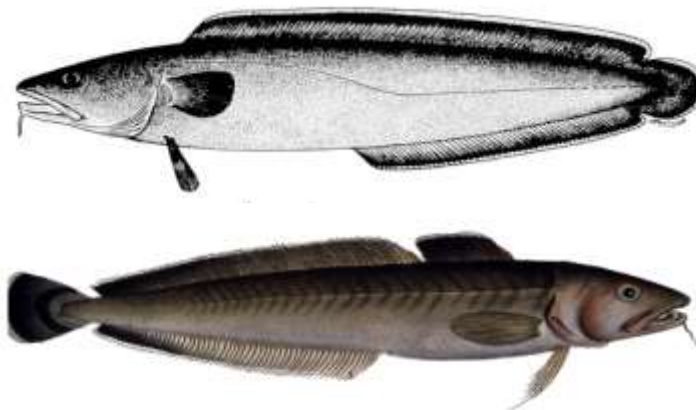


MSC SUSTAINABLE FISHERIES CERTIFICATION

NFA Norwegian Ling & Tusk fishery



NFA Norwegian Lumpfish fishery



Public Certification Report

October 2017

Prepared For: (NFA) Norges Fiskarlag

Prepared By: Acoura Marine Ltd

Authors: Gudrun Gaudian, Geir Hønneland & Hans Lassen

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Glossary

CITES	Convention on International Trade of Endangered Species of Wild Fauna and Flora
Cpue	Catch per unit effort (abundance indicator)
CoC	Chain of Custody
ETP	Endangered, Threatened and Protected
FAO	Food and Agriculture Organization
HCR	Harvest Control Rule
ICES	International Council for the Exploration of the Sea
IMR	Institute for Marine Research (Norges Havforskningsinstitutt)
IPI	Inseparable or Practically Inseparable
LTL	Low Trophic Level
MCS	Monitoring, Control and Surveillance
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
NEAFC	Northeast Atlantic Fisheries Commission
RBF	Risk-Based Framework
STECF	Scientific, Technical and Economic Committee for Fisheries (EC advisory scientific committee)
TAC	Total Allowable Catch
UoA	Unit of Assessment
UoC	Unit of Certification

1 Executive Summary

- » This report provides details of the MSC assessment process for the Ling, Tusk and Lumpfish (Ling & Tusk component) fishery for (NFA) Norges Fiskarlag. The assessment process began on the 17th August 2016 and was concluded 6th October 2017.
- » A comprehensive programme of stakeholder consultations were carried out as part of this assessment, complemented by a full and thorough review of relevant literature and data sources.
- » A rigorous assessment of the wide ranging MSC Principles and Criteria was undertaken by the assessment team and a detailed and fully referenced scoring rationale is provided in the assessment tree provided in Appendix 1 of this report.
- » The Eligibility Date for this assessment is the 1st of March 2017 as agreed through a variation with the MSC (Appendix 6).

1.1 Assessment team

Principle 1	Hans Lassen
Principle 2 and Team leader	Gudrun Gaudian
Principle 3	Geir Hønneland
Acoura Chain of Custody advisor	Paul MacIntyre

1.2 Assessment timeline

Announcement of initial assessment	11. July 2016
Site visit and stakeholder consultations	17 th -19 th August 2016, with follow up information gathering via client, Fisheries Directorate
Actual eligibility date	1 st March 2017 (granted by VR from MSC)

1.3 Principle Level Scores

Table 1 Principle level scores for the Norway Ling Tusk and Lumpfish fishery

		Lumpfish	Ling I+II	Ling Other areas	Tusk I+II	Tusk NEA	Tusk Vib
Principle 1		87.5	80.0	83.0	80.0	84.2	80.0
Principle 2	Longline	-	82.0				
	Gillnet	80.7	80.7				
	Traps and pots	-	84.0				
Principle 3	Longline		90.2				
	Gillnet	94.4					
	Traps and pots		94.4				

1.4 Summary of Conditions

Condition number	Species	Condition	Performance Indicator	Relevant UoAs	Related to previously raised condition? (Y/N/NA)
1	Lumpfish	Missing Well defined HCRs that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	1.2.2a	UoA-12	NA
2	Lumpfish	b) The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	1.2.4b	UoA-12	NA
3	Lumpfish	b) Known direct effects of the UoA are highly likely to not hinder recovery of ETP species	2.3.1b	UoA-12	NA
4	Lumpfish	a) There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species (Lumpfish)	2.3.2a	UoA-12	NA
5	Lumpfish	b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species	2.3.3b	UoA-12	NA
6	Ling - Tusk	a) Missing Well defined HCRs that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	1.2.2a	UoA-1 – UoA-11	NA
7	Ling I+II Tusk I+II and Tusk VIb	b) The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	1.2.4b	UoA-1, UoA-2, UoA-5, UoA6, UoA7, UoA-10, UoA-11	NA
8	Ling Tusk	b) Known direct effects of the UoA are highly likely to not hinder recovery of ETP species.	2.3.1b	UoA 1-11 Not UoA7	
9	Ling Tusk	a) There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species. d) There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate	2.3.2a 2.3.2d	UoA 1-11 Not UoA 7	NA
10	Ling - Tusk	b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Ling and Tusk)	2.3.3b	UoA1-6, 8-11	NA
11	Tusk	b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species	2.3.3b	UoA7	NA
12	Ling-Tusk	a) If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.	2.1.1a	UoA1-6, 8-11	NA
13	Ling-Tusk	a) There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above	2.4.2a	UoA1-6, 8-11	NA

1.5 Main strengths and weaknesses of the assessed fisheries

Strengths

- » The fisheries are well documented, statistics are accurate, and there is a wide range of information available including logbooks, VMS data, landing statistics and biological sampling data.
- » The fisheries are closely controlled through the Norwegian fisheries management system.
- » Compliance is considered to be good.

Weaknesses

- » Data from a fishery independent surveys are missing with the exception of data for the Ling in Vb (Faroese grounds). The availability of such data would strengthen the assessments.
- » There is no well defined Harvest Control Rule although the current fishery seems to be within sustainable limits and there is not perceived need for a more detailed HCR at the moment
- » Recording of non-fish bycatch is poor, in particular in the lumpfish fishery
- » Species identification as part of the catch composition and ETP recognition, needs to be improved
- » Location of lumpfish fishery needs to be more specific in particular in relation to VMEs

Determination

On completion of the assessment and scoring process, the assessment team concluded that the fisheries assessed in this report should be certified.

Conditions & Recommendations

A number of criteria which contribute to the overall assessment score scored less than the unconditional pass mark, and therefore trigger a binding condition to be placed on the fishery, which must be addressed in a specified timeframe (within the 5 year lifespan of the certificate). Full explanation of these conditions is provided in **Appendix 1.3** of the report, but in brief, the areas covered by these conditions are:

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

Acoura Marine Ltd. confirms that this fishery is within scope as defined by the MSC certification requirements v2.0.

2 Authorship and Peer Reviewers

2.1 Assessment Team

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

Assessment team leader: Gudrun Gaudian

Primarily responsible for assessment under Principle 2

Dr Gudrun Gaudian is an experienced marine ecologist and taxonomist, including coastal and marine surveys, EIA's for development and tourism, and research projects in tropical and temperate seas. Work experience also includes coastal and marine management issues, such as identifying sustainable coastal development projects, as well as addressing conservation issues, including selection and planning of marine parks and reserves, sustainable utilisation of natural resources and community based management programmes. Projects have been undertaken in temperate, polar and tropical marine regions. For some years now, Dr Gaudian has been working in fisheries certification applying the Marine Stewardship Council standard for sustainable fisheries, currently concentrating on Principle 2 of the Standard. Furthermore, Dr Gaudian holds an LLM degree in Environmental Law and Management, giving a deeper understanding of law and policy dealing with such relevant issues as the Common Fisheries Policy, water and waste management, and international environmental law including EU environmental policy.

Expert team member: Geir Hønneland

Primarily responsible for assessment under Principle 3

Geir Hønneland is Research Director of the Fridtjof Nansen Institute and adjunct professor at the University of Tromsø, Norway. He holds a Ph.D in political science from the University of Oslo, speaks Russian fluently and has followed the developments of Russian fishery politics and the Barents Sea fisheries management for more than two decades. Among his books are Implementing International Environmental Agreements in Russia (Manchester University Press, 2003) (including fisheries agreements), Russian Fisheries Management: The Precautionary Approach in Theory and Practice (Martinus Nijhoff, 2004), and Making Fishery Agreements Work: Post-Agreement Bargaining in the Barents Sea (Edward Elgar, forthcoming 2012). He has also published a number of articles about Russian fisheries management, and the Barents Sea fisheries management more widely, in peer reviewed journals.

Geir also has wide range of evaluation experience, e.g. for the FAO relating to the FAO Code of Conduct for Responsible Fisheries. Further, he has produced a country study of Russian fisheries management for the OECD and several consultancies about Russian fisheries management. He was member of the team that performed the first MSC assessment of a Russian Barents Sea fishery in 2010.

Geir is based near Oslo in Norway. A more comprehensive presentation can be found at the FNI's website: <http://www.fni.no/cv/cv-geh.html>

Expert team member: Hans Lassen

Primarily responsible for assessment under Principle 1

His background is in fish stock assessments, particularly in the application of computers and models to fisheries issues. He joined the Danish Institute for Fisheries and Marine Research in 1971. He has been a member and Chairman of numerous ICES groups - including Chairman of the Statistics Committee (1979-82), member of ACFM (1979-1982) and alternate member 1993-1998. He chaired the Baltic Salmon Assessment Working Group 1981-1985, the Baltic Multispecies Working Group 1983-1987. He was member of the Baltic Sea Pelagic Assessment Work Group 1977-1987 and the Herring Group 1993-1998.

Within the Northwest Atlantic Fisheries Organization (NAFO), Hans Lassen has been Chairman of the Assessment Committee (STACFIS, 1989-1991), Vice-Chair of the NAFO Scientific Council (1991-1993), and Chairman of that Council (1993-1995).

He has also experience in the work of the European Commission related to DG Fish, including being a member of STECF (1992-1996) as well as being a member of many ad hoc groups and study groups established within the system. From 1995-1996 he was Chairman of the internal EC expert group to provide input to the EC Multi-annual Guidance Program.

Hans Lassen has experience in working in fisheries issues in the Nordic Council of Ministers, including as Chairman of its Working Group on Fisheries (1991-1994). He also has been scientific adviser to Danish delegations to fisheries negotiations, e.g. the EU - Norway agreement on North Sea herring management, and 1993-1998 his attention has also been given to advising in the International Baltic Sea Fisheries Commission (IBSFC).

Hans Lassen has been involved with the FAO/DANIDA project (1982-1998) on teaching fish stock assessment in the third world, with courses conducted in Southeast Asia, India, South America, and in Kenya and Namibia.

ICES produces the international biological advice for fishery management of fish stocks in the Northeast Atlantic and as Fisheries Adviser he served as secretary to the ICES Advisory Committee on Fishery Management.

By 1st January 2004 the ICES Secretariat was reorganised and Hans Lassen took up the post as Head of Advisory Programme. This is the support group for all advisory committees within ICES, i.e. Management Committee of Advisory Processes (MCAP), Advisory Committee for Fishery Management (ACFM), Advisory Committee of Ecosystems (ACE) and Advisory Committee of Marine Environment (ACME). The Programme services a large network of marine scientists and national laboratories. He retired from ICES in 2010 and has since worked on a number of fisheries projects f.ex. Lassen H. 2011. Industrial Fisheries in the Baltic S. European Parliament, Fisheries Committee, IP/B/PECH/NT/2010-152 and as team member of several MSC assessments and reviewer of aMSC assessments.

He is the author and co-author of more than 30 peer reviewed papers and numerous conference contributions.

2.1.1 Peer Reviewers

Peer reviewers used for this report were Rob Blyth-Skyrme and Jo Gascoigne, chosen by the MSC Peer Review college. A summary CV for each is available in the **Assessment downloads** section of the fishery's entry on the MSC website.

Rob Blyth-Skyrme

Robert has worked in aquaculture and then in marine fisheries science, management and policy since 1996. Following his PhD which focussed on fisheries management and the environmental effects of fishing, he worked at the Eastern Sea Fisheries Joint Committee, the largest inshore fisheries management organization in England, where he became the Deputy Chief Fishery Officer. He then became a senior advisor to the UK Government on marine fisheries and environmental issues, leading a team dealing with fisheries policy, science and nationally significant fisheries and environmental casework. Rob now runs Ichthys Marine Ecological Consulting Ltd., a marine fisheries and environmental consultancy. As well as working for Government and industry on fisheries science and management issues, he has undertaken all facets of MSC work as a Lead Assessor, expert team member and peer reviewer across a wide range of fisheries.

Jo Gascoigne

Jo Gascoigne has been working in fisheries (research and consultancy) since 1995 and hence has 20 years of experience in the field. She has completed a PhD in fisheries research (the population dynamics and management of exploited or rare species). She has spent the last 8 years of her career

as a consultant on a mixture of MSC assessments and associated projects, and longer-term projects focusing mainly on fisheries management and policy analysis.

2.1.2 RBF Training

RBF was not used for this fishery assessment.

3 Description of the Fishery

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

3.1.1 UoA and Proposed Unit of Certification (UoC)

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

UoA 1 Norwegian North East Arctic Tusk – Longline

Species:	Tusk (<i>Brosme brosme</i>)
Stock:	Tusk in subareas I and II (North East Arctic)
Geographical range of fishing operations	FAO 27, ICES I and II (Norwegian EEZ zone)
Harvest method:	Longline
Client Group:	Norges Fiskarlag
Management:	Norwegian authorities
Other Eligible Fishers:	N/A

UoA 2 Norwegian North East Arctic Tusk – Gillnet

Species:	Tusk (<i>Brosme brosme</i>)
Stock:	Tusk in subareas I and II (North East Arctic)
Geographical range of fishing operations	FAO 27, ICES I and II (Norwegian EEZ zone)
Harvest method:	Gill net
Client Group:	Norges Fiskarlag
Management:	Norwegian authorities
Other Eligible Fishers:	N/A

UoA 3 Norwegian North East Atlantic Tusk - Longline

Species:	Tusk (<i>Brosme brosme</i>)
Stock:	Tusk in subareas IV, VII-IX, and in divisions IIIa, Vb, VIa, and XIIb (Northeast Atlantic)
Geographical range of fishing operations	FAO 27, ICES IV and VI (Norwegian EEZ and EU zone)
Harvest method:	Longline
Client Group:	Norges Fiskarlag
Management:	Norwegian authorities in accordance with EU-Norway agreement
Other Eligible Fishers:	N/A

UoA 4 Norwegian Tusk (North East Atlantic) - Gillnet

Species:	Tusk (<i>Brosme brosme</i>)
Stock:	Tusk in subareas IV, VII-IX, and in divisions IIIa, Vb, VIa, and XIIb (Northeast Atlantic)
Geographical range of fishing operations	FAO 27, ICES IV and VI (Norwegian EEZ and EU zone)

Harvest method:	Gillnet
Client Group:	Norges Fiskarlag
Management:	Norwegian authorities in accordance with EU-Norway agreement
Other Eligible Fishers:	N/A

UoA 5 Norwegian North East Arctic Tusk - Longline

Species:	Tusk (<i>Brosme brosme</i>)
Stock:	Tusk in division VIb (Rockall Bank)
Geographical range of fishing operations	FAO 27, ICES IV and VI (Norwegian EEZ and EU zone)
Harvest method:	Longline
Client Group:	Norges Fiskarlag
Management:	Norwegian authorities in accordance with EU-Norway agreement
Other Eligible Fishers:	N/A

UoA 6 Norwegian Tusk (North East Atlantic) - Gillnet

Species:	Tusk (<i>Brosme brosme</i>)
Stock:	Tusk in division VIb (Rockall Bank)
Geographical range of fishing operations	FAO 27, ICES IV and VI (Norwegian EEZ and EU zone)
Harvest method:	Gillnet
Client Group:	Norges Fiskarlag
Management:	Norwegian authorities in accordance with EU-Norway agreement
Other Eligible Fishers:	N/A

UoA 7 – Small scale traps and pots fishery for Tusk

Species:	Tusk (<i>Brosme brosme</i>)
Stock:	Tusk in subareas I and II, Iva and b, IIIa
Geographical range of fishing operations	FAO 27, ICES I and II, IIIa, IV a,b (Norwegian EEZ zone, within 12nm of the coast)
Harvest method:	Pots and traps
Client Group:	Norges Fiskarlag
Management:	Norwegian authorities
Other Eligible Fishers:	N/A

UoA 8 Norwegian North East Arctic Ling - Longline

Species:	Ling (<i>Molva molva</i>)
Stock:	Ling in Subareas I and II (Northeast Arctic)
Geographical range of fishing operations	FAO 27, ICES I and II (Norwegian EEZ zone)
Harvest method:	Longline
Client Group:	Norges Fiskarlag

Management:	Norwegian authorities
Other Eligible Fishers:	N/A

UoA 9 Norwegian North East Arctic Ling - Gillnet

Species:	Ling (<i>Molva molva</i>)
Stock:	Ling in Subareas I and II (Northeast Arctic)
Geographical range of fishing operations	FAO 27, ICES I and II (Norwegian EEZ zone)
Harvest method:	Gillnet
Client Group:	Norges Fiskarlag
Management:	Norwegian authorities
Other Eligible Fishers:	N/A

UoA 10 Norwegian Ling (Others) - Longline

Species:	Ling (<i>Molva molva</i>)
Stock:	Ling in Subareas VI-IX, XII, and XIV, and in Divisions IIIa and IVa (other areas)
Geographical range of fishing operations	FAO 27, ICES IV and VI (Norwegian EEZ and EU zone)
Harvest method:	Longline
Client Group:	Norges Fiskarlag
Management:	Norwegian authorities in accordance with EU-Norway agreement
Other Eligible Fishers:	N/A

UoA 11 Norwegian Ling (Others) - Gillnet

Species:	Ling (<i>Molva molva</i>)
Stock:	Ling in Subareas VI-IX, XII, and XIV, and in Divisions IIIa and IVa (other areas)
Geographical area:	FAO 27, ICES IV and VI (Norwegian EEZ and EU zone)
Harvest method:	Gillnet
Client Group:	Norges Fiskarlag
Management:	Norwegian authorities in accordance with EU-Norway agreement
Other Eligible Fishers:	N/A

UoA 12– Norwegian EEZ Lumpfish

Species:	Lumpfish (<i>Cyclopterus lumpus</i>)
Stock:	Lumpfish in ICES I and II (majority in IIa2)
Geographical range of fishing operations	FAO 27, ICES I and II (majority in IIa2) (Norwegian EEZ zone); The fishery takes place close to the Norwegian shoreline in the three most northern counties of Norway: Nordland, Troms and Finnmark
Harvest method:	Small coastal vessels with gill-nets and entangle nets; Fishing Season April - July
Client Group:	Norges Fiskarlag

Management:	Norwegian fisheries management. There is not a HCR for a stock, but regional ecosystem management plans exist. There are no private jurisdiction codes
Other Eligible Fishers:	N/A

These Units of Assessments are compliant with client's wishes for assessment coverage and they are in full conformity with MSC criteria. Figure 1 shows the areas involved. For the purposes of scoring the fisheries, there is no difference in the stock definition and fishing approach between the different geographical areas. Therefore scoring is done is UoA groups as appropriate, see Appendix I.

Tusk (UoA-1 – UoA-7) and Ling (UoA-8 – UoA-11):

The Unit of Assessment includes tusk and ling that are fished by the Client fishery, ie the Norwegian longline, gillnet and trap and pot fisheries (tusk only). The UoA includes by-catch in the fishery and the habitats in the areas where this fishery takes place.

Lumpfish (UoA-12):

The Unit of Assessment (UoA) includes lumpfish that are affected by the Norwegian fishery, i.e. lumpfish that spawns in Norwegian waters. The UoA includes by-catch in the lumpfish fishery and the habitats in the areas where this fishery takes place. The Russian fishery in ICES I (Barents Sea)– which since 2006 has been virtually non-existent and even before that has been very small (< 1%) compared to the Norwegian fishery. This means that in practice the fisheries impact on the lumpfish component spawning in ICES I + II is generated by the Norwegian fishery only. Based on the available information and for the purpose of this assessment the lumpfish in ICES I+II is considered as the Unit of Assessment.

3.1.2 Final UoC(s) and Scope

Rationale for choosing the unit of certification

The final Units Of Certification for this fishery are the same as the Units of Assessment listed in Section 3.1.1. It covers all fishing operators targeting tusk, ling and lumpfish in the ICES Divisions I, II, IV and VI, and IIIa (Figure 1) using gillnet, longline, lumpfish gillnet and pots and traps as harvesting methods and operating under Norwegian management. It is within scope of the MSC standard.



- Controversial unilateral exemptions - this fishery does not operate under a controversial unilateral exemption to an international agreement,
- Destructive fishing practices - this fishery does not use destructive fishing practices (explosives or poisons)
- ETP species – this fishery does not target amphibians, birds, reptiles
- or mammals.
- Disputes – there are mechanisms in place for resolving disputes, and the fishery is not overwhelmed by disputes;
- Previous assessments - the fishery has not failed an assessment against the MSC Standard within the last two years;
- Inseparable or practically inseparable (IPI) catches – there are no IPI catches in this fishery;
- Enhanced fisheries - this is not an enhanced fishery;
- Introduced species - the fishery is not based on an introduced species.
- Forced labour laws - the fishery does not include an entity that has been successfully prosecuted for violations against forced labour laws.

3.1.3 Total Allowable Catch (TAC) and Catch Data

3.1.3.1 Tusk and Ling TAC and Catch data

The fisheries of ling and tusk and lumpfish are not regulated by TAC in the Norwegian zone (they are regulated through technical regulations, mesh size, licence scheme, access limitations and by gear and area regulations). However, when fishing in EU waters, and as a side remark also in Icelandic and Faroese waters, fisheries TACs apply. Vessels under other flags than Norwegian and fishing in the Norwegian EEZ are constrained by annual quotas as agreed at the annual negotiations between EU and Norway (**Table 1**). For 2015 the EU quota in Norwegian waters was 950 tons for ling and 170 tons for tusk. Norway for 2015 was granted a TAC of 5,500 tons ling and 2,923 tons tusk to be fished in EU waters. Table 2 shows that the dominating gear is the longline while for ling the gillnets play an important role as well. Table 3 shows that the distribution by sea area along the coast of Norway, of catches of tusk and ling in the pots/traps fishery from 2014-16.

Table 1 Total Norwegian Fishery for tusk and ling 2014-2016. Fishery not regulated by TAC in Norwegian zone for Norwegian vessels. EU and Norway swap quotas on the basis of the annual bilateral consultations between EC and Norway. The UoC catch is defined as the sum of the catches from the Norwegian, EU and Svalbard zone. Minute catches (< 0.5 t per year) are not included. (Source Fiskeridirektoratet, 2017) downloaded 13 April 2017

Species	Fishing zone		2014 tons	2015 tons	2016 tons
Tusk	Norwegian economic zone	Gillnets	942	827	761
		Jiggings	59	49	73
		Line	7660	9075	10563
		Danish seine	12	Per 12	17
		Trawl	99	54	93
		Other gears	79	84	70
	Faroe economic zone	Line	742	1368	970
	Greenland economic zone	Line	35	58	178
	Iceland economic zone	Line	306	196	287
	Russian economic zone	Gillnets	0	0	1
		Line	6	11	5
	NEAFC (Smutthullet)	Line	19	0	0
	EU - zone	Gillnets	3	3	5
		Line	1359	1838	1606
		Trawl	29	21	28
	NEAFC (Irmingerhavet / Reykjanesryggen)	Line	10	43	20
		Line	45	102	120
	Fiskevernsonen rundt Svalbard	Trawl	2	1	4
		Total	11406	13741	14802
		UoC catch	10289	12065	13341
		UoC %	90.21%	87.80%	90.13%
Ling	Norwegian economic zone	Not	0	0	0
		Gillnets	4793	4375	4262
		Jiggings	46	27	35
		Line	5195	4487	4786

Species	Fishing zone	2014 tons	2015 tons	2016 tons
	Danish seine	63	80	91
	Trawl	868	480	798
	Other	6	20	7
	Faroe economic zone			
	Line	834	1509	1233
	Trawl	0	0	3
	Greenland economic zone			
	Line	2	10	10
	Trawl	0	1	0
	Iceland economic zone			
	Line	158	226	205
	Russian economic zone			
	Gillnets	0	0	5
	NEAFC (Smutthullet)			
	Line	6	0	0
	EU - zone			
	Gillnets	128	188	281
	Line	4424	5739	5933
	Danish seine	0	0	7
	Trawl	269	241	284
	Other	0	0	9
	NEAFC (Irmingerhavet / Reykjanesryggen)			
	Line	79	124	133
	Fiskevernsonen rundt Svalbard			
	Line	9	84	12
	Trawl	5	4	13
	Total	16887	17596	18107
	UoC catch	15807	15725	16519
	UoC %	93.61%	89.37%	91.23%

Table 2 Landings (wt %) by Gear for Norwegian vessels 2014-2016. The gear category 'Other gears' include the traps and pots. (Source Fiskeridirektoratets Fiskeri databank download 10.4.2017)

	Tusk %	Ling %
Gillnets	6.4%	26.7%
Jiggings	0.5%	0.2%
Line	91.7%	66.9%
Danish seine	0.1%	0.5%
Trawl	0.8%	5.6%
Other gears	0.6%	0.1%
Total	100.0%	100.0%

Table 3 Pots and traps landings by sea area for 2014-2016 (catches in tonnes); Source- Client, from Fiskeridirektoratet, 2017

Area code	Area name	2014		2015		2016	
		Tusk	Ling	Tusk	Ling	Tusk	Ling
0	Vestfjorden (Lofoten)	32.01	0.43	7.59	00.7	21.04	2.17
3	Øst-Finnmark	0.41	0.04	1.66	0.01	0.33	0
4	Vest-Finnmark	1.4	0	2.99	0	0.02	0
5	Røstbanken til Malangsgrunnen	9.82	0.16	38.09	0.07	0.62	0.04
6	Helgelandsbanken	19.54	1.47	7.92	0.3	11.46	0.91
7	Storegga-Frøyabanken	2.96	0.58	15.36	4.14	15.05	1.16
8	Eigersundbanken	4.16	1.13	1.68	0.45	4.81	0.73
9	Skagerrak	0.29	0.22	0.17	0.22	0.07	0.1
12	Nordkappbanken	0	0	0	0	0.48	0
28	Vikingbanken	7.27	1.34	7.02	2.5	15.63	1.13

3.1.3.2 Lumpfish TAC and Catch data

The Norwegian fisheries management of the lumpfish fishery operates with maximal annual roe quota per vessel. This quota is converted to fresh round weight using a conversion factor of 6.7. There is no

restriction for the participation of vessels below 13 m oal while for the larger vessels participation is limited¹. The fisheries statistics are summarised in **Table 4, Table 5,**

Table 6,

Table 4 Total Norwegian Fishery for lumpfish 2014-2016. Fishery not regulated by total TAC.

Species	Fishing zone		2014 tons	2015 tons	2016 tons
Lumpfish	Norwegian economic zone	Gillnets	93	352	443
		Line	0	1	0
		Trawl	0	0	8
		Other	0	2	2
		Total (=UoC)	94	354	453

Table 5 Boat TAC and Catch Data - Lumpfish

TAC (Max per vessel)	2017	4,000 t raw roe
UoA share of Norwegian fishing possibilities	2017	98%
Total green weight catch by UoC	2016	443 tons
	2015	352 tons

Table 6 Lumpfish quota per boat (raw roe)

	Quota per vessel (kg)	No participating vessels	No vessels fully utilizing quota	%
2008	2 500	368	146	39,7
2009	2 000	343	74	21,6
2010	2 500	296	39	13,2
2011	2 500	174	17	9,8
2012	2 500	133	18	13,5
2013	3 000	77	24	30,4
2014	3 500	10	0	0,0
2015	3 500	35	0	0,0
2016	3 500	<40	0	0,0

Table 7 Landings (wt %) by Gear for Norwegian vessels 2014-2016. The gear category 'Other gears' include the traps and pots. (Source Fiskeridirektoratets Fiskeri databank download 10.4.2017)

	Lumpfish %
Gillnets	98.6%
Jiggings	0.0%
Line	0.1%

¹ Fiskeridirektoratet 6 January 2015. Forskrift om adgang til å delta i kystfartøygruppens fiske for 2015 (deltakerforskriften).[Executive order on access to the coastal fishery for 2015].
<https://lovdata.no/dokument/SF/forskrift/2014-12-19-1823>

Danish seine	0.0%
Trawl	0.9%
Other gears	0.4%
Total	100.0%

3.1.4 Scope of Assessment in Relation to Enhanced Fisheries

3.1.4.1 Tusk and Ling

Tusk and ling are wild populations without any enhancement.

3.1.4.2 Lumpfish

The lumpfish targeted by the fishery under assessment is a wild population without any enhancement.

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

Lumpfish, Ling and Tusk are wild natural reproducing species in the Northeast Atlantic and the fish has not been introduced to the Northeast Atlantic Ocean.

3.1.6 Any other eligible fishers

There is no other fishery that should be considered in this context, for all three species.

3.2 Overview of the fishery

3.2.1 Ling and Tusk

This is a mixed fishery for ling and tusk with longline and gillnets. Dependent on the grounds ling or tusk are the key target species. The fishery occurs on the edge of the continental slope and on the continental slope as the distribution of ling and tusk is fairly deep. The vessels fish cod mainly in winter and spring and ling and tusk are by-catch in this fishery. The exploitation of ling and tusk is influenced by regulations aimed at other groundfish species, e.g. cod and haddock. The fishery exploits five assessment units. These units are also fished by EU vessels and since 2003 EU vessels have been subject to a restricted TAC. Apart from the longline and gillnet fisheries ling and tusk are bycatch in trawl fisheries directed for cod and haddock.

Norwegian legislation enacted in 2000 to regulate the cod fishery has resulted in a continuous reduction in the number of longliners in the fishery for tusk, ling, and blue ling. By 2011 only 37 vessels above 21m were in the fishery. ICES (2015) reports for 2011 the total catch by gear distribution, the distribution for 2014 (Table 14) is given in parenthesis. Ling: longlines 50% (63); gillnets 45% (29) and other gear types 5% (8). Tusk: longlines 90% (89); gillnets 9% (8) and other gear types 1% (2). The distribution of the fisheries for tusk and ling with longline and gillnets in 2014 and 2015 are shown in Figure 3 and Figure 4 (Location of the Fishery, Section 3.2.3).

In addition to the longline and gillnet fishery for ling and tusk, small amounts are also fished with pots and traps. This is an inshore, small-scale fishery targeting tusk, which is also evaluated as part of this assessment.

3.2.2 Lumpfish

Pampoulie et al. (2014)² show that lumpfish in the North Atlantic is genetically structured on a large geographic scale and three genetically distinct populations are present: Maine – Canada – Greenland, Iceland – Norway, and the Baltic Sea. However, because of the spawning site fidelity (homing) and because there is no significant fishery on the lumpfish in its oceanic stages, in assessment terms the lumpfish in the Norwegian Sea and the Barents Sea can be considered an isolated unit. This means that the Danish (IIIa) and Icelandic (Va) components of the Northeast Atlantic lumpfish are separated from the Norwegian component. The homing tendency seems to be 75% based on Icelandic tagging data and the same study suggests that lumpfish in the open sea originating from different spawning grounds are well mixed. The fishery information suggests that the ICES IVa-IIIa Norwegian component is very small compared to the I+II component and also the Danish component in Division IIIa seems smaller than the Norwegian component while the Icelandic component appears to be of comparable size.

The fishery is for roe and takes place on the coast and in the fjords on the spawning sites. Lumpfish has been exploited since the 1950s and takes place primarily between Lofoten and the Varanger peninsula and in April-June when lumpfish spawn. The fishery is executed by small coastal vessels with gill-nets. Nearly all vessels are below 13m OAL (Overall length) also when the fishery was much larger than it is in 2014-2016. Nets are typically set from the coast and perpendicular to the coastline. The fishery, as it is for roe, targets females only and because of the size difference between female and male (females are about 10 cm larger than males at spawning) and because of the large minimum legal mesh size (267 mm) of the nets there is little by-catch neither of male lumpfish nor other species.

The fish are gutted, the roe extracted and the carcasses to a large extent discarded. The landing is thus mainly roe and the amounts of roe are converted to fresh round weight by using a standard raising factor of 6.7. Table 8 shows the catch by vessel category (overall length) for the period 2010-2015 in the directed lumpfish fishery. The Norwegian fishery has dwindled in recent years due to low participation Figure 2.

² Pampoulie, C., Skirnisdottir, S., Olafsdottir, G., Helyar, S. J., Thorsteinsson, V., Jónsson, S. T., Fréchet, A., Durif, C. M. F., Sherman, S., Lampart-Kałuzniacka, M., Hedeholm, R., Ólafsson, H., Daniëlsdóttir, A. K., and Kasper, J. M. 2014. Genetic structure of the lumpfish *Cyclopterus lumpus* across the North Atlantic. – ICES Journal of Marine Science, 71: 2390–2397.

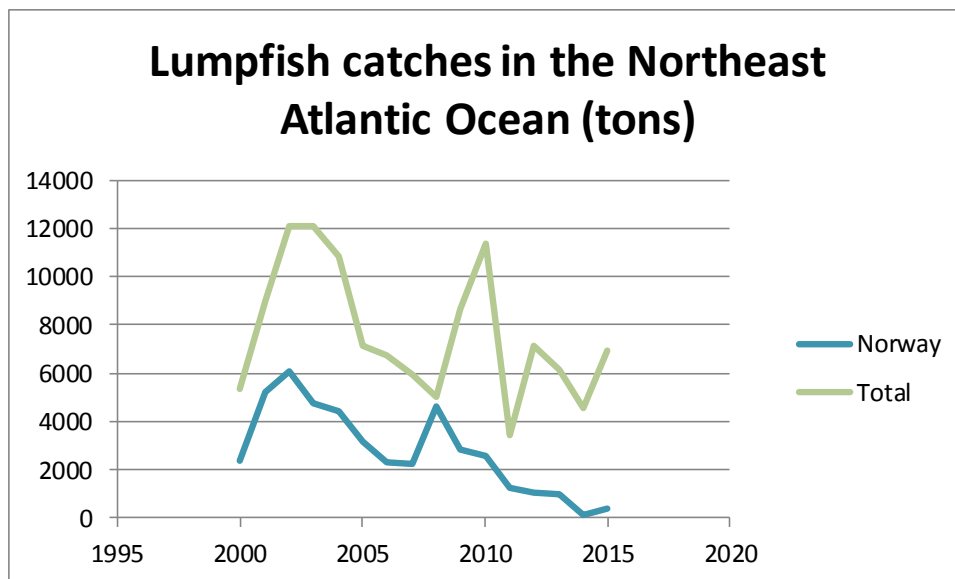


Figure 2 Lumpfish catches 2000-2014 (total 2000-2013) from the Northeast Atlantic (FAO 27) in total and for Norway. Source FAO

Table 8 Lumpfish. Norwegian landing statistics by vessel category (length oal) in the directed lumpfish fishery for 2010 – 2015. Tons: Landing in fresh round weight (tons). Source Fiskeridirektoratet

ICES Area		Vessel oal (m)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ib	Gillnet	< 11 m	151	738	694	741	225	138	42	0	0	0
		11-14,99	51	100	35	55	82	67	21	0	0	0
	Jigging	< 11 m	1	5	4	1	0	0	0	0	0	0
		11-14,99	0	0	0	0	0	0	0	0	0	0
IIa2	Gillnet	< 11 m	1788	3246	1798	1331	726	688	844	70	254	343
		11-14,99	216	531	296	401	158	121	70	22	94	94
	Jigging	< 11 m	2	3	4	1	12	8	0	0	0	0
		11-14,99	0	0	0	0	0	0	0	0	0	0
IIIa	Gillnet	< 11 m	1	1	1	1	1	1	1	1	1	3
		11-14,99	0	0	0	0	0	0	0	0	0	0
	Jigging	< 11 m	0	0	0	0	0	0	0	0	0	0
		11-14,99	0	0	0	0	0	0	0	0	0	0
IVa	Gillnet	< 11 m	0	0	0	0	0	1	0	0	0	3
		11-14,99	0	0	0	0	0	0	0	0	1	0
	Jigging	< 11 m	0	0	0	0	0	0	0	0	0	0
		11-14,99	0	0	0	0	0	0	0	0	0	0
Ib, IIa2, II	Other	Other	0	3	12	10	2	17	3	1	3	15
Total			2210	4625	2844	2540	1206	1042	981	94	353	458

The participation in the lumpfish fishery is closely linked to the situation in the cod fishery. In recent years the general tendency has been to prefer cod fishing over lumpfish fishery and this combined with market problems for the Norwegian roe gave very low participation in 2014-2016.

3.2.3 Location of the fishery

3.2.3.1 Ling and Tusk:

Ling and tusk are targeted along the Norwegian continental slope from the Lofoten islands and southwards in the Norwegian Sea. The fishery is also conducted in the North Sea in both Norwegian and EU waters, and continues westwards along the slope all the way to west of Ireland. It comprises the FAO statistical area 27 in the Northeast Atlantic, see Figure 1 which includes Norwegian fisheries for ling and tusk in the following areas:

- ICES I (Barents Sea)
- ICES II (Norwegian Sea)
- ICES IIIa (Skagerrak)
- ICES IVa (Northern North Sea)
- ICES VIa (West of Scotland)
- ICES VIb (Rockall Bank)

Norwegian catches in Va (Iceland) are not included.

