FISHERY ASSESSMENT REPORT

IFFO GLOBAL STANDARD FOR RESPONSIBLE SUPPLY OF FISHMEAL AND FISH OIL

FISHERY:	**Summer spawning herring (*Clupea harengus*)**
LOCATION:	**Iceland (ICES Division Va)**
DATE OF REPORT:	**13th August 2014**
ASSESSOR:	**Sam Peacock**

1. APPLICATION DETAILS AND SUMMARY OF THE ASSESSMENT OUTCOME			
Name: Icelandic Association of Fishmeal Manufacturers			
Address:			
Country:		**Zip:**	
Tel. No.		**Fax. No.**	
Email address:		**Applicant Code**	
Key Contact:		**Title:**	
Certification Body Details			
Name of Certification Body:	**Global Trust Certification Ltd.**		
Assessor Name	**Peer Reviewer**	**Assessment Days**	**Initial/Surveillance/ Re-certification**
Sam Peacock	Vito Ciccia Romito	1	Surveillance
Assessment Period	August 2014		
Scope Details			
1. Scope of Assessment	IFFO Global Standard for Responsible Supply – Issue 1		
2. Fishery	Summer spawning herring (*Clupea harrengus*)		
3. Fishery Location	Iceland (ICES Division Va)		
4. Fishery Method	Purse seine, pelagic trawl		
Outcome of Assessment			
5. Overall Fishery Compliance Rating	High/Medium		
6. Sub Components of Low Compliance	None		
7. Information deficiency	None		
8. Peer Review Evaluation	Completed		
9. Recommendation	Maintain approval		

2. QUALITY OF INFORMATION

Good; primarily government and ICES websites and reports.

3. COMPLIANCE LEVEL ACHEIVED

High / Medium

Recommendation

Maintain approval

4. GUIDANCE FOR ONSITE ASSESSMENT

None

Based on HIGH compliance findings

Based on MEDIUM compliance findings

Based on LOW compliance findings

5. ASSESSMENT DETERMINATION

There have been no substantial changes in the management of this fishery specifically or Icelandic fisheries management in general. Since the 2013 re-assessment, the TAC has been set in line with scientific advice and total landings have been in line with the TAC. Medium compliance ratings were maintained in sections A3 and D1, as there is still no long-term management plan and there are still some minor historical discrepancies between the scientific advice and the final TAC. If a long-term management plan is developed and TACs continue to be set in line with advice, the fishery is likely to score highly compliant in future.

HIGH Compliance

A1, A2, B1, B2, C1, D2, D3, E1, E2

MEDIUM Compliance

A3, D1

LOW Compliance

SUMMARY OF LEVEL OF COMPLIANCE

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

KEY: Low Compliance: Medium Compliance: High Compliance:

6. RATIONALE OF THE ASSESSMENT OUTCOME

A. THE MANAGEMENT FRAMEWORK AND PROCEDURE

LEVEL OF COMPLIANCE	
A1. The management of the fishery must include a legal and administrative basis for the implementation of measures and controls to support the conservation of the fishery.	
LOW	An administrative framework that ensures an efficient management of the fishery for its conservation is not established.
MEDIUM	An administrative framework that ensures an efficient management of the fishery for its conservation is somehow established, but there is evidence of not being efficient to ensure the conservation of the stock.
HIGH	A legal and administrative framework that ensures an efficient management of the fishery for its conservation is established and works efficiently toward the conservation of the stock.

Determination: There have been no substantial changes to the Icelandic fisheries management system, and so a high compliance rating remains appropriate.

H

Modern Icelandic fisheries management is based on the Fisheries Management Act of 1990, and is the responsibility of the Ministry of Industry and Innovation. The objectives of the Fisheries Management Act are to promote the conservation and efficient utilisation of the marine resources and thus to ensure stable employment and economic viability of fishing communities.

The most recent version of the Fisheries Management Act was published in 2006 and includes:

- A commitment to the conservation and efficient utilisation of Icelandic fishery resources (Article 1).
- A commitment to set an annual TAC for each species “for which it is deemed necessary to limit the catch” (Article 3).
- A requirement for all commercial fishers to obtain a general fishing permit; vessels not fishing for an entire 12 month period will have their permit revoked (Article 4).
- An outline of the ITQ quota system (described in more detail in section D2, below) (Article 8).
- An outline of the methodology and responsibility for enforcement and monitoring of fishery regulations (Articles 17 & 18).
- An outline of penalties for transgressions (Articles 24 – 27).

