. The directorate work is integral to the overall monitoring activities that take place in Icelandic fisheries.

Directorate inspectors: Number of days at sea 2009-2013



Directory Inspectors days at sea per vessel type - Fresh fish vessels (red) - Processing vessels (pink)

The Coast Guard carries out 24-7 surveillance of all vessels in Iceland's EEZ. There are requirements for transmitting position, VMS transmitting, and for reporting catch for vessels entering/leaving Icelandic waters. Based on previous site visits to the HQ of the Coastguard by the assessors and a tour and review of the monitoring system it can be described as comprehensive and effective.

Log books are subject to unannounced vessel boarding inspections by the Icelandic Coast Guard (ICG) and at port boarding's by the Directorate. The table below shows targeted vessel boarding activity by the Coast Guard between 2011 and 2014. Boarding of vessels by Coast Guard and Directorate staff includes a review of catch compared to logbook information.

Targeted ICG boarding and violations per 2011/2014	2011	2012	2013	2014
Control, number of vessels / inspections	233	185	182	297
Comments, number of vessels	85	94	73	49
Equipment, number of vessels	46	30	29	18

Catch, number of vessels	14	16	9	4
Logbook	19	12	20	27
Fishing permit	10	22	22	0
Fishing gear/seaworthiness	2	14	14	1
Muster, registration	14	18	11	13
Lack of right to practice	11	12	14	10
Number of prosecutions against the master	13	15	33	14
Number of reprimands against the master	18	28	98	615

Comments:	**Total**	**Ships**
Coast Guard Vessels	33	22
Leiftur	40	27
Baldur	0	
Total	**73**	**49**

Reprimands:	
Flight Department	1
Coast Guard Vessels	24
Analysis departm. and FMC	591
Total	**615**

Prosecutions:	
Fisheries	6
Outside certified area of operation	0
Muster, registration	4
Lack of right to practice	3
AIS not shining	0
Catch Reporting	0
Fishing permit	0
Certificate of seaworthiness	0
Fishing logbook	0
Rest regulations	1
Total	**14**

(Asgrimur L. Ásgrimsson, ICG Chief of operations, June 2015 *pers. comm.*).
The Act on the Icelandic Coast Guard No. 52, June 14th 2006, enables the current operations of the ICG.

FUNDAMENTAL CLAUSE: 2.2 Concordance between actual catch and allowable catch

Clause Guidance

Concordance between the Total Allowable Catch (TAC) and actual total catch from the stock under consideration shall be ensured through monitoring, control, enforcement, documentation, correction and verification activities. Accordingly, all participating companies engaged in fishing operations shall take responsibility and operate in compliance with the relevant rules and regulations.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

Vessels must weigh catch within two hours of landing on the quay. The system is developed to standardise weights and tares for ice and tubs (a standard tub is used throughout Iceland for fresh fish such as cod and haddock and has a capacity of 280-300 kg). The weight registration document for each vessel is transmitted to the Directorate which also receives the e-logbook information. These two sets of information are then compared and the appropriate reduction is made to the vessel quota. Weighed recorded landings are the main source of catch documentation. Logbook data is used as a secondary source to cross check landings. Any transfer under the ITQ system for each vessel is also monitored to ensure that any additional quota requirements are rented from other vessels within a 3 day period.

EVIDENCE

The system of recording Icelandic fish catch is controlled and includes both at sea (e-logbook records), standard paper based log-books and verification of catch through physical weighing at accredited landing stations registered by the Directorate.

Trackwell, an electronic systems based service company, developed and service the Directorate and Industry with a number of IT based monitoring, reporting and recording systems including:

- Vessel monitoring systems and Electronic Reporting System (legal requirements) which were developed in close cooperation with the Coastguard and Fisheries Authorities.
- Electronic logbook and Reporting System, which generates mandatory reports to the Directorate as well as providing a valuable management reporting system for fleet management.

The vessel log book system requires that the operator of a vessel registers the following information: catch by species, haul no., fishing date, time of fishing, lat/long at haul, fishing zone, depth, wind direction, m/s, wind speed, seafloor, twin trawls, name of person registering information, and other information on transmitting to the Directorate. The system has also other components - Fleet

Manager, analysis tools and a labelling/traceability component allowing catch to be linked to fishing zone for labelling purposes. The distribution of information is managed by a central server which transmits to the Directorate (and MRI), fleet managers and a traceability system. The server enables secure data encryption protocol and backup server of the transmitted data. The distribution server integrates with other database systems using XML via web services. Information from fresh fish landings is collected through the portside official weighing system which is carried out by official staff and calibrated systems.

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The total allowable catch (TAC) is set for every fishing year (Sept-Aug) by the Minister of Fisheries and Agriculture, based on the recommendation from the Marine Research Institute (MRI). The International Council for the Exploration of the Sea (ICES) also provides advice on important Icelandic stocks, such as Golden redfish. Each vessel is allocated a certain share of the total allowable catch (TAC) of the relevant species. The catch limit of each vessel during the fishing year is thus determined on basis of the TAC of the relevant species and the vessel's share in the total catch.

ICES advised in 2013 that catches for the 2013-2014 (September 2013 to August 2014) season should be no more than 51,980 t. The TAC set by Icelandic authorities for the golden redfish in the quota year 2013/2014 was 52,000 tonnes. The actual catch as calculated using the Directorate webpage for information on TAC and fish catches for the 2013-2014 season was 52,374 tonnes**. Catches of Golden redfish in the quota year 2013/14 were in line with TAC recommendations.**

The majority of the golden redfish catch is taken in ICES Division Va, which has contributed 95–98% of the total landings since 1990. A small amount is caught by Greenland and the Faroes Islands.

Based on the management and assessment plan evaluated by ICES in February 2014 (ICES, 2014a), ICES advises that catches for 2014/15 (Sept 2014 to August 2015) should be no more than 47,300 t. The TAC set by the Icelandic Authorities in the quota year 2014/15 was for 45,600 Metric tonnes. The actual catch as calculated using the Directorate webpage information on TAC and catches for the 2014-2015 season (on the 22nd May 2014 at the time of assessment) was 35,660 tonnes. Note that the catch is expected to increase up to TAC limits until the season ends at the end of August 2015. It appears from information exchange and data from the Directorate and the

[29] http://eng.atvinnuvegaraduneyti.is/media/reglugerdir/Regulation-224-2006-on-weighing-and-recoding-of-catch.pdf

Icelandic Coast Guard that all vessel operators and companies ensure that they have been issued with all the required permits, operate in compliance with the relevant rules and regulations; and limit the catches of their vessels in accordance with their catch quota.

http://www.responsiblefisheries.is/files/karf-einbl-iv.pdf
http://www.fiskistofa.is/english/quotas-and-catches/
http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2013/2013/smr-5614.pdf
http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/smr-5614.pdf

FUNDAMENTAL CLAUSE: ***2.3.1 Vessel registration and catch quotas***

Clause Guidance

Allocated catch quotas by species to registered vessels are assigned in such a way that the combined quotas conform with the currently effective decision on TAC. Accordingly, information on the size and composition of the fleet of fishing vessels shall be available and documented, and the catch quota of each vessel or vessel group for each fish species and fishing year shall be recorded in the official central database in a transparent manner.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:
Allocated catch quotas by species to registered vessels are assigned in such a way that the combined quotas conform with the currently effective decision on TAC. For the fishing season 2013-2014 the TAC set by Icelandic authorities for the golden redfish fleet was 52,000 tonnes. Directorate of Fisheries records show that in the same year, the allocated catch, following quota allocations, was 52,865 tonnes, including a transfer from the previous year of 857 tonnes.

EVIDENCE

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Directorate of Fisheries records show that in the same year, the allocated catch, following quota allocations, was 52,865 tonnes, including a transfer from the previous year of 857 tonnes.

The fleet to which redfish was allocated comprised of 646 vessels, mostly of which had formal quota allocation, others who had quota transferred to them (probably because they incidentally caught some redfish), and a minority who caught small amounts of redfish and who are in negative balance for next year's catches. This last group made up a total of 1,014 tonnes towards next year's balance. This can be seen in the table below as copied from the Directorate of Fisheries website.

Accordingly, information on the size and composition of the fleet of fishing vessels is available and documented, and the catch quota of each vessel or vessel group for redfish, along with the fishing year is recorded in the official central database in a transparent manner.

Table 1. Icelandic Golden redfish fleet TAC (in kg) allocation, transfer, balances and catches for fishing year 2013-2014.

Reg. no.	Vessel	Class	Alloc. QUOTA	Compensation	Trfr. prev. year	Trfr. b / t vessels	Allowed catch	Catch	Balance	Overfished
67	Hera TH 60	A	957	0	0	0	957	701	256	0
78	Vide IS 250	A	0	0	0	0	0	890	-890	0
84	Kristbjörg VE 71	0	165.174	0	-672	-136.816	27.686	27.686	0	0
173	Sigurdur Olafsson SF 44	A	9,000	0	949	11.681	21.630	21.630	0	0
177	Phoenix ST 177	A	0	0	0	364	364	539	-175	0
182	Western BA 63	A	65	0	0	34.600	34.665	29.481	5.184	0
233	Erling KE 140	A	9.371	0	1.234	4,000	14.605	14.201	404	0
237	Fjölnir GK 657	A	132.011	0	0	-43.957	88.054	68.229	19.825	0
239	Tjaldanes GK 525	A	0	0	0	2,100	2,100	2,653	-553	0
253	Hammer SH 224	A	3.967	0	-2	5.200	9.165	9.204	-39	0
259	Glacier TH 259	A	0	0	0	13.904	13.904	15.612	-1.708	0
264	Gullhólmi SH 201	A	3.967	0	0	15,000	18.967	18.962	5	0
363	Maron GK 522	A	0	0	0	0	0	172	-172	0
530	Oats HU 12	A	108	0	0	0	108	109	-1	0
741	Stormy ST 2	A	0	0	0	200	200	194	6	0
926	Thorsteinn TH 115	A	4.760	0	0	-2.576	2.184	1.470	714	0
967	Thorsnes SH 109	A	298	49	-13	17.676	18.010	12.731	5.279	0
968	Glófaxi VE 300	A	29.884	0	0	-25.998	3.886	3.861	25	0
972	Kristin GK 457	A	34.667	0	1	46.506	81.174	101.723	-20.549	0
975	Sighvatur GK 57	A	170.661	0	0	-18.661	152000	127.646	24.354	0
1006	Thomas Þorvaldsson GK 10	A	105.189	5.304	-4.646	-55.071	50.776	50.776	0	0
1014	Ársæll 66 YEARS	A	36.891	98	0	25.381	62.370	57.102	5.268	0
1019	Sigurborg SH 12	A	0	92	0	9.023	9.115	8.959	156	0
1028	Saxhamar SH 50	A	19.044	55	120	-8.000	11.219	16.357	-5.138	0
1030	Páll Jónsson GK 7	A	138.667	0	37	-30.514	108.190	89.314	18.876	0

1043	Johanna YEAR 206	A	5.555	0	0	18.540	24.095	26.379	-2.284	0
1054	Sveinbjörn Jakobsson SH 10	A	2.164	0	-35	14,000	16.129	15.811	318	0
1056	Arnar 55 YEARS	A	0	0	0	33.728	33.728	33.728	0	0
1063	Kópur BA 175	A	1.613	0	0	11.680	13.293	13.293	0	0
1076	Johanna Gisladottir GK 557	A	34.667	0	0	14.749	49.416	87.845	-38.429	0
1084	Fridrik Sigurdsson 17 YEARS	A	25.137	1.213	2.007	6.355	34.712	33.212	1,500	0
1092	Glófaxi ll VE 301	-12	0	0	0	998	998	1,033	-35	0
1102	Regin YEAR 228	A	10.408	0	0	-7.000	3,408	4.872	-1.464	0
1134	Steinunn SH 167	A	19.254	0	0	0	19.254	10.571	8.683	0
1136	Ocean Breeze GK 157	A	12.596	15,000	-44	-13.369	14.183	14.183	0	0
1146	Siglunes SI 70	A	0	0	0	184	184	612	-428	0
1153	Ms SU 4	-12	0	0	0	600	600	1,042	-442	0
1202	Townspeople SH 24	A	1.022	52	0	22.877	23.951	22.441	1.510	0
1246	Egil SH 195	A	2.999	0	-133	19.980	22.846	22.756	90	0
1269	Main Berg BA 236	A	2.174	0	-43	-2.131	0	1.331	-1.331	12
1270	Mánaberg of 42	A	434.006	0	0	327.955	761.961	829.576	-67.615	0
1272	Sturla GK 12	A	80.269	4.047	-3.016	-69.646	11.654	53.579	-41.925	0
1274	Pall Palsson ICE 102	A	108.704	0	-3.547	1,739	106.896	106.883	13	0
1275	Jon Vídalín VE 82	A	1,614,527	0	0	10.788	1,625,315	1,381,174	244.141	0
1277	Light Fell SU 70	A	462.843	0	0	-132.201	330.642	290.590	40.052	0
1278	Clear NK 121	A	235.296	0	0	-50.293	185.003	184.663	340	0
1281	Múlaberg SI 22	A	551.155	0	2,234	-442.373	111.016	32.491	78.525	0
1304	Olafur Bjarnason SH 137	A	44.171	0	0	0	44.171	42.826	1.345	0
1321	Gudmundur Jensson SH 717	A	20.471	10,000	-362	-6.645	23.464	26.535	-3.071	13
1343	Magnus SH 205	A	2,725	15,000	0	28.278	46.003	50.733	-4.730	0
1345	Freri RE 73	0	0	0	0	0	0	0	0	0
1351	Snæfell EA 310	A	2,132,957	0	0	-524.180	1,608,777	1,542,206	66.571	0
1357	Níels Jonsson OF 106	A	3.559	0	-102	-2.196	1.261	942	319	0
1360	Kleifaberg RE 70	A	0	0	0	1,492,589	1,492,589	1,491,742	847	0
1395	Kaldbakur EA 1	A	0	0	0	85.967	85.967	85.967	0	0
1399	Haukaberg SH 20	A	9.522	0	179	1,000	10.701	9.974	727	0

1401	August GK 95	A	48.063	0	-1.959	-32.076	14.028	52.648	-38.620	0
1426	Mark KE 177	A	784	0	2	15.266	16.052	14.093	1.959	0
1428	Splash SK 7	K	0	0	0	0	0	27	-27	27
1429	Ársæll GK 33	K	0	0	0	0	0	0	0	0
1432	Von TH 54	-12	40	0	0	0	40	121	-81	0
1434	Thorleif EA 88	A	7.016	1.399	0	480	8.895	16.255	-7.360	0
1451	Stefan is 28	A	65.446	0	-164	355.461	420.743	422.177	-1.434	0
1458	Gold-top GK 24	A	36	0	0	7.570	7.606	7.606	0	0
1472	Klakkur SK 5	A	162.116	0	0	-60.644	101.472	82.328	19.144	0
1476	Björgúlfur EA 312	A	256.516	0	22.356	-162.517	116.355	76.759	39.596	0
1502	Paul Helgi ICE 142	A	5.897	0	0	-4.500	1.397	802	595	0
1509	Ásbjörn 50	A	2,083,428	0	0	-26.752	2,056,676	1,599,182	457.494	0
1511	Ragnar Alfred GK 183	K	0	0	0	3,143	3,143	1.979	1,164	0
1527	Brimnes BA 800	A	0	0	0	2.506	2.506	3.102	-596	0
1530	Sigurbjörg of 1	A	499.839	0	0	-131.462	368.377	456.134	-87.757	0
1535	Dagný SU 129	A	28	0	4	0	32	28	4	0
1544	Viggo SI 32	A	12	0	0	-1	11	9	2	0
1546	Mrs. Magnhildur GK 222	A	450	0	60	0	510	373	137	0
1568	Högni NS 10	A	0	0	0	19	19	19	0	0
1574	Dröfn RE 35	A	199	4.825	0	-169	4.855	4.825	30	0
1575	Njáll RE 275	A	0	0	0	103	103	3.995	-3.892	0
1578	Ottoman N Thorláksson 203	A	3,544,120	0	0	666000	4,210,120	3,977,276	232.844	0
1579	Gnúpur GK 11	A	782.022	39.430	-1.567	267.150	1,087,035	1,156,090	-69.055	0
1585	Sturlaugur H Böðvarsson AK 10	A	1,698,815	0	-38	484000	2,182,777	1,964,965	217.812	0
1591	Núpur BA 69	A	69.120	0	-1	-48.106	21.013	21.013	0	0
1595	Supersonic VE 78	A	35.733	10,000	2.860	-10.000	38.593	37.195	1.398	0
1600	Instead Reykjavik GK 44	K	116	0	0	-113	3	3	0	0
1628	Raven GK 111	A	501.608	25.291	-22.018	377.536	882.417	941.724	-59.307	0
1629	Successful SH 30	A	153.435	0	0	-106.965	46.470	51.470	-5.000	0
1633	Hugborg SH 87	-12	0	0	0	0	0	54	-54	0
1636	Successful GK 162	A	556	0	0	12.961	13.517	13.438	79	0
1645	Jon at Hof 42 YEARS	A	62.877	0	0	123.211	186.088	196.573	-10.485	0

1661	Gullver NS 12	A	567.720	0	20.148	20.650	608.518	613.027	-4.509	0
1664	Stígandi VE 77	A	393.179	0	0	-138.548	254.631	254.631	0	0
1666	Quench Dis KE 29	A	3.588	0	368	-3.936	20	20	0	0
1674	Sunflowers SH 124	A	97.446	4.913	0	-32.500	69.859	65.936	3.923	0
1686	Valbjørn ICE 307	A	0	0	0	1,100	1,100	2,205	-1.105	0
1743	Sigurfari GK 138	A	0	0	0	0	0	12.535	-12.535	0
1744	Wind VE 25	-12	0	0	0	165	165	186	-21	0
1751	Haste YEAR 8	A	12.278	20.619	0	-32.897	0	9.520	-9.520	0
1752	Brynjólfur VE 3	A	141.563	150000	0	-131.657	159.906	155.963	3,943	0
1755	Aðalbjörg RE 5	A	793	0	0	8,000	8.793	10.213	-1.420	0
1767	Kristin ICE 141	K	0	0	0	116	116	72	44	0
1771	Patient SH 173	K	256	0	0	-100	156	115	41	0
1776	Kóngsey ST 4	K	0	0	0	0	0	0	0	0
1792	Arvika TH 258	K	3	0	0	0	3	0	3	0
1796	Hítará SH 100	-12	0	0	0	500	500	520	-20	0
1803	Stella EA 28	-12	0	0	0	1.576	1.576	1,708	-132	0
1808	Johanna EA 31	A	24	0	0	0	24	26	-2	0
1811	Ask GK 65	A	13.522	0	868	-11.500	2,890	986	1.904	0
1813	Profit BA 2	0	0	0	0	0	0	0	0	0
1831	Hjördís HU 16	K	0	0	0	105	105	105	0	0
1833	Malmö SK 1	A	1,581,030	0	81.520	482.225	2,144,775	2,142,115	2.660	0
1834	Sparky HU 5	A	7	0	1	-8	0	0	0	0
1842	Odd Gudjonsson SU 100	-12	0	0	0	0	0	1	-1	0
1844	Draft II SH 158	K	0	0	0	500	500	653	-15.3	0
1850	Hafsteinn SK 3	K	0	0	0	986	986	1.153	-167	0
1851	Sólrún EA 151	A	0	0	0	230	230	875	-645	0
1855	Maggý VE 108	A	7.142	0	198	58.534	65.874	64.803	1.071	0
1856	Rif SH 70	A	24.945	0	-1.102	10.286	34.129	27.720	6.409	0
1857	Indicator ICE 153	K	0	0	0	0	0	0	0	0
1859	Sundhani ST 3	A	38	0	5	0	43	65	-22	0
1862	Sæbjörn ICE 121	A	0	0	0	0	0	455	-455	0
1868	Helga María AK 16	A	3,433,570	0	0	-300000	3,133,570	2,774,491	359.079	0
1881	Winners SU 380	A	224	0	0	-224	0	0	0	0

1887	Mani II YEAR 7	A	385	0	0	1,352	1.737	1.737	0	0
1890	Catherine GK 266	K	8.830	0	0	-8.685	145	145	0	0
1902	Dolphin III AK 250	A	1,064,236	0	-159	874000	1,938,077	2,088,547	-150.470	0
1903	Thorsteinn TH 360	0	31.931	0	0	157.060	188.991	189.351	-360	0
1904	Lea RE 171	K	178	0	0	0	178	107	71	0
1905	Berglin GK 300	A	0	0	0	44.082	44.082	44.082	0	0
1906	Unna 10 YEARS	-12	0	0	0	231	231	231	0	0
1907	Hraunsvík GK 75	A	0	0	0	0	0	17	-17	0
1909	Gisli Ko 10	K	201	0	0	0	201	949	-748	0
1911	Karl Magnus SH 302	0	0	0	0	0	0	21	-21	0
1912	Hvalbakur HF 19	K	0	0	0	481	481	0	481	0
1920	Mani TH 98	K	0	0	0	0	0	875	-875	0
1921	Robbery GK 91	K	0	0	0	2.809	2.809	1.790	1,019	0
1922	Find NS 21	A	16	0	2	0	18	46	-28	0
1925	Byr GK 59	A	44	0	0	0	44	299	-255	0
1926	Indicator SH 77	K	329	0	0	722	1.051	966	85	0
1927	Show SH 707	A	0	0	0	600	600	492	108	0
1928	Halldór I NS 301	A	26	0	3	0	29	213	-184	0
1937	Bergen EA 311	A	2.239	0	225	304.462	306.926	306.926	0	0
1957	Harbour Peak SH 99	A	0	0	0	0	0	1	-1	0
1959	Simms ST 7	K	0	0	0	0	0	0	0	0
1963	Emil NS 5	A	28	0	0	287	315	315	0	0
1964	Sæfari YEAR 170	A	0	0	0	9.325	9.325	9.325	0	0
1968	Aldan ÍS 47	A	0	0	0	0	0	184	-184	0
1972	Raven Sveinbjarnarson GK 255	A	765.150	38.579	-33.790	-105.280	664.659	762.482	-97.823	0
1976	Tire NK 120	A	590.863	429.791	60.758	600000	1,681,412	1,746,229	-64.817	0
1977	Julius Geirmundsson ICE 270	A	441.709	0	-18.531	-80.778	342.400	430.523	-88.123	0
1979	Haförn TH 26	A	1.469	0	0	3.714	5.183	4,956	227	0
1986	Isaac AK 67	A	0	0	0	0	0	75	-75	0
1990	Egil ÍS 77	A	6.418	0	0	-6.000	418	280	138	0
1991	Mummi ST 8	K	111	0	15	-80	46	43	3	0
2005	Kaldi SI 23	K	0	0	0	1.675	1.675	1.521	154	0