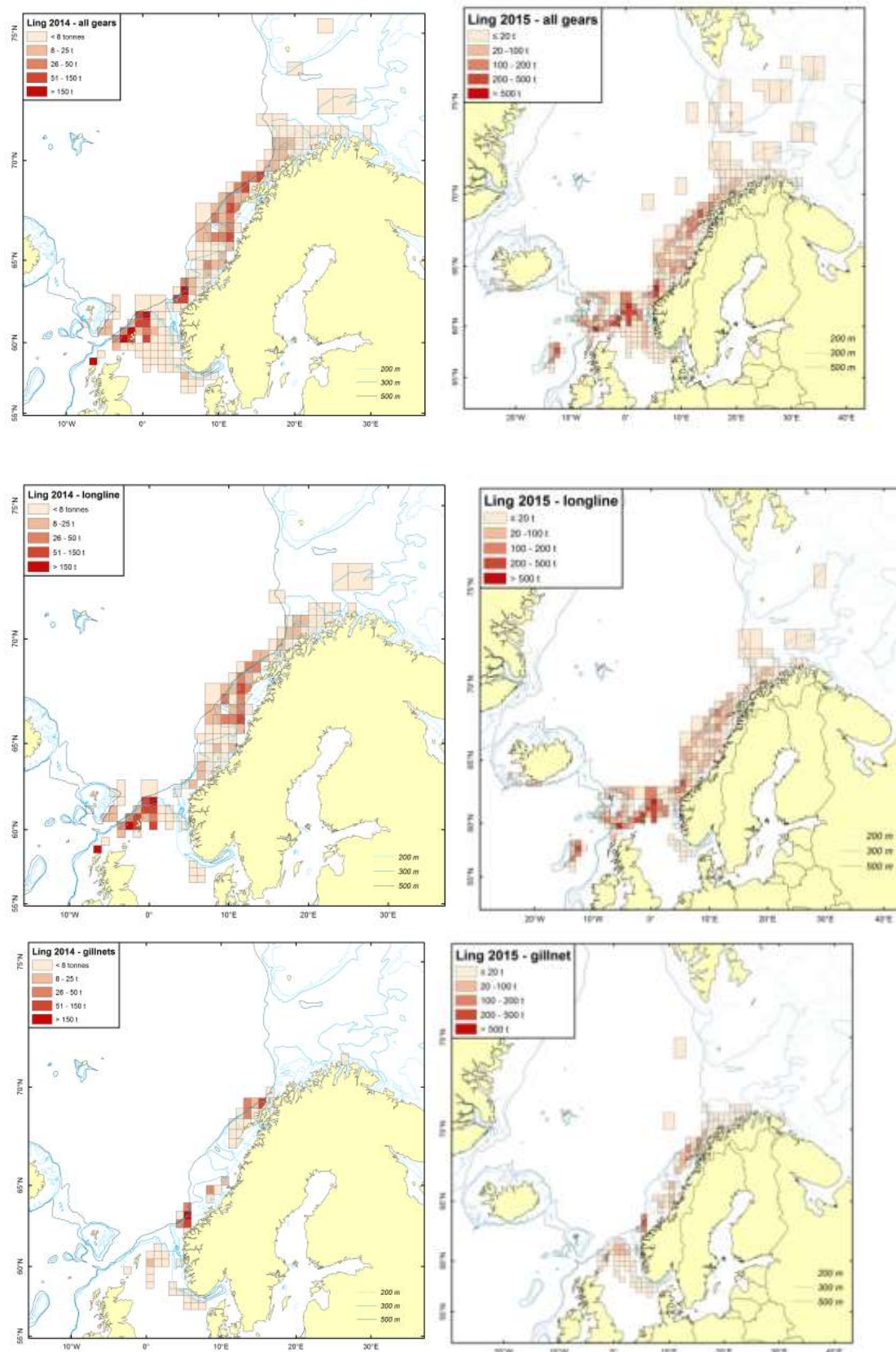


Figure 3 Distribution of the total catch of ling, the catches using longlines and gillnets for the Norwegian longline fishery in 2014 and 2015. (Source: From Figure 8 in Helle and Pennington, 2015. The development of the Norwegian longline fleet's fishery for ling and tusk during the period 2000-2014. Working Document for ICES WGDEEP, Copenhagen 2015)

Approximately 65-70% of the commercial catch of ling is taken by vessels using demersal longlines,

Table 7, either as the target species or as bycatch (Helle and Pennington, 2015), the rest is taken by mainly gillnets but also some by trawlers. Although the fishery takes place from Rockall to the southern Barents Sea (Helle and Pennington, 2004), around 75 percent of the catch by Norwegian vessels is from the Norwegian Economic Zone, **Table 1**.

Tusk is mainly fished by longliners (approximately 90 percent of the total catch), Table 2. Figure 4 show all catches of tusk registered in the electronic logbooks by all vessels, and by longliners in 2014 and 2015. The larger fishing area in 2015 compared to 2014 can also be observed for tusk, with the same western pattern as ling. Tusk was also fished over a large area in the Barents Sea. Although the fishery takes place from Rockall to the southern Barents Sea (Helle and Pennington, 2004), around 60 percent of the catch by Norwegian vessels is from the Norwegian Economic Zone, **Table 1**.

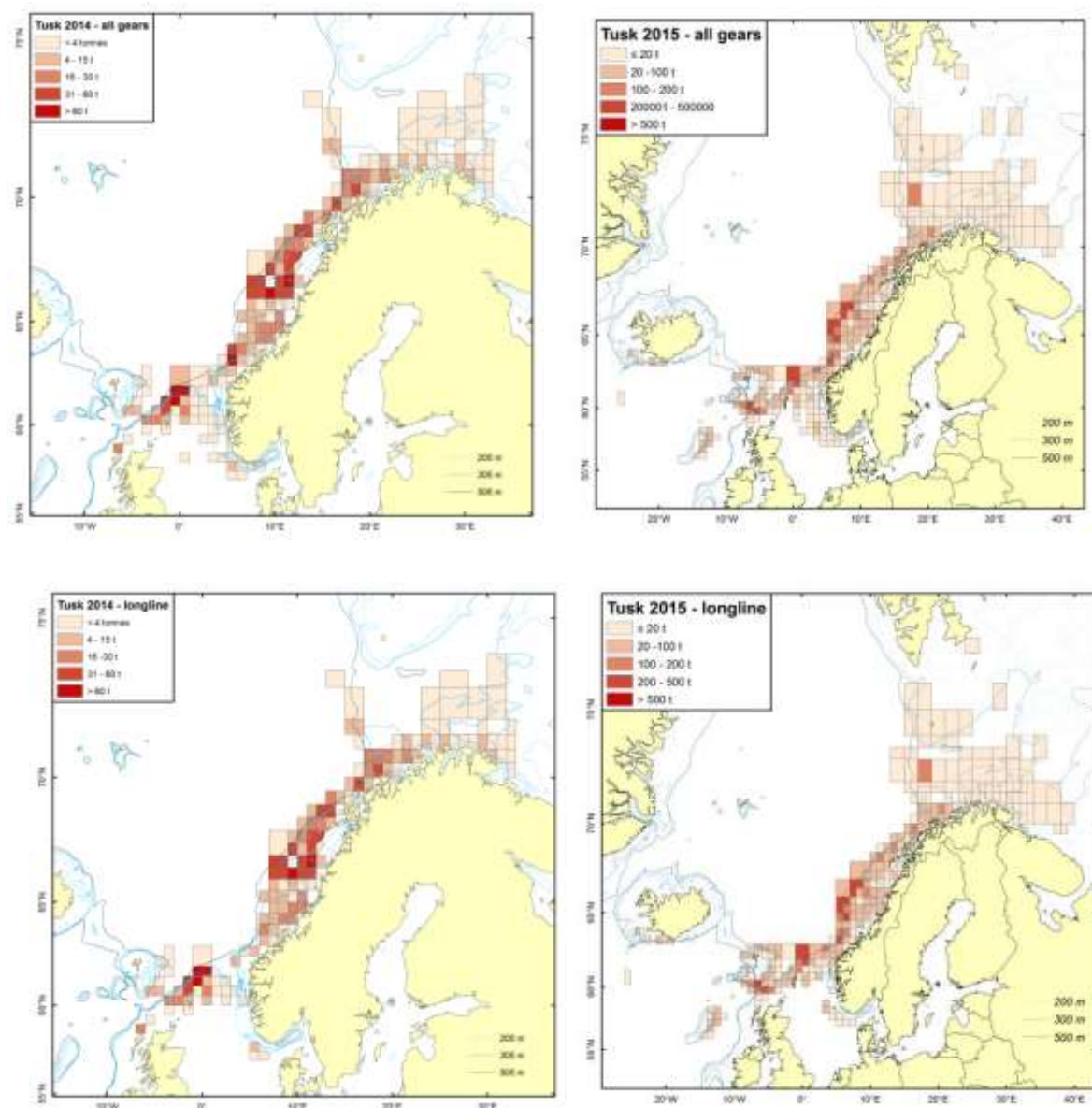


Figure 4 Distribution of total catch of tusk and the catches using longlines by the Norwegian fishery for tusk in 2014 and 2015. (Source: From Figure 9 in Helle Kristin and Pennington Michael 2015. The development of the Norwegian longline fleet's fishery for ling and tusk during the period 2000-2014. Working Document for ICES WGDEEP, Copenhagen 2015)

3.2.3.2 Lumpfish

The fishery takes place close to the Norwegian shoreline in the three most northern counties of Norway: Nordland, Troms and Finnmark i.e. areas 00,03,04 and 05 (Figure 5).

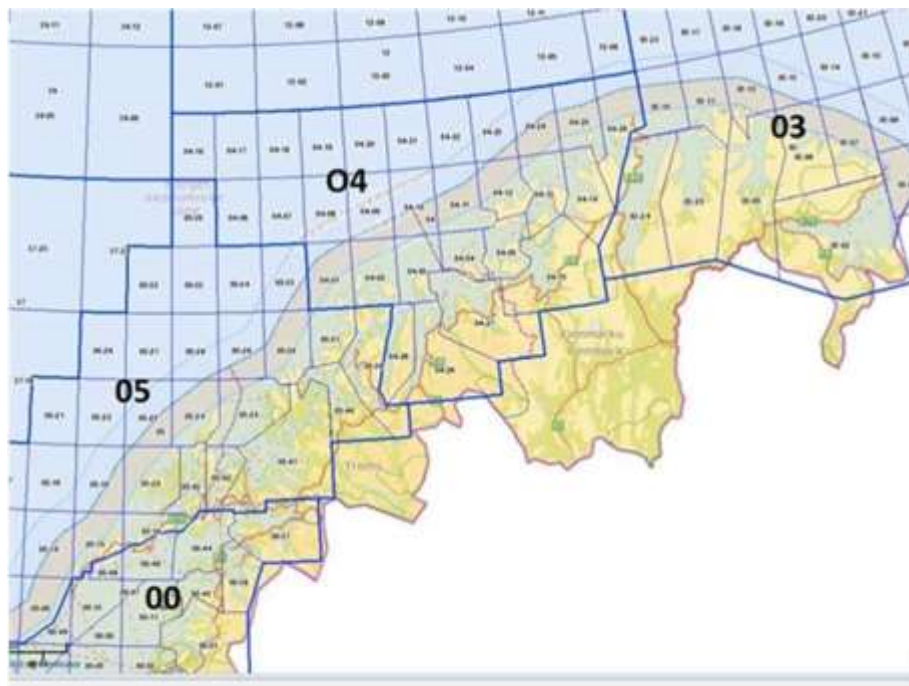


Figure 5 Statistical areas for lumpfish statistics. (Source: Norges Råfiskelag)

The most recent year when the fishery operated at full scale is 2008 and the statistics from this year indicate the areas where there are fishable concentration, i.e. that 04 is the area with dominating concentrations, see Table 9.

Table 9 . Lumpfish landings at Norsk Råfiskelag by area for 2008. Detailed statistics (kg roe landed). For area code (Sea area-area) see Figure 5. Source: Norges Råfiskelag

Sea Area							
00		03		04		05	
Square	kg roe	Square	kg roe	Square	kg roe	Square	kg roe
46	14,833	25	49,538	03	154,682	25	68,290
00	6,000	02	49,280	02	67,743	30	44,530
10	2,900	05	9,872	04	47,016	35	27,856
		10	8,763	01	22,471	31	12,095
		24	5,985	11	19,671	40	9,840
		00	1,996	15	14,803	24	8,606
				27	11,326	15	3,731
				24	5,259	16	1,990
				12	4,305	23	1,79
				00	1,950		
				26	1,411		
				29	567		

			09	130
			13	108
Total	23,733	125,434	351,442	177,117
%	3.50%	18.51%	51.86%	26.13%

3.2.3.3 Pots and Traps fishery

The pots and trap fishery is conducted all along the coast of Norway, within the 12nm limit. A map of the statistical sections can be found at:

<https://kart.fiskeridir.no/share/0e1f32f2c39a>

From the statistical squares recorded, it can be seen that almost all the fishing occurs close to the shore, and some squares incorporate fjords.

The actual sections fished in are:

Area code	Area name	Statistical squares
0	Vestfjorden (Lofoten)	0, 5, 11, 38, 46, 48, 51, 53
3	Øst-Finnmark	0, 2, 3, 5, 6, 10, 12, 24, 25
4	Vest-Finnmark	3, 26, 28, 29
5	Røstbanken til Malangsgrunnen	14, 20, 23, 24, 25, 39, 40
6	Helgelandsbanken	6, 12, 23, 27, 33, 35, 36, 37
7	Storegga-Frøyabanken	7, 8, 19, 24, 25, 28, 31, 32, 33, 35
8	Eigersundbanken	1, 2, 8, 14, 15, 16, 17, 18, 19, 54
9	Skagerrak	8, 12, 16, 20, 25
12	Nordkappbanken	2
28	Vikingbanken	2, 3, 4, 9, 10, 37, 39, 40, 41

3.2.4 Fishing season

Ling and Tusk: Year round – main season March-September

Lumpfish: April-July

3.2.5 History of the fishery

3.2.5.1 Ling and Tusk:

The Norwegian ling and tusk fisheries developed after WWII, when developments in vessel technology in the western Norwegian fleet allowed for longer trips further from shore. New wooden longliners of 60-80 feet made long trips to Shetland, the Hebrides and Iceland during the summer months. The fishery was profitable, and during the 1980s many new boats entered the fishery. The results of this were seen throughout the 1990s with declining catches per unit effort.

To reverse this development, a major restructuring of the fleet took place after the year 2000. The fleet was reduced to a size corresponding to the resource basis and the efficiency of today's

technology. The results of this have also been clear, with CPUE pointing to a greatly improving stock situation.

Development of the Norwegian fleet of longliners, 1977 - 2015 (mainly based on Helle and Pennington 2015): The ling and tusk fishery is part of the deep water fisheries which developed in the 1970, Gordon *et al* (2003) briefly summarize the development of these fisheries in the ICES area. However, ling and tusk had been caught much before in more coastal areas along the Norwegian coast and in Skagerrak. The number of long liners increased from 36 in 1977 to a peak of 72 in 2000, and after that the numbers decreased to 26 in 2014.

This decline was mainly because of changes in the law concerning the quotas for cod. Norwegian legislation enacted in 2000 to regulate the cod fishery resulted in a continuous reduction in the number of longliners in the fishery for tusk, ling, and blue ling. By 2011 only 37 vessels above 21m were in the fishery. In 2012 new regulations were introduced and the number of cod quotas each vessel could own was raised from 3 to 5. This caused a further reduction in the number of longliners to 26 in 2014.

The decrease in the number of vessels was accompanied by a decrease in total catches until 2004; afterwards there was an increase, especially in 2007 and 2008. The catch-per-vessel was relatively stable from 1980 until 2003. In the period 2003- 2008 there was a steady increase in catch-per-vessel, afterwards the catches remained relatively stable. Table 4 provides landings by gear for 2014-2016, the total catch by gear distribution showing that the dominating gears are longlines and gillnets.

In summary, due to new regulations, the number of vessels in 2015 was only 26. Because of the reductions in the number of vessels (64 % reduction since 2000), the total number of hooks employed and the total number of weeks fished, there has been a significant reduction in effort. Compared with 2000, a decrease in total effort has occurred even though there was an increase in the number of hooks set per vessel/day (Helle & Pennington, 2015).

3.2.5.2 Lumpfish

The Norwegian lumpfish fishery has been a seasonal fishery for northern Norwegian coastal fishermen since the 1950s. Until the 1990s it was mainly operated by small open boats from the Lofoten Islands to Varanger in Finnmark. The fishery has taken place in the spring and early summer when lumpfish come to the coastline to spawn. Only sexually mature lumpfish roe is harvested.

The landings are strongly correlated with the number of fishing vessels. Participation in the fishery was at a record low in 2014 and 2015, as participation and therefore catches largely depend on the market situation. Furthermore, the demand for certified roe (such as MSC labelled) has increased, destructive misinformation from WWF Sweden (i.e. WWF Sweden's "fish guide" for 2014, lumpfish received a "red light" in the Baltic Sea) (Durif, 2016)³. The end product is the roe that is processed to caviar.

³ Durif, C, 2016. REGULERING AV FISKET ETTER ROGNKJEKS I NORDLAND, TROMS OG FINNMARK I 2016 Notat Vurdering av bestandssituasjonen av Rognkjeks.

In the earlier years, the fishery was important for coastal fishermen that did not participate in the seasonal cod fisheries. After strict regulations were introduced for cod in the 1990s, some slightly larger coastal vessels entered the fishery after their quota was finished. During the last decade participation in the fishery has dwindled, both due to market factors and generous quotas in other fisheries. In 2003, 729 vessels targeted lumpfish, while a recent low was in 2014 with only 10 vessels. If market challenges are overcome, the fishery remains a potentially important side-income for small-scale northern Norwegian fishermen.

Because of the strong correlation between landings and participation, the data available from the commercial fishery does not reflect the status of the natural lumpfish stock, and is therefore not currently considered to be a reliable tool for assessing lumpfish stocks (Durif, 2016). Advice from IMR is that regulatory measures should ensure that the number of participating vessels does not exceed 300 and the total quantity amounts to about 400 tons of roe.

3.2.6 Description of gears

According to the MSC Notification report the following gears are included in the UoC: Longline; gillnet and traps/pots .

Longline⁴: The longline is commonly set along the bottom, with one 36kg anchor in each end (offshore longlining). Coastal longliners will use similar, but lighter anchor systems. This gives two alternate points of hauling in the case one end is cut off (e.g. due to a trawler going over the gear). In the extremely rare case of loss of both points, the longline is retrieved by seeking with a small dredge at 90 degree angle. Hooks are placed every 1.5m, the line can be up to 40 nautical miles long, a vessel can work up to 40,000 hooks per day (Client, pers.com.), although around 35,000 hooks per day is currently the norm. The hooks are baited with mackerel from Norway and/or squid from South Korea and Taiwan.

There are two main approaches to fishing depth. In areas of the North Sea and on the banks, the line is commonly set at around 140-180m depth. When fishing on the slope edge, the lines are commonly set at depths ranging from 350 to 700m.

In offshore longlining, operators will usually return immediately to the initial point after shooting the line (early morning), and begin hauling. This can often be around 3-4 hours later. For coastal longliners, it is more common to soak the line overnight, and retrieve it at early dawn.

Bird scarers and streamers are used to discourage birds, as well as laser canons are used when it is foggy or dark. The fisheries works hard to discourage birds (Client and fishers meeting, pers.com.)

Gill nets: Gillnets are mainly used by small to intermediate sized boats, much of the ling/tusk caught in gill nets is in the coastal fishery – to a large degree overlapping with the cod, haddock and saithe fisheries (Client, pers.com). Fishing is based on the fish swimming into the net since they are not able to see it and getting entangled by the gills. The nets are rectangular and kept vertical by floaters on

⁴ Client pers.com. 24.08.2016

top and lead-weights at the bottom. Nets are commonly 30 meters long, and 10-12.5 “mesh sizes” tall. Since the mesh size is 267 mm for lumpfish for example, this should make them 2.7-3.3m high. The nets are set in chains of commonly 10-12 nets per chain. They are normally anchored with one (fairly light) anchor in each end. Most fishermen are working with 50-60 nets in total, but some have more than 100. For tusk/ling the nets are left for one night, preferably not longer since otherwise quality of the catch will suffer. Bad weather may, however, delay the nets being attended to and the fish being brought ashore for processing.

The number of nets per boat, depth of sets etc, is very diverse among boats, depending on the season, and locality. The mesh size of the gill net depends on the target species: if caught in the cod fishery north of 62 degrees, minimum mesh is 156 mm. If caught outside 4 nm south of 62 degrees: 148 mm. (reference: Fiskeridirektoratet, 2016 (§23)). For lumpfish, the mesh size is 267mm and the deployment of nets is between between 10-50m depth, in open areas offshore, but this depends on good calm weather. With 10 nets in a line for lumpfish (Fishers, pers.com), the gill nets are anchored at both ends, ie not drifting, and for lumpfish the soaktime is 2-3 days, as lumpfish are considered fairly tough.

Figure 6 illustrates gill nets for both lumpfish and ling/tusk, but as mentioned, it is usually less nets per chain for lumpfish. Lumpfish nets commonly soak for 2-3 days before being hauled.

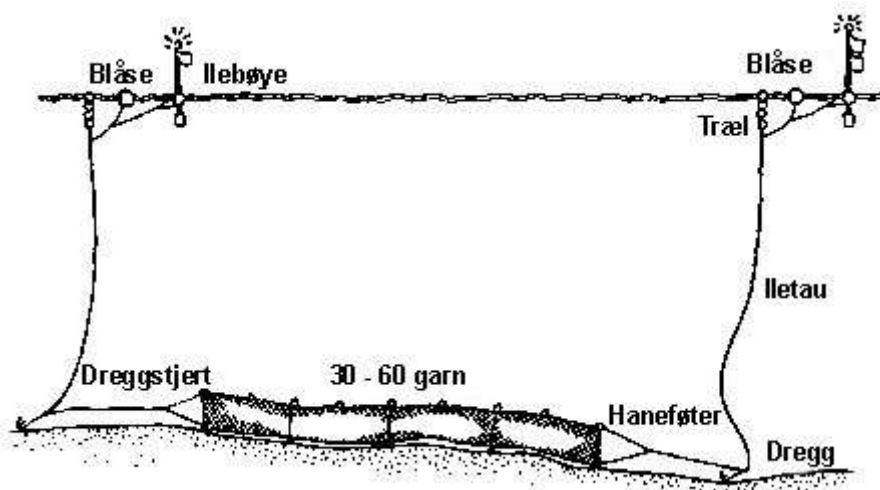


Figure 6 Basic diagram for bottom set gill nets for ling, tusk and lumpfish (Source: <http://www.kulfisk.no/bunnomfiskeri1.htm>, from Client)

Traps/pots: The traps, deployed to catch tusk, usually consist of two chambers and measure 120x80x120cm when set. It is normal to have for example 35 traps on a line with about 70-90m between each trap. The traps are anchored with a simple stone or “dumbbell”. The traps are baited with herring and mackerel. The traps are commonly hauled the day after setting (<24 hours), but there has been good success with hauling after only a few hours as well (Client, pers.com.).

The traps/pots are deployed within the 12nm zone, and few vessels use this gear (50 vessels in 2016 season; 64 vessels in the 2014 season; data provided by client, 2017, the number of boats which participated in the fishery nationwide). The boats are less than 15m length. The trap fishery is spread out evenly along the coast (see Figure 5), the traps are set at 200-400m depth (usually more than 300m). The traps are normally anchored with a simple stone or dumbbell weight, sometimes a very

light anchor may be used (Client, pers.com.). Fishing using traps occurs in spring, summer and autumn – dependant on activities in other fisheries, rather than the actual seasonal biology of tusk. In the winter, these fishermen will be too busy with cod fishing (Client, pers.com.).

In terms of bycatch, it is primarily ling and tusk which enter the traps, since they are positioned at such depth. There is some bycatch of other species, however, and catch composition is provided in Section 3.4.3.

In order to avoid ghost fishing, the pots/traps can be rigged to be ghost fishing proof by attaching external floats with biodegradable rope such as hemp. This would cause the pots to collapse as soon as rope has disintegrated and floats are released. However, this practice is not mandated by law and it is presumed that the practice of rigging pots with external floats/hemp vs. internal floats/synthetic varies from fisher to fisher.

3.2.7 Ownership and Management

The Norwegian fishermen's association (NFA) (<http://fiskarlaget.no/index.php/english>) is a non-profit interest organization, representing all of the Norwegian catching industry, from large trawlers to small coastal vessels, boat owners and employees alike. NFA is based on voluntary membership and has approximately 5700 members. These members are organized in more than 100 local chapters and two semi-independent group organizations (Norwegian Fishing Vessel Owners Association and the Southern Norwegian purse seiner association).

The main mission of the NFA is to safeguard all fishermen's interests, across professional, economic, social and cultural topics. NFA works closely with Norwegian management authorities on behalf of its members and plays an active part in national and international fisheries management. NFA is also client for all Norwegian national MSC certifications on behalf of the broader Norwegian seafood industry.

For the lumpfishery, NFA represents the national fishery, there are no other fishermen targeting the stock. For the ling and tusk fishery, EU, Icelandic and Faroese fishers target the same stock in EU and Norwegian EEZ.

The management of the fishery is outlined in detail in Principle Three: Management System Background.

3.2.8 Observer coverage

According to Client interviews (August 2017) there is practically little observer coverage, as Norway does not have on-board observers as an integral part of its monitoring and surveillance system. There is *ad hoc* on-board observation to address concrete issues as they arise in fisheries, and there is the national reference fleet program consisting of 14 offshore and 24 coastal fishing vessels. This is a comprehensive program where participating vessels are paid by the IMR to collect extensive data, which for many purposes can be extrapolated to the general fleet. Among the vessels in the program,

there are 4 offshore longliners that participate in the ling and tusk fisheries and one boat that was active in the lumpfish fishery in 2017.

4 Principle One: Target Species Background

Magnússon et al (1997) provide a short summary of the general biology of ling and tusk.

4.1 LTL: Tusk, Ling and Lumpfish as Key LTL species

Tusk (*Brosme brosme*), Family Lotidae (Hakes and burbot), is not among the 'default' Key LTL species, tusk shows low resilience to exploitation; trophic level is 3.9⁵. Tusk is not a low trophic level (LTL) species;

Ling (*Molva molva*), Family Lotidae (Hakes and burbot), is not among the 'default' Key LTL species, ling shows low resilience to exploitation; trophic level is 4.4⁶. Ling is not a low trophic level (LTL) species

Lumpfish (*Cyclopterus lumpus*), Family Cyclopteridae – Lumpfishes, is not among the 'default' Key LTL species, Lumpfish shows limited resilience to exploitation; trophic level is 3.9⁷. Lumpfish is not a low trophic level (LTL) species

4.2 Ling (*Molva molva*)

Based on <http://www.fishbase.org> and http://www.fisheries.no/ecosystems-and-stocks/marine_stocks/fish_stocks/ling

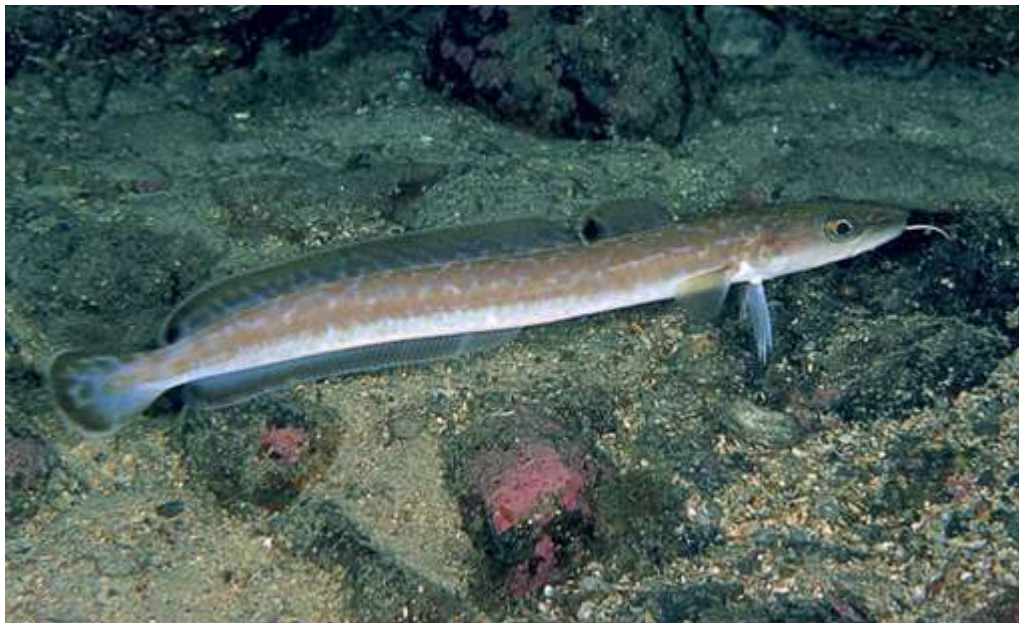


Figure 7 Ling (*Molva molva*) (Source: <http://www.fishbase.org/ComNames/CommonNameSearchList.php>)

Ling, *Molva molva* (Figure 7) is an oceanic cod-like fish whose habitat is in the Atlantic region and can be found around Iceland, Faroe Islands, British Isles, the Norwegian coast and occasionally around Newfoundland. Specific areas of occurrence, of relevance to this fishery, include the Norwegian Sea,

⁵ <http://fishbase.de/Summary/SpeciesSummary.php?ID=51&AT=tusk>

⁶ <http://fishbase.de/Summary/SpeciesSummary.php?ID=33&AT=ling>

⁷ <http://fishbase.de/Summary/SpeciesSummary.php?ID=62&AT=lumpfish>

along the coastal shelves, and the Sea of the Hebrides, where the species is abundant, see Figure 8. Ling has a long slender body that can reach up to 2 metres in length; in adulthood, it is generally a deep-running fish, spending much of its life at depths of 100m or more; younger fish are found at shallower depths.



Figure 8 Distribution of ling (*Molva molva*) in the Northeast Atlantic Ocean (Source: Fisheries Directory, site visit)

Adult ling live demersally on rocky bottoms at depths of 15 to 600m or more, commonly from 100 to 400m. Young up to 1-2 years of age are coastal (15-20m depth) and pelagic. At an age of 3 years ling migrate to greater depths. First maturity is reached at 5 years for males (80cm) and 5-6 years for females (90-100cm). Spawning occurs from March to July and eggs are pelagic. Fecundity may reach 20 to 60 million eggs per female. Major spawning grounds are located at 200 m depth from the Bay of Biscay to off Norway at 100 to 300 m off southern Iceland. Growth is rapid (8-10 cm/year): at 1 year, 20 cm; 2 years, 31-35 cm; 3 years, 31-35 cm; 4 years, 73-83 cm. Females grow faster than males. The maximum age is 10 years for males and 14 for females (ca. 200cm total length).

Ling has a large mouth with sharp teeth, a classic predator on other fishes. It mostly eats herring, flatfishes, and other codfishes. It can also eat invertebrates, such as crustaceans, cephalopods and echinoderms (starfish). The global catch statistics is presented in Figure 9. The Norwegian catch is about 40% of the global production.



Figure 9 Ling Catch Statistics 1950-2013 global total. (Source: FAO FishStat)

4.3 Tusk (*Brosme brosme*)

The information about this species is based on <http://www.fishbase.org> and http://www.fisheries.no/ecosystems-and-stocks/marine_stocks/fish_stocks/tusk



Figure 10 Tusk (*Brosme brosme*) (Source: <http://www.fishbase.org/ComNames/CommonNameSearchList.php>)

Tusk, Figure 10, is a demersal species preferring rocky bottom on the continental shelf and on the slope from 100 until 1000m, normally living in waters deeper than 200m. It is distributed on both sides of the North Atlantic. Its maximum range covers most of the North Atlantic, including the waters around Iceland and the Norwegian coast. It is also found on the Mid-Atlantic Ridge. Tusk has a more northerly distribution compared with e.g. ling and blue ling. In the Northeast Atlantic, the range extends from southern Ireland to Svalbard and the Kola Peninsula. Tusk is abundant around Iceland and the Faroe Islands and in the deeper parts of the North Sea and Skagerrak. It is also common in the Northwest Atlantic, off Greenland, and along the Reykjanes Ridge (Figure 11)



Figure 11 Distribution of Tusk (*Brosme brosme*) in the Northeast Atlantic Ocean. (Source: Fisheries Directory, site visit)

Spawning is widespread. The age of first maturation is eight to ten years, but varies within its geographic range. Maximum age can exceed 20 years, maximum length is about 100 cm, maximum weight about 9 kilos. The species does not seem to form aggregations, e.g., during spawning or wintertime.

Tusk shows little genetic differentiation over large distances, except where populations are surrounded by deep-water areas, namely on the Mid-Atlantic Ridge and the Rockall Bank. This suggests that deep-water areas are barriers for adult movements, and, though they have pelagic eggs and larvae, dispersal during early life stages is not effective over long distances, either.

Tusk spawns in the spring and summer, usually between April and early July. A medium-sized female has been known to produce more than two million buoyant eggs. The young live near the surface until they are about 5 cm long, and then seek out rocky ocean floors in deep water. It eats crustaceans and other soft-bodied invertebrates and molluscs.

The global production of tusk is presented in Figure 12. The Norwegian catch is about 40% of the global production.

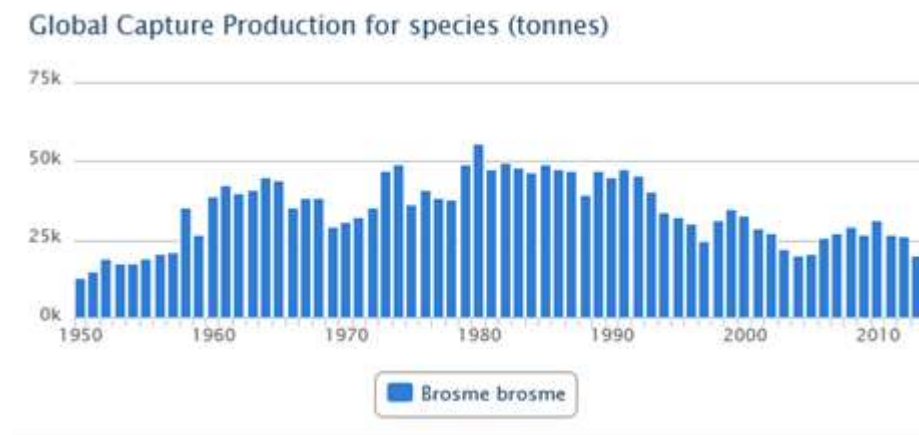


Figure 12 Global annual tusk catches in 1950-2013 from FAO statistics. (Source: FAO <http://www.fao.org/fishery/species/2220/en> accessed 23 December 2015)

The Norwegian Redlist or by CITES species does not classify tusk as threatened. However, tusk in the Northwest Atlantic Ocean Fisheries and Oceans Canada considers tusk endangered based on an evaluation in 2012 by the Canadian Committee on the Status of Endangered Wildlife while US National Marine Fisheries Service classify tusk as a Species of Concern. This classification is based on trends in the Northwest Atlantic Ocean.

4.4 Ling and Tusk: Management Strategy and Harvest Control Rule (PI 1.2.1, 1.2.2, 1.2.3)

The MSC framework version 2.0 requires that there is a “...a robust and precautionary harvest strategy in place” (PI 1.2.1). This harvest strategy is laid down in the Norwegian fisheries management system which is built on a general objective to exploit the fisheries resources sustainably, cf. ‘Havressursloven’.

PI 1.2.2 calls for a “.. well defined and effective harvest control rules (HCRs) in place”. There is no agreed management plan for tusk and ling. ICES advises on the status of the stocks and on fishery management applying the ICES advisory framework ICES (2015a) and management judge on the need for regulation of the fisheries taking this advice into account. Management currently finds that a HCR is not required as the fishery is within sustainable limits based on regulation of the capacity (licence scheme) and technical regulations. Potentially the Norwegian legal system allows the establishment of a Management Plan with an embedded HCR should the need arise.

EU and the Faroe Islands have established management systems for ling and tusk in their NEZ’s and the annual consultations on fisheries possibilities between EU- Norway and Norway and the Faroes Islands includes an analysis of the status of the stocks based on the ICES advice. Parts of the Rockall Bank ICES (5.b) is in international waters and is regulated through NEAFC.

PI 1.2.3 is about the information available to support the management strategy and HCR. There is no abundance survey that adequately covers the distribution of ling and tusk stocks and in the light of the limited fishery and the wide distribution of the stocks, survey costs might be prohibitive. Instead the assessment is based CPUE information from the fisheries and these are analysed in detail in Helle and Pennington (2015).

4.5 Tusk and Ling: Stock Assessment and Stock Status

The fishery exploits five assessment units. These units are also fished by EU and for the Faroese grounds also by Faroese vessels. Since 2003 EU vessels have been subject to a restrictive TAC. Ling and tusk are also bycatch in trawl and Danish seine fisheries directed for cod, haddock and saithe. These by-catches are not part of this MSC assessment but are included in the overall assessment of the status of the ling and tusk stocks.