Iceland’s national fisheries science organisation is the Marine Research Institute (MRI). The MRI carries out wide ranging and extensive research on the status and productivity of the commercial stocks, and long-term research on the marine environment and the ecosystem around Iceland.

For more detail on the legal and administrative framework for fisheries management in Iceland, please refer to the 2013 re-assessment (R1).

R1.

LEVEL OF COMPLIANCE	
A2. Fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account fishery removals and the biology of the species.	
LOW	Fisheries management is not concerned with the whole stock unit over its entire area of distribution and do not take into account any of the matters listed in 'A1'.
MEDIUM	Fisheries management is concerned with matters listed in 'A1' but not entirely. Fisheries, in relation to 'A1' statement, should improve to ensure the long term conservation of the marine resource.
HIGH	Fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account: • All fishery removals • The biology of the species

Determination: There have been no changes in either the stock management unit or the scientific understanding of the biological stock. All fishery removals and the biology of the species continue to be taken into account.

H

Summer-spawning herring is constrained to Icelandic coastal waters throughout its lifespan. Results from various research including tagging experiments, studies on larval transport, and studies on migration pattern and distribution, all suggest that the stock is local to Icelandic waters. Three Icelandic herring stocks are distinguished on the basis of their spawning time and spawning area, as presented by their names, and to date there is no evidence to suggest sufficient mixing to require updating the stock definitions. The summer-spawning stock is managed, in line with this scientific understanding of the biological population, as a single unit throughout ICES Division Va.

For more detail on stock definition, including maps of fishing location and stock migration, please refer to the 2013 re-assessment report (R1).

R1.

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

Determination: The* de facto *management objective for the stock continues to be a fishing mortality of F = $F_{0.1}$. As there is no formal management plan for the stock, a medium compliance rating remains appropriate.

M

Although no formal management strategy has been adopted in the summer-spawning herring fishery, the practice has been to manage fisheries on this stock at F = $F_{0.1}$ (= 0.22 = F_{pa}) for more than 20 years. The ICES Working Group responsible for the stock (NWWG) has determined that managing the stock at an exploitation rate at or above $F_{0.1}$ has been successful in the past. ICES considers this target to be consistent with the MSY approach. In 2013/14, ICES estimated that F = 0.156, and fishing mortality has been similarly below 0.22 since 2009.

For more detail on the management objectives in place for the stock, please refer to the 2013 re-assessment (R1).