2010	Leif RE 220	K	88	0	0	0	88	220	-132	0
2017	Helgi SH 135	A	345.420	0	-10.762	-110.200	224.458	252.722	-28.264	0
2019	Bjargey ÍS 41	A	0	0	0	0	0	11	-11	0
2020	Suðurey TH 9	A	139.908	0	77	45.182	185.167	176.680	8.487	0
2025	Surge VE 75	A	56.982	0	-1.911	61.013	116.084	116.084	0	0
2040	Þinganes SF 25	A	0	0	0	10.649	10.649	17.258	-6.609	0
2045	Gudmundur Thor SU 121	K	0	0	0	0	0	117	-117	0
2047	Sæbjörg EA 184	A	0	0	0	6.789	6.789	6.838	-49	0
2048	Drangavik VE 80	A	1,241,911	0	84.440	-983.567	342.784	342.784	0	0
2049	Drew ICE 106	K	0	0	0	131	131	266	-135	1
2056	Mist NS 2	K	116	0	0	-116	0	0	0	0
2062	Gentleness VE 26	K	0	0	0	1,733	1,733	1.591	142	0
2068	Gold If HF 290	A	0	0	0	191	191	191	0	0
2069	Gone too gentle 70	-12	0	0	0	0	0	57	-57	0
2081	Gudrun NS 111	K	0	0	0	0	0	49	-49	0
2086	Manganese in Búdir SH 85	K	0	0	0	1.358	1.358	1.127	231	0
2093	Jon Paul BA 133	K	0	0	0	0	0	0	0	0
2099	Receiving a HU 113	K	0	0	0	100	100	111	-11	0
2102	Oddverji of 76	K	601	0	0	-601	0	898	-898	0
2104	Þorgrímur SK 27	K	0	0	0	0	0	66	-66	0
2106	Addi grandfather GK 97	K	0	0	0	0	0	205	-205	0
2122	Sigurdur Palsson of 8	A	203	0	0	0	203	187	16	0
2125	Boon TH 207	-12	0	0	0	0	0	4	-4	0
2126	Run AK 125	K	222	0	0	0	222	185	37	0
2129	Oystercatcher OF 3	K	0	0	0	220	220	331	-111	0
2136	BA March 74	K	566	0	0	-435	131	88	43	0
2145	Dynamic SH 423	K	1.909	0	0	2.630	4.539	4.539	0	0
2147	Joe TH 108	K	0	0	0	0	0	39	-39	39
2150	Árni the spit TH 205	A	0	1	0	0	1	1	0	0
2157	Ms TH 55	K	0	0	0	0	0	43	-43	0
2158	Oystercatcher SH 270	A	171.032	0	-7.446	-144.200	19.386	67.664	-48.278	0
2159	Arrows SH 777	A	6.234	314	-275	56.841	63.114	62.176	938	0

2160	Axel NS 15	K	116	0	0	0	116	11	105	0
2161	Sigurvon ÍS 26	-12	0	0	0	0	0	12	-12	0
2163	Oskar TH 234	K	0	0	0	0	0	23	-23	0
2170	Örfirisey 4	A	1,482,745	0	0	-172000	1,310,745	1,397,272	-86.527	0
2174	Willow TH 210	-12	0	0	0	32	32	32	0	0
2175	Eyjolfur Olafsson HU 100	K	147	0	0	0	147	128	19	0
2182	Ringsted Njal GK 400	A	966.438	300000	0	836.897	2,103,335	2,181,566	-78.231	0
2184	Vector RE 71	A	2,145,686	0	-51.951	214.389	2,308,124	2,413,764	-105.640	0
2185	Juliet Blíða SI 173	-12	947	0	125	-438	634	634	0	0
2189	Ásmundur SK 123	K	0	0	0	0	0	56	-56	0
2190	Eyborg ST 59	A	0	0	0	0	0	30	-30	0
2197	Arrows SK 2	0	273.413	0	5.870	-272.388	6.895	6.895	0	0
2203	Therney RE 1	A	2,403,358	0	-807	-1,452,500	950.051	764.644	185.407	0
2207	Kristbjörg ST 39	-12	0	0	0	0	0	0	0	0
2209	Binni EA 108	-12	0	0	0	0	0	2	-2	0
2243	Armor II SH 237	K	4.888	0	197	3,500	8.585	7.923	662	0
2256	Gudrun Petrína GK 107	K	0	0	0	10	10	25	-15	0
2262	Sunflowers Sigurjóns GK 200	A	13	0	0	67.455	67.468	67.468	0	0
2264	Viking TH 264	0	0	0	0	0	0	0	0	0
2265	Arnar HU 1	A	1,544,567	3.299	0	-119.830	1,428,036	1,429,036	-1.000	0
2274	Sandvik EA 200	A	0	0	0	3.496	3.496	2,434	1.062	0
2289	Flights Alda OF 15	K	1.154	0	0	-800	354	201	153	0
2290	Teis SH 49	K	531	0	70	-550	51	19	32	0
2298	Anna Maria YEAR 109	K	0	0	0	239	239	239	0	0
2303	Særún EA 451	K	1.144	0	-11	5,431	6.564	6.401	163	0
2307	Sæfugl ST 81	K	116	0	15	0	131	142	-11	0
2313	Orn GK 114	A	4.816	0	-213	0	4.603	13.823	-9.220	0
2314	Maid SH 350	K	383	0	0	355	738	681	57	0
2317	Bibb Jonsson ÍS 65	K	3	0	0	-3	0	0	0	0
2318	Saer HF 138	0	0	0	0	7	7	7	0	0
2320	Mar ICE 125	K	33	0	4	83	120	120	0	0
2323	Hafborg EA 152	A	224	0	0	0	224	2,066	-1.842	0

2324	Current ST 65	0	34	0	0	0	34	110	-76	0
2325	Arnthor GK 20	A	97.628	0	12.318	-89.017	20.929	6.988	13.941	0
2326	Hafaldan EA 190	K	0	0	0	0	0	39	-39	0
2330	Mt SH 75	A	46	0	0	58.316	58.362	58.362	0	0
2331	Feed EA 18	K	18	0	0	86	104	101	3	0
2338	Sea Pearl ICE 313	K	0	0	0	209	209	283	-74	0
2339	Gardens TH 122	-12	0	0	0	0	0	3	-3	0
2340	Ásdís ICE 2	A	92	0	-4	2,803	2,891	2.764	127	0
2342	Vik Röst VE 70	K	6.949	0	0	-5.309	1,640	2,871	-1.231	0
2345	Hoffell II SU 802	A	0	0	0	1	1	1	0	0
2347	Hanna SH 28	K	116	0	0	-42	74	57	17	0
2352	Húni BA 707	K	116	0	15	0	131	0	131	0
2354	Valdimar GK 195	A	344.841	17.387	-3.117	-359.111	0	31.208	-31.208	0
2365	Snjólfur ÍS 23	K	1.038	0	-24	652	1,666	1,666	0	0
2367	Emilia AK 57	A	0	0	0	0	0	39	-39	29
2370	Sigrun Hrönn TH 36	-12	0	0	0	310	310	381	-71	0
2374	Eydís NS 320	K	11	0	0	0	11	212	-201	0
2381	Barn VE 98	K	2,309	0	306	-720	1.895	1.549	346	0
2383	S. SF 272	K	0	0	0	1.409	1.409	1.897	-488	0
2384	Glad SH 226	K	3.714	1.687	0	-1.696	3,705	3.619	86	0
2385	Bryndís SK 8	K	0	0	0	274	274	274	0	0
2387	Tumi EA 84	K	0	0	0	609	609	713	-104	0
2390	Hilmir ST 1	K	0	0	0	0	0	19	-19	0
2394	Show Dis GK 135	K	1,529	0	0	264	1.793	1.564	229	0
2398	Bjarmi GK 38	K	0	0	0	46	46	262	-216	0
2400	Hafdís SU 220	A	49.706	0	3.946	-38.705	14.947	13.496	1,451	0
2401	Þórunn Sveinsdóttir VE 401	A	182.876	100,000	0	171.480	454.356	480.202	-25.846	0
2403	Hvanneyri SF 51	A	42.681	89	0	-42.770	0	1.219	-1.219	0
2405	Andey GK 66	K	0	0	0	513	513	548	-35	0
2406	Sverrir SH 126	K	1,321	1.567	0	1.196	4.084	4.720	-636	14
2408	Geir TH 150	A	4.091	0	0	-4.000	91	103	-12	0
2417	Kristján SH 176	K	797	0	0	-525	272	272	0	0

2418	Old master SU 19	K	359	0	0	0	359	508	-149	0
2419	Robbery SH 307	K	0	0	0	1,000	1,000	109	891	0
2421	Fannar SK 11	K	0	0	0	0	0	10	-10	0
2423	Frederick Bergmann SH 240	K	0	0	0	0	0	48	-48	0
2426	Siggi Light ICE 50	K	0	0	0	1,119	1,119	1,181	-62	0
2430	Benni honor GK 26	A	0	0	0	0	0	1,933	-1.933	0
2431	Clear Vik HU 11	K	350	0	22	0	372	180	192	0
2432	Njord BA 114	K	298	0	0	0	298	310	-12	0
2433	Frost TH 229	A	94.258	0	5.952	82.996	183.206	159.519	23.687	0
2435	Rocks Haukur ÍS 33	K	372	0	44	293	709	405	304	0
2437	Hafbjörg ST 77	K	0	0	0	0	0	40	-40	0
2438	Wise TH 81	-12	0	0	0	0	0	17	-17	0
2440	Abba of 5	K	0	0	0	0	0	36	-36	0
2441	Kristborg SH 108	K	28	0	4	0	32	36	-4	0
2443	Stone HU 45	K	1.550	0	0	-500	1,050	752	298	0
2444	Vestmannaey VE 444	A	407.645	0	37.300	-3.500	441.445	447.057	-5.612	0
2446	Þorlákur ÍS 15	A	15.573	0	-34	7,201	22.740	20.470	2,270	0
2449	Steinunn SF 10	A	58.598	0	0	185.612	244.210	244.210	0	0
2451	Jónína EA 185	K	3,432	0	0	-1.109	2,323	1.549	774	0
2452	Bergur The strong HU 17	K	0	0	0	0	0	26	-26	0
2454	Siggi Bjarni GK 5	A	0	0	0	0	0	3.896	-3.896	0
2457	Catherine SH 575	A	269	0	33	-301	1	1	0	0
2461	Elvis GK 60	K	0	0	0	0	0	0	0	0
2462	Gunnar Bjarnason SH 122	A	1,010	0	-10	35.143	36.143	37.060	-917	0
2463	Matthias SH 21	A	6.352	10,000	35	70.127	86.514	86.077	437	0
2464	Sólborg RE 270	A	0	0	0	2.805	2.805	2.805	0	0
2465	Sæfaxi NS 145	A	0	0	0	0	0	138	-138	0
2477	Friend SH 34	K	2.779	0	-95	-2.684	0	3	-3	0
2481	Bard SH 81	A	6.348	0	0	-5.253	1.095	552	543	0
2482	Lucky SI 57	K	0	2,100	0	4,500	6,600	5.900	700	0
2494	City TH 70	-12	0	0	0	0	0	105	-105	0
2495	Olli Hooks GK 211	A	0	0	0	0	0	37	-37	0

2497	Gunnar SI 112	K	463	0	0	1.239	1,702	1.225	477	0
2499	Straumnesfjall ICE 240	K	0	0	0	0	0	90	-90	0
2500	Guðbjörg GK 666	K	8.830	0	0	-6.334	2,496	2,496	0	0
2502	Flights Aldan ST 54	K	260	0	0	-260	0	0	0	0
2507	Eydís HU 344	K	214	0	0	0	214	761	-547	0
2508	Signy TH 123	A	0	0	0	0	0	48	-48	0
2512	Sæfari HU 200	K	116	0	14	150	280	212	68	0
2515	Johanna G ÍS 56	K	0	0	0	23	23	289	-266	0
2517	Röðull ICE 115	K	116	0	0	0	116	76	40	0
2519	Albatros 111	-12	0	0	0	300	300	292	8	0
2529	Glad ICE 421	K	0	0	0	0	0	55	-55	0
2538	Straumey ICE 210	K	116	0	0	-73	43	43	0	0
2539	Brynjar BA 338	-12	0	0	0	0	0	11	-11	0
2540	Lilja SH 16	K	2.630	0	0	2,305	4.935	4.935	0	0
2544	Berti G ICE 727	K	165	0	22	0	187	174	13	0
2545	Pays AK 66	K	0	0	0	33	33	33	0	0
2547	Sólrún EA 551	K	3.785	0	-17	2.979	6.747	6.747	0	0
2549	Thor HF 4	0	1,655,842	0	63	-748.312	907.593	907.593	0	0
2553	Keilir II AK 4	K	9.291	0	357	-9.637	11	13	-2	0
2555	Sædís SH 138	K	393	0	0	-17	376	317	59	0
2557	Sleipnir 19 YEARS	K	2.557	0	-23	-1.000	1,534	996	538	0
2560	Current ST 65	K	0	0	0	6,300	6,300	6.711	-411	0
2567	Húni SF 17	K	0	0	0	0	0	120	-120	0
2570	Gudmundur Einarsson ICE 155	K	3.484	0	0	-226	3.258	2,735	523	0
2571	Gudmundur Jónsson ST 17	K	51	0	0	0	51	36	15	0
2574	Guðbjartur SH 45	K	11.997	0	1.590	-3.094	10.493	8.299	2.194	0
2575	Viggi NS 22	K	26	5,000	0	500	5.526	4.615	911	0
2576	Bryndís SH 128	K	130	0	0	0	130	133	-3	0
2577	Konráð EA 90	K	2.226	0	0	-330	1,896	3,041	-1.145	0
2579	Hanna Ellerts SH 4	A	0	0	0	0	0	82	-82	0
2580	Digranes NS 124	K	0	0	0	0	0	49	-49	0
2581	Ársæll Sigurdsson HF 80	K	0	0	0	770	770	756	14	0

2585	Gudmundur Sig SF 650	K	1.752	0	232	4.146	6.130	3.504	2.626	0
2586	Julli Paul SH 712	K	705	0	0	-442	263	263	0	0
2587	Erla Kristin EA 155	-12	0	0	0	0	0	0	0	0
2588	Þorbjörg TH 25	K	232	0	0	0	232	206	26	0
2589	Kari SH 78	K	191	0	-3	1.219	1,407	1.374	33	0
2590	Naustvík ST 80	-12	148	0	0	-100	48	37	11	0
2594	Raggi Hostages SI 73	K	33	0	0	0	33	43	-10	0
2597	Silfurnes SF 99	K	681	0	0	-240	441	337	104	0
2599	Jonni OF 86	K	3,453	0	0	-1.697	1.756	1,810	-54	0
2604	Dori GK 42	K	0	0	0	1.378	1.378	1.378	0	0
2606	Eagle OF 28	K	0	0	0	0	0	645	-645	0
2608	Gisli BA 571	K	12.234	0	0	-2.639	9.595	8.023	1,572	0
2612	Björn Jónsson TH 345	K	116	0	0	349	465	465	0	0
2614	Æsir BA 808	K	1.132	0	0	945	2.077	2.077	0	0
2615	Inga SH 174	K	280	0	0	0	280	821	-541	0
2617	Daðey GK 777	K	14.574	0	0	0	14.574	14.310	264	0
2620	Jaki EA 15	K	0	0	0	110	110	110	0	0
2622	Gottlieb GK 39	K	0	0	0	3,500	3,500	3,810	-310	0
2625	Hólmarinn SH 114	K	251	0	0	0	251	88	163	0
2626	Gudmundur Nes RE 13	A	0	0	0	0	0	15.979	-15.979	0
2628	Narfi GK 68	K	142	15,000	0	-9.522	5.620	3.970	1,650	0
2630	Signy HU 13	K	2,787	0	369	-1.600	1,556	1.254	302	0
2631	Guest Kristinsson ICE 333	K	1,333	0	150	-621	862	765	97	0
2632	Guðný ICE 170	0	0	0	0	0	0	30	-30	0
2640	Paula Ágústsdóttir GK 1	K	162	0	0	1.637	1,799	1,775	24	0
2641	Bjorn Hólmsteinsson TH 164	A	1.268	0	0	-446	822	822	0	0
2645	Gyda Jónsdóttir EA 20	K	4.970	0	0	-2.481	2.489	1.294	1,195	0
2646	Hrólfur Einarsson ICE 255	K	3.051	0	0	2.099	5.150	2,266	2.884	0
2650	Tension HF 30	K	0	0	0	2,729	2,729	3,737	-1.008	0
2651	Lágey TH 265	K	624	0	0	3.759	4.383	4.383	0	0
2652	Darri EA 75	K	119	0	-5	2.895	3,009	2.183	826	0

2655	Bjorn EA 220	K	2.139	0	0	-247	1,892	1.713	179	0
2656	Toni EA 62	K	730	0	0	0	730	612	118	0
2657	Særif SH 25	K	10.734	0	-49	174	10.859	8.236	2,623	0
2660	Arnar SH 157	A	910	0	97	-1.000	7	0	7	0
2661	Christian TH 163	A	1,679	0	0	2.447	4.126	4.054	72	0
2664	Gudmundur the group HU 203	K	9.465	0	1.254	-6.654	4.065	2,645	1.420	0
2666	Coastal areas NS 100	K	118	4.001	0	-617	3.502	2.457	1.045	0
2668	Petra OF 88	K	231	0	-10	1,500	1,721	1.831	-110	0
2669	Stella GK 23	K	1,545	5,000	0	53	6.598	3.442	3.156	0
2670	Thorkatla GK 9	K	6.791	0	0	5.618	12.409	12.409	0	0
2671	Ásþór RE 395	K	659	0	0	647	1.306	1.207	99	0
2672	Halldór NS 302	A	6.791	0	0	3.013	9.804	9.951	-147	0
2673	Særún EA 251	K	0	0	0	10.565	10.565	10.565	0	0
2677	Bergur VE 44	A	427.539	0	0	26.136	453.675	420.530	33.145	0
2678	Kolbeinsey EA 252	K	5.391	0	0	966	6.357	5.738	619	0
2680	Sæhamar SH 223	K	3.481	0	0	2,500	5.981	5.401	580	0
2682	Dynamic SH 23	K	5.008	0	0	-5.008	0	0	0	0
2685	Ring SH 153	A	767.538	0	-2.427	298.200	1,063,311	1,045,529	17.782	0
2689	Show BA 72	K	614	0	0	-248	366	274	92	0
2690	Killarney KE 336	K	3.321	0	0	-1.708	1.613	1,545	68	0
2694	Blessed BA 333	K	289	0	38	300	627	545	82	0
2696	Hlökk ST 66	K	432	0	9	394	835	835	0	0
2699	Aðalsteinn Jónsson SU 11	A	410.456	0	0	-407.956	2,500	0	2,500	0
2700	Sædís ÍS 67	-12	0	3	0	0	3	122	-119	0
2701	Cool BA 120	K	5.571	0	73	-4.339	1,305	685	620	0
2704	Bíldsey SH 65	K	2,545	18.300	-21	-2.913	17.911	18.669	-758	0
2705	Sæþór EA 101	A	0	0	0	14.997	14.997	15.575	-578	0
2706	Sæunn Sæmundsdóttir 60 YEARS	K	7.118	0	0	3,000	10.118	10.440	-322	0
2708	Wealth SU 188	K	0	0	0	19.123	19.123	13.487	5.636	0
2710	Bliki ICE 203	K	168	0	0	1,815	1,983	1,983	0	0
2711	Elli P SU 206	K	0	0	0	0	0	339	-339	0

2712	Alda HU 112	K	3.983	0	-7	-3.292	684	578	106	0
2714	Oli Gisli GK 112	K	8.759	0	744	0	9.503	8.306	1,197	0
2718	Dew SU 118	K	1,745	0	0	1,000	2.745	2.577	168	0
2726	Hrefna ICE 267	K	693	0	0	1.108	1.801	1,829	-28	0
2728	Ring GK 18	K	0	0	0	0	0	512	-512	0
2730	Applies NK 119	0	0	0	0	26	26	26	0	0
2731	Thorir SF 77	A	75.553	0	0	105.525	181.078	170.289	10.789	0
2732	Skinney SF 20	A	75.551	0	0	61.916	137.467	126.678	10.789	0
2733	Hope GK 113	K	8.013	0	0	0	8.013	6.953	1,060	0
2736	Steinunn HF 108	K	403	5,000	0	-3.558	1.845	1.845	0	0
2739	Siggi Bessa SF 97	K	1.727	0	0	-130	1.597	1.979	-382	0
2740	Guard EA 748	A	1,031,580	0	80.996	-475.722	636.854	500.217	136.637	0
2744	Bergey VE 544	A	407.644	0	-58	-36.500	371.086	386.866	-15.780	0
2746	Bergur Vigfús GK 43	K	1.070	0	0	3.629	4.699	4.812	-113	0
2747	Gullberg VE 292	A	269.457	0	-2.002	205.074	472.529	434.051	38.478	0
2749	Áskell EA 749	A	118.602	0	0	429.786	548.388	533.280	15.108	0
2750	Oddeyrin EA 210	A	1,813,345	0	0	820.180	2,633,525	2,633,525	0	0
2751	Indriði Kristinn BA 751	K	899	0	0	676	1.575	1.426	149	0
2754	Skúli ST 75	K	321	0	0	4.477	4.798	3,497	1,301	0
2755	Jon Ásbjörnsson RE 777	K	15.755	0	0	-9.510	6.245	4.851	1.394	0
2757	Háey II TH 275	K	7.043	0	357	4.310	11.710	10.654	1.056	0
2758	Dala-Rafn VE 508	A	302.759	0	9.241	105.285	417.285	365.697	51.588	0
2760	Carolina TH 100	K	561	0	-25	6.952	7.488	7.404	84	0
2763	Armor SH 236	K	2,724	4,000	0	-1.412	5.312	3.719	1,593	0
2764	Beta VE 36	K	7.217	0	508	-6.955	770	770	0	0
2765	Akraberg of 90	K	4.098	0	8	2,000	6.106	4.896	1,210	0
2766	Benni SU 65	K	4.948	0	0	2.030	6.978	5.748	1.230	0
2770	Brimnes RE 27	A	3,913,228	0	493.744	-1,919,425	2,487,547	2,651,184	-163.637	0
2771	Muggur HU 57	K	1,690	3,000	4	0	4.694	2.092	2,602	0
2772	Álsey VE 2	A	680.727	0	74.782	-755.509	0	0	0	0
2773	Wise II YEAR 38	A	32.536	0	0	133.775	166.311	161.665	4.646	0
2774	Kristrún RE 177	A	3.188	100,000	0	-4.935	98.253	98.253	0	0
2775	Siggi Hostages EA 255	K	306	0	0	1.776	2.082	2.082	0	0