ICES operates with the following ling and tusk stock assessment units and these are included in the UoA

Ling

- **Ling I+II:** Ling (*Molva molva*) in Subareas I and II (Northeast Arctic). ICES advisory book 9 section 9.3.23 June 2015
- **Ling (Other areas):** Ling (*Molva molva*) in Subareas VI-IX, XII, and XIV, and in Divisions IIIa and IVa (other areas) Most recent scientific advice. ICES advisory book 9 section 9.3.24 June 2015

Tusk

- **Tusk I+II:** Tusk (*Brosme brosme*) in Subareas I and II (Northeast Arctic). Most recent scientific advice ICES advisory book 9 section 9.3.48 June 2015
- **Tusk (NEA):** Tusk (*Brosme brosme*) in Subareas IV, VII-IX, and in Divisions IIIa, Vb, VIa, and XIIb (Northeast Atlantic) Most recent scientific advice ICES advisory book 9 section 9.3.48 June 2015
- **Tusk VIb:** Tusk (*Brosme brosme*) in Division 6.b (Rockall) Most recent scientific advice ICES advisory book 9 section 9.3.45 June 2016

No abundance survey covers the area of occurrence satisfactorily. These units are all assessed by ICES that provides advice biennially and reviews the advice in intermediate years. The assessment is based on CPUE trends in commercial fisheries and the harvest is influenced by regulations aimed at other benthic species, i.e. cod and haddock. The main uncertainty is the variability in commercial CPUE data and changes in the fisheries invalidating the CPUE index as a stock size indicator. The scientists follow the fisheries to be able to document changes in the fishery. The ICES HCR for category 3 stocks is considered to be sufficiently robust to these variabilities and changes to allow scientific advice.

ICES provide biennial advice for these stocks and with the exception of the Rockall tusk the most recent ICES advice is dated June 2015 and provide advice for 2016 and 2017. The Rockall tusk advice is dated June 2016 ICES (2016b). This MSC assessment is based on this set of advice. At the site visit August 2016 the IMR scientist working on ling and tusk confirmed that the stock status as assessed by ICES (2015a) was evaluated to be unchanged in 2016.

ICES advises on the status of the stocks and on fishery management applying the ICES advisory framework. The ICES approach to advice on fishing opportunities integrates the ecosystem and precautionary approach with the objective of achieving maximum sustainable yield (MSY). The aim is, in accordance with the aggregate of international guidelines, to inform policies for high long-term yields while maintaining productive fish stocks within healthy marine ecosystems, ICES (2016s).

The basis for the assessments are summarised in Table 12. The advice for 2016 and 2017 for ling and tusk falls under ICES advisory category 3 except for the Rockall Tusk which is in category 5. Under category 3 the advice is based on the ratio between the two latest index values and the three preceding values, combined with the 2013 advice which is used as the basis for the advice. If the ratio has increased by more than 20%, an uncertainty cap of 1.2 multiplied by previous advice is applied to calculate the catch advice. If the stock status relative to candidate reference points is unknown, a precautionary buffer (reduction by 20%) was applied for the 2013 advice (i.e. to the 2012 TAC). See ICES 2015 Book 1 (ICES 2015a). This Category 3 advice forms a rudimentary HCR that is responsive to stock development. The ICES reference point is the TAC for 2012, in many cases with the application of the precautionary buffer and as such there is a reference point for the category 3 stocks. In the light of ICES obligation to advice on precautionary fisheries this level might be taken as a PRI point; however, MSY is unknown. Category 5 includes stocks for which there is no stock indicator available only catch data. Rockall Tusk falls into this category.

Table 10 Reference points for Ling and Tusk. Source ICES 2015 advice

Stock	Reference point Cpue (2010-2012)	Current status (Ratio between current and reference indicator)
Ling I+II	79.92 (Cpue Commercial)	1.13
Ling (Other areas)	104.9 (Cpue Commercial)	1.27
Tusk I+II	102.3 (Cpue Commercial)	1.05
Tusk (NEA)	139.9 (Cpue Commercial)	0.99
Tusk VIb	N/A	N/A

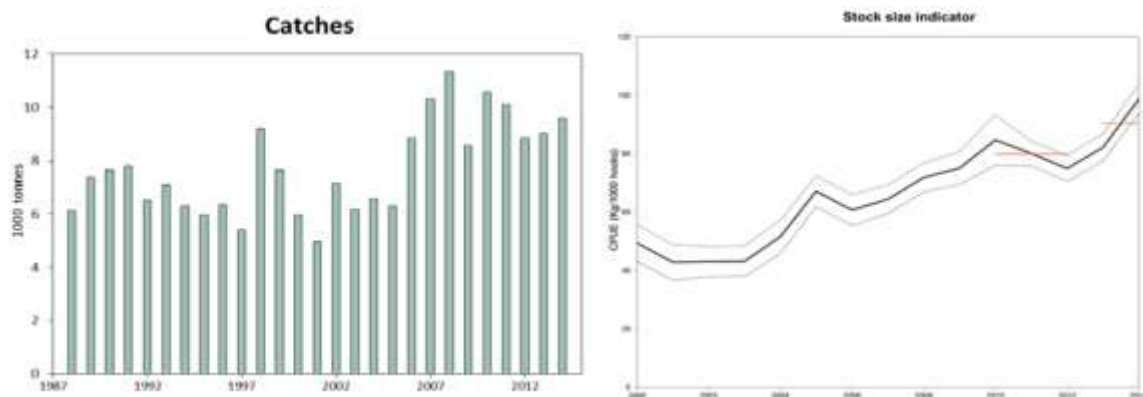
The Norwegian fisheries are subject to a discard ban and EU Common Fisheries Policy adopted in 2013 (EU, 2013) includes the introduction of landing obligations (discard bans) for most of the commercial species.

ICES (2016s) classifies a number of stocks in relation to MSY status for advice categories 3 and 4 stocks (Table 11); these are stocks without analytical assessments but for which either abundance indices provide trends (category 3) or only catch data and biological information are available (category 4). The classification includes three of the five (ling and tusk) stocks that are considered in this assessment,

Table 11 Stock status classification relative to MSY proxies. The period shown in (brackets) under 'value of proxy' are the years of data used. Extract from Table 5.4.2.1 ICES (2016s) and ICES (2017) WGDEEP section 4.3.9

Stock	Method SPiCT ⁸ LBI ⁹	Indicator for MSY exploitation rate	Observed Value of proxy	Status (ICES 2015)	Proxy for MSY Btrigger;	Value of proxy	Status (ICES 2015)
Ling I+II	LBI/SPiCT ¹⁰	F/F_{MSY}	0.8	Desirable	B/B_{MSY}	1.2	Desirable
Ling (Other areas)	LBI/SPiCT	F_{MSY}	0.24 (1988– 2014)	Desirable	$0.5 \times B_{MSY}$	48 000 t (1988– 2014)	Desirable
Tusk (NEA)	LBI/SPiCT	F_{MSY}	0.51 (1989– 2014)	Desirable	$0.5 \times B_{MSY}$	8 500 t (1989– 2014)	Desirable
Tusk Vlb	LBI	Expected mean length of catch above L_c when $F = M$	53 cm (2013)	Desirable	No proxy identified	N.A.	Unknown

Ling ICES I+II (Barents Sea and Norwegian Sea)



⁸ SPiCT: Biomass dynamic model (SPiCT); Biomass dynamic model in catch-only mode (CMSY); SPiCT is a surplus production model that incorporates stochasticity (i.e. process error) in the stock biomass dynamics model. The calculation of the F_{MSY} and MSY Btrigger proxies takes the process error into account

⁹ LBI: Length-based indicator 'Desirable' corresponds to: " $(\text{Observed mean length of catch above } L_c) / (\text{Expected mean length of catch above } L_c \text{ when } F=M) > 1$ ". The LBI method is based on the "Expected mean length of catch above Length at first catch (L_c) when $F = M$."

¹⁰ Based on ICES (2017) WGDEEP 2017

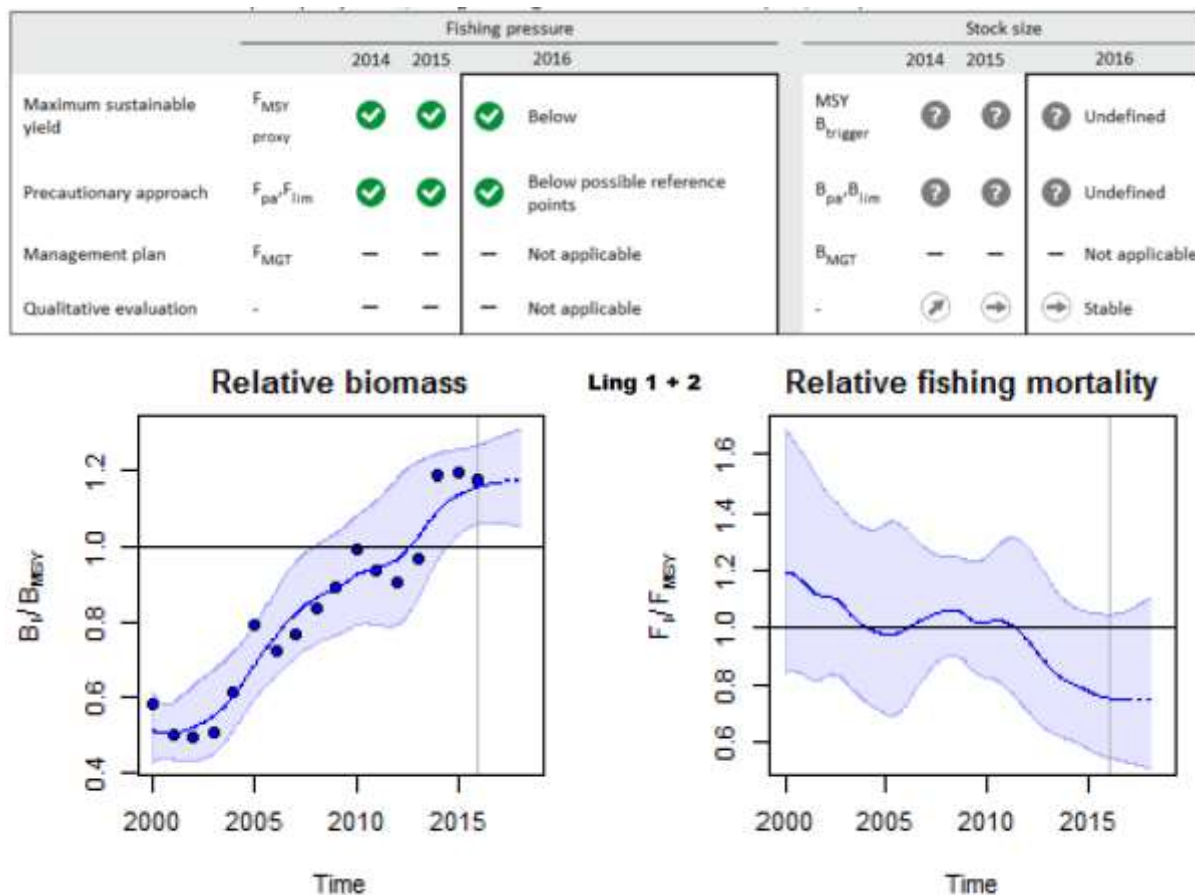
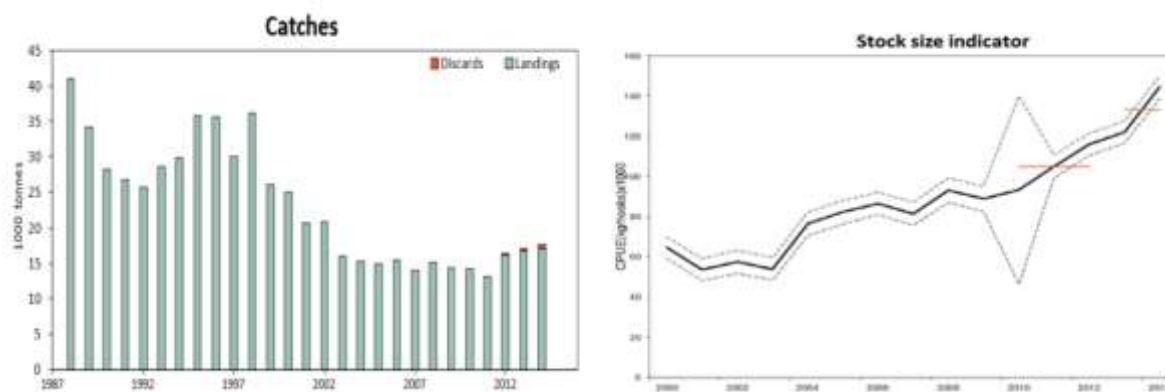


Figure 13 Ling in Subareas I and II. Upper Left: Landings by ICES area (in thousand tonnes). Upper Right: Estimates of cpue (kg per 1000 hooks) based on official logbooks from the Norwegian longline fishery in Division IIa. The red horizontal line shows the reference level (around 2012) and the level on which the advice is based (around 2015). Source: ICES (2015) Figure 9.3.23.1. Middle panel: Stock status for Ling I+II, ICES (2017) Advice on Ling I+II. Lower two panels show the relative biomass and fishing mortality from the SPiCT model run. From ICES (2017) section 4.3.9.

The assessment is based on cpue (kg per 1000 hooks) based on official logbooks from the Norwegian longline fishery in Division IIa. The precautionary buffer was applied in 2013. Discarding is considered negligible. For further detail see ICES (2015f) and ICES (2016s) WGDEEP reports and Helle et al (2015).

Ling in Subareas VI-IX, XII, and XIV, and in Divisions IIIa and IVa (other areas)



Fishing pressure					Stock size				
		2014	2015	2016		2014	2015	2016	
Maximum sustainable yield	F_{MSY} proxy	✗	✓	✓ Below	MSY $B_{trigger}$ proxy	?	?	?	Undefined
Precautionary approach	F_{pa} F_{lim}	?	✓	✓ Below possible reference points	B_{pa} B_{lim}	?	?	?	Undefined
Management plan	F_{MGT}	—	—	— Not applicable	B_{MGT}	—	—	—	Not applicable
Qualitative evaluation	—	—	—	— Not applicable	—	↗	↗	↗	Increasing

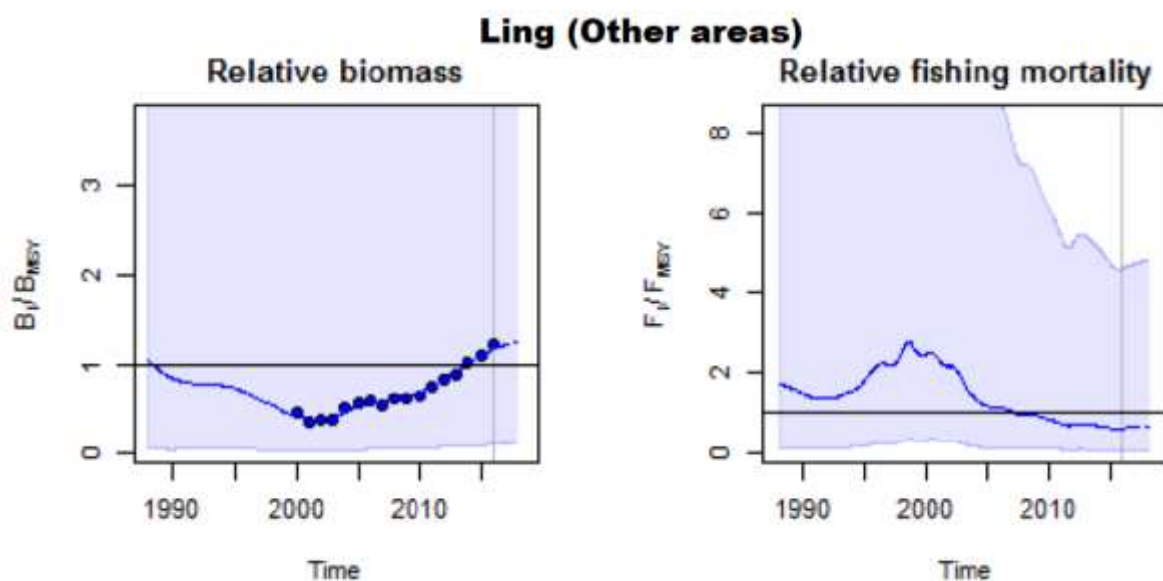


Figure 14 Ling in other areas. Upper panel Left: Catches and discards. Upper panel right: Standardized cpue from the Norwegian longline fleet targeting ling for all areas combined ($[kg \text{ hook}^{-1}] \times 1000$). Red horizontal lines indicate the average cpue index of the respective year range used to calculate the advice. Source ICES 2015 Advice Figure 9.3.24.1. Middle panel: Stock status as assessed by ICES (2017) Advice. Lower panels: SPiCT analysis. From ICES (2017) WGDEEP 2017 Section 4.5.9

The assessment is based on the standardized cpue series from the Norwegian longline reference fleet. This series was applied as index for the stock development. Other time-series covering smaller areas of the stock distribution show a similar trend. Discards are estimated at < 5% of the catch and are considered negligible. For further detail see ICES (2015f) and ICES (2016c) WGDEEP reports and Helle et al (2015).

Tusk (*Brosme brosme*) in Subareas I and II (Northeast Arctic).

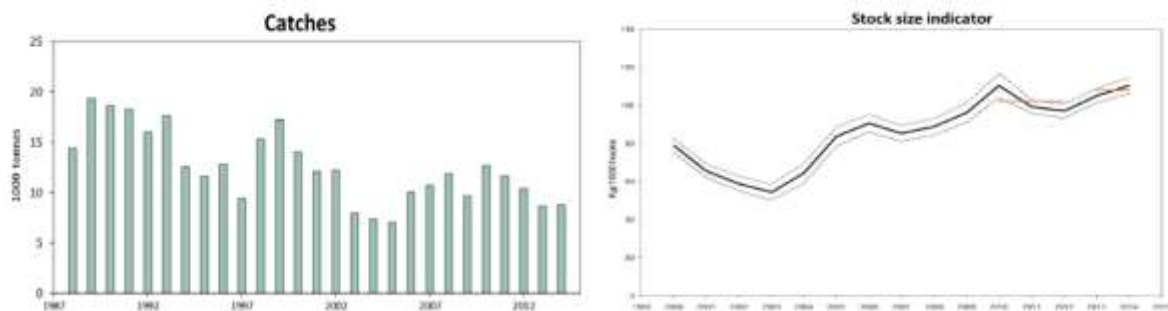
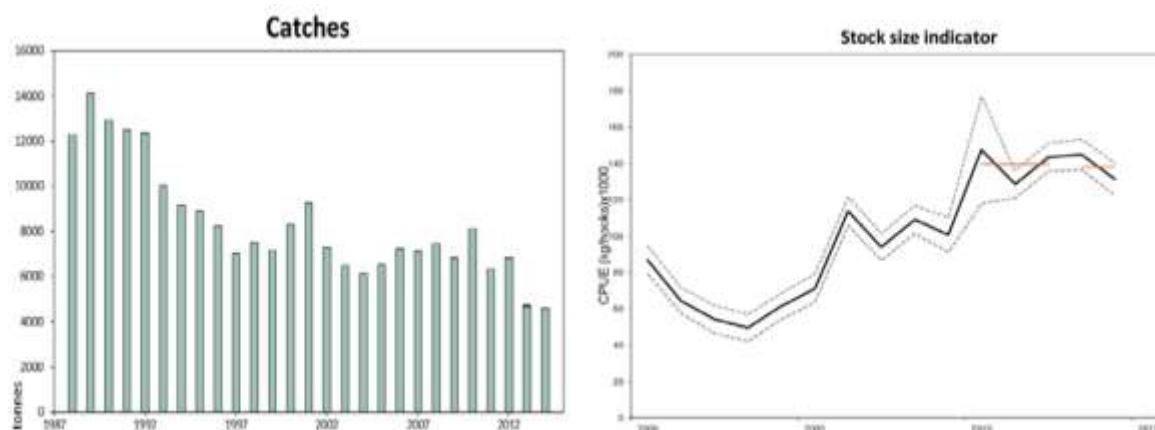


Figure 15 Tusk in Subareas I and II. Left: Catches (in tonnes). Right: Cpue (kg per 1000 hooks) for tusk in ICES Division IIa. The red horizontal lines indicate the average biomass index of the respective year range used to calculate the advice. Source ICES 2015 Advice Figure 9.3.48.1.

The assessment is based on the standardized cpue series from the Norwegian longline reference fleet applied as index for the stock development. The precautionary buffer was applied in 2012. Discarding is considered negligible. For further detail see ICES (2015f) and ICES (2016c) WGDEEP reports and Helle et al (2015).

The stock status was further analysed in ICES (2017) WGDEEP 2017, section 6.5.9 Length-based indicator method. The MSY indicator ($L_{mean}/L_F=M$) varies between 0.85 and 1.13. The values were less than one in 2015 and 2016. ICES concludes in its 2017 advice that “No reference points are defined for this stock. An attempt has been made this year to calculate MSY proxy reference points for this stock. However, there were concerns about the application of the methods to this stock and further investigation is needed.”

Tusk (*Brosme brosme*) in Subareas IV, VII–IX, and in Divisions IIIa, Vb, VIa, and XIIb (Northeast Atlantic)



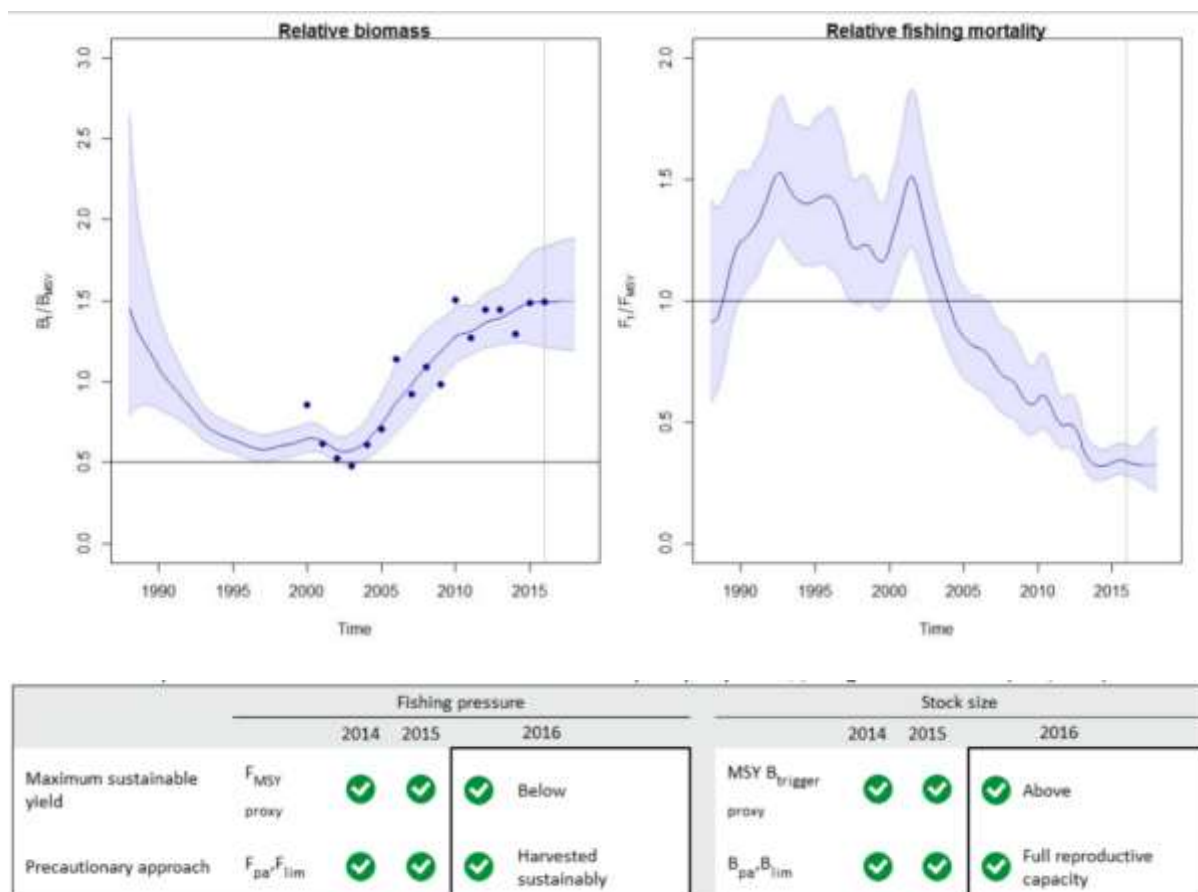


Figure 16 Tusk in Subareas IV and VII-IX, and in Divisions IIIa, Vb, VIa, and XIIb. Upper panel Left: catches in tonnes. Right: Cpu index (kg per 1000 hooks) from Norwegian longliners for tusk in Divisions IVa, Vb, and VIa, based on official logbooks. The red horizontal lines indicate the average biomass index of the respective year range used to calculate the advice. Source ICES 2015 advice Figure 9.3.49.1. Middle panel; Results from SPiCT analysis ICES (2017) Advice. Lower panel: Tusk in subareas 4 and 7-9, and in divisions 3.a, 5.b, 6.a, and 12.b. State of the stock and fishery relative to reference points. The status evaluation is based on the reference point proxy for F_{MSY} , using the SPiCT model (ICES, 2017) WGDEEP 2017.

The assessment is based on a combined standardized cpue series from the Norwegian longline fishery which covers the main areas of the species. Cpue series from the three main areas show similar trends. Discarding is considered negligible. For further detail see ICES (2015f) and ICES (2016c) WGDEEP reports and Helle et al (2015).

The stock status was further analysed in ICES (2017) WGDEEP 2017, section 6.6.9 Length-based indicator method and SPiCT. ICES found that fished below F_{MSY} and is at full reproductive capacity, Figure 16. The estimates are presented including confidence limits and there is less than 5% probability that the stock is below B_{MSY} .

Tusk (Brosme brosme) in Division 6.b (Rockall)

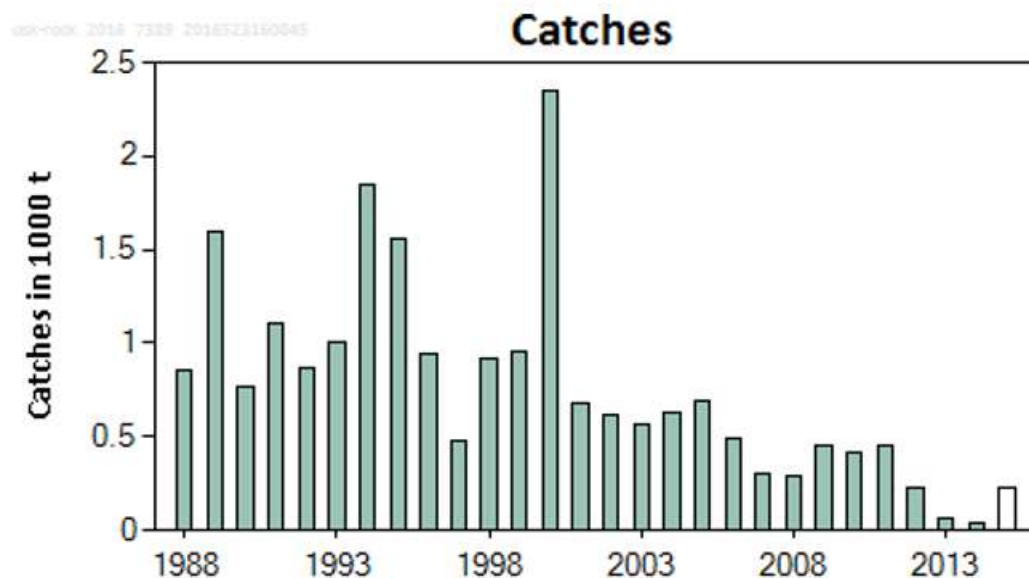


Figure 17 Tusk in Division 6.b. Catches in thousand tonnes, 2015 values are preliminary. Source ICES advice 2016 Figure 9.3.45.1

For the Rockall tusk the effort is now so low that the Norwegian reference fleet index is not informative for this stock and there is no guide except that the effort in general is low and that the most recent information suggest that fishing mortality was low.

The ICES framework for category 5 stocks was applied (ICES, 2012a). Category 5 framework applies to stocks without information on abundance or exploitation, ICES considers that a precautionary reduction of catches should be implemented unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock. In 2013, this stock was exploited at a harvest rate below the FMSY proxy estimate (ICES, 2016a) and effort has decreased since. Therefore, the precautionary buffer, which was last applied in 2012, is not applied this year.

The stock status was further analysed in ICES (2017) WGDEEP 2017, section 6.4.9 Length-based indicator method. The MSY indicator ($L_{mean}/L_F=M$) is around 1 for almost the entire period indicating that tusk on Rockall are fished sustainably. The overall perception of the stock during the period 2015–2016 is that tusk on Rockall seem to be in good shape, specifically the tusk stock is fished sustainably and the stock is not fished greater than the length-based indicator of MSY. The SPiCT approach was inconclusive. This conclusion is in support of the the 2015 conclusion.

Table 12 Summary of assessment and advice for ling and tusk. (N/A: Not available)

Species	Assessment unit (Stock)	Basis for the advice			ICES HCR		Stock status
		Assessment basis	B _{lim}	MSY	Advisory Category	Cap applied for 2016 advice	Based on ICES advice for 2016-2017 ICES (2015b-e) and ICES (2016b)
Ling	ICES I+II	Norwegian longline reference fleet cpue covering the main areas of the stock	N/A	N/A	3 ^{*)}	Uncertainty cap: no Precautionary buffer: 2012 TAC	Stock index increasing since 2004 to present. Landings have been stable and relatively high since 2006. ICES (2015b)
	ICES IIIa, IV, VI, ...	Norwegian longline reference fleet cpue supported by other cpue time-series covering smaller areas of the stock distribution	N/A	N/A	3 ^{*)}	Uncertainty cap: yes Precautionary buffer: 2012 TAC	Stock index increasing since 2003 to present. Catches stable since 2003. ICES (2015c)
Tusk	ICES I+II	Norwegian longline reference fleet cpue covering the main areas of the stock	N/A	N/A	3 ^{*)}	Uncertainty cap: no Precautionary buffer: 2012 TAC	Stock index increasing since 2004 to the present. Since 2010 catches declined. ICES (2015d)
	ICES VIb	The advice issued in 2014 was based on the Norwegian longline reference fleet cpue index in Rockall (Division 6.b). This cpue were covering the main areas of the stock The effort for the fleet has declined substantially and the index can no longer be used as an indicator of stock development. Therefore, there is no assessment of the stock this year.	N/A	N/A	5 ^{**))}	Uncertainty cap: no Precautionary buffer: 2012 TAC	Stock index declining 2000-2006 after which time the index have stabilised at the low level. In 2013, this stock was exploited at a harvest rate below the F _{MSY} proxy estimate (ICES, 2016a) and effort has decreased since. ICES (2016b).

		Basis for the advice			ICES HCR		Stock status
Species	Assessment unit (Stock)	Assessment basis	B _{lim}	MSY	Advisory Category	Cap applied for 2016 advice	Based on ICES advice for 2016-2017 ICES (2015b-e) and ICES (2016b)
	ICES IVa, Vb, VIa,	Norwegian longline reference fleet cpue covering the main areas of the stock	N/A	N/A	3*)	Uncertainty cap: no Precautionary buffer: not applied in 2012 (stock was increasing rapidly).	Stock index increasing since 2004. Catches in all subareas were stable from 2002 to 2012, lower the last two years. ICES (2015e)

*) The ICES framework for category 3 stocks (ICES, 2015a): stocks for which survey-based assessments indicate trends. This category includes stocks for which survey indices (or other indicators of stock size such as reliable fishery-dependent indices; e.g. I_{pue} , $CPUE$, and mean length in the catch) are available that provide reliable indications of trends in stock metrics such as mortality, recruitment, and biomass.

**) The ICES framework for category 5 stocks (ICES, 2015a) for stocks without information on abundance or exploitation, ICES considers that a precautionary reduction of catches should be implemented unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock. In 2013, this stock was exploited at a harvest rate below the FMSY proxy estimate (ICES, 2016a) and effort has decreased since. Therefore, the precautionary buffer, which was last applied in 2012, is not applied this year.

4.6 Tusk and Ling: Management Strategy and Harvest Control Rule

The MSC framework version 2.0 requires that there is a "...a robust and precautionary harvest strategy in place" (PI 1.2.1). This harvest strategy is laid down in the Norwegian fisheries management system which is built on a general objective to exploit the fisheries resources sustainably, cf. 'Havresursloven'.

PI 1.2.2 calls for a "...well defined and effective harvest control rules (HCRs) in place". There is no agreed management plan for tusk and ling. ICES advises on the status of the stocks and on fishery management applying the ICES advisory framework (ICES 2015a) and management judges on the need for regulation of the fisheries taking this advice into account. Management currently finds that a HCR is not required as the fishery is within sustainable limits based on regulation of the capacity, (licence scheme) and technical regulations. Potentially the Norwegian legal system allows the establishment of a Management Plan with an embedded HCR should the need arise.

EU and the Faroe Islands have established management systems for the ling and tusk in their NEZ's and the annual consultations on fisheries possibilities between EU-Norway and Norway and the Faroe Islands includes an analysis of the status of the stocks based on the ICES advice. Parts of the Rockall Bank ICES (5.b) is in international waters and is regulated through NEAFC. However, only about 10% of the catch from this area (VIb) is taken in the NEAFC Regulatory area (ICES 2016d).

PI 1.2.3 is about the information available to support the management strategy and HCR. There is no abundance survey that adequately covers the distribution of ling and tusk stocks and in the light of the limited fishery and the wide distribution of the stocks survey costs might be prohibitive. Instead the assessment is based on CPUE information from the fisheries and these data series are analysed in detail, Helle and Pennington (2015).

4.7 Lumpfish (*Cyclopterus lumpus*) in Nordland, Troms and Finnmark

4.7.1 General Biology

The global distribution of lumpfish is shown in Figure 18. The species is found throughout the Atlantic Ocean, including in the North Sea, Baltic Sea and Barents Sea. There are three distinct genetic lumpfish groups: Maine–Canada–Greenland, Iceland–Norway and Baltic Sea (Pampoulie et al., 2014)¹¹. They also concluded that gene flow was rather limited among the detected groups.

¹¹ Pampoulie, C., Skirnisdottir, S., Olafsdottir, G., Helyar, S. J., Thorsteinsson, V., Jónsson, S. T., Fréchet, A., Durif, C. M. F., Sherman, S., Lampart-Kaluzniacka, M., Hedeholm, R., Ólafsson, H., Danielsdóttir, A. K., and Kasper, J. M. 2014. Genetic structure of the lumpfish *Cyclopterus lumpus* across the North Atlantic. – ICES Journal of Marine Science, 71: 2390–2397

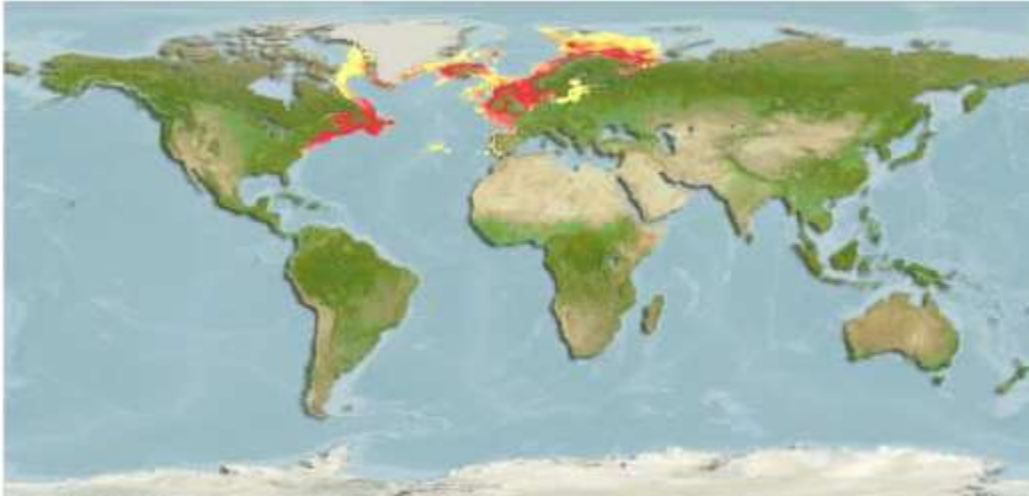


Figure 18 Global probability of presence of lumpfish (*Cyclopterus lumpus*). (Source: Fishbase)

The lumpfish biology is summarized in Fishbase (<http://www.fishbase.de>; Stein, 1986) and in references given in this database including Davenport (1985) who provides basic biological data. The website of the Norwegian Institute of Marine Research (<http://www.imr.no>) and Bay-Nouailhat (2009) provide succinct summaries of the life cycle of lumpfish and basic biological information. The description below draws extensively on and quotes from these references.

The basic biology of lumpfish (*Cyclopterus lumpus*) is summarised by Davenport (1985). Furthermore, MSC assessment reports include a summary, see Icelandic Gillnet Lumpfish Fishery¹² and Greenland lumpfish fishery¹³. Pampoulie et al. (2014) show that lumpfish in the North Atlantic is genetically structured on a large geographic scale and Eriksen et al (2014)¹⁴ provide information focusing on the lumpfish in the Barents Sea and in particular provide biomass estimates. Age determination was revised by Albert et al (2002)¹⁵. Kennedy et al (2015)¹⁶ studied homing behaviour for Icelandic lumpfish.

Below aspects that are relevant for the scoring of the lumpfish in the Norwegian Sea and the Barents Sea are briefly summarised. The summary is based on the literature quoted in the preceding paragraph and it not repeated.

Lumpfish lives in temperate and cold waters at high latitudes. The species is found on both sides of the North Atlantic Ocean from Cape Cod to Canada in the west to Portugal, Iceland, Greenland and Spitsbergen in the east. The species has been found in the Mediterranean Sea and along Portugal's coast.

Lumpfish are adapted to live in two quite different areas in the ocean; coastal areas and the pelagic environment of the open ocean. It lives mostly at a depth range of 50-300m, but during the breeding season the fish returns to shallow coastal areas for spawning and it is during this stage that the fisheries take place as the target is the

¹² Icelandic Gillnet Lumpfish Fishery – Public Certification Report, <https://fisheries.msc.org/en/fisheries/icelandic-gillnet-lumpfish/@assessments>

¹³ Greenland lumpfish fishery Public Certification Report <https://fisheries.msc.org/en/fisheries/greenland-lumpfish/@assessments>

roe rather than the carcasses. Females spend about 3-4 weeks in the coastal areas where they lay two to four batches of eggs at intervals of 8-14 days. They exhibit a homing instinct, Davensport (1985).