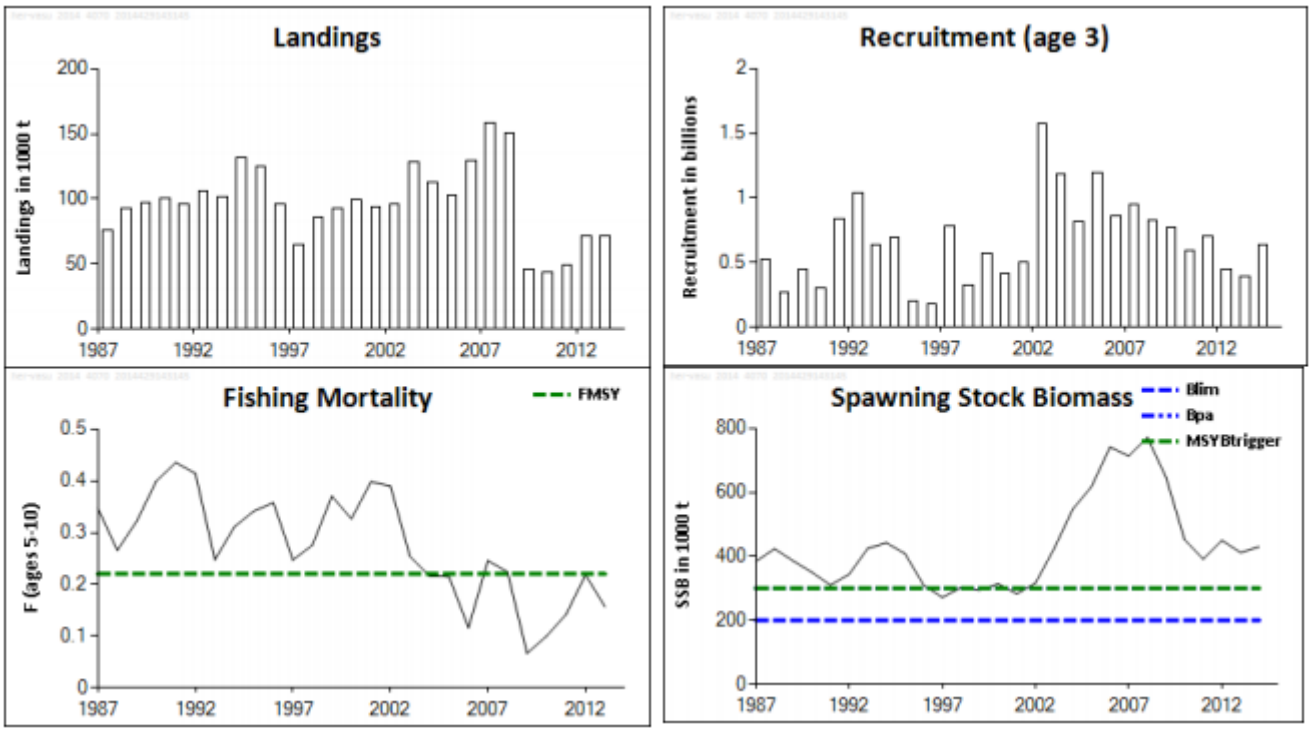
R1, R2.

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

H

Determination: The data collection and stock assessment processes identified in the 2013 re-assessment remain in place and are still considered by scientific organisations to be sufficient to enable informed management of the stock.

ICES and the MRI both produce an annual stock assessment and management advice report for Icelandic summer-spawning herring. The stock assessment is an age-based analytical assessment utilising catch-at-age data and the results of an annual hydroacoustic survey, plus other fishery-dependent data including total landings, CPUE, geographical location of the fishery and discard estimates (though discarding is largely banned in Iceland). Natural mortality is assumed to be constant, M=0.1, for the whole range of ages and years, and although the *Ichthyophonus* infection of recent years is thought to have substantially increased this figure in 2009-10, ICES states that there are indications that the mortality due to infection was probably insignificant during 2011-14.



Herring in Division Va (Icelandic summer-spawning herring). Summary of stock assessment (weights in thousand tonnes). From the ICES advice, June 2014 (R2).

For more detail on the data collection and stock assessment processes in place for this stock, please refer to the 2013 re-assessment report (R1).

R1, R2.

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

H

Determination: The scientific advice provided by ICES and the MRI continues to be taken into account in the design of management measures.

The 2013 re-assessment identified a number of examples of management measures being implemented in response to scientific advice. For example, for the fishing season 2011/2012, a regulation was enforced that prohibited fishing for herring outside of the area of Breiðafjörður in SW Iceland. This was requested by the MRI because of small herring mixed with adults in other areas and less prevalence of infection there. Minimum mesh sizes are also in place in all Icelandic fisheries, partially to minimise the impact of the no-discards rule on smaller individuals. Most notably, the TAC recommendations since 2009/10 have been substantially lower than historically, due to the additional mortality estimated as a result of the *Ichthyophonus* infection. These low recommendations were largely adopted by fishery managers.

For more detail on the *Ichthyophonus* outbreak, please refer to the 2013 re-assessment report (R1).

R1.

C. THE PRECAUTIONARY APPROACH

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

H

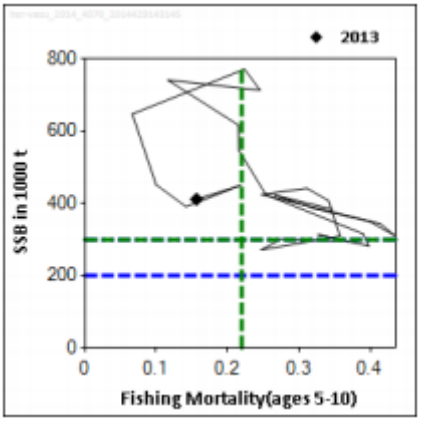
Determination: The previous assessment concluded that the precautionary approach is applied throughout the management of the stock, and there have been no substantial changes since that time.