2778	Dudda Hostages GK 48	K	7.320	0	-321	2,300	9.299	9.407	-108	0
2780	Ásgrímur Halldórsson SF 250	A	126.462	150000	15.956	-282.329	10.089	550	9.539	0
2782	Audun TH 323	K	0	0	0	2.095	2.095	2.095	0	0
2786	Bjargey TH 278	K	0	0	0	2,491	2,491	2,451	40	0
2790	Einar Halfdan en 11	K	2,483	5,000	-110	-2.695	4.678	3.368	1,310	0
2793	Nanna Osk II TH 133	A	466	0	-21	0	445	1.927	-1.482	0
2794	Ásdís SH 154	-12	0	0	0	0	0	13	-13	0
2795	Colored SI 96	K	0	0	0	3,000	3,000	2.876	124	0
2799	Tip of the peninsula SI 76	K	986	0	0	165	1.151	3.051	-1.900	0
2800	Trygve Edvard SH 2	K	9.518	13,000	0	-15.543	6.975	7.056	-81	0
2803	Ring ICE 305	K	380	0	50	-155	275	245	30	0
2805	Sella GK 225	K	173	0	0	278	451	425	26	0
2806	Infested ST 166	K	0	0	0	69	69	69	0	0
2811	Phoenix BA 123	K	116	0	0	0	116	162	-46	0
2812	Heimaey VE 1	A	0	0	0	4.559	4.559	1	4.558	0
2813	Magnus HU 23	K	0	0	0	0	0	4	-4	0
2814	Freyja RE 38	K	0	0	0	0	0	0	0	0
2817	Frida Dagmar ICE 103	K	5.882	10,000	0	-9.687	6.195	5.157	1.038	0
2818	Venn GK 606	-12	0	0	0	330	330	330	0	0
2819	Sæfari GK 89	-12	2,957	0	364	-2.400	921	627	294	0
2820	Christian HF 100	K	4.208	7,000	81	-3.383	7.906	6.939	967	0
2822	Hálfdán Einarsson ICE 128	K	17.226	0	0	-7.982	9.244	5.407	3.837	0
2826	Thorsteinn SH 145	K	0	0	0	751	751	10	741	0
2827	Bark NK 125	0	0	0	0	0	0	0	0	0
2828	Jónína Armor ICE 555	0	0	0	0	0	0	0	0	0
2829	Sædís Bára GK 88	K	7.762	0	992	-3.929	4.825	3.406	1,419	0
2830	Elf SH 414	K	29	0	0	1.823	1.852	1,684	168	0
2834	Hrapp GK 6	-12	2.614	0	346	-2.256	704	255	449	0
2836	Flare ICE 225	K	0	0	0	172	172	167	5	0
2847	Rifsnes SH 44	A	0	0	0	24.369	24.369	26.890	-2.521	0
2860	Christian SH 812	K	0	0	0	11.496	11.496	11.496	0	0

2862	Applies NK 123	A	0	0	0	0	0	0	0	0
2865	Bark NK 122	A	0	0	0	0	0	0	0	0
2866	Falcons Peak NS 99	-12	0	0	0	16	16	16	0	0
2868	Jónína Armor ÍS 55	K	0	0	0	3.145	3.145	2.687	458	0
2870	Anna EA 305	A	0	0	0	37.324	37.324	37.324	0	0
2878	Gisli the Soursop GK 8	K	0	0	0	957	957	957	0	0
2883	Sigurdur VE 15	A	0	0	0	59.708	59.708	0	59.708	0
2888	Wealth Vestein SU 88	K	0	0	0	1.549	1.549	1,100	449	0
5155	Gummi Valli ICE 425	K	0	0	0	0	0	0	0	0
5493	Arni TH 127	A	65	0	0	214	279	482	-203	0
5885	Oats BA 15	K	0	0	0	0	0	0	0	0
5892	Kópur EA 140	-12	0	0	0	323	323	323	0	0
5907	Boon SU 33	K	244	0	0	-176	68	31	37	0
5923	Von SH 192	K	623	0	0	-357	266	266	0	0
5932	Swan GK 620	K	116	0	0	-112	4	4	0	0
5933	Heidrun AK 171	0	24	0	0	-24	0	0	0	0
5982	Sælaug MB 12	K	349	0	34	0	383	145	238	0
6013	Gugga ÍS 63	K	0	0	0	0	0	3	-3	0
6055	Erla AK 52	K	116	0	15	0	131	21	110	0
6061	Byr VE 150	-12	2.680	0	237	-2.142	775	775	0	0
6077	Valþór EA 313	K	0	0	0	0	0	28	-28	0
6086	Find HF 12	K	30	0	0	0	30	11	19	0
6094	Hildur ST 33	K	116	0	0	0	116	82	34	0
6125	Pearl Of 75	K	87	0	12	-95	4	4	0	0
6147	Feed II SH 61	K	0	0	0	0	0	5	-5	0
6167	Would AK 34	-12	0	0	0	0	0	17	-17	0
6175	Bravo VE 160	-12	0	0	0	268	268	268	0	0
6190	Frost HF 320	K	0	0	0	0	0	11	-11	0
6195	Sædís TH 305	K	0	0	0	0	0	5	-5	0
6209	Jon Kristinn SI 52	A	244	0	0	-200	44	37	7	0
6218	Glacier SH 339	K	0	0	0	0	0	47	-47	0
6229	Fin VE 272	-12	5.249	0	0	-3.141	2.108	1.317	791	0
6247	Sædís ST 6	K	116	0	15	-131	0	0	0	0

6272	Hansi MB 1	K	116	0	13	0	129	0	129	0
6282	Simple GK 108	-12	540	0	28	0	568	22	546	0
6311	Hulda EA 621	-12	0	0	0	30	30	24	6	0
6342	Oliver SH 248	-12	767	2,000	97	-1.779	1,085	1,085	0	0
6349	Teis NS 24	K	0	0	0	0	0	1	-1	0
6364	Happiness GK 52	-12	0	0	0	0	0	11	-11	0
6389	Rev. Arni SK 101	K	0	0	0	0	0	22	-22	6
6395	Transistor HU 7	K	0	0	0	0	0	29	-29	0
6418	Original lady KO 234	A	0	0	0	0	0	27	-27	0
6452	Klara BA 51	-12	0	0	0	0	0	33	-33	0
6476	Hafdís RE 79	-12	116	0	0	-116	0	0	0	0
6507	Valberg VE 10	-12	1,760	0	0	-1.610	150	223	-73	0
6513	Gummi Paul ÍS 81	-12	116	0	0	0	116	208	-92	22
6545	Solveig OF 12	K	0	0	0	80	80	153	-73	0
6548	Dry AK 79	A	0	0	0	0	0	181	-181	0
6575	Garri BA 90	K	223	0	30	0	253	271	-18	0
6586	Helga Jon HF 10	K	2,856	0	379	-2.220	1,015	736	279	0
6607	Aggi SI 8	-12	0	0	0	0	0	19	-19	0
6639	Njáll SU 8	K	116	0	0	167	283	266	17	0
6669	Mary ICE 777	K	0	0	0	0	0	90	-90	0
6674	Member KO 25	-12	0	0	0	0	0	53	-53	0
6678	Wind 10 MB	K	446	0	59	-73	432	365	67	0
6680	Bliki TH 53	K	0	0	0	124	124	144	-20	20
6697	Bjarni Jo SH 802	-12	0	0	0	0	0	13	-13	0
6700	Dadda GK 55	-12	0	0	0	37	37	37	0	0
6725	Anna SI 6	K	0	0	0	697	697	697	0	0
6738	Sorli ST 67	K	0	0	0	65	65	35	30	0
6739	Animal BA 98	K	116	0	15	0	131	160	-29	0
6745	Island GK 305	K	933	0	64	-624	373	197	176	0
6754	Anna OF 83	K	0	0	0	50	50	549	-499	0
6776	Þrasi VE 20	K	1.024	0	0	300	1,324	1,734	-410	0
6780	Boggs Vik HU 6	-12	0	0	0	160	160	160	0	0
6790	Sævaldur TH 216	-12	0	0	0	0	0	27	-27	0

6822	Sæpjakkur SH 999	-12	0	0	0	45	45	45	0	0
6830	SK Mar 90	K	0	0	0	0	0	49	-49	0
6838	Ásdís OF 250	-12	0	0	0	203	203	392	-189	0
6847	Fin SF 47	K	116	0	0	-74	42	25	17	0
6848	Glódís AK 99	-12	0	0	0	0	0	27	-27	0
6857	Sæfari BA 110	K	15	0	0	0	15	61	-46	0
6858	Guðni ÍS 52	K	116	0	0	0	116	0	116	0
6868	Duan HF 157	K	73	0	0	0	73	270	-197	0
6886	Swimming SU 406	-12	0	0	0	0	0	34	-34	0
6890	Vaka SU 25	K	116	0	15	-97	34	17	17	0
6909	Falcon TH 35	K	0	0	0	619	619	619	0	0
6918	Björgúlfur Palsson SH 225	K	129	0	17	0	146	222	-76	0
6919	Sigrun EA 52	K	6.446	0	11	-2.805	3.652	2.685	967	0
6933	Húni HU 62	A	0	0	0	0	0	69	-69	0
6934	Transistor ICE 144	-12	0	0	0	0	0	10	-10	0
6935	Máney ÍS 97	K	0	0	0	0	0	74	-74	0
6945	Helga honor TH 78	-12	0	0	0	0	0	578	-578	0
6952	Bára SH 27	A	0	0	0	0	0	9	-9	0
6961	Lundey TH 350	-12	42	0	6	0	48	44	4	0
6978	Feed SU 14	K	0	0	0	0	0	1	-1	0
6986	Hafdís SH 309	K	111	0	0	-50	61	14	47	0
6992	Múli RE 75	K	116	0	0	0	116	121	-5	0
7007	Gunnþór TH 75	A	0	0	0	0	0	96	-96	0
7019	Herborg SF 69	K	0	0	0	141	141	141	0	0
7037	Guðni Sturlaugsson YEAR 1	K	0	0	0	37	37	37	0	0
7040	Eidur EA 13	-12	0	0	0	0	0	0	0	0
7050	March GK 21	K	0	0	0	0	0	19	-19	0
7053	Bessa SH 175	K	0	0	0	10	10	46	-36	0
7060	Andri BA 100	K	87	0	0	0	87	278	-191	0
7064	Hafbjörg NS 1	-12	0	0	0	1	1	0	1	0
7066	Freydís NS 42	K	0	0	0	0	0	50	-50	0
7068	Little Vin SH 6	K	87	0	0	-87	0	0	0	0

7084	Maggi SU 26	K	7	0	0	0	7	7	0	0
7095	OSK EA 17	K	0	0	0	0	0	67	-67	0
7103	Polar bear GK 87	K	436	0	58	0	494	0	494	0
7104	Mar SU 145	K	3	0	0	0	3	347	-344	0
7105	All GK 51	-12	100	0	0	-1	99	84	15	0
7113	Mrs. Emilia SH 60	K	216	0	0	0	216	223	-7	0
7118	Robbery ICE 261	-12	0	0	0	0	0	2	-2	0
7133	Sigurborg II HF 116	K	444	0	59	0	503	457	46	0
7150	Stapavík AK 8	K	231	0	0	0	231	429	-198	0
7159	Gold-top II EA 229	K	9	0	0	0	9	48	-39	0
7162	Þristur BA 5	K	116	0	0	0	116	0	116	0
7164	Geysir SH 39	K	55	0	0	0	55	288	-233	0
7173	Sigurfari ÍS 99	-12	0	0	0	100	100	150	-50	19
7180	Sæunn SF 155	-12	0	0	0	0	0	94	-94	0
7185	Sunna SI 67	K	1	0	0	0	1	56	-55	0
7189	Hafdís GK 202	K	495	0	66	-334	227	153	74	0
7190	Fish Ines KE 24	K	0	0	0	0	0	42	-42	0
7194	Fagravík GK 161	A	0	0	0	0	0	10	-10	0
7214	Storm HF 31	K	125	0	0	-107	18	18	0	0
7219	Helga Margrét RE 21	K	116	0	0	-20	96	107	-11	0
7220	Skaleyjar SK 32	K	0	0	0	15	15	15	0	0
7233	Elli BA 433	K	0	0	0	0	0	39	-39	39
7234	Karl Thor SH 110	K	116	0	0	-58	58	27	31	0
7243	Thor tries SH 140	A	0	0	0	0	0	9	-9	0
7253	Olof Eva KO 58	-12	1,220	0	162	0	1,382	0	1,382	0
7255	Brynjar KE 127	K	160	0	21	0	181	12	169	0
7259	Tint HU 77	K	0	0	0	0	0	0	0	0
7261	Teistan RE 33	-12	32	0	4	0	36	20	16	0
7269	Hamar GK 176	-12	998	0	132	-897	233	233	0	0
7281	Islets SH 355	K	437	0	58	-495	0	64	-64	0
7296	Oats SH 125	K	116	0	0	-87	29	12	17	0
7298	Bára KE 131	K	785	0	0	0	785	109	676	0
7303	Sand Viking NK 41	A	0	0	0	0	0	7	-7	0

7309	Noah OF 19	K	0	0	0	0	0	2	-2	0
7311	Korra AK 44	K	0	0	0	0	0	55	-55	0
7313	Tint ST 16	K	116	0	15	-131	0	0	0	0
7315	Stina KE 91	K	2.794	0	0	-2.794	0	0	0	0
7323	Kristin NS 35	K	1	0	0	0	1	2	-1	1
7328	Fanney EA 82	-12	0	0	0	12	12	218	-206	0
7329	Hulda EA 628	K	335	0	0	176	511	461	50	0
7344	Weekend Raven OF 67	K	0	0	0	0	0	209	-209	0
7353	Gummi ST 31	K	0	0	0	0	0	7	-7	0
7357	Loki TH 52	-12	0	0	0	146	146	146	0	0
7362	Run EA 351	K	4	0	0	500	504	819	-315	0
7366	Sæstjarnan BA 40	K	116	0	0	-116	0	0	0	0
7369	Colored BA 311	-12	23	0	0	-23	0	0	0	0
7382	Sunflowers TH 28	-12	0	0	0	300	300	316	-16	0
7386	Ms ICE 202	-12	0	0	0	0	0	24	-24	0
7388	Ion in the Artur SH 395	K	116	0	0	-51	65	191	-126	0
7389	Mar of 50	K	29	0	0	200	229	266	-37	0
7393	Kari II SH 219	K	184	0	0	0	184	373	-189	61
7395	Gisli boat EA 208	K	0	0	0	0	0	12	-12	0
7396	Hafdís SI 131	K	0	12	0	0	12	295	-283	0
7412	Hilmir SH 197	K	0	0	0	190	190	45	145	0
7416	Emily SU 157	K	116	0	0	0	116	134	-18	0
7417	Joe ÍS 10	K	116	0	0	131	247	233	14	0
7418	Viking SK 78	K	0	0	0	0	0	10	-10	0
7420	Show SH 203	K	116	0	0	0	116	64	52	0
7427	DIT HU 56	K	0	1,000	0	-295	705	202	503	0
7430	Hafsóley TH 119	K	0	0	0	0	0	59	-59	0
7432	Magnus GK 64	K	169	0	0	500	669	896	-227	0
7433	Sindri BA 24	K	116	0	15	300	431	414	17	0
7437	Swan BA 54	K	116	0	0	-62	54	52	2	0
7439	Svein EA 173	-12	0	0	0	0	0	10	-10	0
7443	Ray SK 66	K	116	0	0	-46	70	70	0	0
7447	Hafalda of 25	-12	0	0	0	0	0	0	0	0

7449	Eyrún TH 2	-12	0	0	0	0	0	6	-6	0
7454	Mardi VE 236	K	0	0	0	0	0	0	0	0
7456	Guest SH 187	K	0	0	0	0	0	112	-112	0
7458	Instead Isle SF 15	-12	0	0	0	0	0	11	-11	0
7461	Arnar II SH 557	K	116	0	0	-61	55	38	17	0
7463	Life GK 67	-12	562	0	0	0	562	599	-37	0
7465	Frey ST 111	-12	0	0	0	0	0	0	0	0
7466	Mæja Magg ICE 145	K	0	0	0	0	0	46	-46	0
7467	Defrosters TH 375	K	0	0	0	0	0	284	-284	0
7478	Beggi Hostages ÍS 54	K	116	0	15	0	131	0	131	0
7490	Hulda SF 197	-12	0	0	0	130	130	143	-13	0
7495	Ríkey MB 20	K	492	0	62	-272	282	208	74	0
7501	Amy SH 59	K	42	0	0	0	42	102	-60	0
7514	Kalli SF 144	K	1.180	0	61	0	1.241	523	718	0
7526	Halla honor SF 23	K	116	0	0	0	116	258	-142	0
7527	Surf Vala SH 262	K	675	0	67	-487	255	154	101	0
7528	Dark SH 76	K	293	0	0	-122	171	127	44	0
7538	Njord I TH 246	0	729	0	97	-826	0	0	0	0
7555	Guillemot ICE 416	95	0	0	0	7	7	7	0	0
7559	Little auk ICE 408	95	0	0	0	3	3	3	0	0
7568	Fulmar ICE 412	95	0	0	0	2	2	2	0	0
7581	Phalarope BA 411	95	0	50	0	-3	47	1	46	0
7585	Great Northern Diver BA 415	95	0	0	0	32	32	32	0	0
7589	Bliki ICE 414	95	0	0	0	9	9	9	0	0
7600	Bobby 7 ICE 367	95	0	0	0	0	0	1	-1	0
7602	Bobby 9 ICE 369	95	0	2	0	0	2	2	0	0
7609	Bobby 16 IS 376	95	0	0	0	0	0	1	-1	0
7615	Bobby 22 ICE 382	95	0	2	0	0	2	2	0	0
7661	Sædís SU 78	K	0	0	0	0	0	40	-40	0
7680	Jasmine ICE 431	0	0	0	0	0	0	3	-3	0
7683	Elin TH 7	-12	0	0	0	300	300	382	-82	0
7690	Bergen SH 500	K	0	0	0	199	199	199	0	0

7694	Nykur SU 999	-12	0	0	0	0	0	1	-1	0
7701	Runar ICE 434	0	0	0	0	0	0	2	-2	0
7711	Hvítá MB 2	-12	0	0	0	0	0	2	-2	0
7727	Deer Stapi ICE 124	-12	0	0	0	0	0	21	-21	0
7737	Joe II SH 275	-12	366	0	45	-10	401	348	53	0
7755	Gobbling SU 306	-12	0	0	0	0	0	14	-14	0
7763	Sector HU 69	-12	0	0	0	0	0	149	-149	0
7781	Freyr AK 81	95	0	0	0	0	0	24	-24	0
9055	Defrosters SH 554	K	0	0	0	0	0	41	-41	41
Total			**50,448,316**	**1,559,571**	**857.649**	**0**	**52,865,536**	**51,851,052**	**1,014,484**	**344**

Registered catches are based on information from ports of landing and information on catcher exported unprocessed. The catch statistics above are published subject to change, once they have been compared to submitted reports from buyers.

http://www.fiskistofa.is/english/quotas-and-catches/quota-status-and-catches-of-species-by-vessel/aflastodulisti.jsp?lang=en

FUNDAMENTAL CLAUSE: 2.3.2 Fishing vessel monitoring and control systems

Clause Guidance

A program for the monitoring and control of fishing vessel activities shall be operated and enforcement shall be in place to prevent fishing by unauthorised vessels. Closed areas shall be monitored, the fishing gear and fishing logbooks shall be subject to inspection, as well as the composition of the catch and its handling onboard the fishing vessels. Catch amounts by species and fishing area shall be estimated and continually recorded in fishing logbooks on-board the fishing vessels. Discarding of catch from the stock under consideration shall be prohibited, those that may occur shall be monitored and all catches shall be landed in authorised fishing ports where harbour officials and fisheries inspectors shall monitor the correct weighing and registration of the catch. Accordingly, vessels must comply with all relevant National Fishery Management measures.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

The Icelandic Coastguard administers the VMS for all Icelandic vessels and for all foreign vessels

(including fishing vessels) that enter Icelandic waters. There is an integrated system for monitoring, control and surveillance (MCS) in Iceland. Iceland presents a unique situation, with the importance of the fisheries sector in a relatively small country and its particular historical evolution and institutional setup, and has at its core an underlying concepts of closer collaboration among related institutions and organizations at the national level through creative and dedicated approaches for fisheries enforcement.

EVIDENCE

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The integrated system has proved to be effective in combating and eliminating illegal, unreported and unregulated (IUU) fishing in the Icelandic Exclusive Economic Zone (EEZ) and the North Atlantic Ocean. This approach emphasizes using all available data – identification of the vessel, its movements, IUU lists, notifications, reports, fishing licenses, permits, port State control reports, etc.