There is little distinction between Norwegian and Icelandic lumpfish and surveys indicate almost continuous distribution. Biological and tagging data show that the species exhibits spawning site fidelity, and larval dispersal might be limited.

Growth and size of lumpfish are variable due to sex- and individual differences and in both sexes; maturity is connected to size rather than age. Females mature on average at 38cm, and males at around 28cm. Sexual maturity occurs at around 4 years of age for females and 3 years of age for males. (Albert et al. 2002) and on average a generation is about 5 years. Lumpfish can live up to 12 years old; however, females over 10 years old are rare in the fishery.

Lumpfish is fished for roe and the fishery therefore takes place during the spawning season only in the spring. The season varies slightly geographically and last 3-4 weeks at a particular site. The major share of the 'Norwegian stock'¹⁷ spawns along the Norwegian coast in Nordland, Troms and Finnmark. However spawning also takes place along the coast further south. Figure 1 shows the areas mentioned in the text.

4.7.2 Lumpfish: Stock Assessment, Status and Reference points

The Norwegian fishery for lumpfish has decreased markedly in recent year. Figure 19 demonstrates the close relationship between the effort (measured as the number of participating vessels in the fishery) and the catch suggesting that abundance is not controlling the yield but rather the market situation (i.e. price on lumpfish roe and availability of alternative fishing in this case cod).

The Norwegian Institute for Marine Research (IMR) provides an annual assessment the most recent is Durif (2016). The assessment is based on catch statistics and on data from two annual surveys, the Norwegian 0-group survey, Figure 20, and the International Ecosystem Survey (IESSNS), Figure 21. Both these surveys demonstrate that the lumpfish stock is increasing in the Northeast Atlantic over the more recent years.

¹⁷ Defined as the lumpfish that spawns along the Norwegian coast

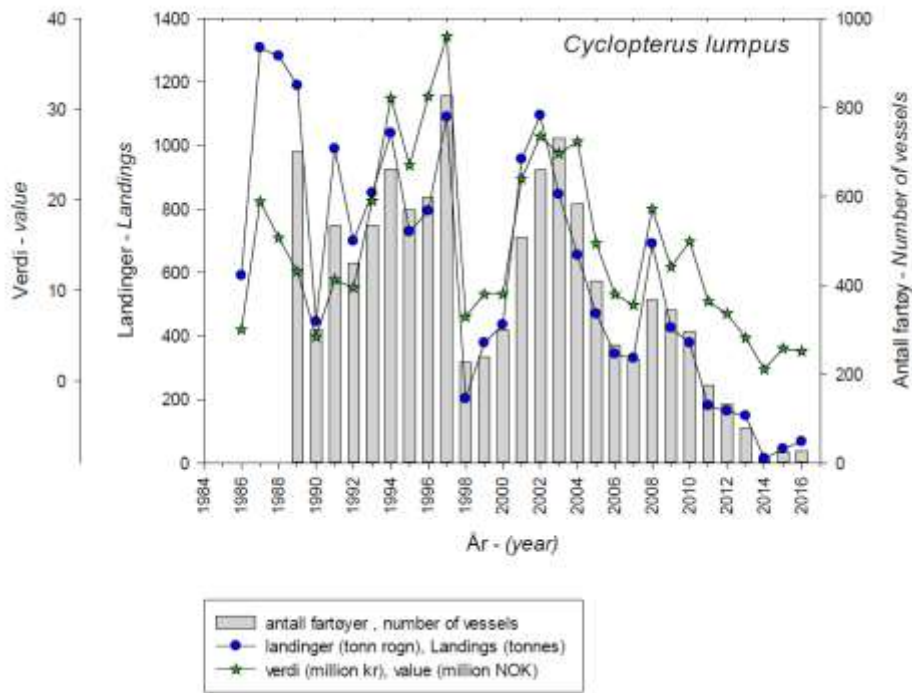


Figure 19 Lumpfish in Norwegian fleet. From Durif (2016)

There is no formal reference points defined for the Norwegian lumpfish stock. The advice is based on trend analysis of the survey data series in particular the Norwegian 0-group survey. This survey suggests that the biomass has varied around a general mean since the mid 2000s. PRI and MSY reference points have not been defined but general indications are that the MSY and PRI reference points would correspond to exploitation rates in the range 10-30%, Hedeholm et al (2014). The current estimate of the harvest rate¹⁸ is around 1%, Durif (2016).

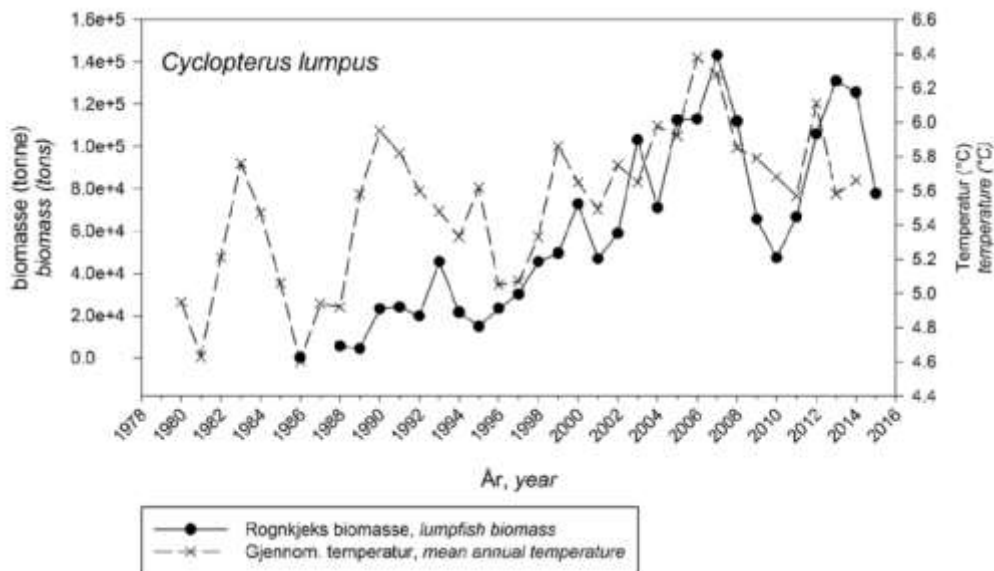


Figure 20 Biomass of lumpfish caught in the Norwegian 0-group survey together with mean temperatures recorded at the Fugleøya and Bjørnøya section at 50-200 m depth. From Durif (2016) Figure 3

¹⁸ Calculated as the swept area female (20 cm+) biomass estimated in the IESSNS summer survey and the removal (based on roe) in the Norwegian fishery



Figure 21 International Ecosystem Survey, IESSNS, (Norwegian data) Lumpfish biomass estimates (swept area). Source Durif (2016) Figure 6

There is thus an assessment available based on annual surveys, catch statistics are detailed and accurate, there is advice from IMR, a management strategy as laid down in the Norwegian fisheries law and a generally accepted harvest control rule based on the IMR advice. However, there is no explicitly defined reference point neither for protection against recruitment impairment or MSY yield.

5 Principle Two: Ecosystem Background

The fishery under assessment takes place the northern North Sea, North East Atlantic and Barents Sea, as can be seen from the 2014 VMS plots for both Ling and Tusk in Figure 3 and Figure 4 in Section 3.2.3 (Location of the fishery). In order to place this into context, Figure 22 shows the eco-regions as defined by ICES

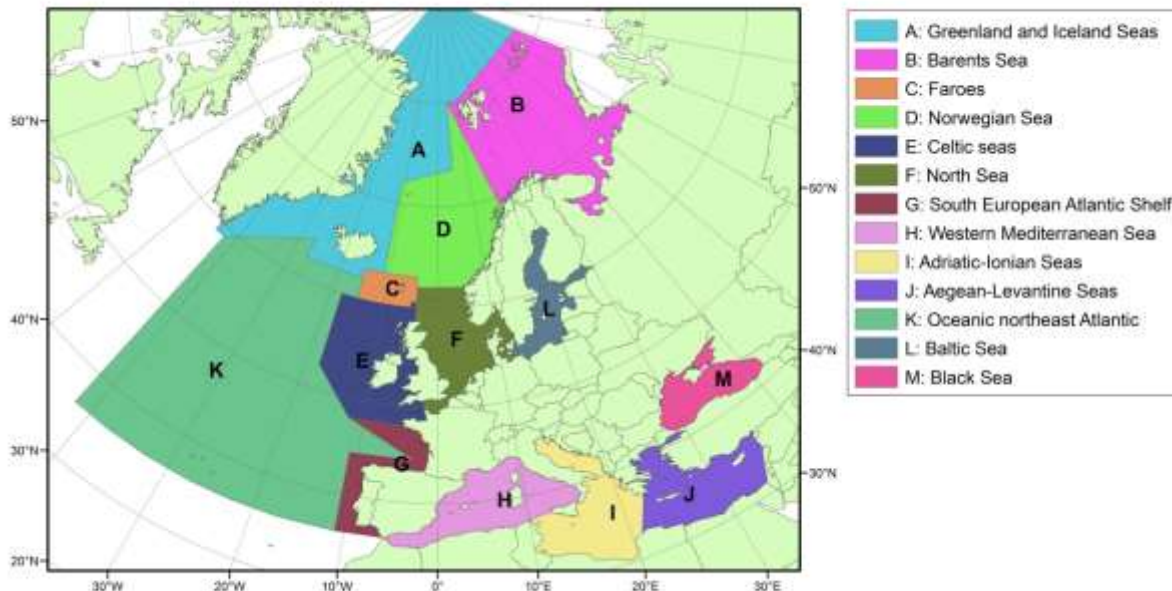


Figure 22 Eco-regions as delineated by ICES (NB The eco-regions are based on biogeographic and oceanographic features and existing political, social, economic and management divisions). (Source: ices.dk/SiteCollectionImages/advice/Ecoregions_incl_legend_WEB)

5.1 Description of the Ecosystem – North Sea and Norwegian Sea

The North Sea comprises a shallow basin between Great Britain and continental Europe. The northern boundary to the North Sea is marked by the slope of the continental shelf, which also forms the southern boundary to the deeper water of the Norwegian Sea which extends northwards along the west coast of Norway. The Norwegian ling and tusk fishery takes place in the northern part of the North Sea and along the shelf waters of the Norwegian Sea – as well as further West and North.

Water temperature is affected by the dominant water currents in the region (Figure 23), whereby the warmer Norway Current is an extension of the Gulf Stream – North Atlantic Drift. This current sweeps in from the south-west and northwards through the Norwegian Sea and into the Arctic. Every second about 8 million tonnes of warm Atlantic water enters the Norwegian Sea (to put this into context - this is about eight times the sum of the global river discharge (Ottersen et al., 2009)¹⁹). It is this warm water which maintains the relatively mild climate in northern Europe. The Atlantic water in the Norwegian Sea has been unusually warm and salty since the turn of the century, with record-high temperature in 2007, since when levels have dropped back to a more normal level (Mork, 2009)²⁰.

¹⁹ http://www.imr.no/filarkiv/havets_ressurser_og_miljo_2009/2.1_introduksjon-okosystem_Norskehavet.pdf/nb-no

²⁰ http://www.imr.no/filarkiv/havets_ressurser_og_miljo_2009/2.2_abiotiske_faktorer.pdf/nb-no

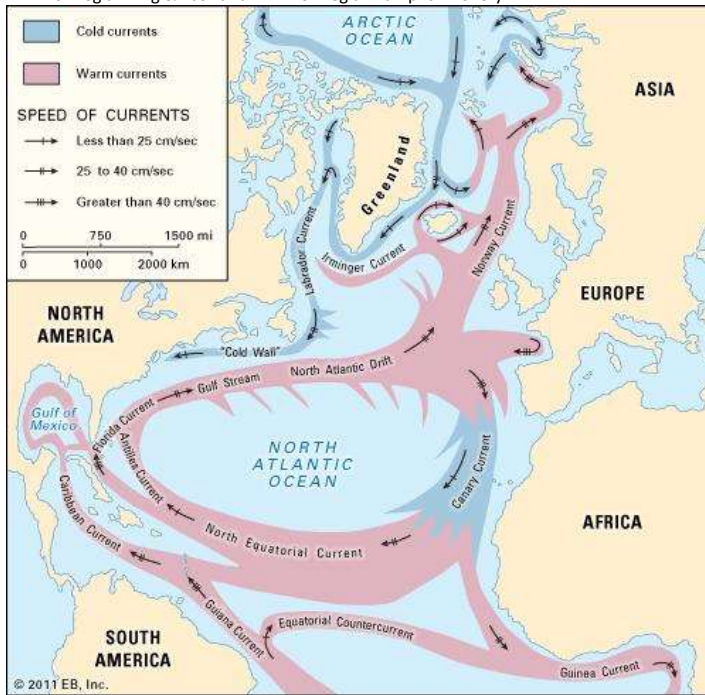


Figure 23 Distribution of cold and warm ocean currents in the assessment area (Source: www.britannica.com/place/Norway-Current)

The ecosystem in the Norwegian Sea has a relatively low biodiversity, but the food chain is productive and some species occur in very high numbers (Ottersen et al., 2009). The great basins are dominated by deep-sea fauna while there are deep-sea coral reefs which act as keystone habitats for a diverse associated community of invertebrate and fish species. There is intense primary production during the spring bloom, which supports a high zooplankton biomass but recent biomass is the lowest since the measurements started in 1997. Plankton organisms uncommon to the Norwegian Sea are entering the area at an increasing rate. The warm-temperate copepod *Calanus helgolandicus* appears to be displacing the normal Norwegian Sea copepod *C. finmarchicus*, and at times is the dominant species along the south-western coast of Norway. This change might have a detrimental effect on spring-spawning fish stocks if the fish larvae experience a reduction in their favoured food supply, i.e. larvae of *C. finmarchicus* (Rey, 2009).²¹

5.2 Description of the Ecosystem – Barents Sea

The Barents Sea is a sub-Arctic ecosystem located between 70 and 80°N. It connects with the Norwegian Sea to the west and the Arctic Ocean to the north. The average depth is 230 m and the maximum depth is approximately 500 m at the western entrance. The general pattern of circulation is strongly influenced by this topography, and is characterised by inflow of relatively warm Atlantic water, and coastal water from the west. There is large inter-annual variability in ocean climate related to variable strength of the Atlantic water inflow and exchange of cold Arctic water. Ice cover has a strong seasonal and inter-annual variation, ranging from almost ice free conditions to cover more than half the sea. Thus, seasonal variations in hydrographic conditions can be quite large. In addition, there is an eastward coastal current along the Norwegian and Russian coastline, characterized by lower salinity and variable temperature. The recruitment of the Barents Sea fish species has shown a large year-to-year variability. The most important reasons for this variability are variations in the spawning biomass, hydrographic conditions, changes in circulation pattern, food availability and predator abundance and distribution.

²¹www.imr.no/filarkiv/havets_ressurser/og_miljo_2009/2.3_primaer_sekundaerproduksjon.pdf/nb-no

Climate has an important effect on the amount of energy entering the system, both directly through affecting the production and indirectly through affecting the inflow to the Barents Sea. Climate variability also impacts fish stocks by altering recruitment, growth and migration patterns. The formation, melt and retreat of sea-ice in the Barents Sea provide physical conditions that influence the structure and function of pelagic and benthic communities. Due to high temperatures and the extreme minimum in sea-ice extent in recent years, ice cover is expected to remain well below the long-term average (BarentsPortal, 2016)²².

Seasonal primary production is governed by nutrients and light, which again are modified by ice cover and vertical mixing of the water column. The Barents Sea is a high-latitude sea, characterized by increasing hours of daylight towards summer and decreasing hours of daylight towards winter. The length of daylight is also determined by latitude and hence modifies the length of the growing season of the primary production in the north-south axis.

ICES describes the Barents Sea, which also incorporates ICES fishing area IIa,b) as one of the most productive and commercially important ecosystems in the world (ICES AFWG, 2014)²³, although the ecosystem is relatively simple with few fish species of potentially high abundance. These are primarily Northeast Arctic cod, haddock, Barents Sea capelin, polar cod and immature Norwegian Spring-Spawning herring. In recent years, there has also been an increase of blue whiting and mackerel migrating into the Barents Sea.

An overview of the Barents Sea is available at: www.barentsportal.com/barentsportal09/. In addition, an annual ecosystem report is produced each year by scientists based at IMR (Norway) and PINRO, which provides a thorough overview of the ecosystem and seeks to provide the managing authorities with scientific advice in order to enable optimal management decisions regarding the long term utilization of the resources in the Barents Sea area. A recent report includes the Joint IMR / PINRO State of the Barents Sea Ecosystem Report (McBride et al., 2014)²⁴, and ICES (AFWG Report 2014, Section 01 Ecosystem considerations).

Key features of the Barents Sea ecosystem may be summarized as follows (McBride et al., 2014):

- » High productivity and biodiversity associated with polar front, sea ice edge, and continental slope;
- » Relatively pollution free;
- » Large inter-annual variations in productivity related to variations in the inflow of Atlantic water and/or other oceanographic changes;
- » More than 2,500 benthic invertebrate species recorded, with decreasing biodiversity from West to East;
- » Benthos composition highly variable dependent on overlying (Arctic or Atlantic) water;
- » Knowledge of distribution of benthic animals improving through regular joint Russian – Norwegian surveys (Jacobson & Ozhigin, 2011).²⁵

²² <http://barentsportal.com>

²³ AFWG Report 2014, Section 01 Ecosystem considerations

²⁴ McBride, M. M., Filin, A., Titov, O., and Stiansen, J. E. (Eds.) 2014. IMR/PINRO update of the "Joint Norwegian-Russian environmental status report on the Barents Sea Ecosystem" giving the current situation for climate, phytoplankton, zooplankton, fish, and fisheries during 2012-13. IMR/PINRO Joint Report Series 2014(1), 64 pp. ISSN 1502-8828.

²⁵ Jakobsen T., Ozhigin V., 2011. The Barents Sea, ecosystem, resources, management. Half a century of Russian – Norwegian Co-operation. PINRO/ IMR. Tapir Academic Press, ISBN 978-82-519-2545-7

- » Sea bottom dominated by sponges in certain areas;
- » Deep water coral reefs along the Norwegian coast including the Røst Reef, the world's largest coldwater coral reef, located off Lofoten;
- » Relatively short and simple food chains, but complex relationships/feedback between major fish species (cod, haddock, herring, capelin and polar cod) with predator-prey relationships shifting according to opportunity and life cycle stage;
- » Capelin is a key species serving as major predator of zooplankton and major prey species of other fish, birds and mammals. It has suffered three major collapses in the last 25 years, though the causes are poorly understood;
- » Important nursery areas for Norwegian spring spawning herring;
- » Average water temperature in Barents Sea during 2012 was considerably higher than in 2011, and also higher than the long-term average (McBride et al., 2014); Cooling favours capelin; warming favours cod and herring;
- » Presence of several alien species, including the introduced Red king crab;
- » Highly concentrated fishing pressure based on known movement and aggregation of cod and haddock;
- » Summer population of around 20-25 million seabirds (more than 40 species) that harvest approximately 1.2 million tonnes of biomass annually. Main concentrations of breeding seabirds (more than 80%) are located on the Norwegian mainland, Novaya Zemlya and Svalbard. However there has been a decline in seabird numbers over the last decade.
- » Seabirds play a significant role in transferring nutrients from sea to land and from North to South
- » Significant marine mammal populations (minke, humpback and fin whale (which breed further south and forage in the sea) beluga and narwhal (which breed in the area), harp, common, grey, bearded, hooded and ringed seals;
- » Minke whale, and some seal species are hunted and subject to a quota;
- » Gas and oil activities are increasing with drop in extent of sea ice.

The first meeting of the ICES working group on integrated assessments of the Barents Sea concluded the following (ICES, 2014a)²⁶:

- An analysis including time-series from 1986–2013 showed that the last 8–10 years have been exceptional. This is related to warming and reduced ice, and increased bio-mass of several, mostly boreal species

²⁶ ICES. 2014. First Interim Report of the Working Group on Integrated Assessments of the Barents Sea (WGIBAR), 24-28 March 2014, Kirkenes, Norway. ICES CM 2014/SSGRSP:04. 68 pp.

- The **ocean temperature** was higher than normal. The surface waters were extremely warm: The deeper layers were warmer than normal but colder than 2012. The **ice coverage** was lower than normal but higher than in 2012.
- Biomass of **meso-zooplankton** was the highest in the northeast. The biomass in the western/central BS in 2013 was the lowest since the early 1990s. Biomass of **krill** was higher than the long-term mean.
- The **shrimp** stock has increased since the 1990s. The shrimp distribution has shifted towards the northeast during the last ten years.
- The cumulative **biomass of pelagic fish** has been consistently high since 2008. The 2013 year class of **capelin** appear average. The biomass was ~10% higher than in 2012 and higher than the long-term mean. The mature stock was considerably lower than in 2012, likely due to poor feeding conditions reducing growth and maturation.
- The cumulative **biomass of demersal fish** is the highest on record. **Cod** has never been recorded further north than in 2012 and 2013
- **Haddock** reached record levels in 2009–2012, declined in 2013, but is still at a high level.

Although the **fishing pressure** is much lower, **landings** in recent years are as high as in the 1970s (exception: 1976–77). **Fishing activity** has moved north along with the stocks, but not to the same extent.

5.3 Primary and Secondary Species

Catch composition data provided by the client was used to separate the species into Primary or Secondary species, as well as ETP species.

Primary species are those which are managed (CR v2 GSA3.1), i.e. species of commercial value with management tools controlling exploitation. Furthermore, Primary species are divided into 'main' and 'minor' groups. 'Main' are those species where the catch of that species comprises 5% or more by weight of the total catch of all species by the UoA; it is also 'Main' if the species is classified as 'less resilient' and the catch of that species comprises 2% or more by weight of the total catch of all species. Therefore it is important that the total catch of all species by the UoA is known. All other primary species not considered 'main' shall be considered 'minor' species.

Secondary species include fish that are not managed according to reference points and all species that are out of scope of the standard (birds/ mammals/ reptiles/ amphibians – Table GSA 2 MSC CR v2)). These 'out of scope' species, if they are not ETPs, are considered 'main' (whereby percentage thresholds apply – see SA3.4.1-5), unless they can be released alive (SA3.4.3). Once that has been established, all other Secondary species within scope are assessed as to whether they are 'main' (catch percentage thresholds apply) or not.

5.3.1 Ling and tusk fishery

The by-catches in the tusk and ling fisheries (long-line and gillnet are shown in

Acoura Marine
Public Certification Report
NFA Norwegian Ling & Tusk and NFA Norwegian Lumpfish Fishery



Figure 24 By-catches (kg) in the tusk and ling fisheries (long-line and gillnet) 2014-2016. Source Norges Fiskerilag

Table 13 Ling and Tusk fishery catch composition (in percentage), for 2014-2016. The fishery takes place over a wide range I-II+Vb, VI Source: Fiskeridirektoratet, 2017 – spreadsheet data via client

Species	Gillnet	Long-line	Primary Secondary	Main/ Minor
Ling	65.25	39.95	Target	
Tusk	11.82	41.80	Target	
Cod	4.28	4.79	Primary	Minor
Haddock	1.97	4.04	Primary	Minor
Saithe	6.77	2.49	Primary	Main
Redfish	4.29	0.88	Primary ²⁷	Minor – LL Main - GN
Atlantic halibut	0.25	1.09	Secondary	Minor
Skates and rays	0.02	1.07	ETP ²⁸	
Greenland halibut	1.01	0.61	Primary	Minor
Blue ling	0.77	0.59	Secondary	Minor
Pollack	1.96	0.13	Secondary	Minor
Other deepwater fish	0.00	0.47		
Wolffish	0.05	0.40	Secondary	Minor
Monkfish/Anglerfish	0.60	0.08	Secondary	Minor
Hake	0.36	0.05	Primary	Minor
Spurdog	0.19	0.02	ETP	

²⁷ *Sebastes norvegicus* is on the Norway Red List.

²⁸ *D. batis* is on the Norway Red List, but recording was not to species level.

Species	Gillnet	Long-line	Primary Secondary	Main/ Minor
Whiting ²⁹	0.02	0.02	Primary	Minor
Porbeagle	0.02	0.00	ETP	
Not Elsewhere Identified fish	0.36	1.52		
Bait: mackerel		See 5.3.3	Primary	Minor
Bait: herring		See 5.3.3	Primary	Minor

Table 13 shows that Saithe is the only 'main' Primary species. There is no 'main' Secondary species in the gillnet/longline fishery. There are no main Primary or Secondary species in the pots fishery for tusk, Table 14.

Table 14 Pots and traps tusk fishery catch composition (in kg), from 2014-2016. The fishery takes place along the coast of Norway. Source: Fiskeridirektoratet, 2017 – spreadsheet data via client

Species	2014	2015	2016	Total	%	Primary/ Secondary	Main/ Minor
Tusk	72528	77252	65489	215268	91.77	Target	
Ling	3096	1526	2544	7166	3.05	Primary	Minor
Nephrops	1657	653	777	3086	1.32	Primary	Minor
Cod	1071	878	155	2104	0.90	Primary	Minor
Atlantic halibut	326	784	292	1402	0.60	Secondary	Minor
King crab	82	279	945	1306	0.56	Primary	Minor
Anglerfish (=Monkfish)	501	312	103	916	0.39	Secondary	Minor
Unspecified fishes	160	14	712	887	0.38		
Blue ling	174	151	247	572	0.24	Secondary	Minor
Saithe	362	53	19	434	0.18	Primary	Minor
Haddock	76	215	8	299	0.13	Primary	Minor
Skates and rays	44	161	45	250	0.11	ETP	
Pollack (<i>Pollachius pollachius</i>)	29	148	5	182	0.08	Secondary	Minor
Greenland halibut	8	170	0	179	0.08	Primary	Minor
Catfishes ³⁰	9	164	5	178	0.08	Secondary	Minor
Redfish	12	113	0	125	0.05	Primary	Minor
Spurdog	84	0	2	85	0.04	ETP	
Lobster	45	0	28	73	0.03	Primary	Minor
Hake	8	0	36	44	0.02	Primary	Minor
Crab ³¹	4	0	3	7	0.00		
Other demersal fishes	0	0	7	7	0.00		
Other deepwater fishes	6	0	0	6	0.00		
Plaice	3	0	0	3	0.00	Primary	Minor
Other flatfishes	3	0	0	3	0.00		
Lemon sole	1	0	0	1	0.00	Secondary	Minor
Other shellfish and molluscs	0	0	1	1	0.00		
Sole	0	1	0	1	0.00	Primary	Minor

²⁹ Whiting in VIa (West of Scotland) is subject to a full assessment (primary). There is little whiting catch outside this area except on VIb (Rockall) for which there is no assessment (secondary)

³⁰ Catfish here is probably Atlantic Wolffish, *Anarhichas lupus*.

³¹ No species defined

Species	2014	2015	2016	Total	%	Primary/ Secondary	Main/ Minor
Dab	1	0	0	1	0.00	Secondary	Minor
Grand Total	80288	82873	71421	234583	100.00		
Bait: Mackerel					See 5.3.3	Primary	Minor
Bait: Herring					See 5.3.3	Primary	Minor

Table 15 reviews the availability of ICES advice for these Primary 'main' and 'minor' species. 'Redfish' has been considered as 'main' in the gillnet fishery. The gillnet catch ratio is 4.29% and therefore well above 2% and both species of redfish (which are inseparable in the catch) should be categorized as "less resilient". Fishbase attest both species very low resilience and high vulnerability, and both species score low/medium on productivity. There is advice for nearly all the by-catch species (including 'minor') on the basis of attaining MSY and protection against recruitment failure although there are no explicit reference points defined for several of the stocks. However, the ICES advisory practise includes a reference point definition based on experience with the stock dynamics, often this point is the TAC for 2012 reduced by 20%.

Table 15 ICES Advice for Primary 'main' and 'minor' species, ling/tusk and lumpfish fishery (Source: ICES.org; shaded areas indicate possible scoring issues)

Species	Assessment Unit ICES Area	B _{lim}	MSY	Advisory Category	Stock status	ICES Advice Year/ section
Saithe <i>Pollachius virens</i>	I + II	Yes	Yes	Analytical Assessment	Harvested sustainably Full reproductive capacity	June 2016/ 3.3.9 (ICES, 2016b) ³²
	IV + VI	Yes	Yes	Analytical Assessment	Fished around F _{MSY} . Full reproductive capacity; SSB _{MGT} within the range	Nov 2016/ 6.3.38 (ICES, 2016c) ³³
Cod <i>Gadus morhua</i>	I + II Coastal stock	N/A	N/A	Trend based on survey results	Stock depleted, some increase in spawning stock biomass (SSB) to 2014, now decreasing.	June 2016/ 3.3.3 (ICES< 2016d)
	I + II	Yes	Yes	Analytical assessment	Stock high. F above F _{MSY} ; Full reproductive capacity	June 2016/ 3.3.2 (ICES, 2016e) ³⁴
	IIIa+IV+VIId	Yes	Yes	Analytical assessment	Fished above F Reference points, Stock above B _{trigger} , and at full reproductive capacity	Nov 2016/ 6.3.3 (ICES, 2016f)
	VIa	Yes	Yes	Analytical assessment	Harvest unsustainable	June 2015 5.3.7 (ICES, 2015b) ³⁵
	VIb	N/A	N/A	Catch trends	Stock may be depleted	June 2015/ 5.3.8 (ICES, 20105c)

³² <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/sai-arct.pdf>

³³ http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/sai-3a46_reopen.pdf

³⁴ <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/cod-arct.pdf>

³⁵ <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/cod-scov.pdf>

Haddock <i>Melanogrammus aeglefinus</i>	I + II	Yes	Yes	Analytical assessment	Fished below MSY; full reproductive capacity	June 2016/ 3.3.5 (ICES< 2016g)
	IV-VIa-IIIaW (Skagerrak)	Yes	Yes	Analytical assessment	Harvested unsustainably; fished above F_{MSY} ; stock size below $MSY B_{trigger}$	Nov 2016/ 6.3.16 (ICES, 2016h)
	VIb	Yes	Yes	Analytical assessment	Fished at F_{MSY} ; full reproductive capacity	June 2016/ 5.3.28 (ICES, 2016i) ³⁶
Golden redfish ³⁷ <i>Sebastes norvegicus</i>	I + II	No reference points defined for this stock		Analytical assessment	Depleted; no directed fishing	June 2016/ 3.3.8 (ICES, 2016j) ³⁸
	V, VI, XII, XIV	Yes	Yes	Analytical assessment	Harvested sustainably; full reproductive capacity.	June 2016/ 2.3.14 (ICES, 2016k) ³⁹
Deep water redfish <i>Sebastes mentella</i>	I + II	N/A	N/A	Analytical assessment	Fishing pressure is below any relevant reference point	June 2014/ 3.3.6 (ICES, 2014b) ⁴⁰
Greenland halibut <i>Reinhardtius hippoglossoides</i>	I + II	Yes	N/A	Analytical assessment	Full reproductive capacity	Sept 2015/ 3.3.7 (ICES, 2014c) ⁴¹
	V+VI+XII+XIV	Yes	Yes	Analytical assessment	Stock size above $MSY B_{trigger}$; stock at full reproductive capacity; F above MSY – increased risk	June 2016 2.3.6 (ICES, 2016l)
European hake <i>Merluccius merluccius</i>	IV, VI, VII, and Divisions IIIa, VIIIa,b,d	Yes	Yes	Analytical assessment	Harvested sustainably; full reproductive capacity	June 2016/ 9.3.32 ⁴²
Whiting <i>Merlangius merlangus</i>	VIa	Yes	Yes	Analytical assessment	SSB is below $MSY B_{trigger}$; F is below F_{MSY} ; The stock is at reduced reproductive capacity; advice is that there should be no catch	June 2016/ 5.3.65 (ICES, 2016n)
	VIb	N/A	N/A	No assessment (ICES category 6.2.0)	It is unlikely that there is a self - sustaining population of whiting at Rockall.	June 2015/ 5.3.63 (ICES, 2015b)
Mackerel <i>Scomber scombrus</i>	NE Atlantic I – VII and XIV	Yes	Yes	Analytical assessment	Harvested sustainably At full reproductive capacity	January 2017/ 9.3.39 (ICES 2017 ⁴³)
Herring	IV Division 3a and 7d	Yes	Yes	Analytical assessment	Harvested sustainably, At full reproductive capacity	May 2017 ICES 2017 ⁴⁴
Plaice <i>Pleuronectes platessa</i>	IV, Sub-division IIIa,20	Yes	Yes	Analytical assessment	The stock is harvested sustainably; it is at full reproductive capacity	June 2016/ 6.3.36 (ICES, 2016o)

³⁶ <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/had-rock.pdf>

³⁷ Note: the catch composition data does not distinguish between the different redfish species

³⁸ <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/smr-arct.pdf>

³⁹ <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/smr-5614.pdf>

⁴⁰ <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/smn-arct.pdf>

⁴¹ <http://ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/ghl-arct.pdf>

⁴² <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/hke-nrtn.pdf>

⁴³ <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/mac-nea.pdf>

⁴⁴ <http://ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/her.27.3a47d.pdf>

Sole <i>Solea solea</i>	Subdivision IIIa	Yes	Yes	Analytical assessment	The stock is harvested sustainably; SSB is below MSY Btrigger and considered at increased risk	June 2016/ 6.3.46 (ICES 2016)
	IV	Yes	Yes	Analytical assessment	The stock is harvested sustainably; full reproductive capacity	Nov 2016/ 6.3.49 (ICES 2016)
Norway lobster <i>Nephrops norvegicus</i>	Subdivision IIIa	N/A	N/A	Underwater TV survey linked to yield-per-recruit analysis from length data; surveys 2011-2014	Fishing pressure, F_{MSY} is considered appropriate; no defined reference points	Nov 2016/ 6.3.23 (ICES 2016) ⁴⁵
	IVa	N/A	N/A	UWTV survey incomplete	Stock reference points are undefined, a TAC is set for this fishery;	Nov 2016/ 6.3.25 (ICES 2016) ⁴⁶
King Crab <i>Paralithodes camtschaticus</i>	I + II	N/A	N/A	2 annual cruises in quota regulated area ; analysis using compound production model	Managed to maintain long-term commercial harvest within a limited geographical area; outside that area harvested to limit further spread.	ICES 2017, WGCRA ⁴⁷
Starry ray	II+IV+IIIa	N/A	N/A		Managed to protect	Oct 2016 6.3.50

5.3.2 Lumpfish

The catch profile for lumpfish for the most recent 5 years is given in Table 16, and Table 17 gives the species names in Latin, based on FAO tables. From the catch profile it can be seen that cod is the only a Primary main species

⁴⁵ ICES . 2016b. Advice basis. In Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 1, Section 1.2.

http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/Introduction_to_advice_2016.pdf

⁴⁶ ICES . 2016b. Advice basis. In Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 1, Section 1.2.

http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/Introduction_to_advice_2016.pdf; and ICES Nov 2016, Section 6.3.25 Norway lobster (*Nephrops norvegicus*) in Division 4.a, Functional Unit10 (northern North Sea, Noup)

⁴⁷ ICES. 2017. Report of the Working Group on the Biology and Life History of Crabs (WGCRA), 1–3 November 2016, Aberdeen, Scotland, UK. ICES CM 2016/SSGEPD:10. 78 pp.

Table 16 Catch profile for lumpfish for the last five fishing years (2012-16) (kg)

	2012	2013	2014	2015	2016	%catch 2012- 16	Primary Secondary	Main/minor
Lumpfish (female based on roe)	974,050	1,026,597	92,199	349,785	436,625	94.97	Target	
Cod	40,482	11,081	848	26,104	4,163	2.73	Primary	Minor
Saithe	13,113	2,637	0	11,561	138	0.91	Primary	Minor
Atlantic Halibut	7,138	2,904	106	1,870	4,053	0.53	Secondary	Minor
Monkfish/ Anglerfish	1,486	246	6	494	377	0.09	Secondary	Minor
Plaice	2,324	854	215	210	1,532	0.17	Primary	Minor
Haddock	3,600	316	0	2,225	10	0.20	Primary	Minor
Redfish	268	178	0	2,754	420	0.12	Primary	Minor
Greenland Halibut	0	0	0	5	0	0.00	Primary	Minor
Atlantic Wolffish	645	347	21	215	534	0.06	Secondary	Minor
Red King crab (male)	1,720	0	0	0	0	0.06	Secondary	Minor
Tusk	736	484	0	141	252	0.05	Primary	Minor
Ling	221	6	0	762	144	0.04	Primary	Minor
Assorted flounders	84	253	0	0	0	0.01	Secondary	Minor
Pollack	82	5	0	310	65	0.02	Secondary	Minor
Lumpfish (male)	0	0	0	550	484	0.03	Target (?)	Minor
Witch flounder	0	0	0	399	0	0.01	Secondary	Minor
Dogfish	5	7	0	0		0.00	ETP	
Turbot	55	19	0	0	53	0.00	Secondary	Minor
Spotted Wolffish	22	48	0	0	74	0.00	Secondary	Minor
Lemon sole	62	0	0	0	0	0.00	Secondary	Minor
Total	1,046,092	1,045,982	93,394	397,385	448,922	100.00		

Table 17 Lumpfish catch profile fish species names, common, local and Latin names

Common Name	Local Name	Scientific Name
Assorted Flounders	Flyndre	<i>Platichthys flesus</i>
Atlantic Cod	Torsk	<i>Gadus morhua</i>
Atlantic Halibut	Kveite	<i>Hippoglossus hippoglossus</i>
Atlantic Wolffish	Gråsteinbit	<i>Anarhichas lupus</i>
Common Dab	Sandflyndre	<i>Limanda limanda</i>
Dogfish	Pigghå	<i>Squalus acanthias</i> (?)
Greenland Halibut	Blåkveite	<i>Reinhardtius hippoglossoides</i>
Haddock	Hyse	<i>Melanogrammus aeglefinus</i>
Lemon Sole	Lomre	<i>Microstomus kitt</i>
Ling	Kvitlange	<i>Molva molva</i>
Lumpfish	Rognkjeks	<i>Cyclopterus lumpus</i>
Monkfish/Anglerfish	Breiflabb	<i>Lophius piscatorius</i>
Plaice	Rødspette	<i>Pleuronectes platessa</i>
Pollack	Lyr	<i>Pollachius pollachius</i>
Red King Crab - male	Kamsjatka - Han	<i>Paralithodes camtschaticus</i>
		<i>Sebastes mentella</i> / <i>S. norvegicus</i>
Redfish	Uer	<i>/S. viviparus</i>
Saithe	Sei	<i>Pollachius virens</i>

Skate Wings	Skatevinger	<i>Amblyraja radiata</i> / <i>Raja batis</i>
Spotted Wolffish	Flekksteinbit	(?)not identified
Turbot	Piggvar	<i>Anarhichas minor</i>
Tusk	Brosme	<i>Psetta maxima</i>
Witch Flounder	Smørflyndre	<i>Brosme brosme</i>
		<i>Glyptocephalus cynoglossus</i>

From Table 16 it can be seen that there are no 'main' Primary and Secondary species in the lumpfish fishery bycatch, as none of the species caught either meets the 5% or 2% threshold. The mesh size of the gill net is 267mm, thus selectivity is high.