Reference points for the precautionary approach were agreed in 1998 and have remained unchanged since. In 2011, reference points for the MSY approach were added, and in the 2012 advice ICES utilised these as a basis for the 2012/13 quota recommendation. The table below lists these reference points; note that MSY $B_{trigger}$ is defined as B_{pa}, and the target fishing mortality or F = 0.22 is based on F_{pa}.

Icelandic summer-spawning herring reference points. From the ICES advice, June 2014 (R2).

	Type	*Value*	*Technical basis*
MSY Approach	MSY $B_{trigger}$	300 000 t	B_{pa}.
	F_{MSY}	0.22	HCS model for simulated harvest rules.
Precautionary Approach	B_{lim}	200 000 t	SSB with a high probability of impaired recruitment.
	B_{pa}	300 000 t	$B_{pa} = B_{lim}\, e^{1.645\sigma}$, where $\sigma = 0.25$.
	F_{lim}	Not defined	
	F_{pa}	0.22	$F_{pa} = F_{0.1} = 0.22$ (based on a weighted average) and used as a target.

Fishing mortality is currently estimated to be below F_{pa}, and biomass is above B_{pa}.



SSB/F for the time-series used in the ICES stock assessment. From the ICES advice, June 2014 (R2).

R1, R2.

D. MANAGEMENT MEASURES

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

Determination: At this time the assessment team consider the maintaining of a medium compliance rating appropriate; however if the TAC continues to be set in line with advice and landings continue to fall within the TAC, an upgrade to high compliance in future is likely.

M

Note: both the MRI and ICES provide annual management advice for the stock, and on occasion the MRI TAC recommendation is different to the ICES recommendation. In general the Ministry of Fisheries follows the MRI advice, even if this results in a lower TAC. The ICES advice since 1984 and the MRI advice since 1990 are shown in the tables below, along with final TACs and landings.

Since the 2013 re-assessment, the 2013/14 TAC was set in line with the ICES advice at 87,000t, with final landings of 72,000t. The ICES recommendation for 2014/15 TAC is 83,000t.

Year	ICES Advice	Predicted catch corresp. to advice	Predicted landings corresp. to advice	Agreed TAC	Official catch/ Landings *	Landings *	ICES Discards
1984		50	50	-	50.3	50.3	0
1985		50	50	-	49.4	49.4	0
1986		65	65	-	65.5	65.5	0
1987	$F_{0.1}$	70	70	72.9	75.4	75	0
1988	$F_{0.1}$	~100	~100	90	92.8	92.8	0
1989	$F_{0.1}$	95	95	90	97.3	97.3	3.7
1990/1991[b]	*Status quo* F	90	90	100	101.6	101.6	3.5
1991/1992[b]	$F_{0.1}$	79	79	110	98.5	98.5	11
1992/1993[b]	$F_{0.1}$	86	86	110	106.7	106.7	1.8
1993/1994[b]	No gain in yield by fishing higher than $F_{0.1}$	110[a]	110[a]	110	101.5	101.5	1.2
1994/1995[b]	No gain in yield by fishing higher than $F_{0.1}$	83[a]	83[a]	130	132	132	2
1995/1996[b]	No gain in yield by fishing higher than $F_{0.1}$	120[a]	120[a]	110	125	125	0.9
1996/1997[b]	No gain in yield by fishing higher than $F_{0.1}$	97[a]	97[a]	110	95.9	95.9	0
1997/1998	No gain in yield by fishing higher than $F_{0.1}$	90[a]	90[a]	100	64.7	64.7	0
1998/1999	No gain in yield by fishing higher than $F_{0.1}$	90[a]	90[a]	90	87.0	87	0
1999/2000	Current F is sustainable	100[a]	100[a]	100	92.9	92.9	0
2000/2001	Current F is sustainable	110[a]	110[a]	110	100.3	100.3	0
2001/2002	Current F is sustainable	125[a]	125[a]	125	95.3	95.7	0
2002/2003	Current F is sustainable	113[a]	113[a]	105	97	96.1	0
2003/2004	Current F is sustainable	113[a]	113[a]	110	131	130.7	0
2004/2005	F = 0.22	106	106	110	114.2	114.2	0
2005/2006	*Status quo* catch	110	110	110	103	103	0
2006/2007	*Status quo* catch	110	110	130	135	135	0
2007/2008	Average of the last 3 years' catch	117	117	150	159	158.9	0
2008/2009	$F_{pa} = 0.22$	131	131	130	152	151.8	0
2009/2010	$F_{pa} = 0.22$	75	75	40	46	46.3	0
2010/2011[c]	Domestic advice autumn 2010	40	40	40	44	43.5	0
2011/2012[c]	Domestic advice autumn 2011, no fishery until then	40	40	45	49	49.4	0
2012/2013	$F_{MSY} = 0.22$	67	67	68.5	72	72	0
2013/2014	$F_{MSY} = 0.22$	87	87	87	72	72	0
2014/2015	$F_{MSY} = 0.22$	83	83				