Their integrated system includes Maritime related services combined in a single centre:

- **Maritime Traffic Service**
  - VTS
  - Vessel monitoring centre
- **Fisheries Monitoring Centre**
  - Fisheries VMS
- **Schengen Border Control**
- **Coastal Radio**
  - Compliance with GMDSS
- **Coast Guard Operations**
  - General Maritime Surveillance coordination
  - MRCC + ARCC =JRCC

The VMS Tracking is primarily for geared for safety but allows closed areas to be monitored

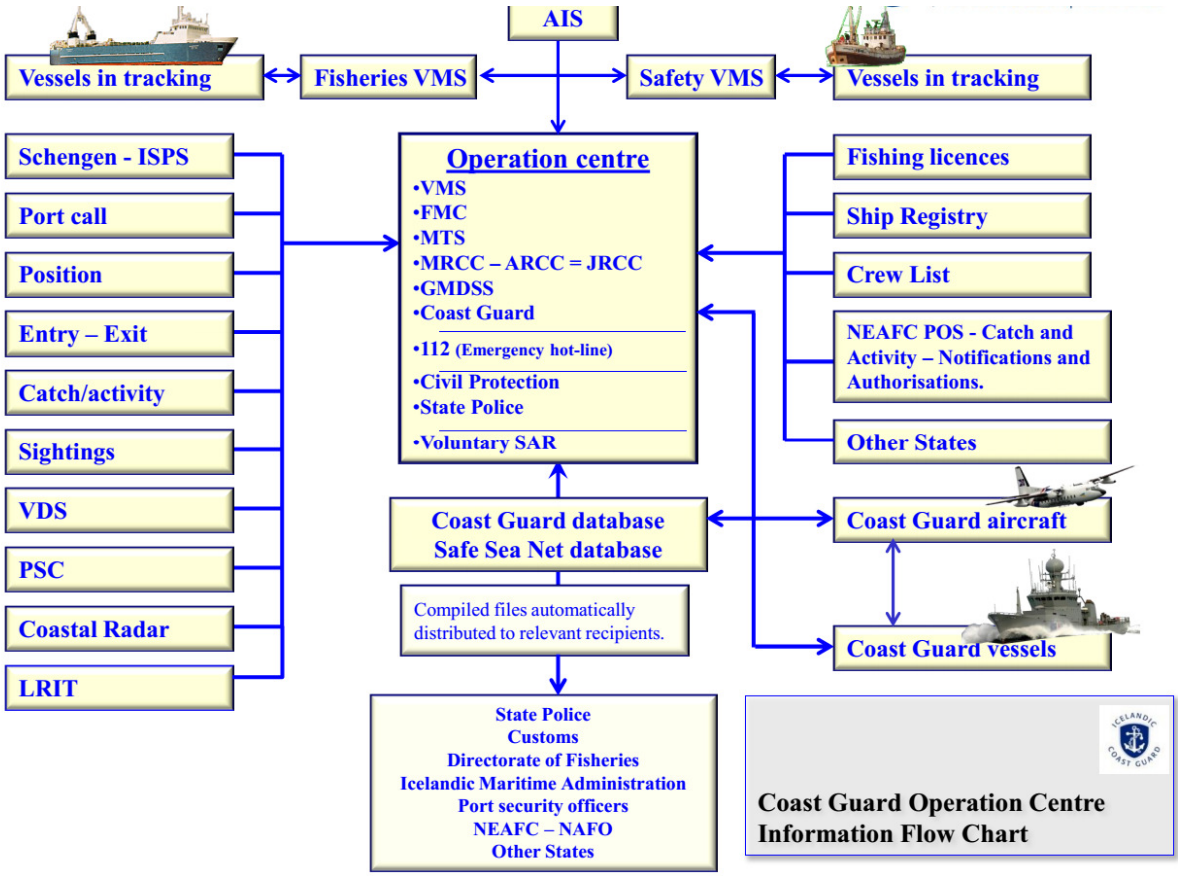
- **Reporting frequency**
  - Ships 24 m > one-hour
  - Ships < 24 m every 15 minute
    - One-hour if outside the VHF coverage but must then have appropriate tracking device installed
  - Passenger ships every 15 minute

– **Same reports used for safety and fisheries control**

• Closed areas are monitored at operations centre

There are also Bilateral tracking agreements with Greenland, Faroe Islands, Norway and Russia. For these there are automatic procedures, and daily catch reporting. A full "Electronic Reporting" from the vessels Electronic Logbooks is being tested.

It is important to point out that the ICG makes use of several VMSs. Apart from satellite-based systems, this includes monitoring of coastal activity through a dedicated land-based very high frequency (VHF) system. Another system is the Automatic Identification System (AIS), which has a similar range (30–60 nautical miles) as the VHF system and is expected to replace this in time. Alternative technologies, such as satellite radar images, are also being used for vessel detection and monitoring. The basic reason for such a variety of technologies and tools is that these all have their limitations when used as standalone solutions. Various examples are given on the combined use of these new technologies with traditional means of surveillance (e.g. patrol vessels, aircraft), making surveillance much more effective. Emphasis is also placed on data analysis, making use of VMS data in conjunction with other sources (e.g. IUU vessel lists, vessel registries, fishing licences, permits, port State control reports).



The Coastguard conduct vessel boarding's in order to inspect gear, catch and catch records including logbooks. Log books are subject to unannounced vessel boarding inspections by Coast Guard and at

port boarding's by the Directorate. Data on this has been provided in the Coast Guard boardings table of Clause 2.1.

An important element in the protection of small fish and prevention of damaging fishing practices is the closure of fishing grounds that have a high concentration of small fish. Directorate of Fisheries Inspectors measure the length of the fish caught and if the percentage of small fish in the catch exceeds a specified threshold, the relevant inspector submits a proposal to the Marine Research Institute to close the fishing grounds; the closure then comes into immediate effect and generally lasts for two weeks. This decision does not require the approval of any other authority. If there is considered to be sufficient reason to close the fishing grounds for a longer period, the Minister of Fisheries and Agriculture issues a regulation. Short term and long term closures are also monitored and enforced by the Icelandic Coast Guard using the VMS system primarily. Fishing fleet in those areas is monitored and enforced at the Coast Guard operation centre and vessels are directly contacted if crossing prohibited areas. This is the first point of action where the Coast Guard can issue a warning to the vessels, and escalate as necessary.

http://www.fao.org/docrep/013/i2099e/i2099e00.pdf

http://www.google.ie/url?sa=t&rct=j&q=&esrc=s&source=web&cd=9&ved=0CE0QFjAI&url=http%3A%2F%2Fwww.vidraedur2009-2013.is%2Fmedia%2FESB%2Fsamningskaflar%2F13%2FIX.Coast-Guard.ppt&ei=6i5fVZfcNYqF8QX_94GADA&usg=AFQjCNFYJeWCZfVYANpGmfseVi7CvnEABA&sig2=rgOeXBAr8zvf9kCl1FhnUA&bvm=bv.93990622,d.dGY

http://www.fiskistofa.is/media/utgefid_efni/DOF.pdf

FUNDAMENTAL CLAUSE: 2.3.3 Catches are subtracted from relevant quotas

Clause Guidance

Landed catches shall be subtracted from the relevant quotas (allowable catch) of the vessel or vessel group. Limited allowance may be made for the use of quota for one species to count against landings of another species, with the objective of providing the necessary minimum flexibility and discouraging discards. Transfer of quota between vessels shall take effect only after it has been authorised and recorded to the official central data base and information on each vessels catch quota and quota use shall be updated regularly and made public and accessible to all on the official website, thus ensuring transparency.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:
In order to facilitate the matching of the species composition of the catch and the quota portfolio for individual fishing vessels or companies, and also to reduce incentives for discard, a variety of flexibility provisions are in place. Current quota share, allocation and remaining quota can be obtained from the Directorates website for any vessels. The system is very transparent.

EVIDENCE

In order to facilitate the matching of the species composition of the catch and the quota portfolio for individual fishing vessels or companies, and also to reduce incentives for discard, a variety of flexibility provisions are in place. This can be seen in the able provided under clause 2.3.1 showing the overall balance of all vessels involved in catching redfish.

In addition to quota transfer, there is a provision allowing the use of catch quota for one species to count against a limited catch amount of another species, although it is prohibited to exchange other species for cod quota which instead must be obtained directly through the quota renting system.

Other items allowing flexibility include the following. It is permitted for the year‘s catch to exceed the year‘s quota by 5% in most demersal species; the excess is then deducted from the following year‘s quota. This is permitted to each vessel. It is permitted to postpone fishing for part of the quota and to transfer up to 15% of the year‘s quota of individual demersal to the following fishing year; postponement of fishing in considered beneficial to the growth of long-lived fish stocks. This is permitted to each vessel.

Current quota share, allocation and remaining quota can be obtained from the Directorates website for any vessels. The system is very transparent. Currently, as of May 25th 2015, 36,030,383 kg of ungutted golden redfish have been caught in the fishery. http://www.fiskistofa.is/english/quotas-

and-catches/catches-in-individual-species/aflastodulisti_tegundir.jsp?lang=en

Documentation that must be submitted for quota share transfers is available on the website and must be transmitted directly to the Directorate for authorization of the transfer. If a fishing company has two or more vessels they can transfer directly between their vessels (within all laws and regulations)[30].

FUNDAMENTAL CLAUSE: 2.3.4 Rules are enforced

Clause Guidance

Rules shall be enforced. There shall be penalties for serious infractions.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

Rules are enforced by the Directorate and the MRI. There are penalties for serious infractions.

EVIDENCE

There is a clearly established legal framework, with regulations and rules that give powers to the Ministry, the Directorate, the Coast Guard and the MRI. These are enforced by principally the Directorate on a day to day basis through powers to collect levies, monitor, inspect, report and gather evidence for prosecution purposes where violations are expected. All prosecutions are carried out through the Icelandic legal process (Ministry of Justice and Human Rights). Other at sea monitoring and inspection duties preside with the Coastguard. The MRI also has legal powers to close fishing grounds within the remit of the overall Ministry of Industries and innovation.

The following information was submitted by the Icelandic Coast Guard on the number of vessel inspections which took place in 2011-2014.

Targeted ICG boarding and violations per 2011/2014	2011	2012	2013	2014
Control, number of vessels / inspections	233	185	182	297
Comments, number of vessels	85	94	73	49

[30] http://www.fiskistofa.is/eydublod/flutningurveidiheimilda/

Equipment, number of vessels	46	30	29	18
Catch, number of vessels	14	16	9	4
Logbook	19	12	20	27
Fishing permit	10	22	22	0
Fishing gear/seaworthiness	2	14	14	1
Muster, registration	14	18	11	13
Lack of right to practice	11	12	14	10
Number of prosecutions against the master	13	15	33	14
Number of reprimands against the master	18	28	98	615

Comments:	**Total**	**Ships**
Coast Guard Vessels	33	22
Leiftur	40	27
Baldur	0	
Total	**73**	**49**

Reprimands:	
Flight Department	1
Coast Guard Vessels	24
Analysis departm. and FMC	591
Total	**615**

Prosecutions:	
Fisheries	6
Outside certified area of operation	0
Muster, registration	4
Lack of right to practice	3
AIS not shining	0
Catch Reporting	0
Fishing permit	0
Certificate of seaworthiness	0
Fishing logbook	0
Rest regulations	1
Total	**14**

(Asgrimur L. Ásgrimsson, ICG Chief of operations, June 2015 *pers. comm.*).
The Act on the Icelandic Coast Guard No. 52, June 14th 2006, enables the current operations of the ICG.

FUNDAMENTAL CLAUSE: 2.3.5 Analysis is carried out

Clause Guidance

Analysis shall be carried out with the aim of detecting any deviations that may occur of the actual total catch from the Total Allowable Catch (TAC). Measures are available and are adopted when indicated. Anyone purchasing and/or selling catches shall be obligated to present reports to the appropriate authorities, containing information on the purchase, sale and other disposition of fish catches.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:
Catch analysis includes the comparison of catch amount with figures for the amounts of sold or exported products in order to ensure independent checking of the accuracy of information about the fish that is brought ashore. If analysis reveals discrepancies between the information stated in the reports and the information received from the harbour weighing, corrective measures are taken as appropriate.

EVIDENCE

Export documentation provides an independent comparative check on catch quantities for different species. Analysis includes the comparison of catch amount with figures for the amounts of sold or exported products in order to ensure independent checking of the accuracy of information about the catches that are brought ashore. If analysis reveals discrepancies between the information stated in the reports and the information received from the harbour weighing, corrective measures are taken as appropriate. All processors making purchases of fish (at auction, or directly) are obliged to report purchases on a monthly basis to the Directorate. The Fish Auction Market also reports directly into the Directorate for fish catches.

There are effective systems in place that can manage the traceability of catch through processing, export and delivery to market. Traceability can be demonstrated using electronic logbook data – which, unless mixing of fish occurs on landing will allow for species by catch area by vessel for date of capture. This information is transmitted to the Directorate's website and also with the fish to the buyer. Essentially, there is an official registration of landed weight in all cases which also registers vessel, species, quantity using identifiers that allow traceability to the vessel. In most cases, the unique vessel identifier remains with the batch throughout production and often on the final pack. For wet fish sales, from the auction, a vessel unique number is registered within the central e-auction for tracking purposes. This full traceability is possible, but not all buyers require the full traceability report from the boat to the final product.

SECTION 3: ECOSYSTEM CONSIDERATIONS

FUNDAMENTAL CLAUSE: 3.1 Guiding principle

Clause Guidance

Adverse impacts of the fishery on the ecosystem (e.g. bycatch, ETP species interactions, habitat and foodweb interactions) shall be considered, appropriately assessed and effectively addressed. Those impacts that are likely to have serious consequences shall be addressed. This may take the form of an immediate management response or further analysis of the identified risk.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

Adverse impacts of the fishery on the ecosystem (e.g. bycatch, ETP species interactions, habitat and foodweb interactions) are considered, appropriately assessed and effectively addressed.

EVIDENCE

Gathering knowledge of the marine ecosystem is a key role that has been assigned to the Marine Research Institute (http://www.fisheries.is/ecosystem/). There is also comprehensive research which forms the basis of the fisheries management implemented in Iceland to harvest the stocks in a responsible manner, in order to ensure and maintain maximum long-term productivity of all marine resources. The MRI monitors and researches the marine environment, including the ecosystem components. There is a clear programme of monitoring and research:

- **Oceanographic and physical data** recording and analysis to support improved understanding of the effects of oceanographic and climatic changes on the redfish commercial fishery and ecosystems.
- Direct measurement of **retained catches** of other species within the redfish fishery. To the most part, other retained commercial species are quota species and all vessels have a specific ITQ for these species. Information on all catches is maintained. Discarding is illegal and the MRI undertakes ongoing assessments of potential discard rate to provide quantification and level of compliance. Discards are not included in the assessment. Discards of golden redfish in 2013 were considered to be negligible. (ICES, 2014[31])
- **Bycatch** and interactions of fishing operations of non ETP species and birds.
- **Habitat interactions** in demersal fisheries can be physical interaction of gear on the seabed or interaction of other gears in the water column; hook and line, gill nets and seine nets. Of these gears, of the total catch (2013) = 53 kt, 92% was taken by bottom trawls and 8% by

[31] http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/smr-5614.pdf

other gear types. As described there are measures in place for the protection of inshore grounds important for nursery areas of fish stocks. Additional closed areas (permanent, seasonal, short notice is also in place for a variety of conservation measures).

- **Endangered, Threatened and Protected Species** with gear interactions.
- **Ecosystem interactions** of the redfish fishery- important prey items and food items.

Environmental conditions in Icelandic waters, 2014

Estimates of seasonal conditions in Icelandic waters have been partially based on data saved during the annual spring cruise in May/June. During this cruise, Icelandic waters are sampled to evaluate the general condition of the ocean, marine vegetation, and zooplankton. Emphasis is placed upon comparable sampling from year to year in order to follow changes in the marine environment. Repeat sampling at a smaller scale has been conducted in the same areas in other seasons. Analysis has shown that seasonal conditions are highly variable between years. Studies during recent decades indicate that warm currents in the northern region support increased total production, but a complex combination of environmental factors influences the food web and the success of exploited stocks in Icelandic waters. The following is a brief discussion of recent seasonal conditions in Icelandic waters. More detailed accounts are provided in the Marine Research Institute report Environmental Conditions in Icelandic Waters, Marine Studies nr. 175 (2014).

Temperature

Temperature and salinity off North Iceland For more than 50 years annual temperature and salinity measurements have been taken off Siglunes. These measurements appear to be a good indication of the general state of the ocean north of Iceland and the influx of warm saline Atlantic water into the region. Following a warm period in the North Atlantic was the so-called Sea Ice Years, 1965–1971, because of cold, low salinity Polar currents entering the Iceland Sea. Since then, warm and cold years have alternated and the years 1979 and 1995 were the coldest. Measurements in the last decade have shown a warming trend in the North Atlantic after 1995. Since 1998 temperature and salinity have been at or above average. From 2006–2008 spring surface (0–50 m) temperatures and salinities were average, but they were well above average from 2009–2014. At greater depth, temperature and salinity have been above average, reflecting the warmer more saline waters to the west and south.

Bottom temperature

Bottom temperatures in Icelandic waters reflect even heat distribution in upper layers. Bottom temperature is usually lower to the north and east due to cold waters from the north, whereas the southern and western waters are warmed by southern waters. Bottom temperatures on the shelf are usually

lowest from February–March and highest from August–September or later. Annual fluctuation on the shelf is higher in shallow waters than at great depth. Outside the shelf margin bottom temperature is always below 0°C (Northern Seas deep water). Off the north-central coast (in Eyjafjarðarál, depth as much as 700 m) the cold deep water coming closest to land divides the northern fishing grounds into western and eastern regions. On the slope south and west lands bottom temperature decreases with depth, but rarely drops below 4°C. Temperature has been

mostly above average for a decade in Icelandic waters. An exception was in 2005 when the southeast current shifted for a short period. Measurements in spring 2014 show the bottom temperature around or above the average.

Zooplankton

Zooplankton plays a crucial role in the ecosystem as a primary food source of herring and capelin stocks, but also as the primary food of all other stocks in their larval and fry stages. The abundance of zooplankton is considered important to the survivability of fish just starting to catch their own food. Marine Research Institute (MRI) studies have shown a connection between zooplankton abundance southwest of Iceland in the spring and the number of cod fry in August. This connection is an indication of the ecological connections between species from the lowest to highest parts of the food chain. Studies aimed at following the long term trends in zooplankton abundance began around 1960. In 2013 the zooplankton abundance off North Iceland was below the historical average, but preliminary results from May 2014 indicate that the zooplankton abundance is above average (http://www.hafro.is/Astand/2014/english/00e-environment-14.pdf).

Retained catch

The total catches of Golden redfish in the Icelandic fleet in 2013 were 53'000 tonnes, where 92% of it (48 thousand tonnes) was taken by bottom trawls and 8% by other gear types. Of this 8%, 1'545 tonnes (2.9%) were caught with longline, 1'455 tonnes (2.7%) with lobster trawl, 537 tonnes (1%) with Danish seine, 181 tonnes with handline, 134 tonnes with herring/Blue whiting gear and 114 tonnes with gillnet gear.

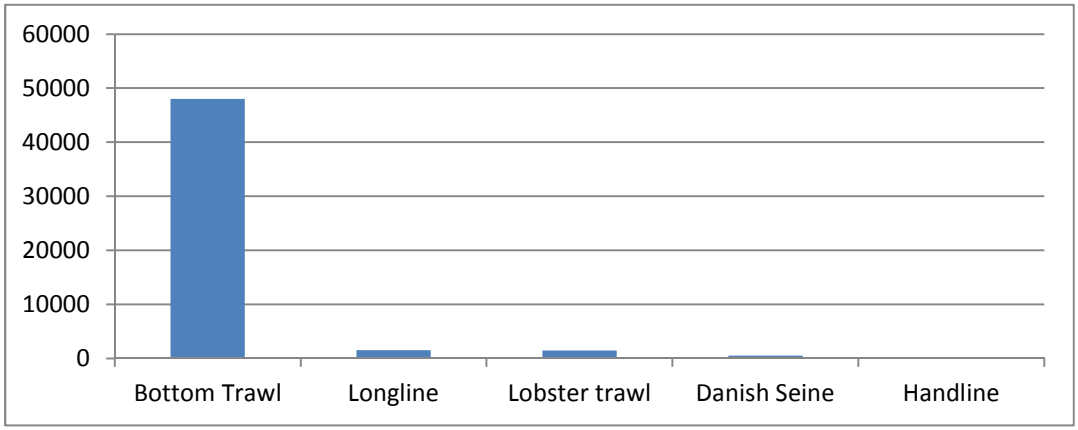


Figure 3. 2013 catch (September 2013 to August 2014) of Golden redfish in Iceland by gear type.

A number of species appear to be major retained species associated with bottom trawl gear. These include cod, haddock, saithe, Greenland halibut, and silver smelt.