5.3.3 Bait

The bait used for the longline ling and tusk fishery, and pots/traps tusk fishery is mackerel, herring and squid all purchased, rather than self-caught. Mackerel and herring are assessed under Primary species. The exact amount of bait used was not available per target species, but will be less than 5% of the total longline catch, and hence a Primary minor species.

The client provided a table for bait consumption in 2016 of all longliners for all species (not just ling and tusk fishery), as well as the consumption of bait for all pot/trap fisheries fishing for all species. According to catch statistics in 2016 provided by the client ling/tusk accounted for approx. 18 % of longline catches, and ling/tusk accounted for less than 0,4 % of pot/trap catches. The relevant bait species and amounts (in kg) are (taken directly from Client information 15th August 2017):

Bait species	Longliners MT all species (of which ling/tusk accounts for approx 18 % of fishery)	Pots/traps MT all species (which is mainly crab fishing in Barents Sea. Pot fishing for ling/tusk accounts for less than 0,4 %)
Herring	1227	1884
Mackerel	1788	3
Squid (<i>Illex argentinus</i>)	2814	1361

According to information received from the client, the actual bait used in the tusk pot/trap fishery is herring and mackerel. Mackerel and herring is also the most popular bait in the ling/tusk fisheries, but squid is also used here. All herring is from the Norwegian MSC certified herring fisheries (rough estimate is that 1/3 is from the North Sea and Skagerrak fishery and 2/3 from the spring spawning herring fishery (Client, Aug 2017) Squid is all *Illex argentinus*. It is caught in Argentinean EEZ, the Falkland islands conservation zone and to some extent in international waters. Vessels are mostly east-asian (Taiwan, Korea, Japan) jiggers under Argentinean/Falklands licencing. Management is under Argentina and Falklands/UK and is under the SAFC. Mackerel is from the MSC certified MINSA fishery.

5.4 Endangered, Threatened and Protected Species

These are species recognised by national legislation (Table 18) and/or binding international agreements to which the jurisdictions controlling the fishery under assessment are party. Species listed under Appendix I of CITES shall also be considered ETP species for the purposes of the MSC assessment, as well as those listed under

ASCOBANS (Agreement on the Conservation of small cetaceans of the Baltic and North Sea), for example. It also includes species classified as 'out-of scope' (amphibians, reptiles, birds and mammals) that are listed in the IUCN Redlist as vulnerable (VU), endangered (EN) or critically endangered (CE).

The catch composition of the longline, gillnet and lumpfish fisheries have shown that a number of ETP species are caught, which are described in detail here.

Table 18 Norwegian Redlist 2015. Marine Species by area. Species in the CITES appendices are included in the Norwegian list. N/R: not relevant in the evaluation of the fishery (NB: Further seabird species are listed in Table 20 below)

Species	Common name	Barents Sea	North Sea	Norwegian Sea	Skagerrak	Category ¹⁾	Ling and Tusk fishery	Lumpfish fishery
<i>Anguilla anguilla</i>	Eel	x	x	x	x	VU	N/R	N/R
<i>Balaena mysticetus</i>	Bowhead whale	x		x		CR	N/R	N/R
<i>Balaenoptera musculus</i>	Blue whale	x		x		VU	N/R	N/R
<i>Boreogadus saida</i>	Polar cod	x				NT	Not reported	N/R
<i>Cetorhinus maximus</i>	Basking shark		x	x	x	EN	Not reported	N/R
<i>Cystophora cristata</i>	Hooded seal			x		EN	Not reported	N/R
<i>Dipturus batis</i>	Common Skate/Blue skate	x	x	x	x	CR	By-catch	N/R
<i>Lamna nasus</i>	Porbeagle		x	x	x	VU	By-catch	N/R
<i>Lophelia pertusa</i>	Cold water coral		x	x		NT	Maybe impacted by Ling and Tusk fisheries	N/R
<i>Molva dypterygia</i>	Blue ling	x	x	x	x	EN	By-catch	N/R
<i>Monodon monoceros</i>	Narwhale	x				EN	N/R	N/R
<i>Mya arenaria</i>	Soft-shell clam		x		x	VU	N/R	N/R
<i>Pusa hispida</i>	Ringed seal	x				VU	Not reported	N/R
<i>Sebastes norvegicus</i>	Golden redfish	x	x	x	x	EN	By-catch	N/R
<i>Sprattus sprattus</i>	Sprat	x	x	x	x	NT	N/R	N/R
<i>Squalus acanthias</i>	Picked dogfish/ Spiny dogfish/ Spurdog	x	x	x	x	EN	By-catch	By-catch
<i>Uria algae</i>	Common guillemot	x	x	x		CR		By-catch

¹⁾ Categories	Norwegian	English
CR	Kritisk Truet	Critically endangered
EN	Stærkt truet	Endangered
VU	Truet	Vulnerable
NT	Nær truet	Near Threatened

Potential by-catches of species which are presented in the Norwegian redlist include blue ling, golden redfish and common skate, as well as porbeagle and dogfish. The fishery is subject to a discard ban in the Norwegian zone and the discard ban is currently being expanded to the EU zone. The gillnet fishery may represent a danger to the shark species in the list i.e. Basking shark, porbeagle, and spurdog. Ringed seal and hooded seal occurs on in the very north of the assessment area (ICES I) and outside the main the main fishing grounds for ling and tusk, see (Figure 3 and Figure 4). Bjørge et al. (2006) reports an interview study that suggests that there is no by-catch of marine mammals in the ling and tusk fisheries.

5.4.1 Fish

Golden Redfish *Sebastes norvegicus*

Golden redfish grow to c. 50 cm in length and are found and fished throughout the North Atlantic at depths of 100–1000 m. It is a very slow-growing, long-lived ovoviviparous species with a late age of maturity, which makes it particularly vulnerable to fishing pressure. There are quota-controlled directed gillnet and longline fisheries and but trawlers do not have quota and can only take it as bycatch. If the number of golden redfish in any haul exceeds 15% the total catch, the vessel must report the catch to the Coastguard and move a minimum of three nautical miles before shooting the trawl again. The Coastguard–Directorate of Fisheries has the option to impose a real-time closed area to protect the species if there are persistent records of golden redfish catches from a particular area (DoF, MFCA pers comm.). All directed fisheries, except handline, are prohibited in the period 20 December–31 July and in September.

The Norwegian stock of golden redfish is subject to an ICES analytical age–length-structured assessment supported by two fishery independent trawl survey abundance indices (ICES, 2012b).

There are neither precautionary nor MSY-based biological reference points. The current fishing mortality is c. 0.3, which is very high compared to the natural mortality of c. 0.05. ICES has concluded that SSB has been decreasing since the 1990s and is currently at the lowest level in the time-series. Fishing mortality has been increasing since 2005 and is currently at the highest level in the time-series. The stock has also been suffering from sustained low recruitment and in the absence of improved recruitment the stock is expected to continue to decline. ICES has recommended a ban on all directed fisheries (WGRED, 2012). ICES advises that when the precautionary approach is applied, there should be zero catch in each of the years 2017, 2018, and 2019 (ICES, 2016p).

There is neither a management nor stock recovery plan. The principal conservation strategy is not to allocate quotas but to minimise bycatch in the trawl fisheries through the move-on and real-time closure measures.

5.4.2 *Elasmobranchs*

According to WGEF (2016)⁴⁸ Norwegian vessels are landing 500-1000 tons of skates annually, but generally do not report which species are caught, how large proportions of the skate catches that are landed, or the species composition of the landed catch. Neither the fishing vessels nor the landing sites are obliged to report skate catch and landings by species, and more than 98% of the landed skates are reported by the generic category "Skates and rays". The rest are landed as either Common skate, Longnosed skate or Thornback ray, but the accuracy of the species identifications is questionable." WGEF (WD2016-07). Gillnet and longline fisheries targeting demersal fish generate the bulk of the chondrichthyan bycatch along the northern coast of Norway (Williams et al. 2008⁴⁹).

Based on data from the Norwegian Reference fleets (in WGEF 2016), the main species landed tend to be larger specimens of *Dipturus oxyrinchus*, *Batyraja spinicauda* and *Raja clavata*. Based on interviews of the Norwegian Reference Fleet and landing sites, the expected discards of skates varies extensively between species and is assumed almost 100% for specimens below 50 cm. For *Rajella fyllae* and *Amblyraja radiata*, nearly all specimens are probably discarded, whereas the discarding of *Raja clavata* by the coastal fleet is expected to be negligible (Albert et al., 2016 WD, in ICES WGEF 2016).

Based on interviews of the Norwegian Reference Fleet and landing sites, the expected discards of skates varied extensively between species and are assumed almost 100% for specimens below 50 cm (ICES WGEF REPORT

⁴⁸ ICES. 2016. Report of the Working Group on Elasmobranch Fishes (WGEF), 15–24 June 2016, Lisbon, Portugal. ICES CM/ACOM:20. 26 pp.

⁴⁹ Williams, Tom, Kristin Helle, and Michaela Aschan. "The distribution of chondrichthyans along the northern coast of Norway." *ICES Journal of Marine Science* 65.7 (2008): 1161-1174.

2016). The estimation of total skate catches and landings by species relied on some strong assumptions due to limited availability of data. There are no TACs for any of the skates in this ecoregion (ICES WGEF REPORT 2016).

Ellis *et al.* (2014 WD in WGEF 2016) provided a review of discard survival studies. Skates taken in coastal fisheries using trawls, longlines, gillnets and tanglenets generally show low at-vessel mortality (Ellis *et al.*, 2008a in WGEF 2016), though it should be noted that the inshore fleet generally have limited soak times and haul durations. Studies for beam trawlers indicate that just over 70% of skates may survive (Depestele *et al.*, 2014 in WGEF 2016).

Thorny skate *Amblyraja radiata*

Amblyraja radiata is the dominant species in the Barents Sea and the Norwegian Sea (ICES I+II). Data for the Barents Sea comprising 96% by number and about 92% by biomass of skates caught in surveys or as bycatch. The next most abundant species are *A. hyperborea* and *R. fyllae* (3% and 2% by number, respectively), and the remaining species are scarce. The catch of Thorny skate is < 0.5 tons in the Norwegian fishery but there is uncertainty if discard occurs (ICES WGEF 2016).

Common skate/ Blue skate *Dipturus batis*

This common or blue skate is the largest European rajid and was once an abundant constituent of the demersal fish community of north-western Europe. It formerly occupied the shelf and slope areas of the NE Atlantic and Mediterranean but now appears to be virtually absent from much of this range. It continues to be caught as bycatch of multispecies trawl fisheries, which cover much of its shelf and slope habitat. Fisheries data indicate that populations of *D. batis* have undergone an extremely high level of depletion in the central part of its range around the British Isles since the early 20th century (the three generation period). It has been extirpated from most inshore areas, but is still caught in Scottish waters, especially around the Shetlands and off North-west Scotland, and also along the shelf edge and in the Celtic Sea. Accurate international species-specific landings data are lacking, although Icelandic landings have declined. French landings appear stable, though this is likely to be attributed to a re-direction of fishing effort from shelf seas into deeper water. The life history and demography of this species allow little capacity to withstand fishery exploitation; its large body size renders it catchable by fishing gears even from birth (Dulvey *et al.*, 2006). As fishing pressure on this species is unlikely to be reduced in the future, it is assessed by IUCN as critically endangered throughout its range.

Individual specimens which are caught must be retained, recorded and landed.

According to WGEF 2016, in the case of the Common skate (*D. batis*-complex): The two species reported as *Dipturus batis* have largely been extirpated from shelf waters. The misidentification of this species, particularly through confusion with other 'longnosed' *Dipturus* species, is likely to hamper data collection and management efforts. Recent genetic research indicated that the species reported as *Dipturus batis* is actually comprised of two large threatened species of *Dipturus* (provisionally *D. cf. flossada* and *D. cf. intermedia*), and that recorded landings of *D. batis* also include Norwegian skate *D. nidarosiensis*, particularly from deepwater fisheries. The implications of these observations are that members of the '*D. batis*' species complex are even more depleted than formerly understood. Since the species reported as *D. batis* take 11 and 20 years to reach maturity, it will likely take decades to see a significant or detectable improvement in status if mortality is minimized. By-catch mortality in fisheries is the key threat to this large-bodied species, which is vulnerable to fisheries long before it is old enough to reproduce (OSPA 2010 in WGEF 2016). Bycatch of this species is highly likely in the UoAs due to their fishing overlap (depth, hard rock substrata etc.) and catches of the species are reported for the reference fleet.

Porbeagle *Lamna nasus*

This is a species of mackerel shark, pelagic-oceanic, widely distributed in cold and temperate waters (1-8°C). It lives between 0-715m depth (FishBase, no date.). IUCN rates it as vulnerable. The stock in the NE Atlantic is well below B_{MSY} and is fished at or above F_{MSY} (ICES WGEF, 2014). In 2007 Norway banned all direct fisheries for porbeagle but bycatch could be landed up to 2011. Since that year, live specimens must be released, whereas dead specimens can be landed, and must be recorded and weighed. In Norway, porbeagle landings have not been remunerated, since 2013, thus discouraging recreational fishery. Porbeagle tends to be taken mainly by gillnetters and longliners; and the main concentration of the population is further south. No EU fishery has been allowed since the implementation of a zero TAC in 2010. However, some limited landings are reported for 2015, as well in the previous five years. The 2016 WGEF estimate is 8t in 2015 and since the zero TAC was implemented, the mean WGEF estimate is 36t per year. However, data since 2010 must be considered as unrepresentative of removals, as dead discards are not quantified. The 2015 advice is valid for 2015–2019, and stated: “ICES advises that when the precautionary approach is applied for porbeagle in the Northeast Atlantic, fishing mortality should be minimized and no targeted fisheries should be permitted” (ICES WGEF, 2016).

Spurdog *Squalus acanthias*

The spurdog (Spiny dogfish *Squalus acanthias*) has a widespread distribution in temperate waters and is at the Northern end of its range in Barents Sea. It is classified as vulnerable by IUCN (Compagno, 1984). This was a very abundant species, but has very low resilience and high to very high vulnerability. The catch in Norwegian waters has halved in the last few years. It is mostly found at 50-200m usually at the bottom but also mid water and surface (ICES WGEF 2014). Directed fishing of spurdog (*Squalus acanthias*) is prohibited in the NEAFC Regulatory Area by vessels flying its flag. Any incidental catches of this stock shall be promptly released unharmed to the extent possible (NEAF, 2017). At the 2010 WG, a working document was presented on the composition of Norwegian elasmobranch catches, which suggested significant numbers of spurdog were discarded (ICES WGEF 2016). Norway has imposed a temporary ban on the commercial fishing of porbeagle, spurdog and basking shark, though landed bycatch may enter trade. In 2014, ICES advised that “*on the basis of the MSY and the precautionary considerations that there should be no target fishery and that bycatch should be minimized. Survival of discards is highly variable. Bycatch should be managed as part of a rebuilding plan, including close monitoring of the stock and fishery*” (ICES WGEF, 2016).

5.4.3 Seabirds

Birds are considered out of scope species and are thus scored as ‘Secondary main’ under the MSC certification requirements, unless they are ETP species. Both longlines and gillnets are known to have by-catch of sea birds.

Several types of interaction with red listed seabirds may take place:

- a. Aggregations of seabirds exploiting fish waste;
- b. Capture of diving seabirds during hauling of nets
- c. Capture or injury to diving seabirds during deployment or recovery of long-lines
- d. Indirect impacts through reduction of food resources.

Seabird populations are monitored under the auspices of the Norwegian nature conservation agency, NINA (Fangel et al., 2016), some 10 million seabirds are present at most times of the year in the

northern North Sea–Norwegian Sea and many interact with the commercial fisheries. Following a review and analysis of a comprehensive array of seabird population data ICES found that only four species showed a sustained long-term decline in abundance: black-backed gulls, great black-back gulls, herring gulls, kittiwakes and skuas. Other species either fluctuated around a longterm mean or showed sustained increase in abundance, most notably lesser black-back gulls and cormorants (ICES, 2013).

A longstanding concern with respect to seabirds and fishing has been estimates of potential mortalities resulting from seabird–fishing-gear interactions (BirdLife, 2012). Estimates have always been difficult to make but reference fleet vessels record seabird–fishing gear interactions (see Table 19) and these data have been subject to review (Bowering *et al.*, 2011). The reference-fleet data indicate that across the fleet, such interactions are not common, but direct interviews with fishermen yielded estimates deaths of 10 000–12 000 birds per year in 2009–10 (Fangel *et al.*, 2011). This is to be compared to the population estimates that in the Norwegian–Barents Seas support one of the largest concentrations of seabirds in the world; more than 20 million seabirds. About 40 species are thought to breed regularly around the northern part of the Norwegian Sea and the Barents Sea. The most typical species belong to the auk and gull families: Brünnich’s guillemot (*Uria lomvia*), 1 750 000 breeding pairs (BP), that prey on polar cod; common guillemots (*Uria aalge*), 140 000 BP; little auk (*Alle alle*), 1.3 million BP; black-legged kittiwake (*Rissa tridactyla*) 850 000 BP; northern fulmar (*Fulmarus glacialis*), 100 000–1 000 000 BP; Atlantic puffin (*Fratercula arctica*), 1 225 000 BP. Northern fulmars, cormorants (*Phalacrocorax* spp.), black guillemots and razorbills are the birds most often drowned in fishing gear in Norway, with the highly specific, targeted inshore gillnet fishery for lumpsucker and the northern longline fishery for Greenland halibut raising particular cause for concern. In total the estimate of seabirds suggest that a total of 10,000 - 12,000 seabirds died in the study fisheries [coastal long line and gillnet fisheries] each year in 2009 and 2010, the lumpfish fishery accounts for about 2,000 birds and that about 2/3 are guillemots apparently particularly vulnerable getting caught in the gillnets of the lumpfish fishery.. The numbers are from Fangel *et al* (2011) The electronic logbook⁵⁰ used by all vessels >15m requires any interactions with seabirds (including ‘zero’ results) be recorded.

Table 19 Seabirds catches (2010) recorded by the Coastal reference-fleet vessels. No seabird catches were recorded by offshore reference-fleet vessel (Bowering *et al.*, 2011).

Seabirds recorded in demersal fishing gear ⁵¹	
Black guillemot	<i>Rissa tridactyla</i>
Black-legged kittiwake	<i>Cepphus grylle</i>
Common eider	<i>Somateria mollissima</i>
Common guillemot	<i>Uria aalge</i>
Cormorants	<i>Phalacrocorax</i> spp
Great black-backed gull	<i>Larus marinus</i>
Northern fulmar	<i>Fulmarus glacialis</i>
Razorbill	<i>Alca torda</i>

Extrapolation from collected data (19 trips observed, 1.6 birds caught per trip) in an earlier study by Fangel *et al* (2015) suggest that the lumpfish fishery could ‘bycatch’ over 3000 birds per year, dominated by guillemots. A follow up study, from 2012-2015 studied 177 trips and recorded a total of 148 seabird bycatch. The tours were distributed in fishing area 03, 04 and 05 (see Figure 5) and the bycatch consisted mostly of black guillemots

⁵⁰ Furthermore, electronic logbooks are also required on vessels <15m fishing in international waters, and vessels >12m fishing in EU waters (Client, pers.com)

⁵¹ The study does not distinguish between the different gears.

(49%) and cormorants (23%; both shag and cormorants). The remaining (28%) divided among various other species, including razorbills, guillemots and eider. This most recent study therefore suggests a bycatch rate of approximately 0.84 birds per trip (data per 2015) but as the effort in the years are low compared to the 2009 - 2010 situation the overall estimate is below the 2-3000 estimate annually. This confirms the perception that the lumpfish fishery has a high bycatch rate of seabirds per trip (Fangel et al 2016), although there is considerable variation in season and proximity to the coast. Primarily affected are adult guillemots (79% of 63 examined birds). A number of seabird species are currently in decline in the south of the Barents Sea, for reasons which are unclear (Strøm et al., 2015). Decline is especially serious in the case of common guillemot and black-legged kittiwake in the Southern Parts of the Barents Sea and Brünnich's guillemot and kittiwake in the north. The long line fisheries are not implicated in this decline, though historic coastal gill-netting may have been a problem.

There are significant monitoring initiatives related to seabirds and it is likely that any emerging and significant negative interactions with fisheries will be flagged up. For example "SEAPOP is a mapping and monitoring programme for seabird populations in Norwegian waters. It focuses particularly on the collection of data that make it possible to model the effects of human activity and distinguish between these and natural variations. This will make it possible to improve the management and protection of seabirds.

The Norwegian Government is committed to intensify mapping and monitoring of seabirds in Norwegian waters, along the coast and in Svalbard and Jan Mayen through the SEAPOP programme" (Ministry of Environment, 2011).

The Landing Obligation currently being phased in under the Common Fisheries Policy has been suggested to have substantial impacts on seabirds, because some species feed extensively on discarded fish. The group developed suggestions for how such impacts could be monitored, focusing on the species and biological aspects most likely to be affected. It is expected that overall the Landing Obligation will benefit the wider marine ecosystem and not seriously undermine seabird communities (ICES, 2016q). Predation from invasive mammals is an important threat to many seabird colonies

Żydelis et al (2013) present a global review of incidental catch of seabirds in gillnet fisheries. They conclude that species suffering potentially significant impacts of gillnet mortality include common guillemot (*Uria aalge*) and thick-billed guillemot (*Uria lomvia*). Also, they conclude that although reports of seabird bycatch in gillnets are relatively numerous, the magnitude of this phenomenon is poorly known for all regions. Further, population modelling to assess effects of gillnet bycatch mortality on seabird populations has rarely been feasible.

The individual species of seabirds which are listed on the Norwegian Red List, and are possibly interacting with the fisheries under assessment are described in detail under ETPs. Although no direct records on birds caught were available from any of the three gears fishery, it is known that both longlines and gillnets have by-catch of sea birds. Anderson et al (2011) notes that for the longline fleet in the Northeast Atlantic (NEA) the main species that is taken is Northern fulmar (*Fulmarus glacialis*).

Considering the location where the gill nets are deployed in the lumpfish fishery, between 10-50m depth anchored at both ends in open areas offshore, there is a greater chance of seabirds getting caught in the net. This has been reported on by Fangel et al (2016) for NINA, whereby several species of diving seabirds have been recorded, including auks, cormorants and wildfowl. No seabirds were recorded by the client fishery, hence the study by Fangel et al (2016) will serve as the primary source of quantitative and qualitative information.

Records show (Fangel et al 2015) that guillemots are particularly vulnerable getting caught in the gillnets of the lumpfish fishery. Extrapolation from collected data (19 trips observed, 1.6 birds caught per trip) in an earlier study by Fangel et al (2015) suggest that the lumpfish fishery could 'bycatch' over 3000 birds per year, dominated by guillemots. A follow up study, from 2012-2015 studied 177 trips and recorded a total of 148 seabird bycatch. The tours were distributed in fishing area 03, 04 and 05 (see Figure 5) and the bycatch consisted mostly of black guillemots (49%) and cormorants (23%; both shag and cormorants). The remaining (28%) divided among various other species, including razorbills, guillemots and eider. This most recent study therefore suggests a bycatch rate of approximately 0.84 birds per trip (data per 2015). This confirms the perception that the lumpfish fishery has a high bycatch rate of seabirds per trip (Fangel et al 2015), although there is considerable variation in season and proximity to the coast. Primarily affected are adult guillemots (79% of 63 examined birds). Fangel et al (2015) conclude that as the population of black guillemots is small in Norway (an estimated 35,000 nesting pairs in Norway) and the species moves least over the year, the population of guillemots in some areas is significantly affected by the lumpfish fishery.

Of the 22 seabird species that have been assessed for the 2015 Red List, 13 have been red-listed in 2015. The common eider is now red-listed for the first time, and several species – razorbill (Red List Status – Svalbard - EN), fulmar (EN), common tern (EN) and Brünnich's guillemot (NT) – have been moved to a higher category of threat since 2010 because the risk of their extinction is considered to be more serious. Factors that may explain the steep decline in seabird numbers are poorer food supplies as a result of fishing pressure from commercial fisheries and climate change, and the large and rising white-tailed eagle population⁵². Table 20 lists those species relevant for this assessment.

Table 20 List of fisheries relevant seabirds as provided in Norway's Red List, 2015 (Source: <http://artsdatabanken.no/Rodliste>)

Species	Common name	Status
<i>Uria aalge</i>	Common guillemot	CR - VU ⁵³
<i>Sterna hirundo</i>	Common tern	EN
<i>Alca torda</i>	Razor bill	EN
<i>Fulmaris glacialis</i>	Northern fulmar	EN
<i>Uria lomvia</i>	Bruennich guillemot	EN

Common guillemot (*Uria aalge*)

The common guillemot is classified as Critically endangered (CR) by the Norwegian 'Artsdatabanken' 2010 and 2015, based on a significant reduction since 1960-70s. This is believed to be caused by a combination of bycatch in the fisheries, oil pollution and reduction in food availability (Norwegian Polar Institute, no date).

The common guillemot is the largest of the extant auk species. The common guillemot is one of the most abundant seabirds in temperate and colder parts of the northern hemisphere, with very large populations in the Atlantic and the Pacific Oceans, and adjacent areas of the Arctic Ocean. In the northeast Atlantic its range extends from Portugal in the south to Svalbard and Novaya Zemlya in the north and includes the Baltic. Bjørnøya is the most important breeding area for the common guillemot in Svalbard and the entire Barents Sea. The common guillemot is a dispersive rather than migratory species with a significant fraction of the adult birds

⁵² <http://www.biodiversity.no/Pages/135386>

⁵³ Note: there seem to be different status, depending on where one looks on the Norwegian sites; <http://www.npolar.no/en/species/common-guillemot.html> (VU); <http://artsdatabanken.no/Rodliste> (CR);

remaining within a few hundred kilometres of the colonies throughout the year. The Svalbard birds probably winter in the southern parts of the Barents Sea and in coastal waters off northern Norway. The birds leave the colonies in late July–early August and return in late March–early May.

The common guillemot is extremely gregarious and colonial breeding is the norm. The colonies can contain many tens of thousands of individuals. Common guillemots nest exclusively in steep cliffs, either on narrow ledges or platforms. In mixed colonies, the common guillemot is usually found on the broadest ledges and plateaus. Breeding success is highest where birds breed at high density or where sites are protected from predators. The Arctic fox, glaucous gull, and great black backed gull are important predators of eggs, chicks and adult birds.

Outside the breeding season, the common guillemot appears in both inshore waters as well as further out to sea. The common guillemot is predominantly piscivorous, preferentially consuming small (max. ca. 200 mm long) schooling fish which it catches underwater. The capelin *Mallotus villosus* is the principal food source for common guillemots on Bjørnøya. The common guillemot can dive to depths of more than 150 metres, but normal feeding depth is probably 20–50 m. The diet suggests that prey is mostly taken in the middle of the water column, rather than being taken from the bottom.

Razorbill *Alca torda*

The razorbill breeds in temperate, boreal and low-arctic coastal regions of the North Atlantic. It nests in rock crevices or behind stones making it extremely difficult to census. It is a colonial seabird that only comes to land in order to breed. This agile bird chooses one partner for life; females lay one egg per year. Razorbills nest along coastal cliffs in enclosed or slightly exposed crevices. The parents spend equal amounts of time incubating. Once the chick has hatched, the parents take turns foraging for their young and sometimes fly long distances before finding prey. Razorbills from Svalbard most likely winter off southwestern Norway and in the Skagerrak. The razorbill usually breeds in association with other sea birds, such as the Brünnich guillemot and the black legged kittiwake.

The diet consists generally of mid-water schooling fish such as capelin, sand lace, juvenile cod, sprats, and herring. It may also include crustaceans and polychaetes. The species is a pursuit diver that propels itself through the water with its wings. They are capable of diving to 120 m depth, but mostly forage nearer the surface. They spend most of their lives at sea, only arriving ashore to reproduce. This species has been described as coastal rather than pelagic and birds tend to be concentrated within 10 km of the shore (Butchart & Symes, 2016a).

This species is threatened by the current and future impacts of climate change, including temperature extremes, sea temperature rises and shifts and reductions in prey availability. A crash in sandeel stocks around Iceland is thought to have contributed to the very rapid population decline of Razorbill in Iceland (Gardarsson *et al.* in press). The species is vulnerable to extreme weather, with severe winter storms causing large scale mortality across north-western Europe in the past (Butchart & Symes, 2016a).

As a pursuit diver the species is at risk from being caught in gillnets and driftnets, with gillnet fisheries in the North and Baltic Seas known to catch significant numbers (Žydelis *et al.*, 2013). Other threats include invasive mammalian predators (e.g. rats, cats) when the bird is breeding. The species is also vulnerable to disturbance from recreational and tourism activities, unregulated hunting in Labrador, the Gulf of St Lawrence, Newfoundland, Greenland, the Faroe Islands and Norway poses a major threat (Butchart & Symes, 2016).

Northern Fulmar (*Fulmarus glacialis*)

Anderson et al (2011) notes that for the longline fleet in the Northeast Atlantic (NEA) the main species that is taken is Northern fulmar (*Fulmarus glacialis*). The distribution of this species in NEA is presented in Figure 25.

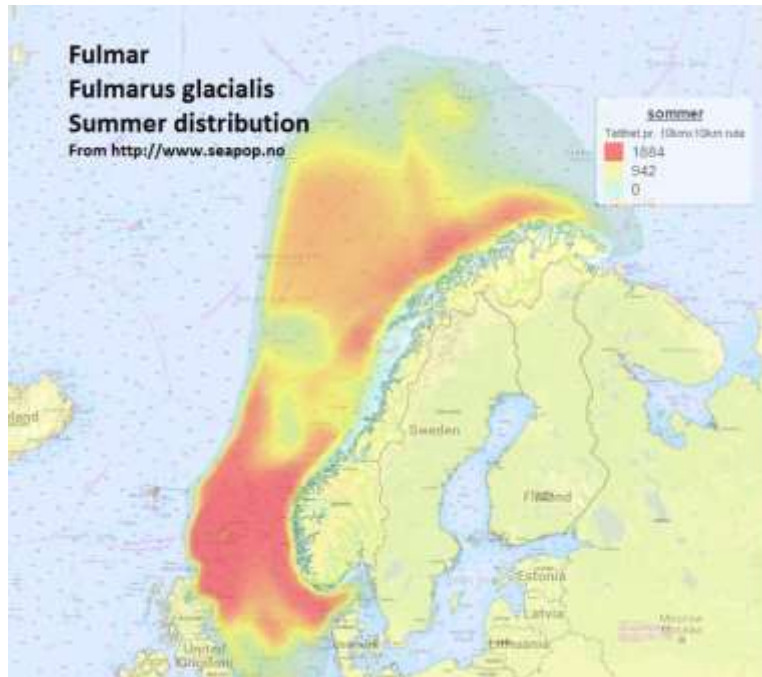


Figure 25 Summer distribution of Northern Fulmar (*Fulmarus glacialis*) in Open Sea; Norwegian EEZ. (From <http://www.seapop.no> downloaded 23 January 2016)

The overlap with the fisheries distribution as shown in Figure 3 and Figure 4 is evident, note that the distribution continues outside the Norwegian EEZ. The European fulmar population is assumed to be stable although in Norway (excl. Svalbard) there has been little breeding in recent years⁵⁴.

Common tern *Sterna hirundo* (Butchart & Symes, 2016b)

This species has a circumpolar distribution and can be found breeding in most of Europe, Asia and North America except the extreme north and south. It winters further south, being found along the coast and inland of South America down to the Falkland Islands (Islas Malvinas), along the coast of Africa excluding the north, along parts of the Arabian Peninsula and the whole coast of India, and throughout much of south-east Asia and Australasia (excluding New Zealand) (del Hoyo *et al.* 1996). Because of its global distribution, IUCN Red List lists it as Least Concern, although on the Norwegian Red List it is 'Endangered'.

This species is a strongly migratory coastal seabird. It breeds between April and June in solitary pairs or colonially in groups of up to several thousand pairs (inland colonies often smaller and more widely-dispersed than coastal ones). The species is opportunistic, its diet consisting predominantly of small fish and occasionally planktonic crustaceans and insects.

During the breeding season the species is vulnerable to human disturbance at nesting colonies, and to the flooding of nest sites as a result of naturally fluctuating water levels. On its breeding grounds the species is also threatened by habitat loss as a result of coastal development and erosion. It suffers predation at nesting colonies from rats (especially on islands) and from expanding populations of large gull species such as Herring

⁵⁴ <http://data.artsdatabanken.no/Pages/186759>

Gulls *Larus argentatus*. The species is susceptible to avian influenza so may be threatened by future outbreaks of the virus.

Brünnich guillemot (*Uria lomvia*), also thick billed murre

The Brünnich's guillemot is a stout, sturdily built auk that is slightly smaller than the common guillemot, and is one of the most numerous seabirds in the northern hemisphere. Brünnich's guillemots from Svalbard generally winter in waters off Iceland, Greenland and Newfoundland (Canada), although many stay in the Barents Sea throughout the year. Thick-billed murre spend all of their lives at sea in waters which remain below 8°C except during the breeding season where they form dense colonies on cliffs. Brünnich's guillemots leave their colonies when the chick fledges towards the end of July or in the early August. They return to the colonies in April or May, a breeding pair will lay a single egg each year. Outside the breeding season it appears in coastal waters and at sea, often in ice-filled areas. The diet of adult Brünnich's guillemots consists mainly of fish and crustaceans. On Spitsbergen, for example, important prey items include polar cod *Boreogadus saida*, blennies (e.g. *Lumpenus lampretaeformis* and *Leptoclinus maculatus*) and capelin *Mallotus villosus*.

They are accomplished divers, reaching depths of up to 150 m and diving for up to four minutes at a time; usually however birds make either shallow short dives or dive down to 21–40 m for longer periods. While hunting, the diving trajectory resembles a flattened 'U'. Birds will make long trips to get to favorite feeding grounds; while they usually forage several dozen km from their nest sites, they often travel more than 100 km to fish. The strong and direct flight of murre, which is, for their body size, the most costly form of sustained locomotion of any animal, is a result of their short wingspan (Elliott et al., 2013).

5.4.3.1 Bird bycatch avoidance strategy

The vessels deploy bird scarers and streamers off the end of the ship in order to scare off birds which might be attracted by the baited longline as it is deployed. Laser canon is used in the dark and in foggy conditions. The vessels work hard at discouraging birds (Client interview), such as for example releasing the longlines below the water level (similar to a moonpool), (Client, pers.com).

5.4.4 Marine mammals

Several marine mammals are listed in CITES Appendix 1 as well as on the Norwegian red-list presented above (Table 18). Destructive encounters with marine mammals are relatively unusual in the long-line fleet, and there have been no recorded interactions with the ling/tusk gillnet gear. There is no evidence that this is a significant cause for concern at the present time, for the ling/tusk fishery.

Considering the proximity to the coast of the gillnets used in the lumpfish fishery, and as the nets are deployed between 10-50m depth, interactions with marine mammals are more likely, in particular seals. From the list in Table 18, restricted to the Barents Sea and the Norwegian Sea, only hooded seal and ringed seal might be affected by the lumpfish fishery. Both these seals are found in the northern part of the fishing area only i.e. ICES I, Figure 26 and Figure 27, and there is very little overlap with the Norwegian lumpfish fishery. Bjørge et al (2006) reported that 3 Grey seals and 4 Harp seals were caught in 2005, but none of these in the area under assessment, but further south.

Hooded Seal *Cystophora cristata*



Figure 26 Hooded seal (*Cystophora cristata*) distribution.

Hooded Seals, listed as ‘vulnerable’ on the IUCN redlist, are found at high latitudes in the North Atlantic, and seasonally they extend their range north into the Arctic Ocean. They breed on pack ice and are associated with it much of the year, though they can spend significant periods of time pelagic, without hauling out. There are four major pupping areas: near the Magdalen Islands in the Gulf of Saint Lawrence, north of Newfoundland in an area known as the Front, in central Davis Strait, and in the West Ice in the Greenland Sea near the island of Jan Mayen (Kovacs, 2016).