Weights in thousand tonnes.
[a] Catch at $F_{0.1}$.
[b] Season starting in October of first year.
[c] No advice was given by ICES until new information on *Ichthyophonus* infection was available from survey monitoring in the following autumn.
* Official landings and ICES landings are the same in all fishing seasons and are used for the assessment.

ICES advice, official TAC and final landings 1984 – 2014/15. From the ICES advice, June 2014 (R2).

TAFLA 2.21.1.
SÍLD. Tillögur Hafrannsóknastofnunar um aflahámark, heildaraflamark samkvæmt ákvörðun stjórnvalda og afli (þús. tonn) 1990/1991–2012/2013.

HERRING. TAC recommended by the Marine Research Institute, national TAC and landings in the quota years (thous. tonnes) 1990/1991–2012/2013.

Ár *Year*	Tillaga *Recommended TAC*	Aflamark *National TAC*	Afli *Landings (Iceland)*
1990/91	80	110	105
1991/92	80	110	109
1992/93	90	110	107
1993/94	90	100	103
1994/95	120	120	132
1995/96	110	110	126
1996/97	100	100	96
1997/98	100	100	64
1998/99	90	70[1)]	87
1999/00	100	100	93
2000/01	110	110	100
2001/02	125	125	95
2002/03	105	105	94
2003/04	110	110	126
2004/05	110	110	115
2005/06	110	110	103
2006/07	130	130	135
2007/08	130	150	159
2008/09	131	150	152
2009/10	40	47	46
2010/11	40	40	44
2011/12	40	45	49
2012/13	67	68.5	

[1)] Sjávarútvegsráðuneytið úthlutaði 70 þús. tonnum en samtals urðu veiðiheimildir um 90 þús. tonn þar sem 20 þús. tonn voru færð frá vertíðinni 1997/98. *TAC was decided 70 thous. tonnes but because of transfers from the previous quota year the national TAC became 90 thous. tonnes.*

MRI advice, official TACs and final landings 1990/91 – 2012/13. From the MRI advice, 2012/13 (R3).

R1 – R3.

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

Determination: Annual quotas remain the primary mechanism for limiting fishing effort in Iceland. As there have been no major changes since the 2013 re-assessment, a high compliance rating remains appropriate. H

The main instrument in Icelandic fisheries and fleet management is a system based on Individual Tradable Quota (ITQs), which has been in place in its current form since 1990. During the past 15 years there has been no specific fleet management system in Iceland; fishing licenses are readily available for anyone with a

seaworthy vessel, and no decommissioning schemes are in place. Under the ITQ system, each vessel is allocated a certain share of the TAC of the relevant species. Decommissioning occurs indirectly, as companies increase their share of the TAC by buying out vessels and thus receiving the quota attached to those vessels.

R1

LEVEL OF COMPLIANCE	
D3. Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment.	
LOW	There are no management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment.
MEDIUM	There are management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment. However it is not science based.
HIGH	There are management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment. Measures are based on scientific information.