Species	Catch (t)	% Contribution to bottom trawl catches
Cod	114259	43.01%

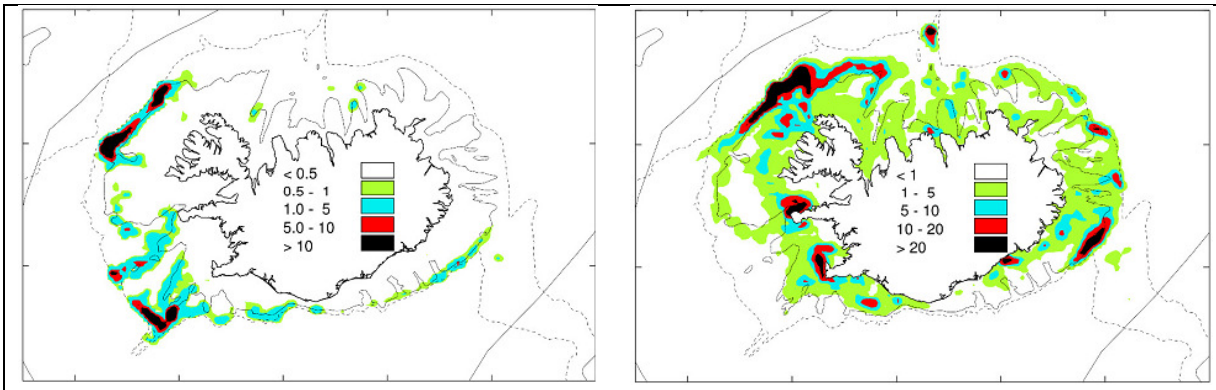
Golden redfish	48306	18.18%
Saithe	47027	17.70%
Haddock	18593	7.00%
Greenland halibut	10202	3.84%
Deep sea redfish	9689	3.65%
Silver smelt	7107	2.68%
Catfish	1960	0.74%
Ling	1686	0.63%
European plaice	1649	0.62%
Blue ling	866	0.33%
spotted catfish	859	0.32%
Norway haddock	663	0.25%
whiting	507	0.19%
Ocean redfish	501	0.19%
Black scabbard fish	420	0.16%
lemon sole	315	0.12%
Mackerel	193	0.07%
torny skate	139	0.05%
Monk fish	135	0.05%
Tusk	86	0.03%
megrim	84	0.03%
witch flounder	60	0.02%
American plaice	57	0.02%
Shrimp	40	0.02%
roundnose grenadier	39	0.01%
Halibut	36	0.01%

Blue whiting	34	0.01%
Baird's smooth-head	32	0.01%
Common skate	30	0.01%
roughhead grenadier	25	0.01%
arctic wolffish	18	0.01%
Greenland shark	15	0.01%
Orange roughy	13	0.00%
common dab	10	0.00%
Spiny dogfish	7	0.00%
Herring	6	0.00%
shagreen skate	0	0.00%
white hake	0	0.00%
Bluefin tuna	0	0.00%
Common hake	0	0.00%

Major (>1% of golden redfish catch volume) retained species and their status

Cod

Landings of Icelandic cod in 2013 were 223 thousand tonnes (kt), as compared to 196 kt in 2012. TAC for quota year 2012/2013 was set by the catch rule at 196 kt but total catch was 212 kt. Probably, the landings exceeding the catch rule will be of similar size in the current quota year. In order to calculate the annual Total Allowable Catch (TAC) a harvest control rule (HCR) is used based on the mean of the TAC in the current year and 20% of the biomass of 4 year and older cod in the assessment year according to the current stock estimate a 20% HCR, in which the current year's TAC is considered, leads to a TAC of 218 kt in the quota year 2014/2015. There appears to be moderate spatial overlap between cod and golden redfish (left and right respectively).

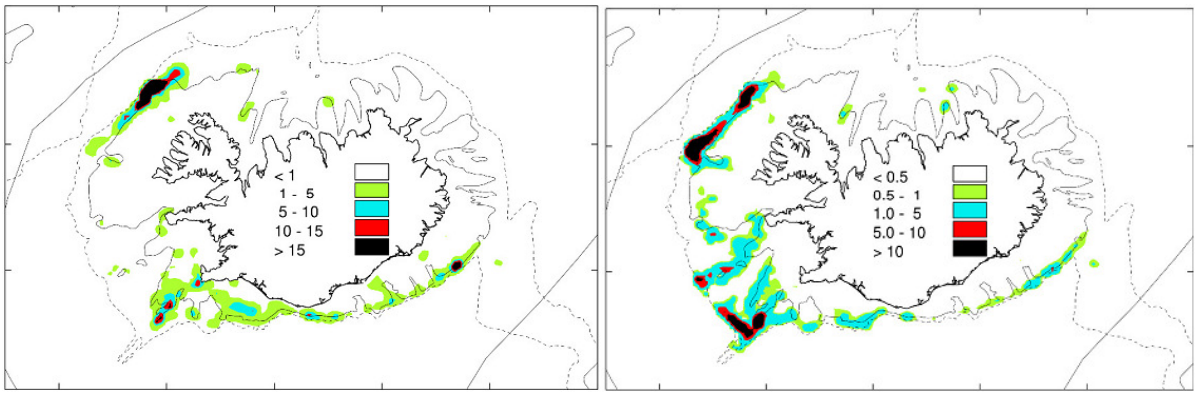


Cod and golden redfish an cod (left and right respectively) fishing grounds in 2013. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).

http://www.hafro.is/Astand/2014/english/01-cod-14.pdf
http://www.hafro.is/Astand/2014/english/04-goldenredfish-14.pdf

Saithe

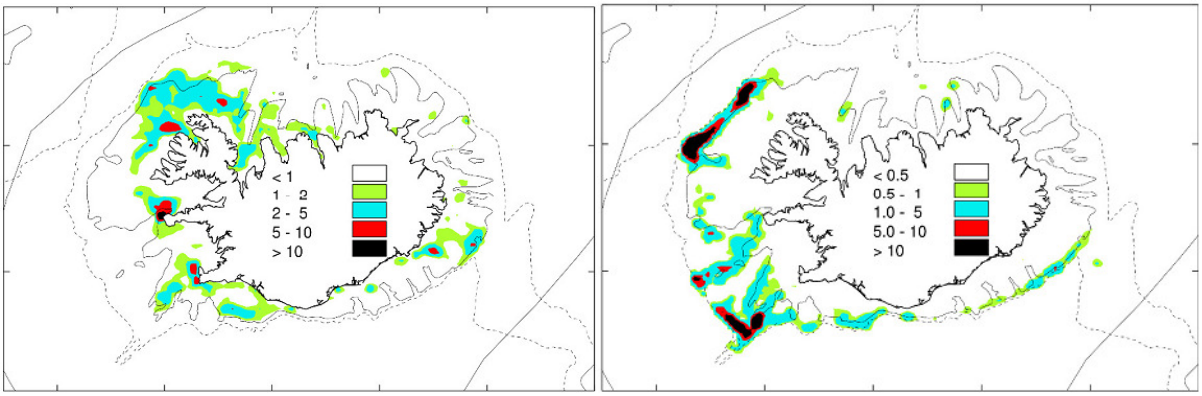
In 2013, landings of saithe (*Pollachius virens*) were 58 000 t, a 6000 t increase from 2012. The advice for the quota year 2012/2013 was 49 000 t and the TAC was set at 50 000 t. The reference biomass of age 4 and older was estimated as 296 000 t at the beginning of 2014, with a harvest rate of 19% in 2013, and a fishing mortality of 0.22. In spring 2013, the Icelandic government adopted a management plan for the saithe fishery. ICES has evaluated this management plan and concluded that it is in accordance with the precautionary approach and the MSY framework. It is based on a HCR that sets the upcoming TAC as an average of the last TAC and 20% of this year's reference biomass. A lower harvest rate is applied if the spawning stock biomass goes below the reference point Btrigger (65 000 t). According to the HCR, the saithe TAC for the quota year 2014/2015 will be 58 000 t. Visual inspection of the distribution of saithe and golden redfish (left and right respectively) suggests some technical interaction between the two stocks.



Saithe and golden redfish (left and right respectively) fishing grounds in 2013. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).
http://www.hafro.is/Astand/2014/english/03-saithe-14.pdf
http://www.hafro.is/Astand/2014/english/04-goldenredfish-14.pdf

Haddock

In 2013, landings of haddock (*Melanogrammus aeglefinus*) were 44000 t, a 2000 t decrease from 2012. The advice for the quota year 2012/2013 followed the harvest control rule giving 38000 t and the TAC was set at this level. The reference biomass of 45 cm and larger was estimated as 76000 t at the beginning of 2014, with a fishing mortality rate of 0.36 in 2013. In 2013, the Icelandic government adopted a management plan for the haddock fishery. ICES has evaluated this management plan and concluded that it is in accordance with the precautionary approach and the MSY framework. A lower harvest rate is applied if the stock biomass of haddock of 45cm and above goes below the reference point Btrigger (45000 t). According to the HCR, the haddock TAC for the quota year 2014/2015 will be 30400 t. Visual inspection of the distribution of haddock (left) and golden redfish (right) suggest limited technical interaction between the two stocks.



Haddock and golden redfish (left and right respectively) fishing grounds in 2013. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2).

http://www.hafro.is/Astand/2014/english/02-haddock-14.pdf
http://www.hafro.is/Astand/2014/english/04-goldenredfish-14.pdf

Greenland halibut

Greenland halibut (*Reinhardtius hippoglossoides*) from the East Greenland/Iceland/Faeroe Islands region (GIF) is considered a single stock, so stock assessments and advice from ICES and the MRI have referred to it as such. Total landings of Greenland halibut in the GIF region were over 27 kt in 2013, about 15 kt from Icelandic waters. Landings from Icelandic waters were near or above 90% of landings from 1982–1992 but decreased significantly thereafter and have recently been about half of the total. Icelandic TAC in 2012/2013 was 14700 tonnes and landings were just over 14 kt. For the current quota year the Icelandic government set 12480 tonnes as the quota for Greenland halibut in Icelandic waters and Greenland set the quota at 9800 tonnes for 2014. The fishery in the Faroe Islands is managed by fishing days. Last year ICES recommended that total landings of Greenland halibut in the GIF region should not exceed 20 kt, based on the results from the surplus production yield model. At the end of May 2014, Iceland and Greenland adopted a bilateral five-year management plan for Greenland halibut. The management plan

declares their agreement that both nations should fish the stock with consideration of an international precautionary approach to management and using the Fmsy provided by ICES. Agreement was reached between the two nations that Iceland should have rights to 56.4% of the recommended TAC and Greenland would have rights to 37.6%. Agreement between these two nations and the Faroe Islands was not reached, so Faroese effort and landings will not be bound by the Icelandic/Greenlandic agreement. The fishing fleet of the Faroe Islands landed over 2000 tonnes in 2012 and 2013. ICES and the MRI recommend that TAC for Greenland halibut in the GIF region for the quota year 2014/2015 be 25 kt, based on the effort that leads to maximum sustainable yield from a surplus production model. Visual inspection of the distribution of greater Greenland halibut (left) and golden redfish (right) catches suggests very limited spatial and therefore technical interaction between the two stocks.

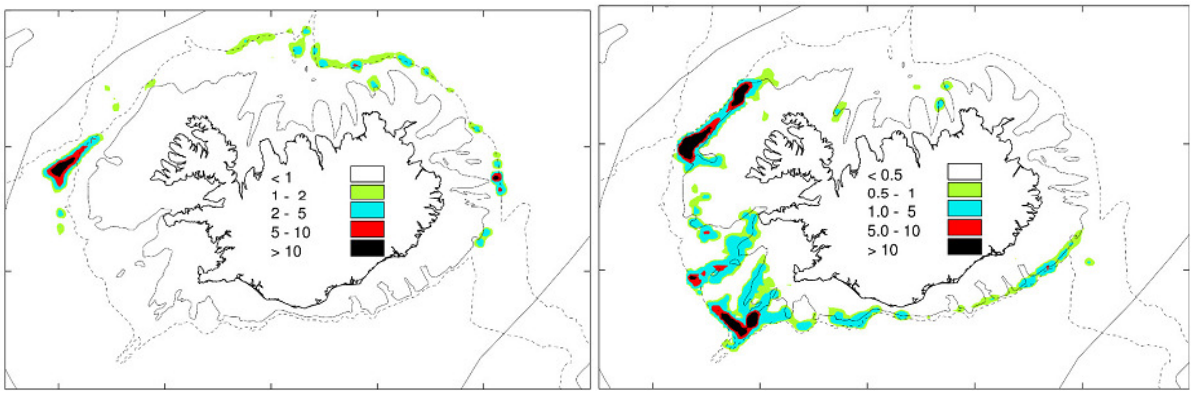


Figure 4. Spatial distribution of greater Greenland halibut (left) and golden redfish (right) catches in 2013. Darkest areas indicate highest densities in tonnes/nmi^2.

Source: http://www.hafro.is/Astand/2014/english/07-greenlandhalibut-14.pdf
http://www.hafro.is/Astand/2014/english/04-goldenredfish-14.pdf

Deep Sea Redfish

In 2013, 9000 t of Icelandic demersal deep sea redfish (*Sebastes mentella*) were landed, a decline of 3000 t on the previous year. The lack of long-term indices of abundance prevent analytical assessment, but survey indices from the autumn survey since 2000 are used as basis for advice. The index of fishable biomass decreased between 2000 and 2003 and has since then been stable. ICES and MRI recommended that effort should be kept low and the TAC in Icelandic waters not to exceed 10000 t for the quota year 2014/2015. Visual inspection of the distribution of deep sea redfish (left) and golden redfish (right) catches suggests very limited spatial and therefore technical interaction between the two stocks.

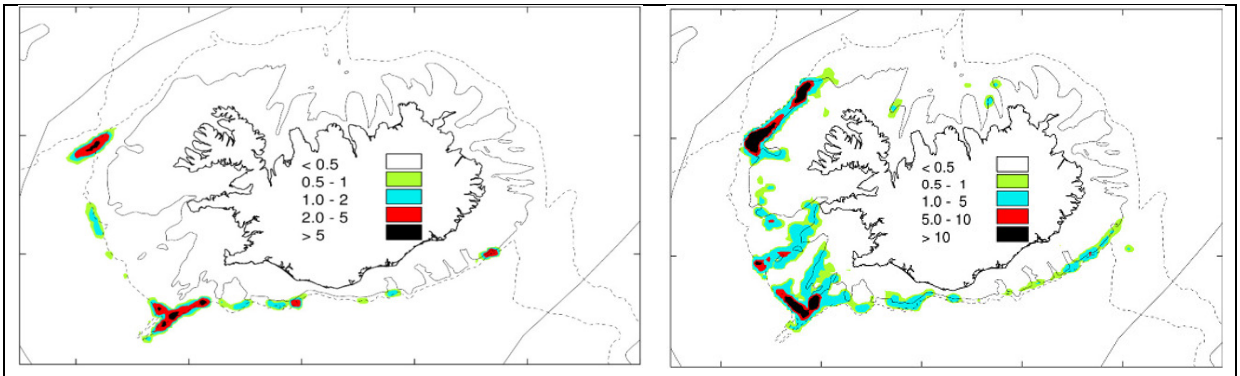


Figure 5. Spatial distribution of deep sea redfish (left) and golden redfish (right) catches in 2013. Darkest areas indicate highest densities in tonnes/nmi^2.

Source: http://www.hafro.is/Astand/2014/english/05-deepsearedfish-14.pdf
http://www.hafro.is/Astand/2014/english/04-goldenredfish-14.pdf

Silver smelt *(Greater argentine)*

Greater silver smelt has been caught in bottom trawl in Icelandic waters for many years, especially as bycatch in the redfish fishery. In 1997 direct targeting of the species began and landings increased from 800 tonnes in 1996 to over 13 kt in 1998. From 2000–2007 landings were from 2500–4800 tonnes. A large increased occurred from 2008–2010 and landings were more than 16 kt in 2010. From 2011–2013 landings decreased partly due to improved management and in 2013 landings decreased to about 7200 tonnes. ICES considers the significant increase in greater silver smelt fishing in recent years is well beyond the limits of a precautionary approach to stock management. For this reason, ICES recommends that greater silver smelt landings in quota year 2014/2015 should not exceed 4 100 tonnes. This recommendation is assuming a harvest rate that is the average from 2002–2007, decreased 20% because of uncertainty in the survey indices.

The MRI recommends that greater silver smelt landings in quota year 2014/2015 should not exceed 8 000 tonnes. This is based on the fact that variation is little both in the fishable stock biomass index between years and in the average age of greater silver smelt in landings from 2010–2013, but also because that recommendation is near Fmax according to the Gadget model. Visual inspection of the distribution of silver smelt (left) and golden redfish (right) catches suggests moderate spatial and therefore technical interaction between the two stocks.

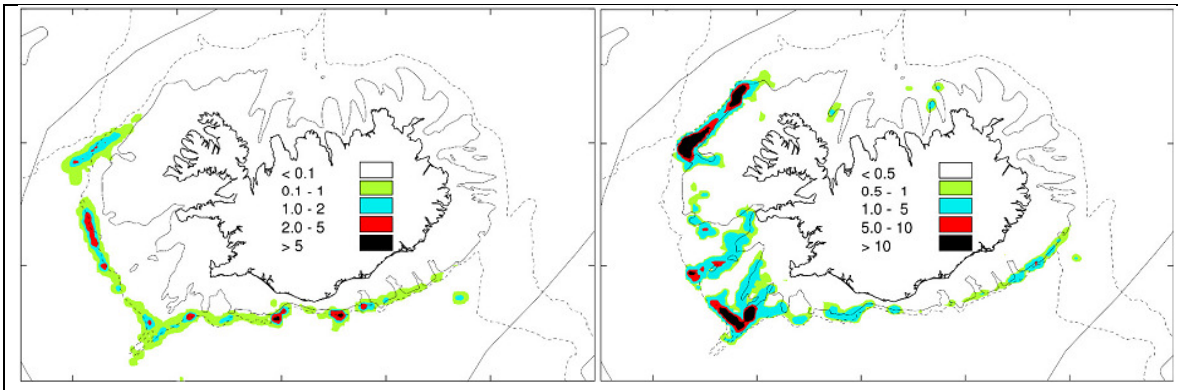


Figure 6. Spatial distribution of silver smelt (left) and golden redfish (right) catches in 2013. Darkest areas indicate highest densities in tonnes/nmi^2.

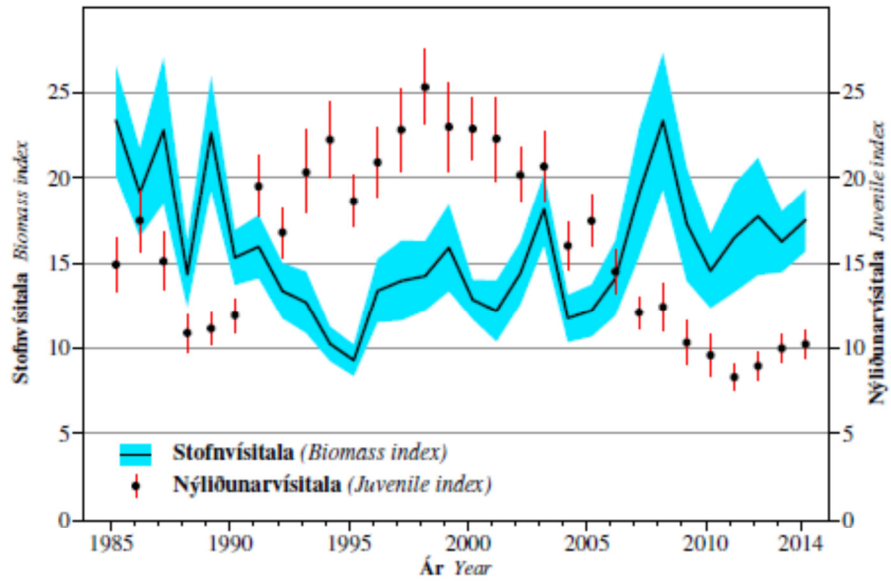
Source:
http://www.hafro.is/Astand/2014/english/28-greatersilversmelt-14.pdf
http://www.hafro.is/Astand/2014/english/04-goldenredfish-14.pdf

Vulnerable or Endangered/Threatened/Protected (ETP) Species Interactions

Atlantic wolffish

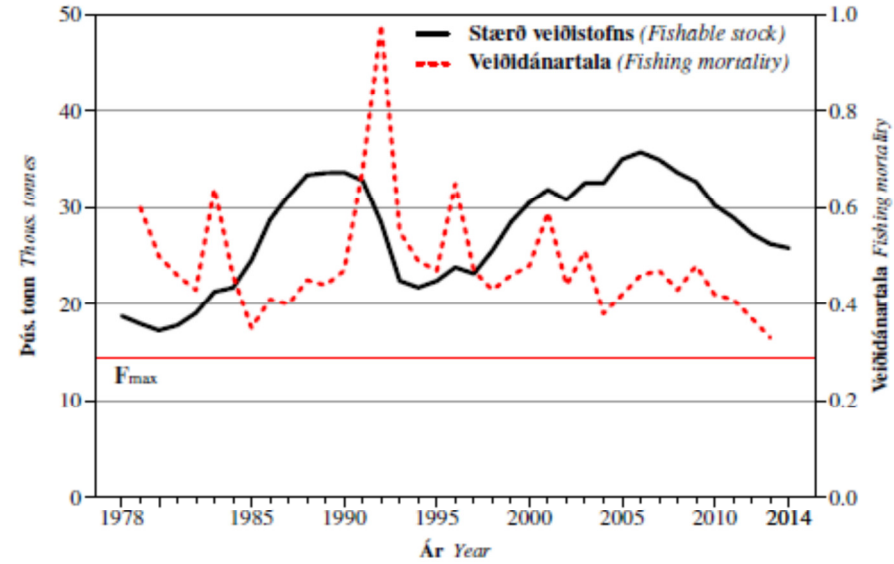
Landings of Atlantic wolffish (*Anarhichas lupus*) in 2013 were around 9000 t in Icelandic fisheries, the lowest landings since 1982, despite the MRI recommended setting the TAC as 7500 t for the quota year 2013/2014, based on Fmax=0.29. Despite a general decline in recruitment since the late 1990's, the stock has shown an increasing trend in biomass (survey index) which appears to be partially driven by the continued decline in fishing mortality. While F is still above Fmax is likely to be well below any potential PA level. Evidence from stock assessment shows the fishing mortality has been decreasing continuously since the past 5 years and appears to be close to reaching the target mortality. Based on this information the management of this stock appears to be improving although not ideal, but not posing significant threats to the stock. Notwithstanding, this stock and its management will be reassessed with attention in the coming years, given the low recruitment levels. Having said that, we note that the redfish fishery is not associated with wolfish catches (MRI, June 8th, pers comm) as redfish is caught only toward the far edges of the Icelandic shelf well into the EEZ.

The two figures below show recruitment, biomass and fishing mortality for this stock. It can be seen that recruitment is very low, biomass is somewhat on the rise and fishing mortality has decreased significantly over the last 5 years. The decrease in fish mortality appears to show positive management measure taken in response to the expected reduced productivity of this stock, in future years.



Mynd 2.15.2. **STEINBÍTUR**. Vísitölur veiðistofns (þyngd, fiskar 60 cm og stærri) og nýliðunar (fjöldi, 20–40 cm) úr stofnmælingu botnfiska í mars, ásamt staðalfráviki.

Fig. 2.15.2. ***ATLANTIC WOLFFISH****. Fishable biomass indices (>60 cm) and juvenile abundance indices (20–40 cm) from the annual groundfish survey in March, along with the standard deviation.*



Mynd 2.15.3. **STEINBÍTUR**. Stærð veiðistofns (þús. tonna) 1978–2014 og veiðidánartala 70 cm og stærri steinbíts (F) 1979–2013 samkvæmt Gadget líkani.