Hooded Seals are capable divers that spend extensive periods at sea without hauling out. Most of their dives are from 100-600 m in depth and last 5-25 minutes, however, very deep dives to over 1,000m and dives lasting almost an hour have been recorded. Hooded Seals feed on a wide variety of fish and invertebrates, including species that occur throughout the water column. Examples of typical prey are pelagic Amphipods (*Parathemisto* sp.), Greenland Halibut, members of the Cod family such as Polar and Atlantic Cod, Redfishes, Sand Eels, Herring, Capelin, Squid (e.g., *Gonatus fabricii*), and Shrimp (Kovacs, 2016). According to their distribution and feeding behaviour, they are unlikely to be caught in the lumpfish fishery.

Ringed Seal , *Pusa hispida*

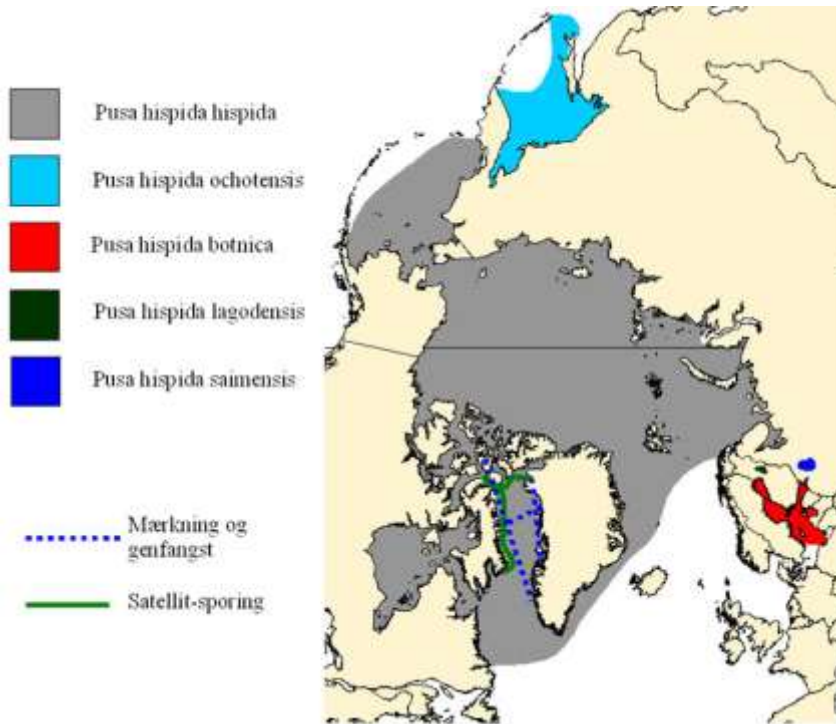


Figure 27 Ringed Seal (*Pusa hispida*) distribution

Ringed Seals, listed as ‘least concern’ on the IUCN species redlist, have a circumpolar distribution throughout the Arctic Basin including records of individuals near the North Pole (Figure 27). Ringed Seals also range widely into adjacent seas being found in the Bering Sea, Chukchi Sea, Beaufort Sea, Canadian Arctic Archipelago, Hudson Bay, Hudson Strait, Davis Strait, and Greenland, Barents, White, Kara, Laptev, and East Siberian Seas. Ringed Seals are in many respects the “classic” ice-seal. Throughout most of their range they use sea ice exclusively as their breeding, molting, and resting (haul-out) habitat, rarely if ever moving onto land (Lowry, 2016).

Although they may dive to more than 500m, in many areas where they feed the water is not that deep and dives are correspondingly shallower. Commonly eaten prey include Polar Cod, Arctic Cod, Redfish, Herring, and Capelin in marine waters. Invertebrate prey species seem to become more important in the open-water season and often dominate the diet of young animals. Large Amphipods, Krill, Mysids, Shrimps, and Cephalopods are all eaten by Ringed Seals and can be very important in some regions at least seasonally (Lowry, 2016).

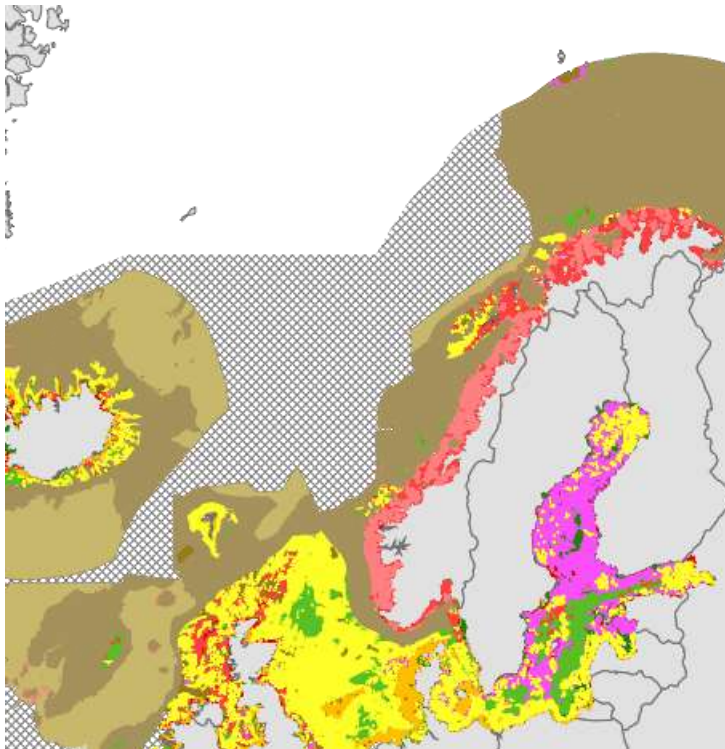
According to their distribution and feeding behaviour, Ringed seals are unlikely to be caught in the lumpfish fishery.

5.5 Habitats

Both ling and tusk are demersal fish that live on stony and rocky bottoms. Ling also occurs on sandy bottom with large boulders. Tusk and ling occurs on *Lophelia* reefs see Husebø et al (2002). Longlines are known to impact reefs and to lesser degree sandbanks. Gillnets impact reefs and fauna in coastal areas. Tusk does not occur in great numbers in coastal areas whereas ling is also fished in the fjords and coastal areas. Lumpfish are fished in the coastal areas, using gill nets. Both longline and gillnet are low impact gears, compared to trawls, and the main concern is to ensure that cold water coral reefs and sponge beds are not damaged. The Norwegian legislation is well developed to protect these grounds, including closing areas to fishing where these habitats occur. The EU waters are similarly protected on the basis of the EU Marine Strategy Framework Directive EC (2008).

5.5.1 Habitat types distribution

Figure 28 provides a broad overview of the seabed habitats within the area where the fishery under assessment is active. These are as defined in the MSFD (Marine Strategy Framework Directive, 2008).



Acoura Marine
Public Certification Report
NFA Norwegian Ling & Tusk and NFA Norwegian Lumpfish Fishery

- Shallow sublittoral mud
- Shallow sublittoral sand
- Shallow sublittoral coarse sediment
- Shallow sublittoral mixed sediment
- Shallow sublittoral rock and biogenic reef
- Shelf sublittoral mud
- Shelf sublittoral sand
- Shelf sublittoral coarse sediment
- Shelf sublittoral mixed sediment
- Shelf sublittoral rock and biogenic reef
- Upper bathyal sediment
- Upper bathyal rock and biogenic reef
- Lower bathyal sediment
- Upper bathyal sediment or Lower bathyal sediment
- Lower bathyal rock and biogenic reef
- Abyssal sediment
- Abyssal rock and biogenic reef
- ⊗ Unknown

Figure 28 EMODnet broad-scale seabed habitat map for Europe (EUSeaMap)
MSFD predominant habitat classification (Source: <http://www.emodnet-seabedhabitats.eu>)

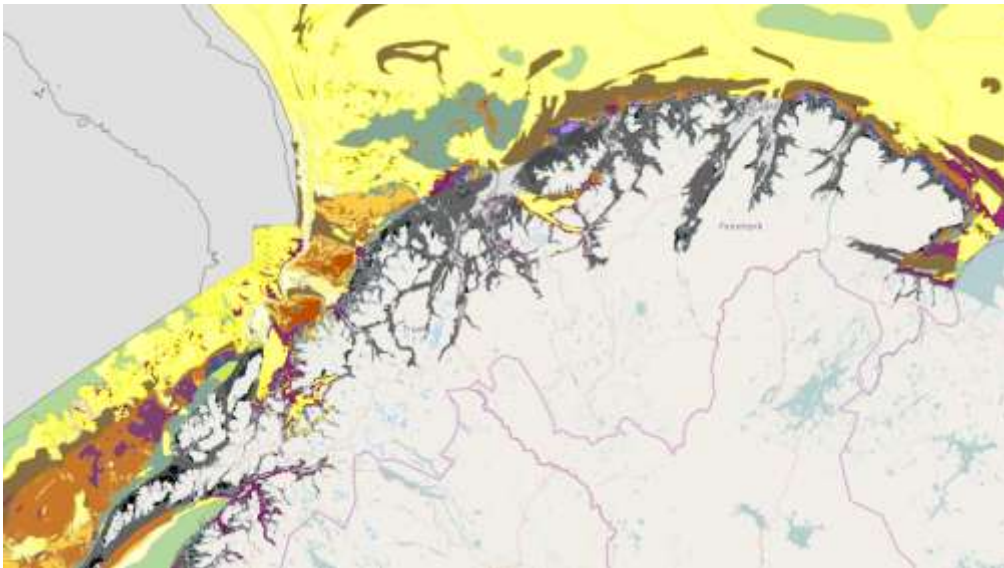


Figure 28a – close up of the substrate off the coast of Northern Norway, relevant to the fishing area of lumpfish, based on EMODNET data, showing broad distribution of sand and mud and rocky sublittoral, with faunal communities on deeper outcrops (as per legend at emodnet, it is very broad) (Source: <http://www.emodnet.eu/geoviewer/#/>). Legend link: <http://www.emodnet.eu/geoviewer/proxy//http://213.122.160.75/scripts/mapserv.exe?map=D:/Websites/MeshAtlantic/map/MESHAtlantic.map&REQUEST=GetLegendGraphic&LAYER=EUSM2016&VERSION=1.1.1&FORMAT=image/png>

A more detailed distribution of benthos communities in the Barents Sea is provided in Figure 29, based on research in the 1990's – the figure is taken from Chapter 4 of Jakobsen T., Ozhigin V. (2011). This is of relevance for the UoAs situated in areas I and II (ling and tusk fisheries) for this assessment.

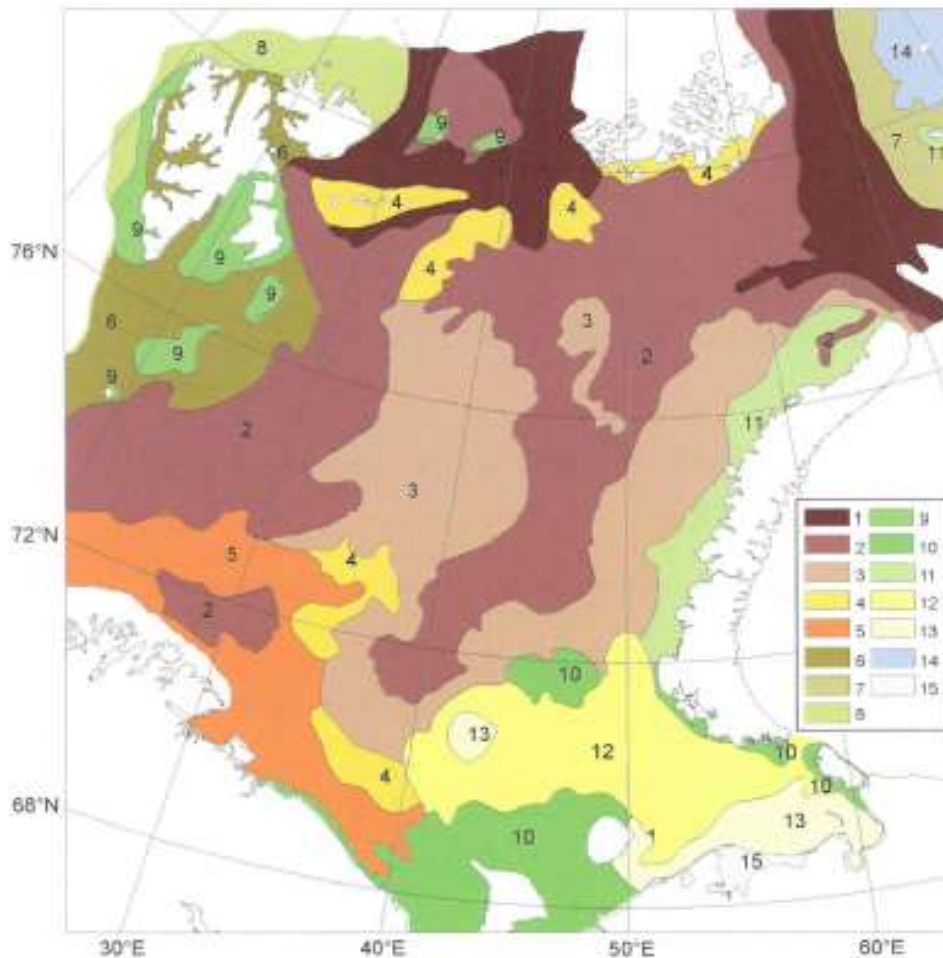


Figure 4.1.8. Distribution of benthic communities in the Barents Sea based on data from grab samples in 1991–1994 (after Kulakov et al. 2005). Community: 1 – *Ophiopleura borealis* + *Harmosina globulifera*; 2 – *Polychaeta* + *Sipunculoidea* (*Golfingia* spp.); 3 – *Trochostoma* spp.; 4 – *Elliptica elliptica* + *Astarte crenata*; 5 – *Brisaster fragilis*; 6 – soft-bottom community adjacent to Svalbard (Spitsbergen); 7 – community of St. Anna Trough slopes; 8 – *Strongylocentrotus* spp. + *Ophiopholis aculeata*; 9 – shallow-water coastal community of sessile filter-feeders adjacent to Svalbard (Spitsbergen); 10 – shallow-water coastal community of sessile filter-feeders on *Lithothamnion* spp.; 11 – shallow-water coastal community adjacent to western coast of Novaya Zemlya and Vise Island; 12 – *Astarte borealis*; 13 – *Clinocardium ciliatum* + *Macoma calcarea* + *Serripes groenlandicus*; 14 – community of bivalves adjacent to Ushakov Island; 15 – *Macoma balthica*.

Figure 29 Distribution of benthos communities in the Barents Sea (Source: Jakobsen T., Ozhigin V., 2011)

Mapping of the benthic habitats in the Barents Sea has been undertaken over many years and is on-going under several national and international programmes⁵⁵. There is an increasing body of information available, of good enough resolution, to allow better decision making regarding where to fish and where to protect vulnerable habitats. Areas of high biodiversity value/vulnerability continue to be identified. Available information on habitat types in the Barents Sea shows that there are aggregations of large, non-mobile, long-living habitat-forming species, in particular large deep sea sponges (*Geodia* spp & *Stelletta* spp, *Tethya citrina*, *Thenaea muricata*), mussel beds (*Modiolus modiolus*) and some reef species such as Zooanthidae and *Drifa glomerata*. Such deep sea communities serve as breeding, spawning and nursery areas for many fish species, and provide vital habitat for a variety of species. The richest communities of hard-bottom benthic species are found along

⁵⁵ The "Mareano programme" http://www.mareano.no/_data/page/9235/Focus-Oceans_Mareano-Mai-2010.pdf; the Joint Russian/Norwegian Ecosystem Assessment (Barents Portal: http://barentsportal.com/barentsportal_v2.5/index.php/en/); the Atlas of marine and coastal biological diversity of the Russian Arctic Moscow (Spiridinov et al 2011); Larsen, T. Nagoda, D. and Andersen, J.R. (Eds) 2003. A biodiversity assessment of the Barents Sea Ecoregion WWF;

the Norwegian coast and the coast of Svalbard. Reefs of *Lophelia petusa* are found closer inshore in Norwegian territorial waters and are therefore not thought to be in areas fished by the fishery under assessment.

Mapping programmes include for example the MAREANO programme which maps bathymetry, sediment composition, biodiversity, habitats and biotopes as well as pollution in the seabed in the region (see Figure 30, Figure 31). Particular attention has also been paid to deepwater corals such as *Lophelia* which occur especially on the NW continental slope of Norway.

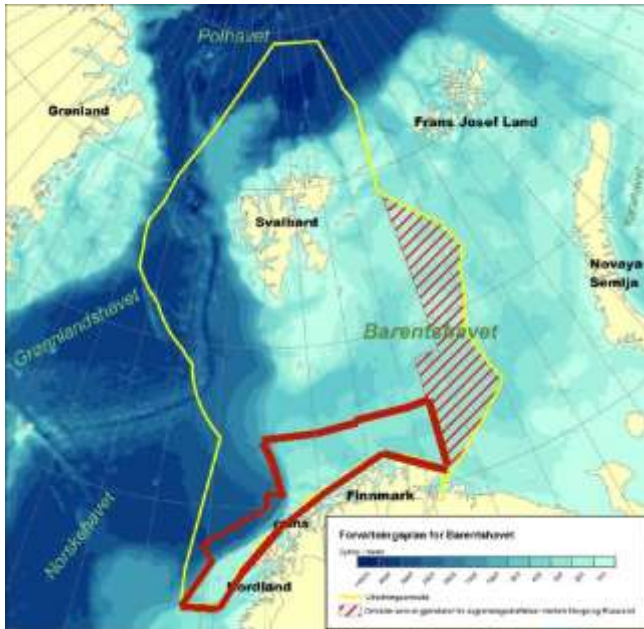


Figure 30 Overview map of the area (140.000 km²) that is covered by MAREANO (red line). (Source: MAREANO.no)

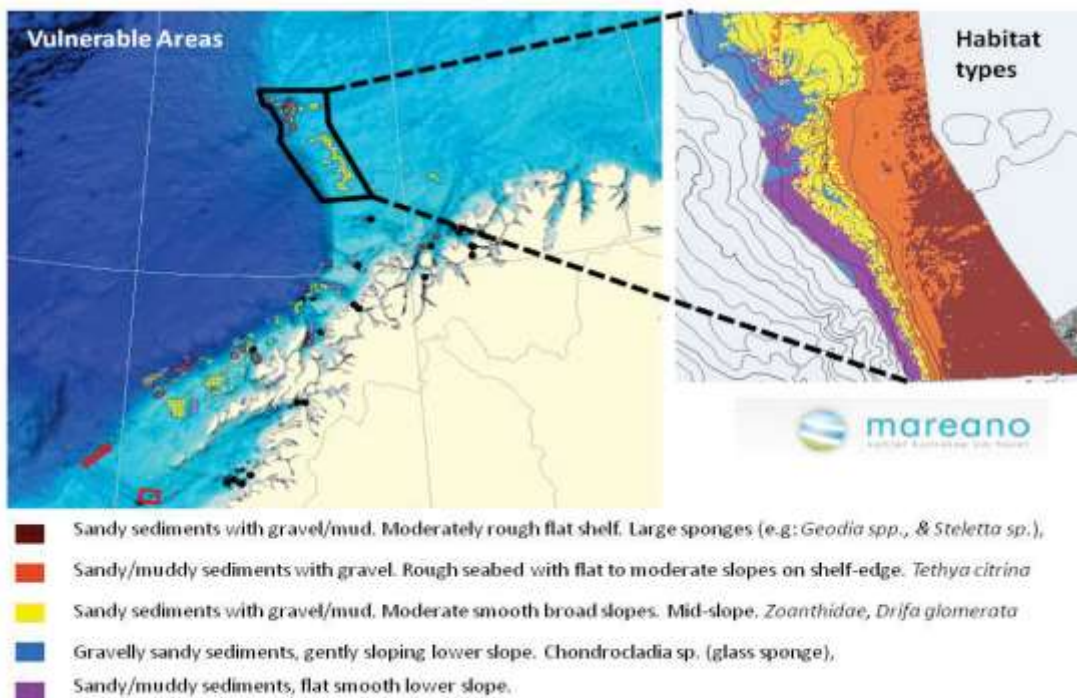
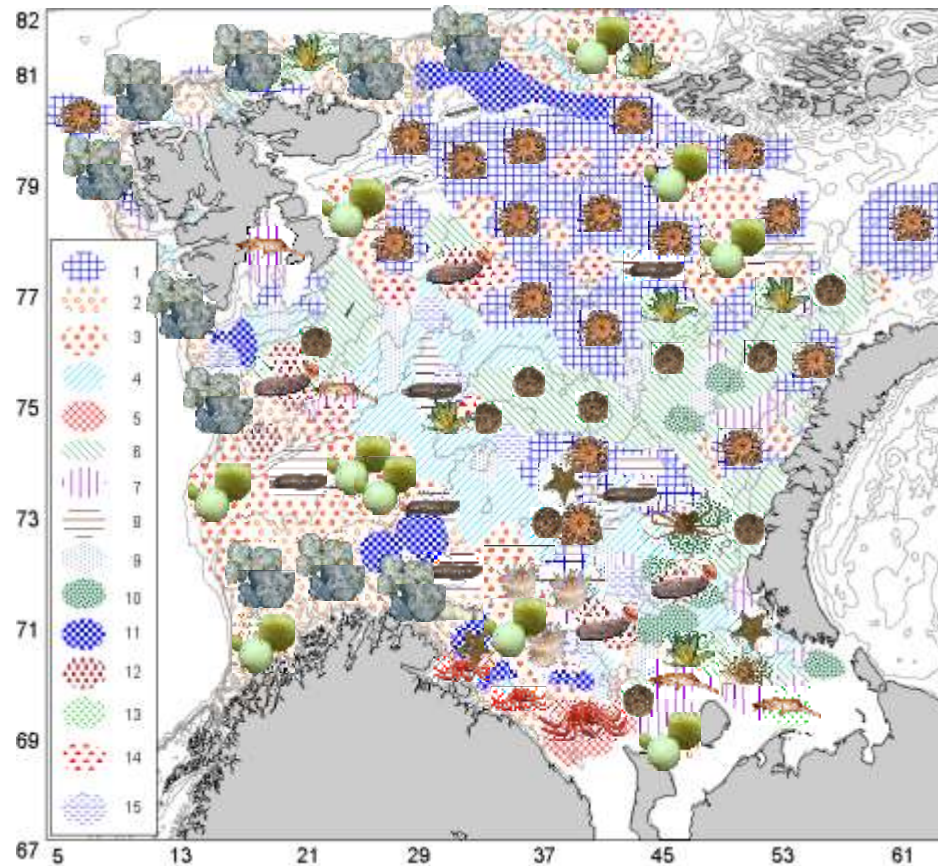


Figure 31 Image extract from MAREANO project showing vulnerable habitat on shelf edge. (Source: adapted from MAREANO)

A variety of groups including Annelids (mainly polychaetes), nematelmintes, bryozoans, foraminiferans, and cnidarians also contribute a substantial biomass and numbers of species. Some of these communities can be seen in the graphic below (Figure 32) from Lyubin et al., 2010 and Anisimova et al., 2010).



Legend: 1 - *Gorgonocephalus* spp., 2 - *Geodia* spp., 3 - *Spongia* g. Spp., 4 - *Ctenodiscus crispatus*, 5 - *Paralithodes camtschaticus*, 6 - *Strongylocentrotus* spp., 7 - *Sabinea septemcarinata*, 8 - *Molpadia* spp., 9 - *Urasterias linckii*, 10 - *Chionoecetes opilio*, 11 - *Hippasteria phrygiana*, 12 - *Cucumaria frondosa*, 13 - *Sclerocrangon* spp., 14 - *Crinoidea* g. spp., 15 - *Icasteriaspanopla*

Figure 32 Areas with various dominant representatives of megazoobenthos in the Barents Sea in 2006-2011 (by: Lyubin et al., 2010; Anisimova et al., 2010).

5.5.2 Vulnerable marine ecosystems (VMEs) and International guidance

Following on from guidance produced by FAO (2009) there has been increasing activity on the parts of governments and RFMOs to define and manage “vulnerable marine ecosystems”. These are typically interpreted as significant aggregations of benthic organisms that create benthic habitats of importance in their own right and as habitat for other organisms. These areas may high structural diversity, biodiversity and productivity and may in turn be important for the long term health of commercial fish and shellfish stocks. In its advice to NEAFC and NAFO, ICES lists seven VME habitat types for the Northeast Atlantic and the taxa and species that are most likely to be found in these habitats (ICES, 2013). Criteria for a VME indicator are based on traits related to functional significance, fragility, and the life-history traits of component species that show slow recovery to disturbance. For each group it is the dense aggregations (beds/fields) that are considered to be VME in order to establish functional significance. Indicators include for example various species of crinoids, erect bryozoans, large sea squirts, sponges and corals.

NEAFC VME habitat types include:

1 - Cold water coral reef:

Lophelia pertusa reef

Solenosmilia variabilis reef

2 - Coral garden:

a) Hard-bottom coral garden

- Hard-bottom gorgonian and black coral gardens
- Colonial scleractinians on rocky outcrops (incl. *L.petusa*)
- Non-reefal scleractinian aggregations

b) Soft bottom coral gardens

3 - Deep sea sponge aggregations

4 - Seapen fields

5 - Tube dwelling anemone patches

6 - Mud and sand emergent fauna

7 - Bryozoan patches

FAO also offers guidance as the meaning of “significant adverse effects” on VMEs: They are those that compromise ecosystem integrity (i.e. ecosystem structure or function) in a manner that:

- impairs the ability of affected populations to replace themselves,
- degrades the long-term natural productivity of habitats, or
- causes, on more than a temporary basis, significant loss of species richness, habitat or community types

Since 2003 OSPAR has been proceeding with a programme to collate existing data on the distribution of the fourteen habitats on the OSPAR list of threatened and /or declining species and habitats, as part of a wider programme to develop measures for their protection and conservation. Each OSPAR Contracting Party agreed to compile the relevant data for its own marine waters and submit these to the lead country (UK) for collation into composite maps on the distribution of each habitat type across the whole OSPAR area. The work has been coordinated by the Joint Nature Conservation Committee (JNCC). The data available to date provide an initial indication of the distribution of each OSPAR priority habitat type; further data will be added as it becomes available. The maps are not yet considered to be comprehensive for the OSPAR area as a whole and may not be comprehensive within any given Contracting Party’s waters. A summary table published by OSPAR (accessed August 2017) shows that Norway has been mapping several habitat types relevant to this assessment: coral

gardens, deep sea sponge aggregations, *Lophelia petusa* reefs, seapen and burrowing megafauna communities. On the High Seas, *Lophelia petusa* beds and seamounts are the habitats mapped so far⁵⁶.

OSPAR (to which Norway is party) also lists threatened and/or declining species and habitats (OSPAR agreement 2008-6) in sub-areas I&II and the NE Atlantic area and of relevance to these fisheries, including for example Coral gardens, Deep sea sponge aggregations, *Lophelia pertusa* reefs *Modiolus modiolus* beds, Seapen and burrowing megafauna communities.

Both NEAFC and NAFO have obligations to contribute to the key objectives of the UN General Assembly Resolutions on the protection of vulnerable marine ecosystems and to ensure the long-term sustainability of deep sea fish stocks and non-target species. They have therefore responded by seeking guidance from ICES⁵⁷ on implementing the FAO guidance at regional level, and subsequently issued a recommendation on *the Protection of Vulnerable Marine Ecosystems in the NEAFC Regulatory Area* (which encompasses most of the Barents and all the Norwegian Sea) (NEAFC 2014).

While some protection is now in place for the less common and more delicate VMEs such as corals (and biogenic reefs more generally), protection remains very limited for more widespread but ecologically important habitats. It is notable that ICES (2009) have developed a list of 25 sponge species which are habitat-forming and can be considered indicators of sponge VMEs in the North Atlantic. These are species that form the sponge grounds, and host a variety of associated smaller sponge species that contribute to the biodiversity of the habitat.

5.5.2.1 VMEs in the Barents and Norwegian Sea and NE Atlantic relevant to this assessment

The following VMEs, as defined in the ICES advice to NEAFC and NAFO are found within the area fished by the client fleet in the Barents and Norwegian Seas. Although there are other important benthic species and communities (such as crinoids, basket stars and sea cucumbers) these do not usually form dense aggregations and do not therefore meet the FAO criteria for VME.

Cold water coral reef (*Lophelia pertusa*, *Solenosmilia variabilis*) occur in the south-western part of the Barents sea off the coast of Norway. There are four marine protected areas to the SW of the Lofoten Islands designated specifically to protect these features. There are no known colonies North of the Varanger penninsular or within the Russian EEZ. Protected coral reefs areas are within the red boxes, and detailed locations of identified coral areas can be found along the coast as indicated on the maps (Mareano, 2017) (Figure 34, Figure 35) are detailed location maps of corals found along the SW Barents Sea and Norwegian North Sea. The red rectangles are protected coral areas.

⁵⁶ <https://www.ospar.org/work-areas/bdc/species-habitats/mapping-habitats-on-the-ospar-list-of-threatened-or-declining-species-and-habitats>

⁵⁷ 9.3.2.3 NEAFC request on identification of vulnerable marine ecosystems, including definitions and assessment of fishing activities that may cause significant adverse impacts on such ecosystems. ICES Advice 2008, Book 9
<http://www.ices.dk/news-and-events/news-archive/news/Pages/Newly-released-ICES-advice-on-Vulnerable-Marine-Ecosystems-%28VMEs%29-includes-information-on-hydrothermal-vents.aspx>

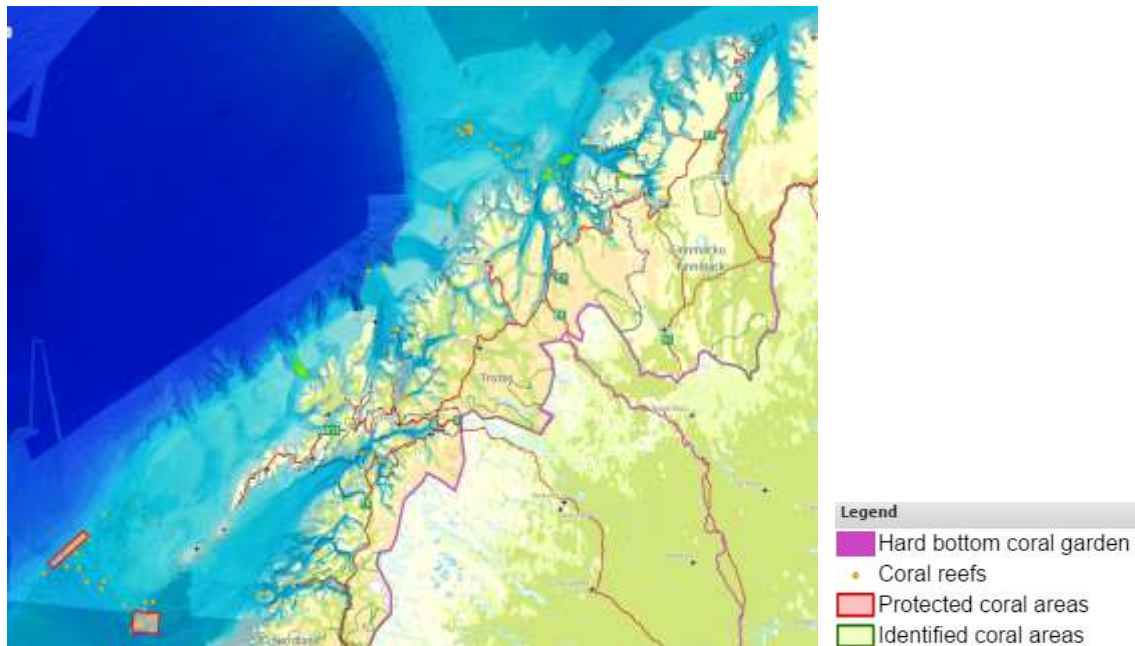


Figure 33 Distribution of *Lophelia* reefs and hard bottom coral garden in SW Barents and Norwegian Seas (Source: Mareano, 2017)

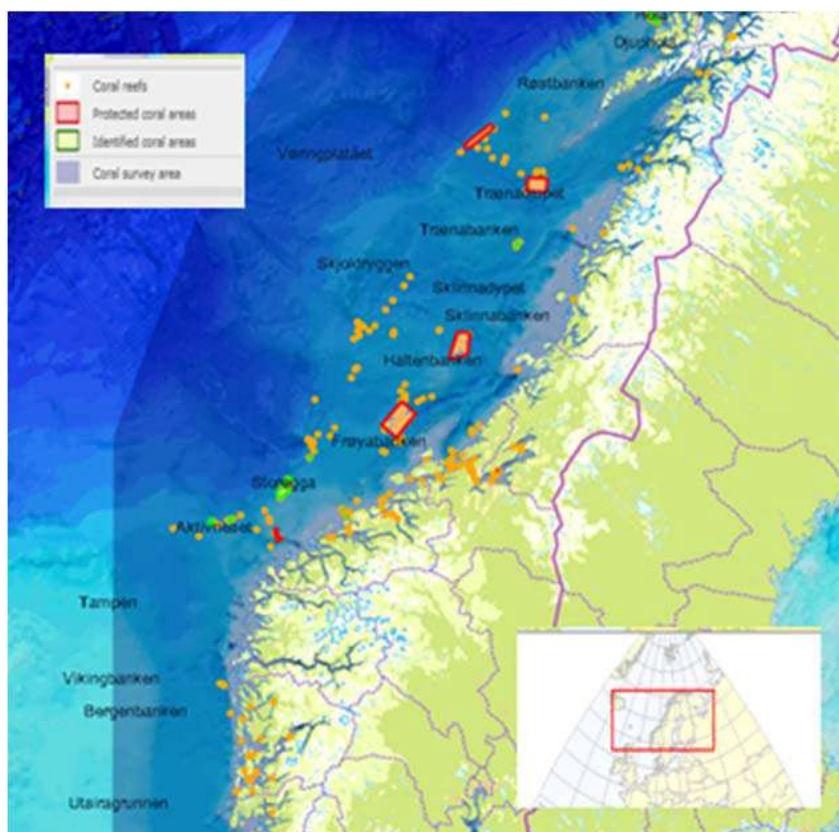


Figure 34 Distribution of coral reefs, mostly but not only *Lophelia pertusa*, on the continental shelf of the Norwegian Sea. All fishing is prohibited within the protected areas (red rectangles) (Mareano, 2017).

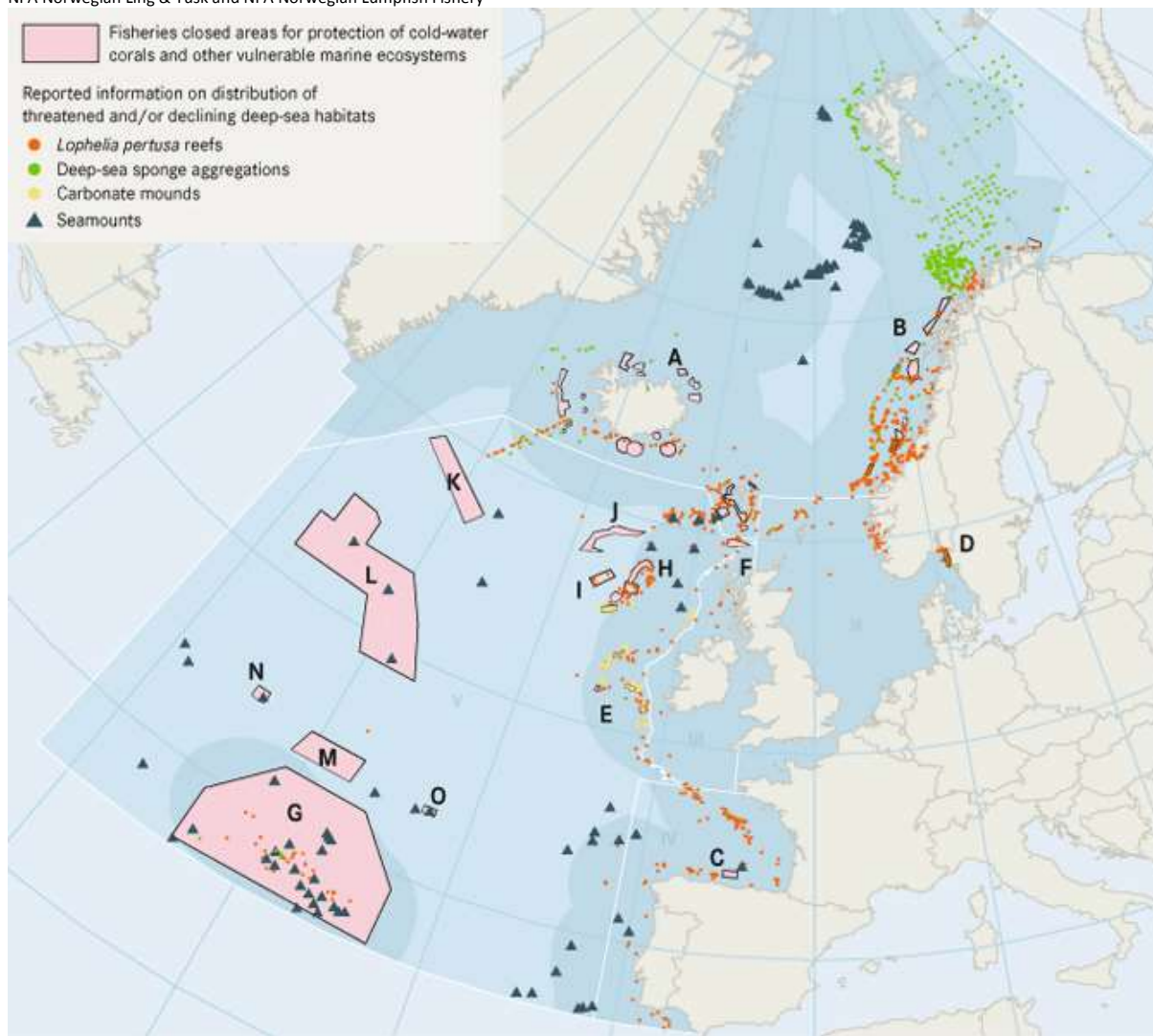


Figure 35 Distribution of *Lophelia pertusa* reefs and deep sea sponge aggregations. (Source: OSPAR, 2010)

Coral reefs grow slowly, and can survive for thousands of years. The oldest coral reefs in Norway are around 9,000 years old. A wide variety of species find food and shelter amongst the branches of the corals, although these species are generally also found on other types of hard bottom not made of coral skeletons (Mareano, no date).