Determination: There have been no significant changes in the likely impacts of the fishery on non-target species and the physical environment, nor the management measures in place to minimise these. As such a high compliance rating remains appropriate. H

With a handful of minor exceptions, discarding is banned in Icelandic fisheries and so all bycatch is landed, and therefore recorded by MRI or government officials and included in annual reports. Likewise, bycatch of summer-spawning herring in other commercial fisheries is included in the estimates of total landings in the tables in section D1. Neither ICES nor the MRI have raised concerns over bycatch in the summer-spawning herring fishery. Icelandic legislation (557/2007) states that all fishing vessels must keep a Fishery Log-book. Birds and Mammals that are caught in fishing gear are to be reported and recorded in the Fishery Log-book. Adult herring is food resource for various animals in Icelandic waters, including mink whale (*Balaenoptera acutorostrata*), humpback whale (*Megaptera novaeangliae*), several sea bird species, cod (*Gadus morhua*) and pollack (*Pollachius virens*). Direct effects on habitat and seafloor are typically minimal for pelagic gears, although occasional contact is known to occur and, in these cases, can potentially cause damage to fragile ecosystems (e.g. corals).

For more detail on the impacts of the fishery on non-target species and the physical environment, and the technical measures in place, please refer to the 2013 re-assessment (R1).

R1.

E. IMPLEMENTATION

LEVEL OF COMPLIANCE	
E1. There should be a framework for sanctions of violation of Laws and regulations.	
LOW	A framework for sanctions of violation of Laws and regulations do not efficiently exist.
MEDIUM	A framework for sanctions of violation of Laws and regulations do exist but do not work efficiently.
HIGH	A framework for sanctions of violation of Laws and regulations exists and is proven to be efficient.

Determination: As at the time of the 2013 re-assessment, there is a robust framework in place for sanctioning violations of fishery laws and regulations in Iceland. H

Breaches of the law and regulations on fisheries management are subject to fines or revoking of the fishing permit, irrespective of whether such conduct is by intent or negligence. Major or repeated intentional offenses are subject to up to six years imprisonment. If the catch of a vessel exceeds the allowable catch of the said vessel of individual species, the relevant fishing company must obtain an additional catch quota for the relevant species.

Penalties are outlined in Articles 24-27 of the Fisheries Management Act, including:

- Violations of the Act shall be prosecuted according to the Criminal Proceedings Act.
- Violations against the Act shall be liable to fines, and cases of serious or repeated deliberate violation shall be liable to imprisonment for up to six years.
- Fines may vary between ISK 400,000 (US$3,200) and ISK 8,000,000 (US$65,000), depending on the nature and scope, and whether it represents a repeat offence.

R1

LEVEL OF COMPLIANCE	
E2. A management system for fisheries control and enforcement should be established.	
LOW	A management system for fisheries control and enforcement is not established.
MEDIUM	A management system for fisheries control and enforcement is established but do not work efficiently.
HIGH	A management system for fisheries control and enforcement is established and work efficiently.

H

Determination: Effective fisheries control and enforcement mechanisms remain in place in Icelandic fisheries.

Day to day administration and enforcement of the Fisheries Act and related legislation is in the hands of the Directorate of Fisheries, a government body responsible to the Minister of Fisheries. The Directorate is also responsible for the continuous monitoring of compliance with the Act. The Icelandic Coast Guard, responsible to the Minister of Justice, monitors fishing activities in Icelandic waters, including surveillance of areas closed for fishing and inspection of mesh sizes and other gear related practices. Under a bilateral agreement between Iceland and the European Union (EU), Icelandic inspectors are required on board all EU fishing vessels in Icelandic waters.

R1

7. KEY STAKEHOLDERS

8. REFERENCES

R1 – IFFO RS assessment, Iceland Summer-spawning herring re-assessment, June 2013: http://www.iffo.net/files/iffoweb/approved-raw-materials/whole-fish/iceland-summer-spawning-herring-re-assessment-june.pdf

R2 – ICES advice, Herring in Division Va (Icelandic summer-spawning herring), June 2014: http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/her-vasu.pdf

R3 - MRI status of Icelandic stocks 2012/13 and prospects 2013/14, herring: http://www.hafro.is/Astand/2013/english/21-herring-13.pdf