Fig. 2.15.3. ***ATLANTIC WOLFFISH****. Fishable stock size (thous. tonnes) 1978–2014 and F of 70 cm and longer Atlantic wolffish 1979–2013 based on the Gadget model.*

http://www.hafro.is/Astand/2014/english/15-atlanticwolffish-14.pdf

Common Skate

In 2013 the total catch of common skate (*Dipturus batis*) in Icelandic waters was 121 t. No TAC is available for this species because there is no directed fishery for it. New studies suggest that the common skate *D. batis* is actually a species-complex, split into two nominal species, the blue skate (provisionally called *D. cf. flossada*) and the flapper skate (provisionally called *D. cf. intermedia*) with maximum lengths of 143.2 cm and 228.8 cm respectively (Iglesias et al. 2009). This classification confusion has resulted in the depletion of the flapper skate throughout European waters, the more endangered species of the two, being masked in the catch record.

From 2011 onwards, all *Dipturus* specimens caught in the annual lobster survey of the south coast have been carefully examined and compared to the criteria given by Iglesias et al. (2009) to differentiate between *Dipturus cf. flossada* and *Dipturus cf. intermedia*. All specimens morphologically examined hitherto belong to *Dipturus cf flossada*, not *intermedia*. This is also true for other specimens caught in the groundfish surveys. The largest individuals caught in these cruises was 152 cm long. Identification of sexual maturity stages revealed the onset of maturity at 100 cm length (males) and that all individuals larger than 120 cm were mature. This agrees with what Iglesias et al. (2009) found for *Dipturus cf. flossada*. *Dipturus cf. intermedia* is considerably larger when sexually mature.

In 2013, tissues samples for DNA analysis from these skates were sent to Dr Andrew Griffiths at the University of Salford, UK. By the end of the year the largest individuals of the batch were analysed and it was found that the sequences analysed were identical to others previously collected from D. flossada. Thus confirming the identification based on morphological characters (MRI and Griffiths, 2013, pers. comm.). Search for archived specimens in Iceland did not reveal a single Dipturus cf. intermedia. Thus, there is no indication of occurrence of *D. intermedia* in Icelandic waters.

MRI note that the bottom trawl spring survey will continue to report on incidences and distribution of skate (*Dipturus spp.)* as they have been doing since the start of the survey in 1985. Also, catches in commercial fisheries will continue to be collected and the MRI will monitor whether significant changes in quantities landed or in the survey results occur. Currently the catches are stable.

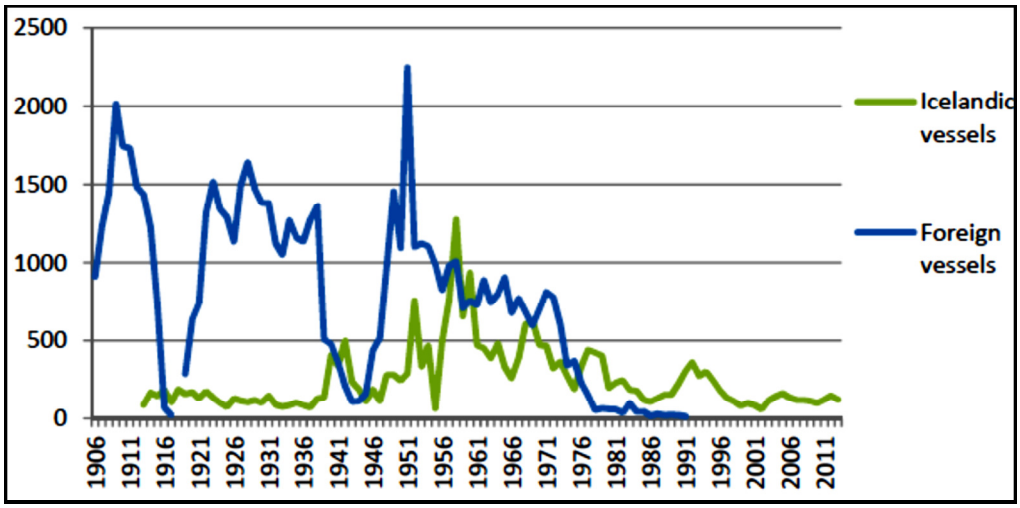


Figure 7. Landings of common skate by Icelandic and international vessels.

The stock is listed as Critically Endangered to Extinction on the IUCN Red list but not officially listed as a stock of concern in Iceland, while the catches and indices of abundance will, as for other stocks, be reviewed to consider if there are potential concerns to the stock status. In fact, the incidence of this species in the MRI surveys has been increasing in recent years (Figure 8). Icelandic catch reports, at present, still go with *Dipturus batis* in terms of nomenclature, as the accepted scientific name. The 'World Register of Marine Species' lists the names *Dipturus cf. flossada* and *Dipturus cf. intermedia* as "Status under discussion". It is still not clear if these will be the officially accepted names.

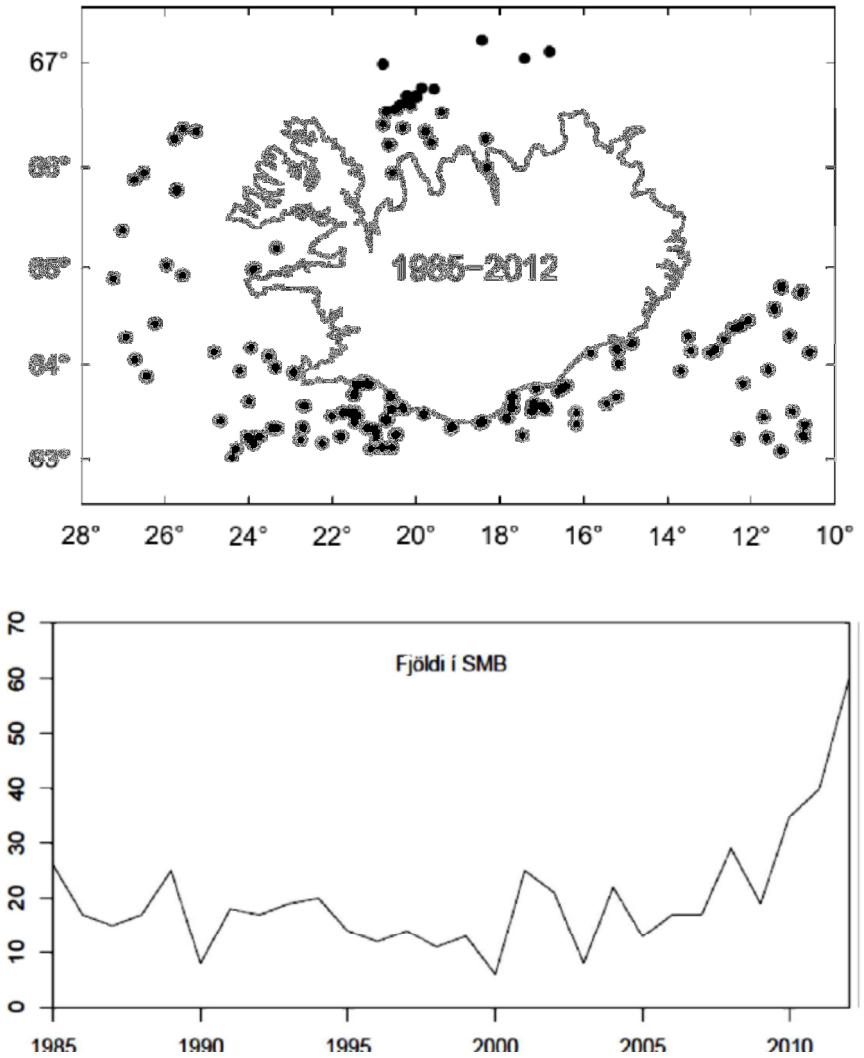


Figure 8. Spring groundfish survey incidence of skate (D. flossada) captures per year (1985-2012). The upper figure represents the survey catch locations for the species in question. In the lower figure the Y axis of the bottom graph represents the number of skate caught.
Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2871835/
http://www.sciencedaily.com/releases/2009/11/091117191048.htm
http://onlinelibrary.wiley.com/doi/10.1002/aqc.1083/abstract

Halibut

On the 1st January 2012 a regulation was issued to ban all directed fishery for halibut (*Hippoglossus hippoglossus*) and that all viable halibut must be released in other fisheries. The landings of halibut dropped to 44 t in 2013, compared to 555 t in 2011. Historically, halibut has mainly been taken as

bycatch in the bottom trawl and longline fisheries. In the last years before the regulations a longline fishery directed at halibut was developing, coinciding with a sharp decline in the survey biomass index. In recent years, the biomass indices from the groundfish survey have declined to a very low level. Currently, the halibut stock seems to be severely depleted, with very little recruitment into the spawning stock in recent years. The MRI recommended for these regulations to be maintained until clear indications of significant improvement in the stock are visible.

http://www.hafro.is/Astand/2014/english/08-halibut-14.pdf

Greenland shark

Greenland shark (*Somniosus microcephalus)* fisheries have probably been conducted in Icelandic waters from the time of settlement. They reached a large scale in the 18th century, and a zenith in 1867 when 13,100 barrels of shark oil were exported (each barrel is about 62 l). This was probably the most important marine resource in Icelandic waters at the time, and these were the only fisheries by Icelanders prior to the 20th century that can be described as deep-water fisheries. Despite this, they were first conducted in open rowing boats, but later they were the first Icelandic fisheries to use decked sailing boats extensively. Usually only the liver was retained, yielding valuable oil used for lighting up cities in Europe. When whale oil and fuel oil became more available the markets for the shark oil disappeared and direct fisheries for the Greenland shark were over by about 1910. Catches have been low since that time, or about 40 tonnes annually, mostly bycatch in bottom trawls but a few are caught each year in direct longline fisheries. Most of the catches are during spring and early summer (http://www.fisheries.is/main-species/cartilaginous-fishes/greenland-shark/). No information is available on the stock status of this species and it is unclear whether there is any direct or technical interaction between this species and those fisheries associated with golden redfish.

Discards

In 1996, a total ban of discards was introduced and any discards are subject to penalty. Practically, this means that if vessels do not have sufficient catch quota for their bycatch, it is required that sufficient catch quota be transferred from other vessels. Consequently, if vessels do not have sufficient catch quotas for their probable catches, they must suspend all fishing activities. This means that under the ITQ system, the discard policy primarily affects the composition of landings and not the aggregate volume.

However, the discard ban has some flexibility, as any 5% of demersal catches from a fishing trip (called VS catch), irrespective of fish species or size, may be excluded from quota restriction (which means that the VS catch is additional to the TAC), on the condition that catches are sold in public fish markets. Only 20% of the revenue of VS catch goes to the fishing company and the crew, and 80% goes to a designated research and development fund (the VS fund, under the auspices of the Ministry). Therefore, the fishing companies have limited incentives and financial motivation to land VS catch. But having the VS catch provisions within the fisheries management system enables the fishing companies with flexibility to land small catches which are outside their specific quota,

prevents discards to some degree, improves the treatment of the fishery resource and promotes more responsible fishing practices. Discards in the golden redfish fishery are considered negligible.
http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/smr-5614.pdf

Interactions of bottom contact gear with benthic ecosystem

It is important to note that the Icelandic groundfish fleet is essentially a multispecies fishery and so, bottom trawl vessels, as well as longline and other vessels, may and do target more than one species at any one time, during the calendar fishing year. For this reason, the effects of bottom trawl gear on the Icelandic seabed communities and biotic structures can be attributed to the fishery as a whole rather than to one or other species in particular.

Bottom trawling for fish and shrimp is one of the most common fishing methods in Arctic and Subarctic waters. The most widely used gear for bottom fishing in Icelandic waters is the otter trawl, which consists of a large net bag rigged with ground rope and a headline to keep the net open vertically. Otter boards are connected to the ground rope with heavy wire to keep the net spread horizontally and to hold the trawl down as it is towed along the seafloor. In general, the effects of otter trawling in shallow areas with a soft seabed are relatively minor for most of the smaller species. Effects of trawling on large structural biota such as corals and sponges are considered to be more severe. Although little evidence exists on the effects of trawling on this group of animals, it is likely that their distribution is now more fragmented than prior to fishing.
http://www.hafro.is/undir_eng.php?ID=16&REF=2

Effects of otter trawling have been investigated in Icelandic waters with a manipulative field experiment. A field experiment (Ragnarsson and Lindergarth, 2009 http://www.int-res.com/articles/meps2009/385/m385p051.pdf) was conducted to examine the short- and long-term effects of otter trawling on a macrobenthic infaunal community in shallow subtidal waters of Faxaflói Bay (SW Iceland) that had never been trawled before. The experimental design consisted of 4 sites trawled 10 times and 4 areas left undisturbed (controls). Sampling of fauna and sediments was carried out in June 1997, immediately after trawling, and subsequently 2 and 7 months later, in order to investigate longer term impacts of trawling.

A total of 160 taxa representing 138 577 individuals were recorded during the course of the study. Two taxa dominated in abundance, the tube-building polychaete *Myriochele oculata* and bivalves belonging to the genus Abra, accounting for 38 and 27% of the total abundance, respectively. The polychaetes Paraonissp., *Cossura longocirrata, Scoloplos armiger, Pholoe minuta, Sternaspis scutata* and *Eteone longa* contributed 25% to the total abundance. Polychaetes, bivalves, crustaceans and other groups comprised 69.6, 29.3, 0.7 and 0.3% of the total abundance, respectively.
Multivariate tests of hypotheses about effects of trawling on the whole benthic community found no significant persistent or temporary effects. The overall qualitative pattern of total abundance and diversity is that all variables increased during the experiment. In contrast to the measures of diversity, there were no persistent long-term effects of trawling on abundances of individual taxa.

Furthermore, a significant short-term effect was found only for the bivalve *Thyasira flexuosa*, which was less abundant (70%) in trawled plots immediately after trawling but more abundant in trawled plots at subsequent sampling times (34 and 15%, respectively). Thus, significant long - or short-term effects on average abundance were found for only 1 out of 32 investigated taxa. No significant treatment effects could be detected on total abundance or on multivariate structure, and tests for individual species revealed only a single short-term effect (for the bivalve *Thyasira flexuosa*). However, trawling affected several aspects of diversity with significant short-term reduction in species richness and persistent effects on the Shannon-Wiener index. Power analysis revealed that larger changes were needed to detect changes in abundance compared to measures of diversity.
http://www.int-res.com/articles/meps2009/385/m385p051.pdf

The available data on fishing effort of the Icelandic fleet is very accurate and have made it possible to map in detail the distribution of otter trawl effort around Iceland (see below).

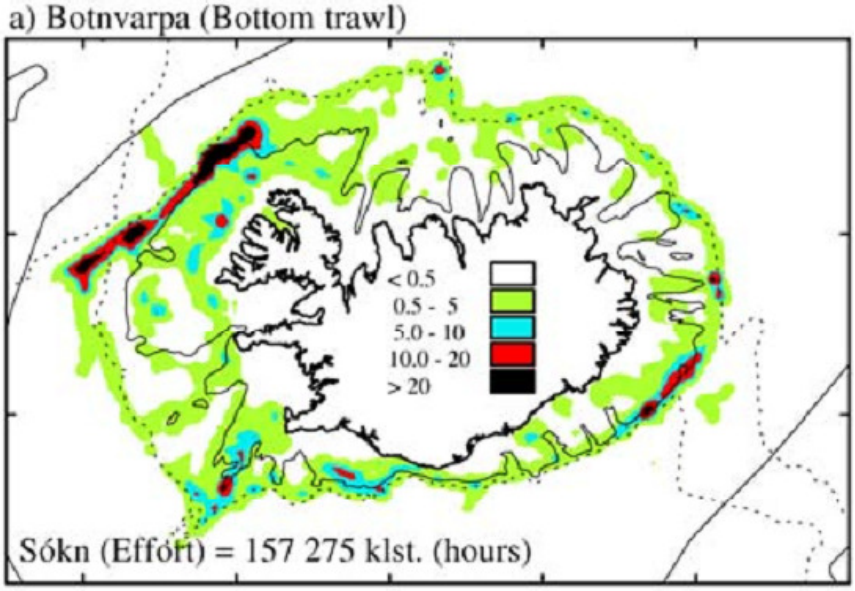


Figure 9. Otter trawl effort in Icelandic waters in 2013. Effort is given as hours travelled per nautical mile. Source: http://www.hafro.is/Astand/2014/40-vidaukar.PDF

Protection of VMEs

Seabed mapping is a one of the Marine Research Institute's projects which started with the launching of the research vessel, Awvni Fridriksson, in the year 2000. The vessel is equipped with a multibeam echo sounder which enables a detailed mapping of the seabed. Bathymetrical and backscatter data is used to make different kinds of maps, i.e. contour, sun-illuminated and three dimensional maps, and maps with information of the substrate. Emphasis has been on mapping fishing grounds and benthic communities and habitats. The available data on fishing effort of the Icelandic fleet is very accurate and have made it possible to map in detail the distribution of otter trawl effort around Iceland. Over the next few years priority will be given to map the distribution of benthic assemblages and habitats which are considered to be sensitive to trawling disturbances. Such information will be important in order to predict which species and habitats are being at risk of being damaged by fishing activities and for protection of important marine habitats in the future.

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* (former *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 suspected that sponge bycatch is lower in areas of high fishing effort as indicated in the Figure below.

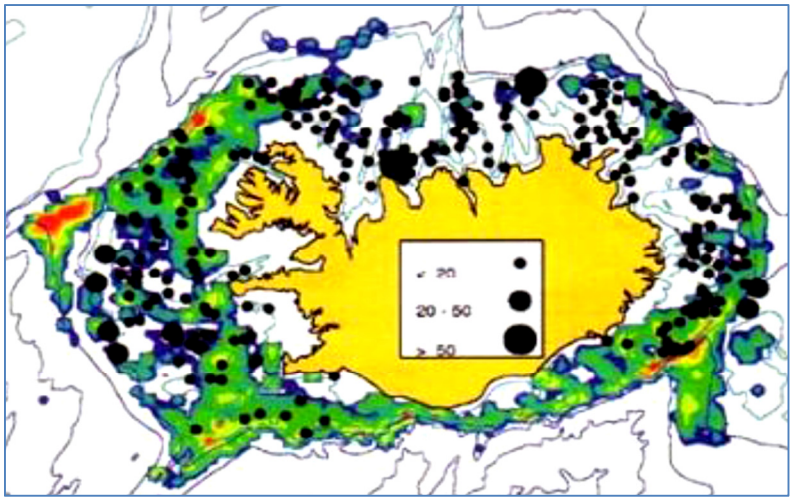


Figure 10. Biomass of sponge bycatch in 2002, superimposed on fishing effort as mean annual swept area (nm^2 per 1° latitude x 1° longitude cell). Black dots indicate total biomass (kg/h otter trawl haul) of sponges in the 2002 groundfish survey by the Marine Research Institute.
http://qsr2010.ospar.org/media/assessments/Species/P00485_deep_sea_sponge_aggregations.pdf

Currently, there are no strategic conservation plans for sponges. However, within Icelandic water outside 12 nautical miles, several permanent regulatory fisheries closures (total area 13,094 km^2) have been established, where fishing with otter trawls and also in most cases long-lines, is banned.
The main aim of these closures is to protect nursery grounds of Atlantic cod (Gadus morhua) and redfish (Sebastes spp.). However, these closures do also de facto protect benthic organisms, including sponges. In addition, all coastal areas within 4-12 nautical miles are protected against bottom trawls (total area of 45,290 km^2), while Danish seine are permitted and the area thus practically protected with respect to sponges. Finally, ten closed areas have been established in Icelandic waters to protect cold water corals, (see map below) and some of these have considerable abundance of sponges. Within those areas, all activities (including fishing) that can affect the seabed are prohibited. All in all, aside from the coral closures, 58,384 km^2 are protected trough trawl closures, while the shelf area (within which fishing activities occur) is 109,010 km^2. Trawl closures make up more than half of the total fishable area. Furthermore, not all the fishable shelf areas outside closed areas are trawlable, as some parts are too rough or uneven for trawl gear to operate on. This can be seen in figure 11 which shows trawl effort in Iceland in 2013 (darker areas signify

higher effort). Because of this, it appears that there is suitable protection for sponge communities within the Icelandic shelf area.

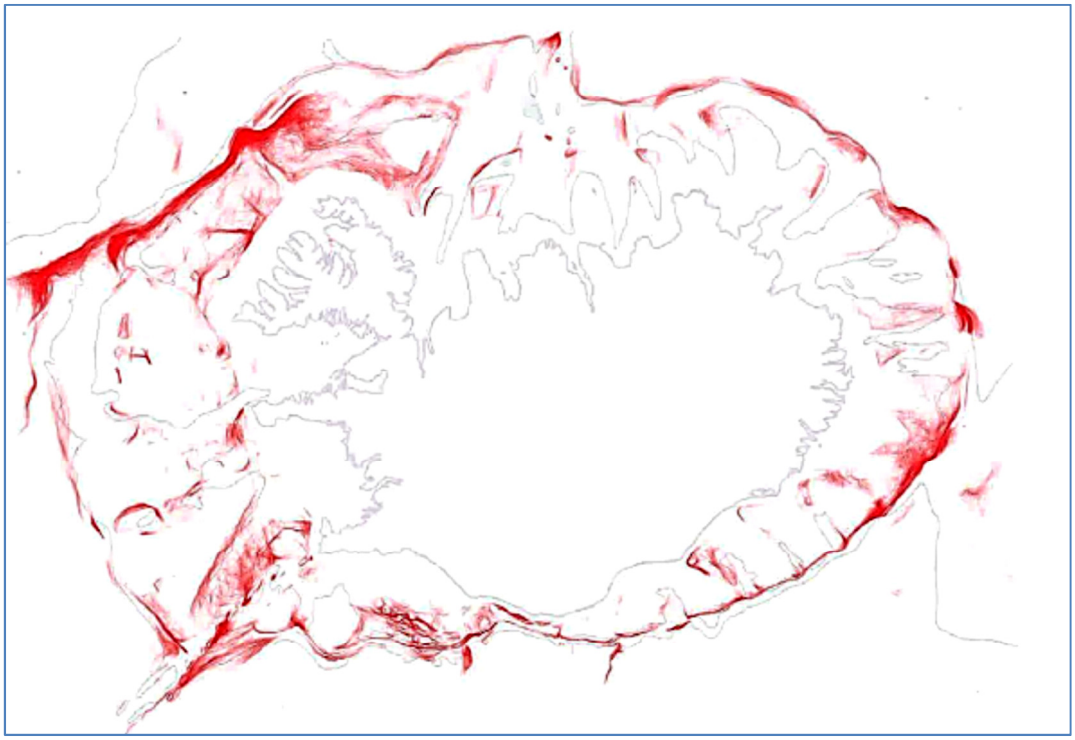


Figure 11. Trawl effort in Icelandic water during 2013. Darker areas show higher effort levels.