Since 1997 IMR has been monitoring and mapping coral reef areas, the surveys of the reefs have been used to establish conservation areas for coral reefs, using both fisheries and conservation legislation. Around 600 coral reefs have been documented and mapped but many more (possibly ten times as many) (Mareano, no date) remain to be documented. In the northeast Atlantic *Lophelia* reefs are most likely to be found on the upper slope of off shore banks and near the continental shelf break at depth depths 200–400 m, at temperatures of 4–8° C (Bruntse & Tendel, 2001). An individual reef (bioherm) studied during the Faroese BIOFAR project (a parallel project to MAREANO) was measured by sonar equipment to be c. 10m high and 110m wide (Bruntse & Tendel, 2001). Reef areas are also recognised as good long-line fishing areas (Husebø *et al.*, 2002). Remotely operated vehicle (ROV) studies in Norwegian waters have shown a preponderance of saithe and redfish around such reefs (Mortensen *et al.*, 1995).

Hardbottom coral garden. These aggregations (mainly sea fans) occur on hard substrates exposed to strong currents. Their distribution has been mapped in the Norwegian EEZ (excluding Svalbard) as part of Mareano.

They occur at the upper edge of the continental slope to the West of Tromsø and the Lofotens.

Softbottom coral gardens. “Soft coral” species belonging to the Alcyonacea are relatively common on silty and mixed bottom substrates throughout the Barents Sea, including *Gersemia fruticosa*, *G. rubiformis*, *Drifa glomerata* and *Duva florida*. While most of these species need hard bottom or rock on which to attach, *Gersemia* is able to anchor itself in relatively soft sediments and establish significant colonies. These species are relatively common and widely dispersed, but dense aggregations appear to be unusual. However, an extensive area of softbottom coral garden has been mapped on the upper part of the continental slope to the northwest of Finmark (roughly 70°00' to 70°30'N; 14°45' to 16°17'E). The Mareano project mapped areas in the SW Barents sea and Norwegian Sea (Figure 36)

Seapen fields. Aggregations of *Umbellula* are relatively common throughout both Barents and Norwegian Seas, occurring in the central and lower parts of the continental slope. *Umbellula incrinis* is found in dense aggregations on soft muddy substrates in the north-eastern part of the Barents Sea near the St. Anna Trough. The long stalks (up to 1m) mean that these organisms are vulnerable to trawling and are regularly found as bycatch in this area. The Mareano project mapped areas in the SW Barents sea and Norwegian Sea (Figure 36).

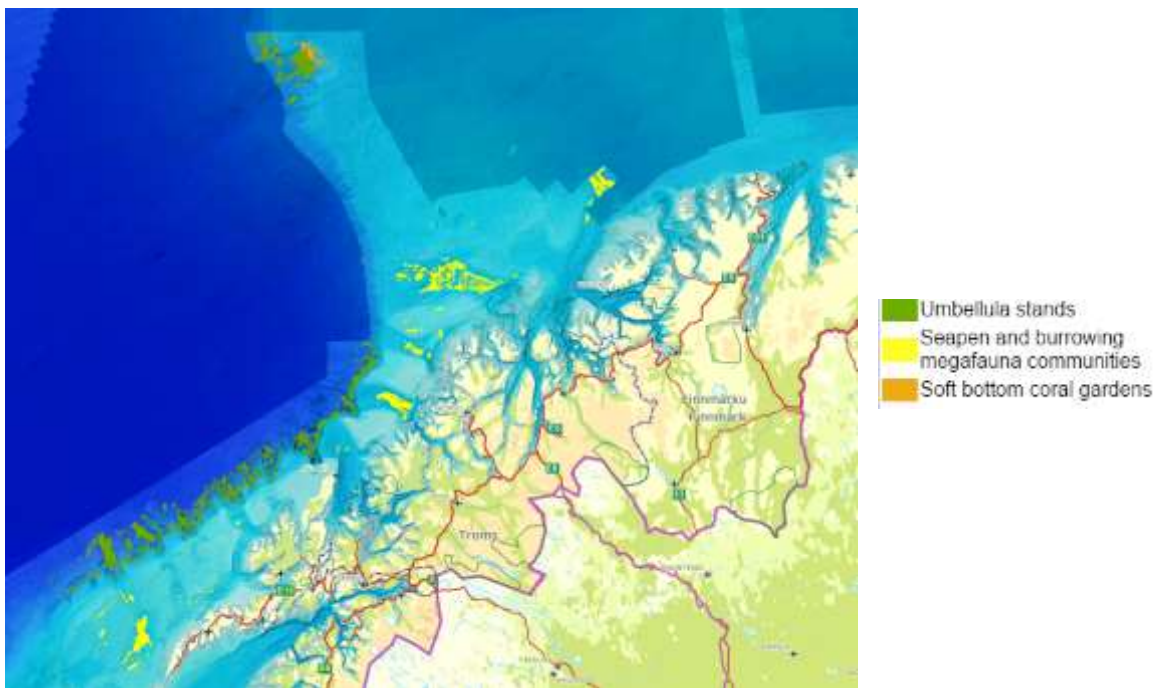


Figure 36 Distribution of seapen and softbottom coral garden in SW Barents and Norwegian Seas (Source:Mareano, 2017)

Ostur sponge aggregations. Aggregations of sponges, mainly *Geodia*, *Thenea*, *Tetilla*, *Phakellia*, *Rhadiella*, and *Polymastia* are characteristic of substantial areas of the Barents Sea shelf as determined in surveys early in the 20th century. These sponges form mass settlements in areas with active sea bottom hydrodynamics, notably on deepwater banks and slopes. The richest communities of sponges are found along the edge of the Barents Sea shelf and at the upper parts of the continental slope. Larger settlements of *Geodia* sponges are found in the most south-western parts of the shelf and the Tromsø Bank (Tromsøflaket) where the Norwegian current encounters the Barents Sea shelf. A rich fauna of hydroids and bryozoans is usually found in association with these sponges (Figure 37)

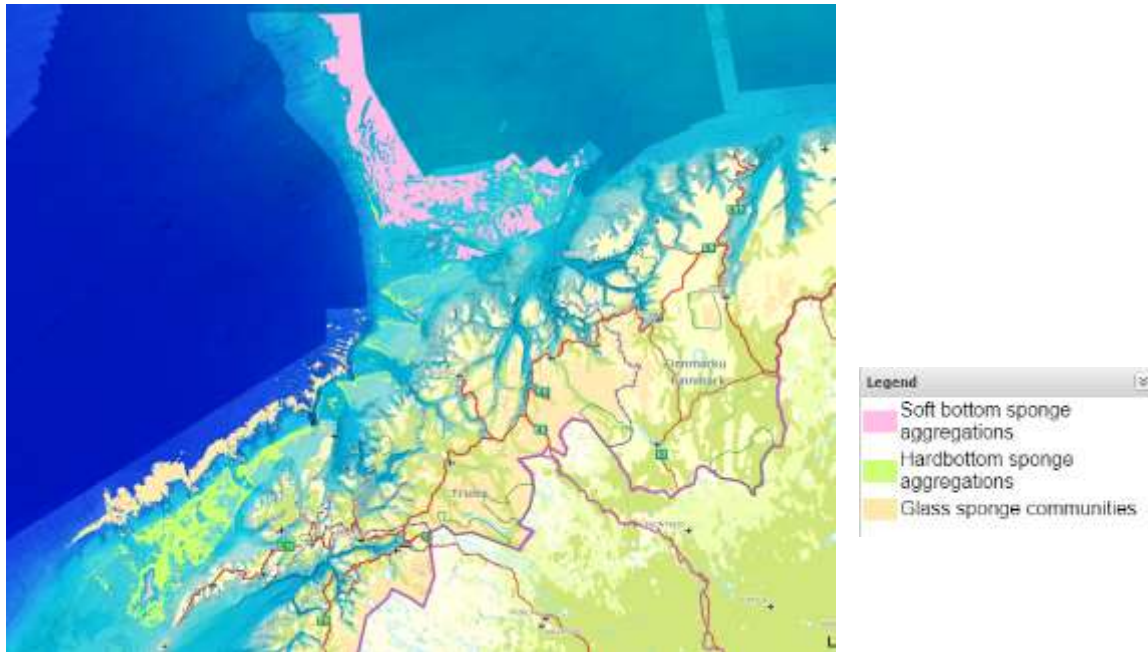


Figure 37 Distribution of sponge communities in SW Barents and Norwegian Seas (Source: Mareano, http://mareano.no/en/maps/mareano_en.html)

It appears (VMS tracks - Figure 3 and Figure 4) that vessels of the client fleet fish in areas where these habitats are likely to occur. While some coral gardens are protected in Norwegian waters, there is no protection for other habitats and no management structures in place, although in theory the move on rule could be applied to invertebrate by-catch in Norwegian waters, but this has not been implemented to date. Guidance on encounters with VMEs are being developed by NEAFC, and it is arguable that the fishery should also adopt some form of avoidance rule. Under NEAFC an encounter with primary VME indicator species is defined as a catch per set (e.g. trawl tow, longline set, or gillnet set) of more than 30 kg of live coral and/or 400 kg of live sponge.

5.5.2.2 Marine Protected areas

Norway has signed several international agreements and conventions on species protection and management of relevance to the Northeast Atlantic fisheries, including the Norwegian North Sea and the Barents Sea:

- » the Convention on Biological Diversity (CBD),
- » the Convention on Trade in Endangered Species of Wild Animals (CITES)
- » the Convention on the Conservation of Migratory Species of Wild Animals (CMS),
- » the Agreement on North Atlantic Marine Mammal Commission (NAMMCO)

Norway is also subject to its agreements under OSPAR Annex V ("on the protection and conservation of the ecosystems and Biological Diversity in the maritime area"). The Norwegian Government has established a set of objectives for species management in the Barents Sea – Lofoten area (Report No. 8 (2005-2006) to the Storting. These relate to population viability, genetic diversity, safe biological limits (for harvested species), management of key species in the ecosystem, endangered species for which Norway has special responsibility.

Under the biodiversity assessment of the Barents Sea (Larsen et al., 2003) experts nominated areas of high conservation value for plankton, benthos, fish, seabirds and marine mammals. In the Norwegian sector this work was taken forward under the Barents Sea Integrated Management Plan, using criteria including productivity, number of species, endangered or vulnerable habitats, important/ETP species. As a consequence several areas were selected as closed areas designed mainly to protect cold water corals and fish nursery areas). At present, in Norwegian waters, the management of habitat impacts includes the closure to bottom fishing of five marine protected areas, established under the fisheries legislation to specifically protect coral reefs:

- » Sula Reef (Sularevet, 1999)
- » Iverryggen Reef (2000)
- » Røst Reef (Røstrevet, 2003)
- » Tisler and Fjellknausene Reefs (2003)

The Norwegian Government has set a target for at least 10% of coastal and marine areas to be protected by 2020. Four areas have been established just inside the Barents Sea—Lofoten area, and four more are likely to be designated in coming years. There are a number of marine protected areas (MPA) to be found in the area where the fishery under assessment is operating. Figure 38 shows the distribution of MPAs under OSPAR. The network has a good representation of the different biogeographic regions within the North-East Atlantic. Management plans and measures are in place for some areas, but for many MPAs they still have to be developed and implemented (OSPAR, 2016).

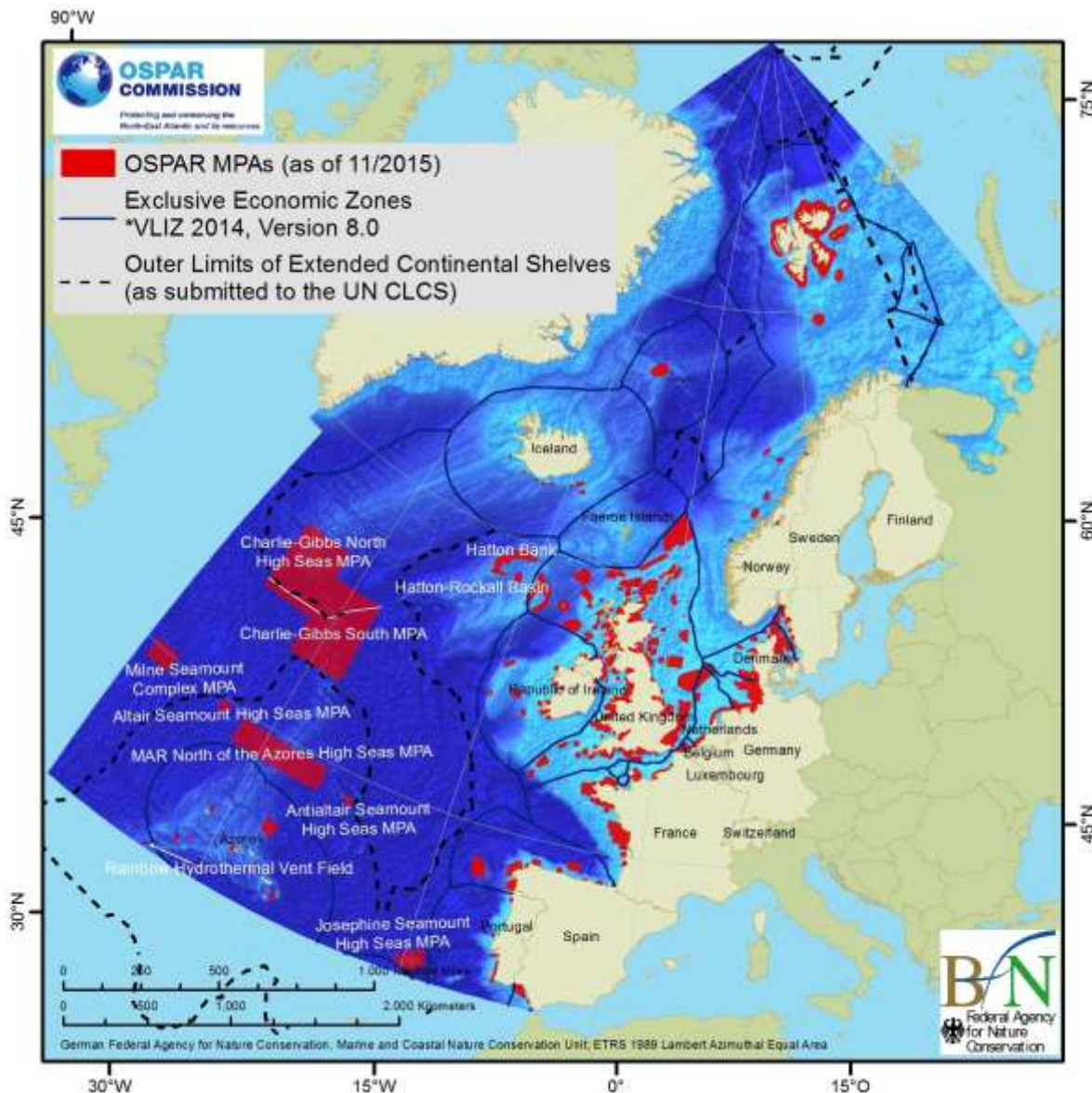


Figure 38 The OSPAR network of MPAs as of 1 October 2015 (Source: OSPAR, 2016)

Under the ‘Biodiversity Assessment of the Barents Sea’ (Larsen et al 2003) experts nominated areas of high conservation value for plankton, benthos, fish, seabirds and marine mammals. In the Norwegian sector this work was taken forward under the Barents Sea Integrated Management Plan (IMR, 2010), using criteria including productivity, number of species, endangered or vulnerable habitats, important/ETP species. As a consequence several areas were selected as closed areas designed mainly to protect coldwater corals and fish nursery areas.

The NEAFC recommendation on *the protection of vulnerable marine ecosystems in the NEAFC Regulatory Area* (which encompasses most of the Barents and all the Norwegian Sea) (NEAFC, 2014) is specifically designed to “prevent significant adverse impacts on VMEs”. Article 4 of the recommendation identifies “existing bottom fishing areas” in NEAFC regulated international waters. Article 5 defines a series of area closures for the protection of deep sea VMEs. These are mainly seamounts mounds and banks in international waters of the NE Atlantic. Articles 6 and 7 require that any “exploratory fishing” outside these areas will require thorough assessment and rigorous protocols to ensure that appropriate information is collected and VMEs are not damaged. Article 8 sets down protocols for responding to any encounter with VMEs (defined as >30kg of live

coral and/or >400kg of live sponge) – specifically to report the encounter and move at least 2nm from the relevant trawl track. Information should be collated and preferably mapped.

Although this recommendation is not obligatory within national jurisdictions, Norway has largely implemented it within its own regulations (prior to the NEAFC recommendation). The Norwegian Ministry of Fisheries and Coastal Affairs regulates fishing with bottom gear in the fisheries protection zone around Svalbard. A new regulation, entered into force in 2011. This establishes a distinction between existing fishing areas (where the water depth is less than 1000m) and new fishing areas (where the water depth is more than 1000m) although the latter may be classed as existing fishing area if sufficient information is available. In existing fishing areas a “move on” rule requires a vessel that catches more than 30kg of live corals or 400kg of live sponges in a single haul to cease fishing activities and relocate to a position at least two nautical miles from the position of the vulnerable benthic habitat that has been identified. The vessel must report the encounter to the Directorate of Fisheries, including the location and the type of habitat. Vessels must hold a special permit from the Directorate of Fisheries to fish in new fishing areas (>1000 m depth) application for which requires a detailed protocol for the exploratory fishery, including a harvesting plan describing fishing gear, target species, bycatch, dates and areas; a mitigation plan for avoiding damage to sensitive marine ecosystems; a plan for log-keeping and reporting; and a plan for collection of data on vulnerable benthic habitats. A scientific observer may also be required.

5.5.2.3 Effect of gillnet and longline gears on habitats

In general, static gillnets are fishing gears with a high degree of selectivity, regulated by the mesh size of the gear (FAO, 2017). In some areas the entangling of diving seabirds is a problem for gillnet fishers. Seasonal and /or total closure of areas is one possibility to avoid this problem – an option considered under bycatch and ETPs in this report.

Set longlines, whereby the hooks rest on or near the bottom, cause less of an impact on habitats compared to moving gears. They may cause entanglement, however, FAO (2017) lists the possibility of this certain species of sharks and turtles becoming entangled. The incidental catch of seabirds when setting and/or hauling the line can be a problem, although there are technical measures in place to reduce this. However, this is of relevance in Secondary species bycatch and/or ETP species.

A study by Baer et al (2010)⁵⁸, in support of a Canadian Science Advisory Workshop on the impacts of gears, showed that the demersal applications of longline and gillnet gear have some demonstrated impacts through entanglement and breakage of bottom features such as corals. The main concerns are with impacts on seamount ecosystems, deep-sea coldwater coral, and sponge communities. The prime mitigation strategy is avoidance of most sensitive areas. International protocols including precautionary management, closed areas, and protection for corals are pending.

A study by Fossa et al (2002)⁵⁹ on the impact on VMEs of gillnets and longlines conducted in the early 2000s in Norwegian waters showed that gillnets and longlines can have a significant impact on VMEs and damages by these types of fishing gear have been documented in Norwegian waters (Fossa et al 2010⁶⁰).

⁵⁸ Baer, A., Donaldson, A., and Carolsfeld, J. 2010. Impacts of Longline and Gillnet Fisheries on Aquatic Biodiversity and Vulnerable Marine Ecosystems. DFO Can. Sci. Advis. Sec. Res. Doc. 2010/012 vii + 78

⁵⁹ Fosså, Jan Helge, P. B. Mortensen, and Dag M. Furevik. "The deep-water coral *Lophelia pertusa* in Norwegian waters: distribution and fishery impacts." *Hydrobiologia* 471.1 (2002): 1-12.

⁶⁰ Fossaa, Jan Helge, and Hein Rune Skjoldal. Conservation of cold-water coral reefs in Norway. Oxford University Press, New York(USA), 2010.

Fossa concluded in 2010⁶¹ that *“We have reasons to believe that extensive use of gillnets in gorgonian forests can have a significant bycatch of gorgonians and hence significant impact. Although these fishing techniques obviously cause breakage and disturbance of corals, it is often assumed that the extent of damage is less compared to the effect of bottom trawling. However, a study of gorgonian corals on a Canadian longline fishing ground showed that this fishing practice had a clear impact on corals. Because these organisms are long-lived, the effect of a relatively low disturbance frequency may accumulate over time (Mortensen and Buhl-Mortensen 2004). Thus, persistent high use of longline and gillnet in coral areas can cause severe damage over time. Consistent international advice from ICES is now to ban all bottom-set gear where corals could be affected.....The Norwegian authorities have so far been reluctant to impose restrictions on the use of passive gears in coral areas, which are often targeted by longline and gillnet fisheries.*

Fossa 2002 estimated that between 30% and 50% of the reef areas on Norway are already damaged or impacted and Clark et al (2014⁶²) concluded that there is in general no evidence of “Recovery” of stony corals. This is likely to be very slow-decadal time scales, possibly 100s years, if it can occur at all. Clark et al (2015) reviewed the impact of fishing gear on deep water benthic communities. They found that static gears, such as longlines and traps have lower impacts than mobile gear types. However, in certain conditions, for example during retrieval, static gear may move laterally across the seabed, resulting in impacts to the habitat and biota. Longline impacts on sessile fauna such as sponges and corals have been observed, where the animals have been broken by longline weights or by the mainline cutting through them while moving laterally during fishing or hauling (in Clark et al 2015). Line gears alter the seabed to a lesser extent than demersal trawl gears due to their much narrower footprint; lines can, however, drag on the seabed stirring up sediments, as well as interact directly with sessile organisms. Overall gillnets and longlines are lower impact gears compared to demersal trawls, but in deep sea communities such damage takes a long time to repair (see recovery tables in Clark et al 2014).

Direct interactions of fishing gear with epibenthic animals that results in physical damage can be classified into three basic types (in Clark et al 2015): (i) blunt impacts—the motion of a broad object through the benthos (e.g. groundrope, trawl doors, mesh, codend, or chafe mat), or the dropping of weights; (ii) line shear—the motion of a narrow object across or through the benthos (e.g. trawl sweeps and lower bridles, longlines when dragging across the seabed); (iii) hooking—direct interaction of hooks with the benthos (e.g. snagging animals). Blunt interactions generally result in the dislodgement or crushing of individuals, particularly larger, erect forms that are anchored to the seabed such as corals, sponges, and crinoids. These organisms can also be sheared off, hooked, or tangled in longlines.

In the ling and tusk longline and gillnet fisheries under assessment, the commonly encountered bottom type is rocky which is widespread over the area. Although both longline and gillnet are comparatively lower impact gears, the main concern is to ensure that cold water corals beds and gardens and sponge beds are not damaged. Considering the slow growth of many of these deep sea habitats, Clark et al (2014) showed that the only realistic way to protect such deep sea habitats is by closing the area to fishing, preferably before any fishing damage has occurred. The Norwegian legislation is well developed to protect these grounds including closing areas to fishing where these habitats occur. The EU waters are similar protected on the basis of the EU Marine Strategy Framework Directive EC (2008).

⁶¹ Fossaa, Jan Helge, and Hein Rune Skjoldal. Conservation of cold-water coral reefs in Norway. Oxford University Press, New York(USA), 2010.

⁶² <https://www.ices.dk/news-and-events/symposia/Effects/Documents/Presentations%20Thursday/08%20Malcom%20Clark%20-%20The%20impacts%20of%20deep-sea%20fisheries%20their%20effects%20on%20the%20megabenthos%20and%20lessons%20for%20sustainability.pdf>

5.5.2.3.1 Move – on rule

Move-on protocols legally apply to all bottom-contact gears and the impact thresholds are 30kg live coral and 400 kg sponge (harmonized with NEAFC). If a vessel in one haul reaches this threshold value, they are required to report the impact to the Directorate of fisheries and move 2 nautical miles before resuming operations. Although legally and theoretically applicable to ling/tusk and lumpfish fisheries, it is fairly safe to say that the impact threshold values render them practically irrelevant for these fisheries. There is no relevant protocol/legislation for the avoidance. It is in the fishermen's interest to avoid gear entanglement (Client interview May 2017).

In May 2013 ICES provided advice to the following request: *ICES is requested to advice on the appropriateness of applying the threshold levels for VME indicator species for long line fishing as adopted in the SEAFO, and CCMLAR, in the NEAFC RA.*

The resulting advice was: ICES advises the use of a threshold of 10 VME indicators caught per 1000 hook segment or per 1200 m section of long line, whichever is the shorter, to indicate the presence of a VME⁶³. ICES advises that NEAFC set specific threshold levels for VME indicator bycatch by longlines. This is because of the substantial difference in the bycatch of VME indicators on longlines compared to trawls.

5.5.2.4 Effect of pots and traps on ecosystem

Ghost fishing, whereby the pots/traps become lost and yet continue fishing, can be an issue with this gear, although increasingly gear design is such that the materials disintegrate after a certain length of time (in the Barents Sea Red King Crab fishery the weave of the traps are designed to disintegrate after 2 years, for example). Ghost fishing can also be avoided by deploying the gear in such a way, that the trap collapses automatically when the marker buoy is lost. However, the traps are expensive, which is a great disincentive to lose them. As the traps are deployed in a chain, a lost marker does not automatically lead to loss of gear, as the fishers will 'drag search' for the line of pots, similar to when a demersal longline is 'lost'. This is usually successful (Client, pers.com)

5.6 Ecosystem Effects

The ecosystem are briefly presented in sections 5.1 (North Sea and Norwegian Sea) and 5.2 (Barents Sea)

5.6.1 Ecosystem Impact

The ecosystems in the North Sea, ICES (2008), Norwegian Sea, ICES (20xx), Skjoldal and Saetre (eds) 2003, and in the Barents Sea, Sakshaug et al (eds) 2009 and ICES (2016) are well described and generally well understood. ICES AFWG (2015) includes a section on the ecosystems in I and II from a fisheries perspective.

The following text is based on <http://www.fisheries.no/ecosystems-and-stocks/Ecosystem-status/Status/#.Vn71A02FOos>

5.6.1.1 The Barents Sea (ICES I)

capelin larvae by strong herring year classes. Cod and haddock are the most abundant The Barents Sea is one of the most productive ecosystems in the world with few, but highly abundant marine stocks

⁶³

https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2013/Special%20requests/NEAFC_threshold_levels_%20for_%20longline_%20fishing.pdf

throughout the food chain. Important pelagic fish species are capelin, polar cod, herring, and blue whiting. Capelin is a key species in the ecosystem, and undergoes large fluctuations in abundance primarily linked to the predation on demersal fish species. Their abundance varies significantly due to oceanographic fluctuations and other ecosystem interactions, but at a slower rate than for the pelagic species. The spawning stock biomass for cod has increased strongly over the past decade and is close to 2 million tonnes in 2013. Redfish, Greenland halibut and long rough dab are also abundant. The most important marine mammals in the Barents Sea ecosystem are minke whales and harp seals.

Production in the Barents Sea is currently high and the ling and tusk fisheries are small without influence on the general status of the system. The lumpfish fishery is minute in an ecosystem context.

5.6.1.2 The Norwegian Sea (ICES II)

The Norwegian Sea is dominated by two deep basins of 3000–4000 m depth and the coastal shelves of surrounding land masses. The tusk and ling fisheries occur on the deeper parts of the shelf and on the slopes of the continental shelf. Zooplankton biomass has decreased in recent years, probably due to high abundances of pelagic fish species. The most important pelagic feeders are mackerel, Norwegian spring spawning herring and blue whiting. Marine mammals include minke whales as well as larger whales such as humpback whales, blue whales and fin whales. Deepwater redfish is an abundant demersal species at the slopes of the Norwegian shelf. Moreover, there is a large variety in bottom fauna in the Norwegian Sea due to the great variation in depth. The great basins are dominated by deep-sea fauna while there are deep-sea coral reefs with a high biodiversity on the continental shelf along the Norwegian Coast.

The ling and tusk fisheries and also the lumpfish fisheries are small without influence on the general status of the system.

5.6.1.3 The North Sea and Skagerrak (ICES IV and IIIaW)

The North Sea and Skagerrak, including its fjords and tributaries is shallow in comparison to the Barents and Norwegian Seas. Two thirds of the North Sea measures less than 100 m in depth.

The North Sea ecosystem is heavily influenced by human activities, including fishing, extraction of oil, gas, and gravel, and spill-off from agriculture. Although pollution levels have been reduced since 1985, these activities remain a reason for attention. The water masses in the North Sea originate from the Atlantic Ocean. In addition to this salty water, there is a substantial supply of fresher water from the Baltic, and large European river systems.

The North Sea can roughly be divided into four areas, each with a characteristic ecological profile. In the northern part, at depths between 100–200 m, we find the most important areas for Norwegian fisheries, containing cod, saithe, haddock, herring and Norway pout. In the Norwegian trench, there are adult herring and mackerel near the surface, whereas the deep has a distinct fauna of its own. In the central parts, the juvenile herring replaces the adults and sprat becomes more common. Finally, in the eastern part of the Sea, there are nursery areas for herring and cod, and important sand eel areas. The Tusk and ling fisheries occur in the Northern area.

The most common marine mammals in the North Sea are minke whale, harbour porpoise, white-beaked dolphin, harbour seals and grey seals.

The ling and tusk fisheries and also the lumpfish fisheries are small without influence on the general status of the system.

5.6.1.4 Integrated management plans

Integrated management plans have been established for the Norwegian part of the Barents Sea and the sea areas outside the Lofoten Islands, the Norwegian Sea and the Norwegian part of the North Sea and Skagerrak. In sum these three plans covers all Norwegian sea areas. The following text is based on http://www.fisheries.no/resource_management/Area_management/Integrated_management_plans/#.Vn75t02FOos

The management plans give an overall framework for both existing and new activities in these waters, and facilitate co-existence of different activities, particularly the fisheries, maritime transport and the petroleum activity. The aim is to establish an ecosystem-based management of the activities in the relevant sea area. This means that all activities in the area should be managed within a single context and that the total environmental pressure from activities should not threaten the ecosystems. It is a goal that human activities do not jeopardise natural fluctuations in ecosystems and mitigation measures are implemented where unacceptable risks have been identified.

The integrated management plan for the Norwegian part of the Barents Sea and the sea areas off Lofoten was adopted by the Norwegian Parliament in 2006 and revised in 2010. The plan for the Norwegian Sea was adopted in 2009 and plan for the Norwegian part of the North Sea and Skagerrak was adopted in 2013.

It is the intention to revise and update the management plans at certain intervals.

The management plans are built on a comprehensive set of knowledge, but they also reveal that there are considerable needs for further knowledge. The knowledge base will therefore be strengthened through mapping, research and monitoring, and a monitoring group is established to coordinate the monitoring of the ocean areas (MAREANO). This project has since it was established provided a significant lift in the knowledge on the Norwegian Sea and Barents Sea ecosystems. In assessing the impact of in particular the habitats (PI 2.4) this assessment draws heavily on MAREANO Data.

6 Principle Three: Management System Background

6.1 Jurisdiction

The lumpfish fishery takes place in the Norwegian Exclusive Economic Zone. The ling and tusk fisheries take place within the Norwegian EEZ as well as in EU and international waters. **Table 1** shows that Norwegian vessels fish tusk and ling in other areas than those covered by this assessment, i.e. Faroese, Icelandic and Russian waters. Not all of these fisheries are target but represent by-catches in other fisheries e.g. for cod and Greenland halibut. However, in this assessment only those fisheries as described in the UoAs are evaluated.

6.2 Objectives

The 2008 Marine Resources Act requires that Norwegian fisheries management be guided by the precautionary approach, in line with relevant international treaties and guidelines, and by an ecosystem approach that takes into account habitats and biodiversity. The same objectives are found in the most relevant policy documents, such as the integrated management plans for the Barents and Norwegian Seas, and for the North Sea and

Skagerrak. At the international level, the 2006 amendments to the NEAFC Convention require states to apply the precautionary approach. In the EU, the current CFP regulation requires that member states, in accordance with international treaties such as the 1982 Law of the Sea Convention, the 1993 FAO Compliance Agreement and the 1995 Fish Stocks Agreement, apply the precautionary approach to fisheries management, and aim to ensure that exploitation of living marine biological resources restores and maintains populations of harvested species above levels which can produce the maximum sustainable yield. It is specifically mentioned that when targets relating to the maximum sustainable yield cannot be determined, multiannual (management) plans shall provide for measures based on the precautionary approach, ensuring at least a comparable level of protection for the relevant fish stocks. The maximum sustainable yield exploitation rate shall be achieved by 2015 where possible and, on a progressive, incremental basis at the latest by 2020 for all stocks.

6.3 Legal basis and management set-up

Norway has a well-established system for fisheries management, which has evolved over more than a century and is now codified in the 2008 Marine Resources Act and secondary legislation. The Act applies to all catch and use of marine resources and their genetic material and covers issues such as bioprospecting, catch levels and quotas, catch and use of marine resources, arrangements on the fishing fields, liability for damage and local regulations, as well as monitoring, enforcement, sanctions and criminal liability.

The Marine Resources Act is a framework law, which in the main authorizes the Government to issue specific regulations within designated fields. The most important rules are found in the Regulation on the Execution of Marine Fisheries, which is updated annually. The Regulation contains rules for mesh size, selection and limitations on the use of specific catch gear, seasonal restrictions, bycatch, minimal fish size, discard ban, restrictions on the use of trawl in specific areas, protection of coral reefs, documentation on hold volumes, marking of vessels and gear, loss of gear and fish welfare. Other important legal instruments are the 1999 Act on the Right to Participate in Fisheries, the 2015 Act on First-Hand Sales of Wild Catch of Marine Resources, the 2016 Regulation on Participation in Fisheries, the 2016 Regulation on Licencing and the 2016 Regulation on Landing and Sales Notes. All Regulations are subject to running modifications and additions through so-called J-orders, which are distributed to the fishing fleet electronically.

The executive body at governmental level is the Ministry of Trade, Industry and Fisheries, while the practical regulation of fisheries is delegated to the Directorate of Fisheries. Enforcement at sea is taken care of by the Coast Guard, which is part of the Royal Norwegian Navy, but performs tasks on behalf of several ministries, including the Ministry of Trade, Industry and Fisheries. Scientific research is performed by the Institute of Marine Research. Fisheries management authorities coordinate their regulatory work with that of other bodies of governance, for instance the Ministry of Climate and Environment and the Norwegian Environmental Agency, which are responsible for the implementation of the integrated management plans for different marine areas.

The national legal documents refer to and are in compliance with relevant international agreements, such as the 1982 Law of the Sea Convention and the 1995 Fish Stocks Agreement. Extensive cooperation takes place with relevant management authorities in other countries, in particular Russia and the EU.

Unlike lumpfish, ling and tusk are fished also in EU and international waters in the Northeast Atlantic. Fisheries here are managed within the context of the North East Atlantic Fisheries Commission (NEAFC), bilateral negotiations between Norway and the EU, and EU's Common Fisheries Policy (CFP). Norway and the EU concluded a framework agreement on fisheries cooperation in 1980 (in force 1981). The agreement provides the legal basis for the setting of TACs for joint stocks, transfers of fishing possibilities, joint technical measures and issues related to control and enforcement. The TACs for the jointly managed North Sea

stocks are agreed in annual negotiations between the EU and Norway and split according to fixed distribution formulas. The CFP's provisions are transposed into the national legal systems of the EU countries and apply to all fishing activities in EU waters, including the exclusive economic zone (EEZ), and to the activities of EU vessels outside EU's marine jurisdiction. The EU quota is divided among member states according to the principle of relative stability.

When fishing in other fishing zones the rules defined for these areas apply. However, there is a high degree of harmonization between the regulations, e.g. minimum mesh sizes and other technical measures. The fishing laws (EU CFP and NEAFC Fishing Regulations) are based on the same objectives as is the Norwegian legislation, e.g. MSY considerations. Norwegian fishers are not involved with the consultation processes that apply within EU.

For the stakeholders and consultation processes Norway has a long tradition of including non-governmental organizations in fisheries management, with continuous consultation and close cooperation between governmental agencies and user-group organizations, in particular the Norwegian Fishermen's Association, but also the more specialized organizations such as the fishermen's sales organizations. As these organizations have regional branches, whose representatives are actively involved in policy-making, ensuring that local knowledge is also taken into consideration in the management process. So-called Regulatory Meetings are organized twice a year are open to all; user-group organizations and NGOs attend on a regular basis. In addition there is day-to-day contact by telephone and email between authorities, user groups and other interested parties. Distribution of the national quota between different gear and fishing fleets has in practice been delegated to the Norwegian Association of Fishermen, which includes all fishermen from the smallest coastal vessels to ocean-going trawlers. Hence, the inherent conflict of interest between different vessel types is handled at the level of the Fishermen's Association, and the outcome is formalized by the Ministry or Directorate after agreement has been reached within the Association. Technical regulation measures are to a large extent decided upon in direct consultations 'over the table' between authorities and user groups at the Regulatory Meetings. The Sami Parliament, which is a consultative body for the indigenous Sami population on Norwegian territory, is consulted on all management measures, including the distribution of the national quota, related to species of particular historic importance to the Sami, e.g. lumpfish. The Government has formally committed to this through the 2005 Royal Decree on Consultations with the Sami Parliament.