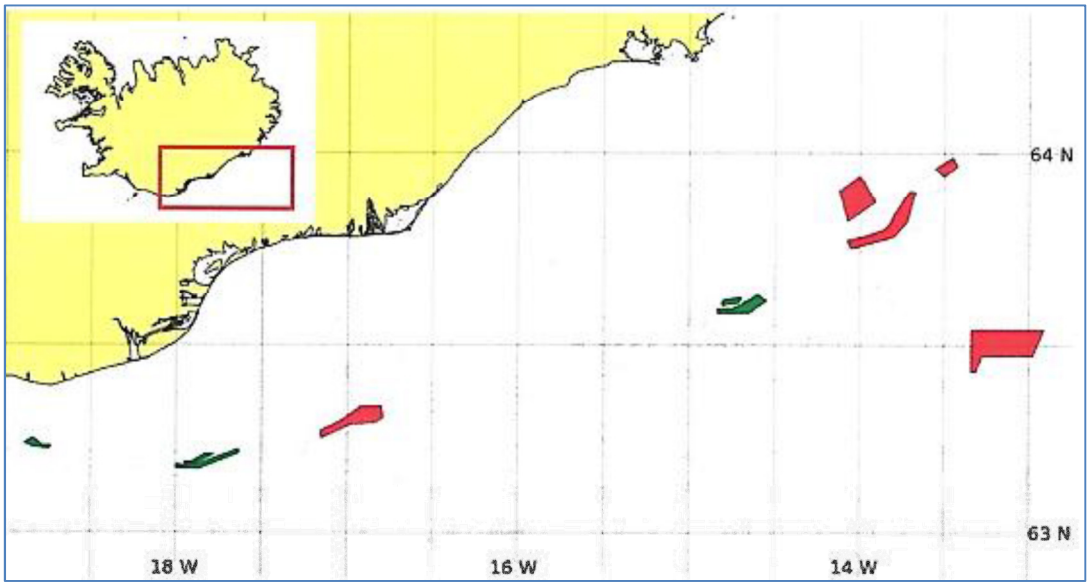


Figure 12. Location of closed areas for the protection of cold water corals in water to the South East of Iceland.

The coral (*Lophelia pertusa*) closures protect a species of cold-water coral which grows in the deep waters throughout the North Atlantic ocean. *L. pertusa* reefs are home to a diverse community, however the species is extremely slow growing and may be harmed by destructive fishing practices. In 2004 a research project was started on mapping coral areas off Iceland (using a Remote Operated Vehicle, ROV), based on the results from questionnaires to fishermen on occurrence of such areas.

As a result several areas were permanently closed to fishing for protection of coldwater corals (see figure 12). Currently there are 10 coral closures in Southeast Iceland.

It is the policy of the Icelandic government to protect vulnerable marine ecosystems (VMEs; coldwater corals and hydrothermal vents), from significant adverse impact from bottom contacting gear. Known cold-water coral reefs and hydrothermal vents are protected through permanent closures. Overall, large areas within the Icelandic EEZ are closed for fishing, either temporarily or permanently. These closures are aimed at protecting juveniles and spawning fish and protecting vulnerable marine ecosystems.

Interactions with Seabirds and Marine Mammals

The Icelandic government is in the process of improving data collection relating to fisheries interactions and bycatch of marine mammals and seabird.

Measures taken to date. A Steering group of the Ministry of Industries and Innovation (MII), the Directorate of Fisheries and the MRI has laid out a detailed date-marked operation plan which has the aim of improving the shortcomings which have occurred with respect to the documentation of seabirds and marine mammal bycatch into logbooks in fishing operations. The plan entails increased enforcement of documentation of the bycatch of birds and marine mammals by the fishery inspectors themselves. The returns of data from e-logbooks will also be improved and changes made in paper logbooks to enhance recording possibilities along a revision of the regulation on logbook. The plan furthermore entails an annual compiling and processing of bycatch data and an annual evaluation results obtained with the aim of improving the plan. The plan also provides for an overall appraisal of the operations undertaken and results obtained as well as an evaluation of the magnitude of bycatch before the end of 2015, issued by the Steering group.

Timetable as provided in 2013 by the Client

• January 2013: a Steering group has been created by the Ministry for coordinating the work of the Directorate and the MRI with the objective to ensure effective monitoring of seabirds and marine mammals.
• March 2013: improvement of the Directorate neutral documentation of seabirds and marine mammals bycatch independent of the vessel's logbook when fisheries inspectors operating on board a vessel along with technical improvements of transfer of bycatch data from the Directorate to the MRI.
• April 2013: changes in communication applications which will enable direct automatic transfer of bycatch data into the MRI database.
• Prior to May 15th 2013: the Steering group will have finished a review of Regulation no. 557/2007 on logbook which has objective to evaluate, whether the obligation to register all seabirds and marine mammals into the logbook is clear enough and satisfactorily stipulated.
• Fall 2013: bycatch data will be compiled and processed for final analysis of results.
• January 2014: evaluation of the 2013 bycatch data recording.

• Fall 2014: bycatch data will be compiled and processed for final analysis of results.
• January 2015: evaluation of the 2014 bycatch data recording.
• Fall 2015: bycatch data will be compiled and processed for final analysis of results.
• End of 2015: the Steering group shall make an overall appraisal of the bycatch data recording and report along with an estimate of the bycatch of seabirds and marine mammals in the haddock fishery.

A new amendment to existing regulations requiring that data submitted in logbooks includes seabirds and marine mammals number and species was issued in February 4 2014.

Nr. 126/2014	4 February 2014
REGULATION	
amending Regulation no. 557, 6 June 2007 on logbooks, as amended.	

Article 1.

First paragraph. Article 6. added two paragraphs which read as follows:

1. Seabirds on the number and species.
2. Marine mammals on the number and species.

Article 2.

This Regulation is issued under the provisions of Act no. 116, 10 August 2006, the Fisheries Management as amended, and Act. 151, 27 December 1996, for fisheries under the jurisdiction of Iceland, to take effect immediately.

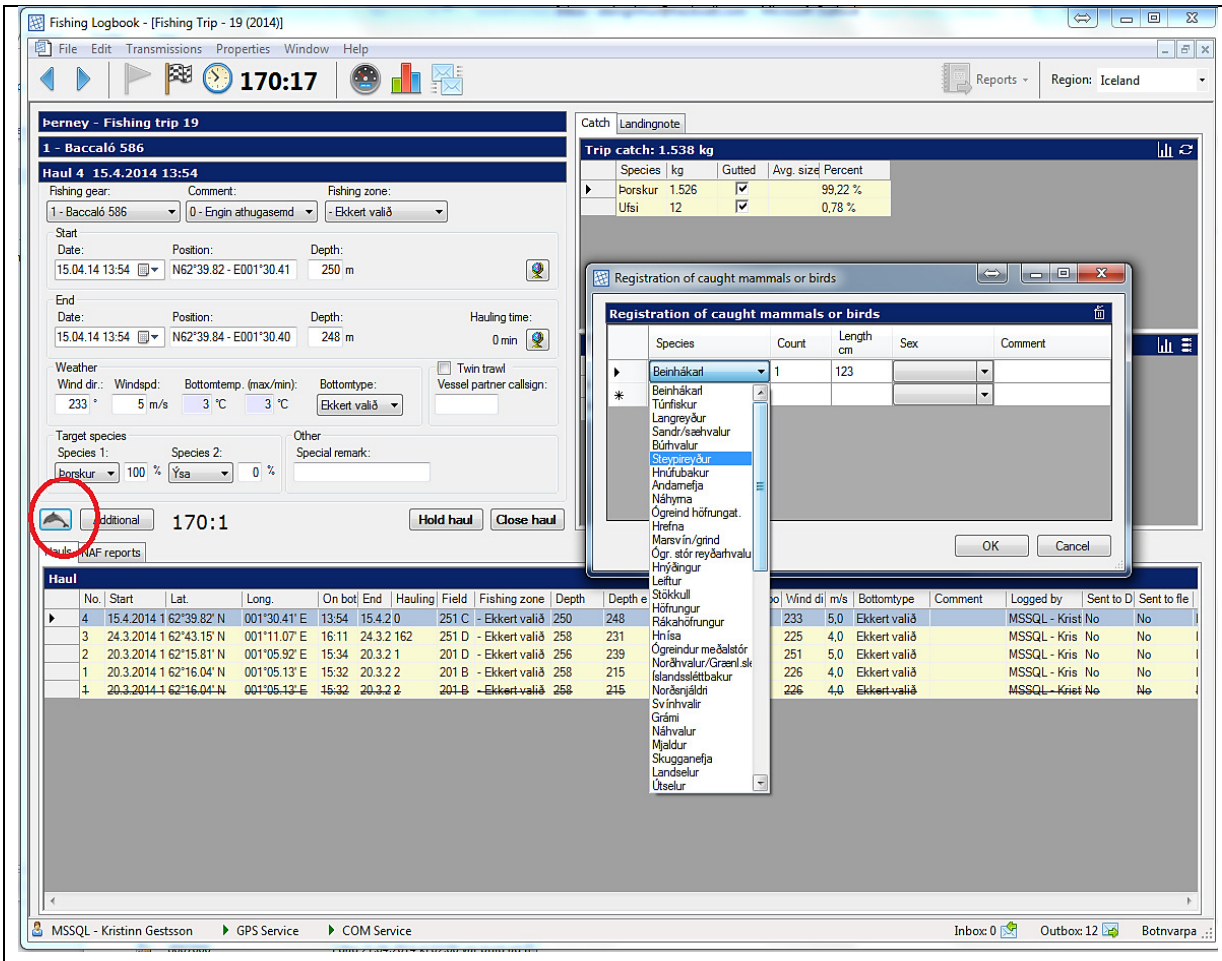
Industries and Innovation Ministry, 4 February 2014.

F. h. Ministry of Fisheries and Agriculture,

Johann Gudmundsson.

http://www.stjornartidindi.is/Advert.aspx?ID=9bc42c49-4617-4fa3-a4f5-424936339ff0

The E-logbook designed by trackwell allows for marine mammal and seabirds are recorded along with normal catch.



Here below the list of the marine mammals and seabirds programmed in the e-logbook system is presented for fisherman to log their interaction with.

ID Number	Icelandic common name	Species common English name
1	Langreyður	Fin whale
2	Sandreyður/sæhvalur	Sei whale
3	Búrhvalur	Sperm Whale
4	Steypireyður	Blue whale
5	Hnúfubakur	Humpback
6	Andarnefja	Northern Bottle-nosed Whale
7	Háhyrna	Killer whale
8	Ógreind Höfrungat.	Unrecognized type of dolphin
9	Hrefna	Minke whale
10	Marsvín/Grind	Pilot whale
20	Ógr. stór Reyðarhvalur	Unrecognized type of Balaenopteridae
21	Hnýðingur	White-beaked dolphin
22	Leiftur	Atlantic white-sided dolphin
23	Stökkull	Bottle-nosed dolphin
24	Höfrungur	Dolphin

25	Rákahöfrungur	Stenella dolphin
26	Hnísa	Sea hog dolphin
27	Ógreindur meðalstór	Unrecognized whale, medium size
31	Norðdhvalur/Grænl.sléttb.	Greenland right whale
32	Íslandssléttbakur	Icelandic right whale
33	Norðsnjáldri	North Sea beaked whale, Mesoplodon bidens
34	Svínhvalir	North Sea beaked whale, Mesoplodon bidens
35	Grámi	Grey
37	Náhvalur	Narwhal
38	Mjaldur	White whale
39	Skugganefja	Ziphius cavirostris
51	Landselur	Harbour seal
53	Útselur	Grey seal
55	Hringanóri	Ringed seal
57	Vöðuselur	Harp seal
59	Kampselur	Bearded seal
61	Blöðruselur	Bladdernose
63	Rostungur	Walrus
93	Sæskjaldbaka	Sea turtle
100	Svartfuglar	Guillemot; Auk
101	Langvía	Sea hen
102	Stuttnefja	Brunnich's guillemot
103	Álka	Razorbilled auk
104	Lundi	Puffin
105	Teista	Black guillemot
106	Haftyrðill	Little auk
110	Skarfar	Sea raven; Cormorant
111	Dílaskarfur	Great Cormorant
112	Toppskarfur	Shag
120	Súla	Northern Gannet, Sula bassana
130	Fýll (Múkki)	Fulmar
131	Skrofa	Manx Shearwater (Puffinus puffinus)
132	Gráskrofa	Grey Manx Shearwater
140	Endur	Duck
141	Æðarfugl	Eiderduck
142	Æðarkóngur	King Eider
143	Hávella	Long-tailed duck
144	Hrafnsönd	Common scoter
150	Máfar	Sea gull
151	Rita	Sea swallow

152	Sílamáfur	Lesser black-backed gull
153	Silfurmáfur	Herring gull
154	Svartbakur	Great black-backed gull
155	Hvítmáfur	Glaucous gull
160	Skúmur	Great skua
161	Kjói	Arctic skua
170	Lómur	Loon; Red-throated diver
171	Himbrimi	Great northern diver

Icelandic marine ecosystem and the fisheries catching redfish

The fish that are economically and ecologically important components of the Icelandic marine ecosystem include cod *Gadus morhua*, haddock *Melanogrammus aeglefinus*, saithe *Pollachius virens*, redfish *Sebastes norvegicus*, Greenland halibut *Reinhardtius hippoglossoides*, herring *Clupea harengus*, and capelin *Mallotus villosus*. Other species common to the region include Atlantic wolfish *Anarhichas lupus*, spotted *wolffish Anarhichas minor*, and flatfish such as plaice *Pleuronectes platessa*, dab *Limanda limanda*, and long rough dab *Hippoglossoides platessoides*. Starry ray *Amblyraja (Raja) radiata* is also a common elasmobranch.

In a study by Jaworski and Ragnarsson (2006) stomach data on main fish species were collected during groundfish surveys in 1992 in the waters around Iceland by the Marine Research Institute That year's sampling effort was substantially increased in terms of sampled stations, species, and stomachs (Pallsson and Bjo¨rnsson, 1993). The surveys took place during three seasons: February-March, July-August, and November-December, with the bulk of samples (96%) taken in March, July, and November. Samples were collected from depths between 20 and 823 m, almost all (99%) within the 500-m isobath. There were in total 854 tows in which stomach samples were collected. The methods of sampling and stomach contents analysis have been described in detail by Pallsson (1983) and Pallsson et al. (1989). The stomach data for 1992 were based on aggregate stomach samples (up to ten stomachs of fish from a length group per sample). Those samples were taken for a number of length groups (Pallsson, 1983). More than 14 000 aggregate samples were examined for that year. For each prey item in a stomach sample, the number and the weight were recorded (the latter to the nearest 0.001-0.1 g, depending on the size of the prey items). In most cases, the prey were identified to species level (Pallsson, 1983). In addition to data on stomach content and fish size (total length), date, location (latitude and longitude), and bottom depth were known for each tow.

The main components of redfish diet were zooplankton (with a large proportion of *Calanus hyperboreus*), euphausiids (mainly *M. norvegica* and *Thysanoessa inermis*), capelin, and other fish. Fish size was the major factor determining the redfish diet. Zooplankton dominated the diet of the smallest fish, and its importance decreased with increasing fish size. The euphausiids *T. inermis* followed by *M. norvegica* were common in the diet of medium-sized redfish. The proportion of fish (including capelin) in the diet of redfish increased with increasing predator size.

The proportion of *M. norvegica* and *T. inermis* in the diet of redfish was higher in the second half of the year than in March, whereas the opposite was found for other euphausiids. Also, consumption of capelin and *C. hyperboreus* was greatest in March. Zooplankton, particularly *C. hyperboreus*, were more important in the northern areas.

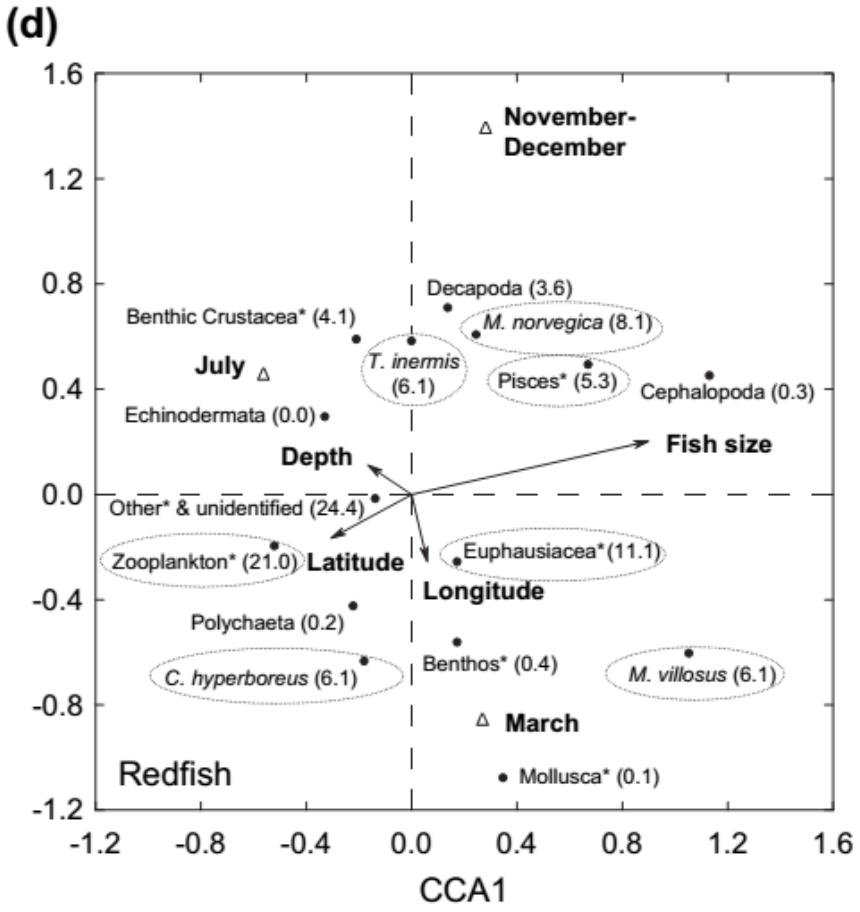


Figure 13. CCA ordination diagrams for (a) cod, (b) haddock, (c) saithe, (d) redfish, (e) Atlantic wolffish, (f) starry ray, (g) spotted wolffish, and (h) long rough dab. The arrows indicate significant explanatory variables, with the arrowheads indicating the increase in gradient. Triangles represent centroids for season (categorical variable). Data points indicate CCA scores of prey categories in ordination space. Numbers in parenthesis show the contribution of each prey category in the diet (in % by weight, mean for pooled data). The most important prey categories (>5% of the diet) are circled. *, other than the named prey or unidentified.

http://icesjms.oxfordjournals.org/content/63/9/1682.full.pdf+html

FUNDAMENTAL CLAUSE: ***3.2.1 Information gathering and advice***

Clause Guidance

Information shall be available on fishing gear used in the fishery, including the fishing gears' selectivity and its potential impact on the ecosystem. Stocks of non-target species commonly caught in the fisheries for the stock under consideration may be monitored and their state assessed as appropriate.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

Information is available on fishing gear used in the fishery, including the fishing gears' selectivity and its potential impact on the ecosystem. Stocks of non-target species commonly caught in the fisheries for the stock under consideration are monitored and their state assessed as appropriate.

EVIDENCE

There is information available on the legal specification of fishing gear for Golden redfish. Fishing gear selectivity is intended primarily as size selectivity, and secondarily as species selectivity. Gears are regulated in several ways to regulate both size and species selectivity.

The bottom trawl (also often called otter trawl) is the most important gear used in the Icelandic fisheries and has been adapted to suit various conditions of different fisheries. It is used at varying depths, ranging from 80 m to 1500 m. The fish species most often caught by bottom trawl are cod, demersal redfish, haddock, saithe and Greenland halibut but trawls also catch large amounts of plaice, Atlantic catfish, spotted catfish, ling, blue ling, tusk, great silver smelt and lemon sole. Trawls are used throughout the year, but the catch composition may vary depending on the season.

In the groundfish fisheries, the minimum mesh size is 135 mm and selectivity devices are also required in some fishing areas. The minimum allowed mesh size has been increased with time, from 110 mm in 1954, to 120 mm in 1963, and 135 mm in 1976, the largest minimum mesh size in the North Atlantic. Problems of a bycatch of small and immature fish may arise from time to time and from one area to another, in spite of the regulations for minimum mesh size. In order to overcome this, a range of selectivity devices has been developed that exclude the bycatch from the square part of the trawl. The devices are usually grids that will exclude the bycatch which may be either larger than the target species in case of immature small fish in the shrimp fisheries or it may be smaller than the target species such as small fry and immature shrimp in the shrimp fisheries.

http://www.fisheries.is/fisheries/further-information/

MRI routinely undertakes selectivity experiments to assess the characteristics of the main gears used and to investigate measures to further enhance selectivity. One such study by the MRI is underway. In this respect, MRI communications indicate that over the last decades, several surveys for assessing selectivity of bottom trawl codends have been conducted in Icelandic waters and results never gave reasons to worry about poor codend selection. However, the authors note that changes in the type of materials used to construct trawls and cod-ends has changed over time with a switch to materials that are heavy and stiff. A study is currently ongoing potentially indicating less than ideal selectivity performance, the results of which may well change current management measures.

Stocks of non-target species are meant as other stocks (i.e. commercial) caught together with golden redfish (e.g. cod, haddock, saithe, and others) and do not include other benthic assemblages (e.g. starfish, large bivalves, hard-shelled gastropods, crabs etc…).

In terms of monitoring and assessment, these other main "non target" commercial stocks are monitored/assessed accordingly by Icelandic Authorities. The Marine Research Institute provides catch advice for 35 different species, while catch statistics for 2013 were collected for 72 species (source: catch data from Directorate, 2014). Note that for many of the species listed there is little or no spatial overlap with Golden redfish catches and therefore the technical interaction between these species and redfish will be limited or absent. See discussion on associated species in clause 3.1 for further details.

FUNDAMENTAL CLAUSE: 3.2.2 By-catch and discards

Clause Guidance

Discarding, including discarding of catches from non-target commercial stocks, is prohibited. Where relevant, appropriate steps shall be taken to avoid, minimize or mitigate encounters with seabirds and marine mammals. Accordingly, non-target catches, including discards, of stocks other than the "stock under consideration" should not threaten these non-target stocks with serious risk of extinction; if serious risks of extinction arise, effective remedial action shall be taken.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

Discarding, including discarding of catches from non-target commercial stocks, is prohibited.

Non-target catches, including discards, of stocks other than the "stock under consideration" do not serious risks of depletion to these stocks.

EVIDENCE

Icelandic fishery law prohibits the discarding of all commercial stocks. Commercial species are listed yearly in documents such as the annual MRI advice. Catches of these species are subjected to a discard ban (regulation no. 57/1996) with inbuilt flexibility measures.

Latest MRI advice: http://www.hafro.is/undir_eng.php?ID=26&REF=4

Accordingly, non-target catches, including discards, of stocks other than the "stock under consideration" do not threaten these non-target stocks with serious risk of extinction. Details of this have been provided under clause 3.1.

In terms of bycatch of marine mammals and seabirds, this is not considered a problem in the golden redfish trawl fishery as these animals are not encountered with this gear. Instead, most of these animals are found to interact with longliner and gillnet vessels.

As of February 2014, it is now mandatory requirement to report bird and marine mammals interaction/bycatch with fishing gears. A new amendment to the existing logbook regulation requires that data submitted in logbooks includes seabirds and marine mammals number and species was issued in February 4 2014. The amendment took effect immediately.
http://www.reglugerd.is/interpro/dkm/WebGuard.nsf/key2/557-2007

The MRI is in the process of improving the recording and data collection for these species groups and is due to provide the most up to date evaluation within the next 12 months. See the evidence provided under clause 3.1.1. for specific details.

FUNDAMENTAL CLAUSE: 3.2.3 Habitat Considerations

Clause Guidance

If studies show that the spawning or nursery areas or other essential habitats in the fishing area are at risk and highly vulnerable to negative impacts of particular fishing gear, such impacts shall be limited in range relative to the full spatial range of the habitat or else action is taken to avoid, minimise or mitigate such impacts. Management measures must take into account and protect through closures significant continuous stony coral areas, identified through scientific and formal methods. Known thermal vents shall be protected through area closures to fishing activities with gear that has significant bottom impact during normal operation.

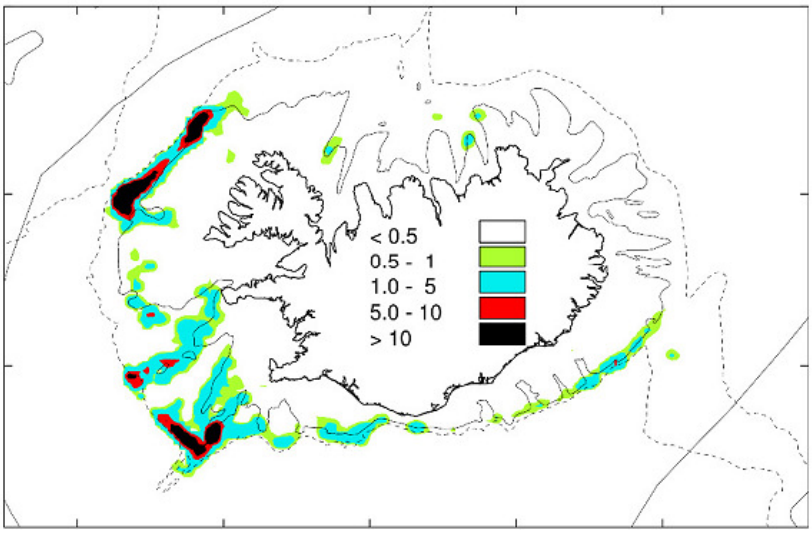
EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

The Icelandic authorities have implemented an extensive array of areas closures in national waters. These take the form of permanent, seasonal and periodic closures aimed at protecting both juvenile and spawning fish and are gear or fishery specific. In particular, the permanent closures will also provide wider ecological benefits over and above their intended fisheries management objective. While the majority of temporary closures to protect juveniles are aimed at protecting cod, haddock and saithe, these closures are likely to have a conservation benefit for other species too.

EVIDENCE

Descriptions of Icelandic redfish essential habitat can be found on the Icelandic Ministry of Fisheries website, and in the North Western Working Group report (NWWG, 2011). Golden redfish is found all around Iceland on various bottom types, but juveniles are found mainly off the north coast. They can be both found close to the bottom and in the water column (usually at night) and can therefore be classified as benthopelagic. The main fishing grounds, as well as the main adult grounds, are at the edge of the continental shelf at 200 to 400 m depth south and west of Iceland. Golden redfish is found along the coast of North America from Cape Cod to Newfoundland, in southern Greenlandic waters, around Iceland, the Faroe Islands, in the Northern part of the North Sea, along the coast of Norway and in the southern part of the Barents Sea. Redfish mate in early winter; the female carries the sperm and eggs, and later larvae hatch in April/May in remote areas in the southwest. The fry stay near the bottom off East Greenland and at the edge of the Icelandic continental shelf.



GOLDEN REDFISH. Fishing grounds in 2013. All gears combined. Dark areas indicate highest catch (tonnes/nmi^2) http://www.hafro.is/Astand/2014/english/04-goldenredfish-14.pdf

The Icelandic authorities have implemented an extensive array of areas closures in national waters. These take the form of permanent, seasonal and periodic closures aimed at protecting both juvenile and spawning fish and are gear or fishery specific. In particular, the permanent closures will also provide wider ecological benefits over and above their intended fisheries management objective. While the majority of temporary closures to protect juveniles are aimed at protecting cod, haddock and saithe, these closures are likely to have a conservation benefit for other species too, including redfish.

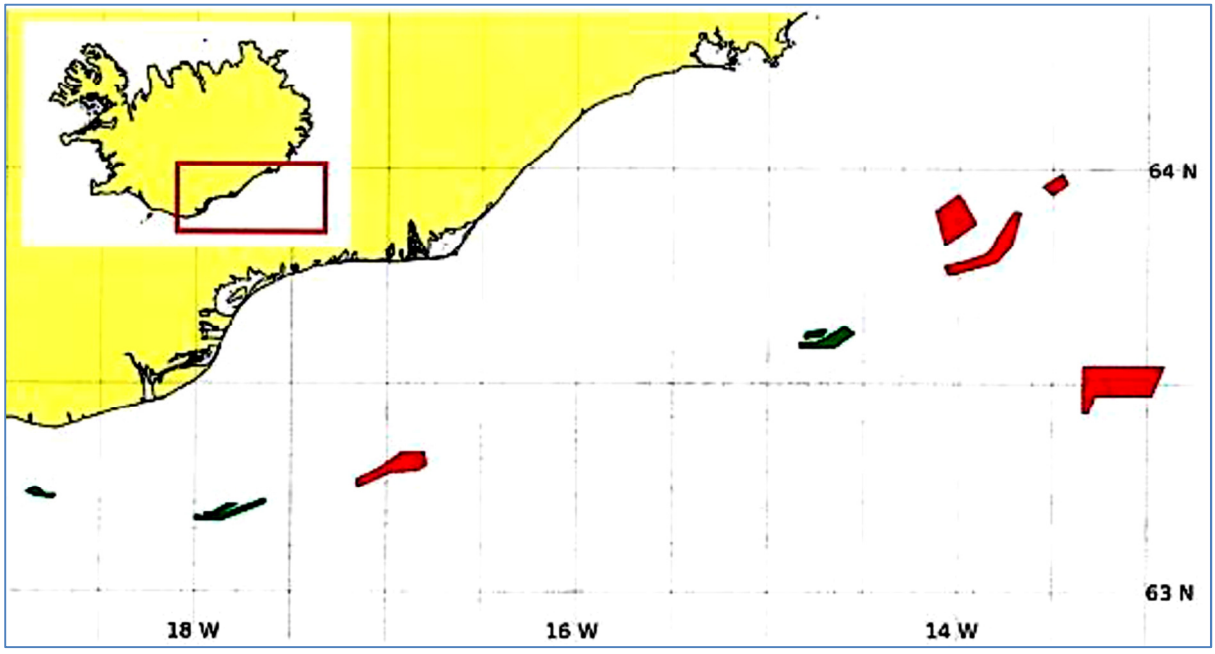
The effects of towed fishing gear, including demersal trawls, is subject to ongoing research by the MRI (http://www.hafro.is/undir_eng.php?ID=16&REF=2) and has been subject to review for all Nordic Seas, including Iceland (Garcia, 2007). The most vulnerable habitats were identified as those with long-lived benthic structures such as corals, sponge communities and maerl (*Lithothamnion* spp.), all of which can act as keystone species for diverse benthic communities. Garcia (2007) also drew attention to the fact that trawling can alter the age, size and community structure of fish populations and that to counter some of these adverse effects a variety of technical measures (minimum mesh sizes, sorting grids) and closed areas are in force.

MRI is currently carrying out research programmes 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*). Seabed mapping is one of the Marine Research Institute´s research focuses which started with the launching of the research vessel, Arni Fridriksson, in the year 2000. The vessel is equipped with a multi-beam echo sounder which enables a detailed mapping of the seabed. Bathymetrical and backscatter data is used to make different kinds of maps, i.e. contour-, sun-illuminated and three dimensional maps, and maps with information on the substrate. The main emphasis of the project is to map selected areas on the outer part of the continental shelf and rise down to 1500 – 2500 m water-depth around Iceland, including the submarine ridges southwest and north of Iceland. The information is useful for the Institute´s various research fields, such as exploring new and known fishing grounds, effects of fishing gears on seabed, benthic communities

and habitats and the geology of the ocean floor. It is the policy of the Icelandic government to protect vulnerable marine ecosystems (VMEs; coldwater corals and hydrothermal vents), from significant adverse impact from bottom contacting gear. Known cold-water coral reefs and hydrothermal vents are protected through permanent closures. The MRI provides advice on closures to protect VMEs which are promptly processed within the Ministry. Overall, large areas within the Icelandic EEZ are closed for fishing, either temporarily or permanently.

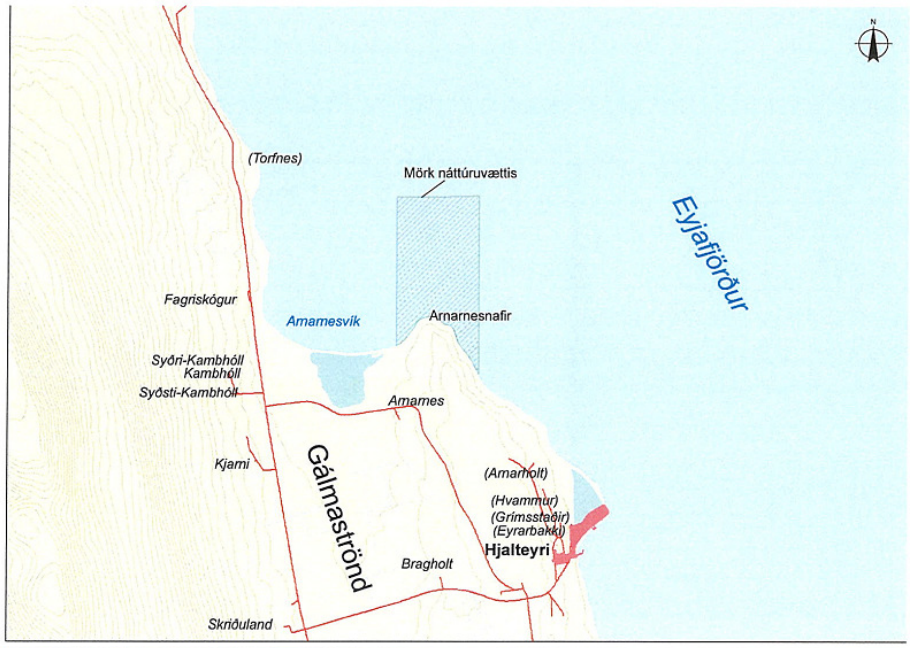
http://eng.atvinnuvegaraduneyti.is/publications/news/nr/8133

The coral (*Lophelia pertusa*) closures protect a species of cold-water coral which grows in the deep waters throughout the North Atlantic ocean. *L. pertusa* reefs are home to a diverse community, however the species is extremely slow growing and may be harmed by destructive fishing practices. In 2004 a research project was started on mapping coral areas off Iceland (using a Remote Operated Vehicle, ROV), based on the results from questionnaires to fishermen on occurrence of such areas. As a result several areas were permanently closed to fishing for protection of coldwater corals (see below). Currently there are 10 coral closures in Southeast Iceland.



Location of closed areas for the protection of cold water corals in water to the South East of Iceland.

There are two known hydrothermal vent areas on the Icelandic continental shelf with series of chimneys and fissures both inside Eyafjord, North Iceland (see map). In addition, there are known hydrothermal vents deep north of Iceland on the Grimsey-Kolbeinsey ridge and at Steinakoll, south of Melsa at the Reyjkjanes ridge, Southwest Iceland.



The chimney areas in Eyjafjord area are fully protected by environmental law/regulation. The other vents are in more remote areas and with less surface structure and have thus not been considered under serious threat by fishing activities (evidence received by the MRI, September 2014).

One example of a lesser surface structure hydrothermal vent is the Reykjanes Ridge. Detailed along-axis survey [*German et al.,* 1994 *and German and Parson,* 1998] *has* found only one hydrothermal

vent along the 600 km of the Reykjanes Ridge, which corresponds to a value of 0.014 for the "plume incidence" factor. The plume incidence is defined as the fraction of the ridge segment length overlain by hydrothermal plumes or vent fields. Therefore, it represents an average assessment of the hydrothermal activity on a segment scale. *German and Parson* [1998] also reported that conventional black smoker plumes are almost completely absent, even directly above the recently imaged axial magma chamber at 57°45'N [*Sinha et al.,* 1997]. For comparison, data collected at the 11°N–30°N area of the *Mid-Atlantic Ridge* (MAR), which was thought as a good representative of hydrothermal activities at the MAR, have yielded an along-axis average of at least one vent site for every 150 km [*German et al.,* 1995]. This translates into a plume incidence factor of 0.053 for MAR. These observations suggested that the Reykjanes Ridge is associated with at least a factor of 4 less than normal hydrothermal activity at MAR.
http://onlinelibrary.wiley.com/doi/10.1029/2001JB000816/full

FUNDAMENTAL CLAUSE: 3.2.4 Considerations

Clause Guidance

Foodweb considerations - If the stock under consideration is a key prey species in the ecosystem, the harvesting policy and management measures shall be directed to avoid severe adverse impacts on dependent predators. Management plans shall be developed and implemented in a timely fashion for avoiding, minimizing or mitigating any ecosystem issues properly identified, based on risk analysis and scientific advice, as being of serious concern in the fishery in question.

EVIDENCE RATING:	**High ☑**	**Medium €**		**Low €**
NON CONFORMANCE:		**Minor NC €**	**Major NC €**	**Critical €**

SUMMARY EVIDENCE:

The MRI has studied redfish, and its place in the ecosystem. All the redfish species primarily feed on zooplankton, but also on small fishes such as capelin. The single most important food group, however, is krill. Golden redfish are in turn prey to larger fish including cod, halibut and whales. There is no information to suggest that golden redfish are key species in the food web.

EVIDENCE

The MRI has studied redfish, and its place in the ecosystem. Extensive studies on the feeding ecology of a large number of demersal fish species, marine mammals and seabirds have shown that capelin

is a key prey species in the Icelandic waters ecosystems (Marine Research Institute 1997). All the redfish species primarily feed on zooplankton, but also on small fishes such as capelin. The single most important food group, however, is krill. Golden redfish are in turn prey to larger fish including cod, halibut and whales. There is no information to suggest that golden redfish are key species in the food web. It's trophic level appears to be around 4.0 ±0.68 se, based on food items.

Management measures relevant to ecosystem effects of the fishery

As mentioned above, large areas within the Icelandic EEZ are closed for fishing, either temporarily or permanently. These closures are aimed at protecting juveniles and spawning fish and protecting vulnerable marine ecosystems. Restrictions on the use of gear are also in effect. Thus the use of bottom trawl and pelagic trawl is not permitted inside a 12-mile limit measured from low-water line along the northern coast of Iceland. Similar restrictions are implemented elsewhere based on engine size and size of vessels and large bottom trawlers are not permitted to fish closer than 12 nautical miles to the shore. In many areas special rules regarding fishing gear apply, e.g. a requirement of using a sorting grid when fishing for shrimp to avoid juveniles and small fish and an obligation to use bycatch-or juvenile grid when fishing for pelagic species in certain areas to protect other species and juveniles. It is the policy of the Icelandic government to protect vulnerable marine ecosystems (VMEs; cold-water corals and hydrothermal vents), from significant adverse impact from bottom contacting gear. Known cold-water coral reefs and hydrothermal vents are protected through permanent closures. The MRI provides advice on closures to protect VMEs which are promptly processed within the Ministry of Industries and Innovation (Fisheries department).

http://eng.atvinnuvegaraduneyti.is/publications/news/nr/8133

8. Performance specific to agreed corrective action plans

No non-conformances were applied for this fishery. Accordingly, no corrective action plans were required. However, the recording of marine mammal and seabird bycatch in the Icelandic groundfish fisheries is under improvement and initial data on the magnitude of this item should be available early in 2016.

9. Unclosed, new non-conformances and new corrective action plans

Not applicable.

10. Future Surveillance Actions

The recording of marine mammal and seabird bycatch in the Icelandic groundfish fisheries is under improvement and initial data on the magnitude of this item should be available early in 2016. This will be reviewed accordingly during the second surveillance activities in 2016.

11. Client signed acceptance of the action plan

Not applicable.

12. Recommendation and Determination

The assessment team recommends that the management system of the applicant fishery, the Icelandic Golden redfish (*Sebastes Norvegicus)* commercial fishery under state management by the Icelandic Ministry of Industries and Innovation, fished with demersal trawl (main gear), long-line, Danish seine net, gill net, and hook and line by small vessel gear within Iceland's 200 nautical miles Exclusive Economic Zone, is granted continued certification.

13. References

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Atvinnuvegaraduneyti. 2006. Regulation No. 224, 14 March 2006, on Weighing and Recording of Catch.	http://eng.atvinnuvegaraduneyti.is/media/reglugerdir/Regulation-224-2006-on-weighing-and-recoding-of-catch.pdf
Chen, Y. J. (2003), Influence of the Iceland mantle plume on crustal accretion at the inflated Reykjanes Ridge: Magma lens and low hydrothermal activity? J. Geophys. Res., 108, 2524, doi:10.1029/2001JB000816, B11.	http://onlinelibrary.wiley.com/enhanced/exportCitation/doi/10.1029/2001JB000816
Fiskistofa. 2014. Catch for individual species. Fiskistofa; Dalshrauni 1; 220 Hafnarfjörður	http://www.fiskistofa.is/english/quotas-and-catches/catches-in-individual-species/aflastodulisti_tegundir.jsp?lang=en
Fiskistofa. 2014. Quotas and catches. Fiskistofa; Dalshrauni 1; 220 Hafnarfjörður	http://www.fiskistofa.is/english/quotas-and-catches/
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Appendix 1

Based on the technical expertise required to carry out the above fishery assessment, Global Trust Certification Ltd., is pleased to confirm the Surveillance Assessment team members for the fishery as follows.

Dankert Skagen

Dankert has recently retired from the Institute of Marine Research (IMR), Bergen, where he worked for 22 years. His responsibilities included stock assessment, multispecies work, in particular in the North Sea, work connected to the introduction of the precautionary approach in fisheries and recently, on development of harvest control rules and management strategies. He was leader of the IMR research program for population dynamics and multispecies investigations in 1996-97 and for the development of new assessment tools for North-East arctic cod in 1998-99 and the assessment package TASACS in 2007-08. In addition, he has developed several programs for simulating harvest control rules that are commonly used in fisheries management today. Within ICES, he has participated in a wide range of working groups and been chairman of several of them, including the Study Group of Management Strategies. He was chairman of the Resource Management Committee for 3 years and member of ACFM for 7 years.

Dr Géraldine Criquet, Assessor

Géraldine holds a PhD in Marine Ecology (École Pratique des Hautes Études, France) which focused on coral reef fisheries management, Marine Protected Areas and fish ecology. She has also been involved during 2 years in stock assessments of pelagic resources in the Biscay Gulf, collaborating with IFREMER. She worked 2 years for the Institut de Recherche pour le Développement (IRD) at Reunion Island for studying fish target species growth and connectivity between fish populations in the Indian Ocean using otolith analysis. She served as Consultant for FAO on a Mediterranean Fisheries Program (COPEMED) and developed and implemented during 2 years a monitoring program of catches and fishing effort in the Marine Natural Reserve of Cerbère-Banyuls (France). Geraldine has joined Global trust Certification in August 2012 as Fisheries Assessment Officer and is involved in FAO-Based RFM and MSC fisheries assessments.

Vito Ciccia Romito, Lead Assessor

Vito Ciccia Romito is Italian and holds a BSc in Ecology and a MSc in Tropical Coastal Management from Newcastle University in the U.K. After his BSc, he worked in Tanzania as a Marine Research officer at the Mafia Island Marine Park carrying out biodiversity assessments and monitoring studies of coral reef, mangrove and seagrass ecosystems. Subsequently, for his MSc, he worked on fisheries assessment techniques, ecological dynamics of overexploited tropical marine ecosystems, and evaluation of low trophic aquaculture as a support to artisanal reef fisheries. Since 2010 he has been fully involved through Global Trust with the FAO-based RFM Assessment and Certification program covering the Alaska commercial salmon, halibut, sablefish, pollock, crab, Pacific cod and flatfish fisheries as well as the Icelandic cod, saithe, haddock and redfish fisheries. Vito has also participated

in IFFO fisheries assessments for anchovy and sardine stocks in both Chile and Peru, and other pre-assessment work in Canada and the Gulf of Mexico. Vito is also lead, third party IRCA approved auditor.