In addition to formal and informal consultation on the running regulation of the fisheries, user-group organizations and authorities work together – e.g. in designated working groups – to tackle new and emerging challenges to the fishery, such as conflicts with the petroleum sector, marine litter, ghost fishing and other threats to the marine environment.

User groups such as the Norwegian Fishermen's Association also participate in the annual negotiations conducted between Norway and other countries. Norwegian management authorities actively seek advice from user groups in preparation for all international consultations and negotiations, and user groups are included in the Norwegian delegation.

6.4 Enforcement and compliance

The Marine Resources Act places the overall responsibility for monitoring, control and surveillance in Norwegian fisheries with the Directorate of Fisheries. The 1997 Coast Guard Act provides the Coast Guard with the authority to conduct inspections in waters under Norwegian jurisdiction, within the fields covered by the Marine Resources Act and secondary legislation given with statutory authority in that Act. Hence, MCS in Norwegian fisheries is taken care of through shared responsibility and close collaboration between the

Directorate of Fisheries, the Coast Guard and the regional sales organizations. The Directorate of Fisheries keeps track of how much fish is taken of the quotas of individual vessels, different vessel groups and other states at any given time, based on reports from the fishing fleet. Norwegian vessels are required to have electronic logbooks, or more specifically Electronic Reporting Systems (ERS). This implies that real-time data are forwarded to the Directorate of Fisheries, with the possibility to make corrections of data submitted each day within 12 hours into the next day. Norway has agreements in place with a number of other countries about exchange of ERS data, including the EU. The self-reported catch data can be checked at sales operations through the sales organizations, which have monopoly on first-hand sale of fish in Norway, and through physical checks performed by the sales organizations, the Directorate of Fisheries and the Coast Guard. The sales organizations are required to record all landings of fish in Norway and keep track of how much remains of a vessel's quota at any given time, on the basis of the landings data. This information is compared to the figures provided by the vessels to the Directorate of Fisheries through the electronic logbook. The value of any catch delivered above a vessel's quota is retained by the sales organization and used for control purposes. The sales organizations have their own inspectors who carry out physical controls of landings. They check, among other things, weighing equipment, quantity and size distribution of the catch, the quality of the fish and documentation. The Directorate has seven regional offices along the coast, staffed with inspectors that carry out independent physical control of the fish at the point of landing, including total volume, species and fish size. All landings have to be reported six hours in advance in order to give the inspectors the possibility to check the landed catch. The landed volumes are compared to the volumes reported to the Directorate through the logbooks. Both landing and at-sea control is conducted using a risk-based framework aimed at utilizing resources to optimize compliance at any given moment.

As mentioned above, the Coast performs tasks on behalf of several ministries, but its most important field of work in practice is fishery inspections. Coast Guard inspectors board fishing vessels and control the catch (e.g. catch composition and fish size) and fishing gear (e.g. mesh size) on deck and the volume of fish in the holds. Using the established conversion factors for the relevant fish product, the inspectors calculate the volume of the fish in round weight and compare this with the catches reported to the Directorate through the logbooks. Hence, there are a number of possibilities for enforcement authorities to physically check whether the data provided by fishers through self-reporting are indeed correct. In addition, VMS data enables control of whether area restrictions are observed, among other things.

Intentional or negligent violations are punished with fines or prison up to one year, while infringements committed with gross intent or negligence may be punished with prison up to six years. In the judgment of the seriousness of the infringement, the economic gain of the violation, among other things, is to be taken into consideration. Alternatively, catch, gear, vessels or other properties can be confiscated. The Norwegian enforcement agencies use a graduated sanctioning system, with sanctions ranging from oral warnings, written warnings and administrative fines to formal prosecution. If the fishers do not accept the fines issued by the enforcement or prosecution authority, the case goes to court. The decision of a lower-level court can then be appealed to higher-level courts.

Enforcement authorities report the level of compliance in the fishery to be high. In 2015, the Coast Guard carried out approx. 1500 inspections at sea. 293 inspections (20 %) resulted in a warning and 44 inspections (3 %) in a fine or prosecution. The Directorate of Fisheries performed 2788 landing controls in the period from 1 January 2015 to 25 August 2016. Some form of reaction was given in 16 % of the inspections (either warning or fine/prosecution). Included in this total were 478 landings of ling, tusk or lumpfish, mainly taken in mixed fisheries. Four vessels with ling in the catch and one with tusk were fined (1 %). Warning was issued in 34 inspections (7 %).

As follows from the above, the fishery has in place a comprehensive system for monitoring, control and surveillance, including physical checks of fishing operations, catch and gear, as well as a fine-meshed sanctioning system. In addition to these coercive compliance mechanisms, various forms of norm-, legitimacy- and communication-related mechanisms have also proved effective to deliver compliance in Norwegian fisheries. First, there is a degree of social control in the small coastal communities from which the fishery takes place, and the high level of user-group involvement may provide regulations with a degree of legitimacy that increases fishermen's inclination to comply with them. The same applies to the relationship between fishermen and enforcement officers, which is reported to be good. Inspectors are trained to approach the fishermen in as forthcoming a manner as possible and perceive themselves as having a guidance-providing and not only a policing role towards the fishing fleet.

6.5 Review of the management system

There are mechanisms in place to evaluate key parts of the management system. At the Regulatory Meetings that take place twice a year, management authorities receive feedback on management practices from the industry and other interested stakeholders, including NGOs. The scientific research component of the fisheries management system is reviewed in ICES reports and advice. The enforcement component is subject to continuous evaluation at meetings between the various bodies involved in enforcement activities, where priorities are hammered out on the basis of risk-based monitoring of past experience. The international side to Norwegian fisheries management system is reviewed by the Parliament upon submission by the Government (through the Ministry of Trade, Industry and Fisheries) of annual reports on the agreements concluded with other states within the fisheries sector. The Office of the Auditor General conducts annual reviews of the financial performance of the fishery management system.

The Office of the Auditor General regularly carries out holistic reviews of different sectors of the Norwegian bureaucracy (so-called 'management audits', as opposed to the more traditional financial audits). Such a review of the fisheries management system was undertaken in 2003–2004. At the initiative of the Russian Auditor General, a parallel audit of the Norwegian and Russian management systems for the Barents Sea fisheries was carried out in 2006–2007 and updated in 2011.

7 Evaluation Procedure

7.1 Harmonised Fishery Assessment

Lumpfish

The lumpfish fisheries at the westcoast of Greenland and around Iceland are MSC certified (April 2017). These two fisheries however exploit different populations, operate on different grounds and under different management. No harmonization activity was required.

Ling and Tusk

For Ling and Tusk there is a newly (17 March 2017) announced fishery

[Joint demersal fisheries in the North Sea and adjacent waters](#)

This assessment includes tusk and ling. No harmonization activities have taken place yet, as the other fishery is still early in the process. It is expected that as the other fishery progresses through assessment, harmonisation will take place to ensure scores are consistent.

The Icelandic golden redfish assessment includes Tusk but the areas considered are mainly in Va and not relevant in the present context.

7.2 Previous assessments

None

7.3 Assessment Methodologies

This fishery was assessed using MSC CRv2.0 of the MSC Certification Requirements and version 2.0 of the MSC Full Assessment Reporting Template. The default assessment tree was used without adjustments.

7.4 Evaluation Processes and Techniques

7.4.1 Site Visits

The assessment team made a site visit to Bergen from 17-19/8 2016. The agenda of the visit is given in Table 21
Table 21 Site visit Agenda.

Date	Name	Affiliation	Key issues
17/8	Tor Bjørklund Larsen	Norges Fiskarlag	Basic information about Norges Fiskarlag, history, organizational structure, roles and responsibilities in MSC Fisheries certification process.
	Knut Torgnes (Norges Sildesalgslag)		Review of fishing operations: Fishing season, fishing areas, gear used (specifications), catches and quotas.
	Tor-Edgar Ripman		
	Willy Godtliebsen		Review of impact on ecosystem: list of bycatch species, loss and recoveries of fishing gears.
	Lars Nyvold		
	Nils Mycklebust (Skipper Autoliner)		Compliance with rules and regulations: control, surveillance and monitoring routines/regulations

Date	Name	Affiliation	Key issues
			applied to the fishery/ geographical area. Chain of Custody start: Review of traceability system on board and at landing, first point of landing, point of first sale, main products.
18/8	Caroline Durif Anne Kjos Veim	Institute of Marine Research	Sampling programmes and level of sampling, research surveys. Integration of national data collection programmes and stock assessments with ICES assessments. Stock status, stock structure and recruitment of the fisheries under assessment. Review of Limit and Target reference points established for the stocks. Harvest strategy and harvest control rules. Data from the reference fleet. Monitoring programmes for non-target species. Level of by-catch (composition of species, quantities). Monitoring programmes for ETP species. Location of marine protected areas. Location of sensitive habitats. Ecological role of the fisheries under assessment on the stocks.
18/8	Modulf Overvik	Directorate of Fisheries	Function, role and responsibility of the organization. Review of regulations for the fisheries under assessment in the relevant geographical area. Control, surveillance and monitoring routines applied to fisheries under assessment. Fishermen's compliance with regulations. VMS data for the fleet of the fisheries under assessment in the last fishing year.

7.4.2 Consultations

There was no consultations as no NGO's reacted to the notification.

7.4.3 Evaluation Techniques

Email was used for all communications with stakeholders in relation to the assessment process, along with public announcements via the MSC website.

Acoura contacted a list of stakeholders with potential interest in the assessed fishery. This list included managers and other relevant national agencies, scientists, environmental NGOs, fishermen. A total of 13 contacts were included in the mailing list. This list was elaborated on by Acoura based on previous assessments performed in the country and agreed with the team members.

Scoring was performed according to the procedure established in Certification Requirement 7.10 (MSC FCR v2.0). The assessment team held two scoring meetings by conference call in November and December 2016.

According to MSC guidance, a list of the different scoring elements assessed is presented in Table 22.

Table 22 Scoring elements assessed by the team.

Scoring element	Component	Main/Minor	Data-deficient or not
Ling	Target		Not data deficient

Tusk	Target		Not data deficient
Lumpfish	Target		Not data deficient
Cod	Primary	Minor	Not data deficient
Haddock	Primary	Minor	Not data deficient
Saithe	Primary	Main	Not data deficient
Redfish	Primary ⁶⁴	Minor	Not data deficient
Atlantic halibut	Secondary	Minor	Not data deficient
Skates and rays	ETP ⁶⁵		Not data deficient
Greenland halibut	Primary	Minor	Not data deficient
Blue ling	ETP		Not data deficient
Pollack	Secondary	Minor	Not data deficient
Wolffish	Secondary	Minor	Not data deficient
Monkfish/Anglerfish	Secondary	Minor	Not data deficient
Hake	Primary	Minor	Not data deficient
Spurdog	ETP		Not data deficient
Whiting ⁶⁶	Primary	Minor	Not data deficient
Porbeagle	ETP		Not data deficient
Lemon sole	Secondary	Minor	Not data deficient
Red King crab	Secondary	Minor	Not data deficient
Witch flounder	Secondary	Minor	Not data deficient
Turbot	Secondary	Minor	Not data deficient
Seabirds ⁶⁷	ETP	No actual data records available from the fisheries,	
Lophelia reefs	VME habitat	Habitat maps available	
Soft coral gardens	VME Habitat	Habitat maps available	
Sponges	VME habitat	Habitat maps available	
NE Atlantic	Ecosystem	The NEA is one single ecosystem	

7.4.3.1 Scoring Process

After all relevant information was compiled and analysed, the assessment team scored the Unit of Assessment against the Performance Indicator Scoring Guideposts (PISGs) in the final tree (Default tree). The team discussed evidence together, weighed up the balance of evidence and used their judgement to agree on a final score following MSC FCR processes and based on consensus. Preliminary scoring was done at the end of the site visit and at skype meetings in September 2016. Final scoring took place in February 2017.

Individual Performance indicators are scored for each UoC. Where practical the scoring is presented combined for several UoC, e.g. as the UoCs are all subject to the same management system and there is no difference between Scores for each of the three Principles are reported to how this is applied to individual fisheries. the nearest one decimal.

In Principle 1 and 2 the scoring may include PI with multiple scoring elements. Scoring is then applied to the individual scoring elements and the overall score for the PI is determined based on the score of the different scoring elements. Scoring elements considered in this assessment are listed in Table 22.

⁶⁴ *Sebastes norvegicus* is on the Norway Red List.

⁶⁵ *D. batis* is on the Norway Red List, but recording was not to species level.

⁶⁶ Whiting in VIa (West of Scotland) is subject to a full assessment (primary). There is little whiting catch outside this area except on VIb (Rockall) for which there is no assessment (secondary)

⁶⁷ The group was treated as a whole rather than listing each possible or not so possible seabird species – as the issues apply to all, conditions set for each PI to improve quantitative.

In order to fulfil the requirements for certification the following minimum scores are required:

- The fishery must obtain a score of 80 or more for each of the three MSC Principles, based on the weighted aggregate scores for all Performance Indicators under each Principle.
- The fishery must obtain a score of 60 or more for each individual scoring issue under each Performance Indicator in each Principle.

The final scores are based on group consensus within the assessment team. The assessment team will recommend certification where the weighted average score is 80 or more for all the three Principles, and where all individual scoring issues are met at the SG60 level.

Conditions are set where the fishery fails to achieve a score of 80 on any Performance Indicators. Conditions with milestones are set to result in improved performance to at least the 80 level within a period set by the assessment team. The client is required to provide a client action plan to be accepted by the assessment team. The client action plan shall detail:

- how conditions and milestones will be addressed
- who will address the conditions
- the specified time period within which the conditions and milestones will be addressed
- how the action(s) is expected to improve the performance of the UoA
- how the CAB will assess outcomes and milestones in each subsequent surveillance or assessment
- how progress to meeting conditions will be shown to CABs.

8 Traceability

8.1 Eligibility Date

The **Eligibility Date** for this fishery will be the 1st March 2017 (as granted by variation request from the MSC⁶⁸). This means that any fish caught by the certified fleet following that date will be eligible to enter the chain of custody as certified product if and when certification is ultimately granted.

The measures taken by the client to account for risks within the traceability of the fishery – and therefore generating confidence in the use of this date for target eligibility – are detailed in the rest of this section.

A list of members holding eligible stock can be found in Appendix 9

8.2 Traceability within the Fishery

As described in section 6.4, monitoring, control and surveillance is taken care of thorough shared responsibility and close collaboration between the Directorate of Fisheries, the Coast Guard and the regional sales organizations. Coast Guard inspectors board fishing vessels and control the catch (e.g. catch composition and fish size) and fishing gear (e.g. mesh size) on deck and the volume of fish in the holds. Norwegian vessels are required to have electronic logbooks, where real-time catch data are forwarded to the Directorate of Fisheries. The Directorate of Fisheries keeps track of how much fish is taken of the quotas of different vessels, vessel groups or other states at any given time, based on reports from the fishing fleet.

The self-reported catch data can be checked at sales operations through the sales organizations, which have the monopoly on firsthand sale of fish in Norway, and through physical checks performed by the sales organizations, the Directorate of Fisheries and the Coast Guard. The sales organizations are required to record all landings of fish in Norway. This information is compared to the data provided by the vessels to the Directorate of Fisheries via the electronic logbook. Physical controls of landings are carried out both by inspectors from the sales organizations and DoF.

The Catch certificate is mandatory for export to EU. Norges Sildesalgslag has the responsibility for the catch certificate for all Norwegian fisheries through a separate company (Catch Certificate SA, <https://www.catchcertificate.no/>). The catch certificate accompanies the delivery note from the vessel. Buyers can access and extract catch certificates electronically.

Fish is mainly sold through auctions. There are exceptions for catches of less than 50 tonnes, where agreements can be made directly with the buyer, but the same requirements for reporting apply. All transactions are done through the sales organizations, logged and publicly available. All relevant information on the catch is provided to the sales organizations on a pre-delivery note. The vessel will complete the pre-filled delivery note and set the correct quantity and size distribution in accordance with requirements from the DoF. After landing, the delivery note is signed electronically and sent to the sales organizations for invoicing and settlement to fishermen. The purchaser's name is included in the delivery note. The current list of approved buyers in Norway can be accessed at <http://www.fiskeridir.no/register/kjoperreg/>, but eligible buyers outside of Norway are also permitted to buy the certified product. The MSC fishery certificate number is provided on invoices, and invoices are issued through the sales organizations. The fish changes ownership from vessel to processing plant.

⁶⁸ See <https://fisheries.msc.org/en/fisheries/nfa-norwegian-ling-tusk-and-nfa-norwegian-lumpfish/@assessments> for copy of request and response.

Fishing outside the UoC

All vessels are monitored by the Directorate of Fisheries through VMS data. The client has access to tracking data, and organizational and peer pressure in addition to official control contributes to minimizing the possibility of fishing outside the unit of certification. Catch details including catch locations are logged in real time. In terms of trips operating inside and outside the UoC, the following applies:

- 1) All fish is packed on boxes on board and labelled with catch area and catch date. The fish is thus physically separated on board or at point of landing.
- 2) Separate landing notes are written by the sales organizations for each catch area, so the fish is also clearly separated in the paperwork. This paperwork also identifies whether the fish originates from a MSC-certified fishery.
- 3) Confirmation of 1) and 2) is performed at the landing stations on shore, as they can and will provide traceback exercised during their CoC audits to demonstrate that they can separate the fish they have in storage.

The client noted (Client, pers.com) that “mixed trips” which include the Faroes or Iceland are rare, and the catch can be identified and kept separate as described in 1) and 2) above.

The potential for non-certified gear/s to be used within the fishery; ling and tusk fishery

This is handled at the sales note stage by the Norwegian sales organizations, just as in other Norwegian MSC-certified fisheries. At the point of landing, a sales note will always be generated by the sales organization, containing information such as gear, catch area, etc. Based on these parameters, the system specifies clearly on the sales note if the product is eligible to enter MSC chain of custody

Other EU vessels

Vessels outside the UoC or client group fishing the same stock, such as other EU vessels, are subject to quota restrictions on the stocks, as set by international agreement (see Principle 1).

the potential for non-certified gear/s to be used within the fishery;

At sea processing and trans-shipping

At sea processing on the Norwegian vessels from these fisheries is mainly the production of whole chilled fish, headed and gutted, frozen blocks, frozen fillets. All of the onboard processing results in products which are clearly identified with batch numbers, identifying the vessel, area of catch and the species. Tusk and Ling from these fisheries is also landed as unprocessed catch. There are no transshipment at sea activities involved in the Norwegian fisheries. All catches are subject to controls at landing.

Points of landing

Landing sites are mainly in Norway, with inspections by DoF and sales organization as described above. Product may also be landed outside of Norway, e.g. in Denmark, Scotland and Shetland. In these cases, landing information is transmitted to Norwegian Authorities who cooperate with national control bodies at points of landing to ensure correct information, ie the information and paperwork goes through the Norwegian sales organizations, just as if it were a landing in Norway (Client, pers.com)

8.3 Eligibility to Enter Further Chains of Custody

Product landed by Norwegian vessels from the Norway Tusk and Ling and lumpfish fisheries is being accurately recorded and identified through the Directorate of Fisheries and sales organizations as described above. Norway tusk and ling and lumpfish products landed by Norwegian vessels, recorded by the Directorate of Fisheries and the sales organizations, and sold through or by approval from the sales organizations, are eligible to enter further Chain of Custody. The scope of the MSC Fishery certification is up to the point of landing and Chain of Custody will commence from the point of landing and sale.

Sales organizations:

- Norges Rafisklag,
- Surofi,
- Vest-Norges Fiskesalsslag
- Rogaland Fiskesalgsalg
- Skagerakfisk

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

There is no IPI species involved with the tusk and ling fisheries. Nor are there IPI species in the lumpfish fishery.

9 Evaluation Results

9.1 Principle Level Scores

Table 23 Final Principle Scores

		Lumpfish	Ling I+II	Ling Other areas	Tusk I+II	Tusk NEA	Tusk VIb
Principle 1		87.5	80.0	83.0	80.0	84.2	80.0
Principle 2	Longline	-	82.0				
	Gillnet	80.7	80.7				
	Traps and pots	-	84.0				
Principle 3	Longline	-	90.2				
	Gillnet	94.4					
	Traps and pots	-	94.4				

9.2 Summary of PI Level Scores

Table 24 Lumpfish, Ling and Tusk, detailed Principle 1 PI scores. For ling and Tusk by stock

Table 24a Lumpfish

Principle	Component	Performance Indicator (PI)	Score
One	Outcome	1.1.1 Stock status	100
		1.2.1 Harvest strategy	95
	Management	1.2.2 Harvest control rules & tools	75
		1.2.3 Information & monitoring	80
		1.2.4 Assessment of stock status	75
Two	Primary species	2.1.1 Outcome	80
		2.1.2 Management strategy	90
		2.1.3 Information/Monitoring	90
	Secondary species	2.2.1 Outcome	80
		2.2.2 Management strategy	90
		2.2.3 Information/Monitoring	90
	ETP species	2.3.1 Outcome	70
		2.3.2 Management strategy	65
		2.3.3 Information strategy	70
	Habitats	2.4.1 Outcome	80
		2.4.2 Management strategy	80
		2.4.3 Information	80
	Ecosystem	2.5.1 Outcome	80
		2.5.2 Management	80
		2.5.3 Information	85
Three	Governance and policy	3.1.1 Legal &/or customary framework	100
		3.1.2 Consultation, roles & responsibilities	100
		3.1.3 Long term objectives	100
	Fishery specific management system	3.2.1 Fishery specific objectives	80
		3.2.2 Decision making processes	95
		3.2.3 Compliance & enforcement	100
		3.2.4 Monitoring & management performance evaluation	80

Table 24b Tusk and Ling

Principle	Performance indicator		Score				
			Ling		Tusk		
			I+II	Other areas	I+II	NEA	Vlb
One	Stock Status	1.1.1	80	80	80	90	80
	Harvest Strategy	1.2.1	90	90	90	90	90
	Harvest Control Rule	1.2.2	75	75	75	75	75
	Information and monitoring	1.2.3	80	80	80	80	80
	Assessment of stocks	1.2.4	75	90	75	90	75

PI Scores for Ling and Tusk

Principle	Component	Performance Indicator (PI)	Score		
			Gillnet	Longline	Traps and pots
Two	Primary species	2.1.1 Outcome	70	80	80
		2.1.2 Management strategy	95	95	95
		2.1.3 Information/Monitoring	85	100	100
	Secondary species	2.2.1 Outcome	80	80	80
		2.2.2 Management strategy	90	90	90
		2.2.3 Information/Monitoring	90	90	90
	ETP species	2.3.1 Outcome	70	70	80
		2.3.2 Management strategy	70	70	80
		2.3.3 Information strategy	70	70	70
	Habitats	2.4.1 Outcome	85	85	85
		2.4.2 Management strategy	75	75	85
		2.4.3 Information	80	80	80
	Ecosystem	2.5.1 Outcome	80	80	80
		2.5.2 Management	85	85	80
		2.5.3 Information	85	85	85
Three	Governance and policy	3.1.1 Legal &/or customary framework	85		
		3.1.2 Consultation, roles & responsibilities	90		
		3.1.3 Long term objectives	100		
	Fishery specific management system	3.2.1 Fishery specific objectives	80		
		3.2.2 Decision making processes	95		
		3.2.3 Compliance & enforcement	100		
		3.2.4 Monitoring & management performance evaluation	80		

9.3 Summary of Conditions

Table 25 Summary of Conditions The conditions for Ling and Tusk are on the same principle indicator, spread across the multiple UoAs.

Condition number	Species	Condition	Performance Indicator	Relevant UoAs	Related to previously raised condition? (Y/N/NA)
1	Lumpfish	a) Missing Well defined HCRs that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	1.2.2a	UoA-12	NA
2	Lumpfish	b) The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	1.2.4b	UoA-12	NA
3	Lumpfish	b) Known direct effects of the UoA are highly likely to not hinder recovery of ETP species	2.3.1b	UoA-12	NA
4	Lumpfish	a) There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species (Lumpfish)	2.3.2a	UoA-12	NA
5	Lumpfish	b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species	2.3.3b	UoA-12	NA

Condition number	Species	Condition	Performance Indicator	Relevant UoAs	Related to previously raised condition? (Y/N/NA)
6	Ling - Tusk	a) Missing Well defined HCRs that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	1.2.2a	UoA-1 – UoA-11	NA
7	Ling I+II Tusk I+II and Tusk Vlb	b) The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	1.2.4b	UoA-1, UoA-2, UoA-5, UoA6, UoA7, UoA-10, UoA-11	NA
8	Ling Tusk	a) Known direct effects of the UoA are highly likely to not hinder recovery of ETP species;	2.3.1a	UoA 1-11	NA
9	Ling Tusk	a) There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species. e) There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate	2.3.2a 2.3.2e	UoA 1-11	NA
10	Ling - Tusk	b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Ling and Tusk)	2.3.3b	UoA-1 – UoA-11	NA
11	Tusk Traps/pots	b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species	2.3.3b	UoA7	NA
12	Ling- Tusk	a) If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.	2.1.1a	UoA 1-11	
13	Ling- Tusk	a) There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above	2.4.2a	UoA1-6, 8-11	NA

9.4 Recommendations

Recommendation 1, PI 2.4.2.

This applies to all fisheries under assessment – lumpfish fishery, ling and tusk fishery. Ensure that all fishers know the locations of vulnerable habitats as identified by survey/mapping programmes (MAREANO). Ensure that all fishers are aware of the need to protect such areas (eg *Lophelia* reefs), even where they are not in a protected closed area.

Recommendation 2 PI 2.3.1

To strengthen the data collection of by-catch of sea birds in the lumpfish fishery the Client might consider support work by data recording by a reference fleet or voluntary observer programmes/observers?

Recommendation 3: PI 2.3.1

Marine mammal interaction for the tusk pots and traps fishery: recording of any interaction of the gears with marine mammals. If possible, establish a system to independently verify such self-recording

9.5 Determination, Formal Conclusion and Agreement

The Assessment team have recommend that the fishery under assessment meets the requirements for the MSC standard, with conditions, and should be certified.

Acoura confirm the determination that the NFA Norwegian Ling & Tusk and NFA Norwegian Lumpfish Fishery should be certified.

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Appendices

Appendix 1 Scoring and Rationales

Appendix 1.1 Performance Indicator Scores and Rationale

Lumpfish (UoA 12)

PI 1.1.1 Lumpfish stock status – Evaluation table

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guidepost	It is likely that the stock is above the point where recruitment would be impaired (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
	Met?	Y	Y	Y
	Justification	Lumpfish abundance is linked to temperature in the Barents Sea and as the temperature has generally been increasing so has the lumpfish population. PRI reference points has not be defined but general indications are that the PRI reference points would correspond to exploitation rates in the range of 10-30%, and MSY reference point in the 30% range, Hedeholm et al (2014). The lumpfish in the Norwegian Sea is increasing and have done so steadily since 2011 based on survey results. As the current estimate of the exploitation rate is around 1% (calculated as the (20cm+) female population swept area estimate relative to the roe catch in the Norwegian fishery), Durif (2016), and if using the exploitation rate of 10% (precautionary) as a proxy for PRI it can be concluded that there is a high degree of certainty that the stock is above PRI. So SG 60, 80 and 100 are all met.		
b	Stock status in relation to achievement of MSY			
	Guidepost		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		Y	Y
	Justification	The estimated harvest rate (1%) combined with general biological estimates of MSY level of 10-30% survey suggests that the stock currently is exploited well below MSY and has been so for the most recent three years. There is no indication of the stock being overexploited the stock is increasing as indicated from survey results, recruitment is also increasing. SG 80 & 100 is met. The stock has yielded significantly higher yields than is the case in most recent years. Current catches are around 3-500 t while catches peaked at more than 6,000 tons (~1,100 tons roe), see Figure 19.		
References		Durif (2016) Hedeholm et al (2014)		

PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue	SG 60	SG 80	SG 100
Stock Status relative to Reference Points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (SIa)	Yield/Survey Biomass	10-30%	1%
Reference point used in scoring stock relative to MSY (SIb)	Yield/Survey Biomass	10-30%	1%
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			

PI 1.1.1A key LTL - Evaluation table. Lumpfish is not identified as key LTL. Hence the Table 1.1.1A is not scored

PI 1.1.2 – Stock rebuilding - Evaluation table. Not scored as the stock is not deemed depleted

PI 1.2.1 Lumpfish Harvest strategy - Evaluation Table

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guided ost	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	Y	Y	Y
	Justification	The harvest strategy is based on the Norwegian approach on MSY fishing as defined in 'Norwegian marine fishing law' (Norges saltfiske lag) and therefore is expected to meet stock management objectives (meets SG 60). The regulation (boat quota) is set taking the two survey results into account combined with the available fishery statistics including both a detailed account of the potential fleet and the landing history, Fiskeridirektoratets Statistikkbank. Currently the commercial effort - measured as number of participating vessels - is low and there is no direct link between abundance and yield but instead yield reflects effort. However, past experience with system has demonstrated that the boat quota can be adjusted in response to the stock status i.e. the reduction of the boat quota in 2002 from 6.5 t per boat to 3 t per boat per season, therefore showing the strategy is responsive to the state of the stock (meets SG 80). The strategy is designed to achieve a low exploitation level - the current estimate is around 1% of the survey biomass measured in the 0-group survey. Although there is no PRI defined for the Norwegian lumpfish general indications of the PRI level is around 10-30 % exploitation based on data in Hedeholm et al (2013). SG 60, 80 and 100 are all met.		
b	Harvest strategy evaluation			
	Guided ost	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	Y	Y	N
	Justification	The increasing stock demonstrates that the strategy is achieving its objectives, so SG 80 is met. However, as the strategy has not been fully tested, SG 100 is not met		
c	Harvest strategy monitoring			
	Guided ost	Monitoring is in place that is expected to determine		

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PI 1.2.1		There is a robust and precautionary harvest strategy in place		
		whether the harvest strategy is working.		
	Met?	Y		
	Justification	The fishery is well documented as part of the general Norwegian statistical system for fisheries. The vessels are small and there is no VMS obligation except for a few vessels above the VMS limit of 13 m. The fishing grounds are reported as part of the sales slips that also replace other logbook information. A system with reporting through mobile telephone sms is being introduced. Beause of the vessel size there is little concern about geographical misreporting. The survey data inform whether the strategy is working and the fisheries data supports analysis if stock changes are likely to be related to changes in the fishery SG60 is met.		
d	Harvest strategy review			
	Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			Y
	Justification	The harvest strategy is revied annually as part of the general annual review of the Norwegian fisheries. This review is conducted through Fiskeridirektoratet. SG100 is met.		
e	Shark finning			
	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	Lumpfish is not a shark		
f	Review of alternative measures			
	Guidepost	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	The gillnet used has large meshes > 260 mm. There is therefore no unwanted catch of the target stock and the score post is not relevant.		
References				
OVERALL PERFORMANCE INDICATOR SCORE:				95
CONDITION NUMBER (if relevant):				

PI 1.2.2 Lumpfish Harvest control rules and tools Evaluation table

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guidepost	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Met?	Y	N	N
	Justification	There is a generally understood HCR in place (from 2017 a total TAC and earlier setting boat quota and monitoring the total number of vessels involved) combined with an annual assessment that that stock trends are not marked negative. This HCR is not institutionalized and there is no precise reference points hence the HCR is not well-defined and SG80 is not met. Current practice combined with the market conditions (prices) and the attractive alternative cod fishery have assured that it is highly unlikely that the lumpfish fishery is overexploiting the stock. As mentioned elsewhere it is taking around 1% of the biomass as measured by the 0-group survey. This level is expected to keep the stock at MSY or above. Imr (Bergen) that provides the advice is obliged to provide advice that is consistent with the Norwegian fishing law i.e. aiming at sustainable fisheries. The advice will therefore include reductions in fishing mortality if this is indicated by the assessments, i.e. based on the survey results combined with the development in the fishery.		
b	HCRs robustness to uncertainty			
	Guidepost		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	Met?		Y	N
	Justification	The main uncertainty related to the HCR is variability in the survey indices and changes in stock distribution due to climate change. In particular the IESSNS survey covers a wide area giving some robustness to the survey results and this will absorb some uncertainty around the stock distribution. Therefore SG 80 is met. However SG 100 is not met as the approach does not cover a wide range of uncertainties, f. ex. Ecological changes (growth) furthermore there is no evidence that the HCR is robust to this wider range of uncertainties. SG 100 is not met.		
c	HCRs evaluation			
	Guidepost	There is some evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	Y	Y	N

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place
	Justification	The fishery is currently at a low level and management together with the industry review the situation annually based on information from IMR and the industry. At these reviews the regulation applicable for the coming year are agreed. Management finds that the boat quota combined with the general licence scheme is satisfactory to deliver a sustainable lumpfish fishery. The Norwegian fishing law allows management to introduce more tight restrictions on the fishery based on evidence if this is required and the case in 2002 demonstrate that management both has the tools to restrict the fisheries and the willingness to implement such more tight restrictions if required. The increasing stock is evidence that the HCR is appropriate and effective. The survey in relation to the fisheries data provide evidence that exploitation rate are as required under the HCR, so SG 60 and 80 are met. The evidence is however, somewhat limited and does not constitute 'clear' evidence. SG 100 is not met
	References	Eriksen et al (2014) Durif (2016) Hedeholm et al (2014)
OVERALL PERFORMANCE INDICATOR SCORE:		75
CONDITION NUMBER (if relevant):		1

PI 1.2.3 Lumpfish Information and monitoring - Evaluation table

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guidepost	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Y	Y	N
	Justification	There is general biological information available on stock structure and stock productivity Pampouile et al (2014) and Hedeholm et al (2013), the fleet is well documented as part of the general Norwegian fisheries statistics programme. SG 60 is met. This information is sufficient to support the strategy. SG 80 is met. However, the amount of information on the biology and productivity of the lumpfish in the Northeast Atlantic is limited and SG 100 is not met. The WGLUMP 2016 report (WGLUMP is a cooperation group of lumpfish researchers) identifies a range of relevant information that is desirable for the better understanding of the lumpfish. This lack of information includes data on homing and reproduction biology.		
b	Monitoring			
	Guidepost	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Y	Y	N
	Justification	The fishery is well documented and this is the only fishery on this stock component. There are two survey indices available. SG 60 is met. The surveys are annual. The information for the fishery is with very high accuracy while the survey results are accurate as of ‘best available practise’. These information items support the HCR. SG80 is met. There is some understanding of the uncertainties involved and the robustness of the assessment. However, because the stock in recent years have not been under stress by the fishery, the stock is increasing, the robustness is not well understood. SG100 is not met.		
c	Comprehensiveness of information			
	Guidepost		There is good information on all other fishery removals from the stock.	

PI 1.2.3		Relevant information is collected to support the harvest strategy		
	Met?		Y	
	Justification	This is the only fishery which affects this stock. Also any minute by-catch in other fisheries are well documented as the fisheries in the Northeast Atlantic in observed landing obligations (Iceland, Faroe Islands) and provide detailed logbook information. SG 80 is met.		
References		<p>Pampouile et al (2014)</p> <p>WGLUMP 2016 and 2017 (Most recent meeting 7-9 February 2017). Report not available</p> <p>Durif (2016)</p> <p>Hedeholm (2016)</p> <p>Eriksen et al (2014)</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				

Acoura Marine
Public Certification Report
NFA Norwegian Ling & Tusk and NFA Norwegian Lumpfish Fishery
PI 1.2.4 Lumpfish Assessment of stock status - Evaluation table

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guidepost		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		Y	N
	Justification	The generally understood HCR is based on the assessment which is based on survey trends and fisheries yield data. This data set is appropriate for the HCR. SG80 is met. The design of the survey is targeting 0-group fish in general and not lumpfish in particular and the IESSNS survey is designed for general mapping of the marine biomass. Neither of the surveys are designed with the specific objective to provide input to an assessment of lumpfish and therefore do not take specific biological features of the lumpfish population into account. Hence SG100 is not met		
b	Assessment approach			
	Guidepost	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	Y	N	
	Justification	The assessment is measured relative to an exploitation rate (yield/swept area biomass) reference point, this has been estimated and is considered to be appropriate. However, there is no reference point defined explicitly. SG 80 is not met.		
c	Uncertainty in the assessment			
	Guidepost	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	Y	Y	N
	Justification	The two major uncertainties survey variation and stock distribution are clearly discussed in the assessments. The evaluation takes these uncertainties into account. SG80 is met. The assessment is not probabilistic; SG 100 is not met.		
d	Evaluation of assessment			
	Guidepost			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			N
	Justification	The assessment has not because of the market situation been under stress and has not been tested and shown to be robust. There is no studies of that thoroughly investigate alternative approaches SG 100 is not met.		
	Peer review of assessment			

PI 1.2.4		There is an adequate assessment of the stock status		
e	Guidepost		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		Y	N
	Justification	The stock assessment is subject to internal (IMR) review) there is no external review presented. SG 100 is not met		
References		Eriksen et al (2014) Durif (2016)		
OVERALL PERFORMANCE INDICATOR SCORE:				75
CONDITION NUMBER (if relevant):				2

PI 2.1.1 Lumpfish – Primary species outcome – Evaluation table

PI 2.1.1		The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guided post	Main primary species are likely to be above the PRI OR If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are highly likely to be above the PRI OR If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main , to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.
	Met?	NR	NR	NR
	Justification	There are no ‘main’ Primary species in the lumpfish fishery. All Primary species are caught at less than 5% of the total catch. See Table 16 Section 5.3.2. Because there are no ‘main’ species, scoring issue a) is not used ⁶⁹ .		
b	Minor primary species stock status			
	Guided post			Minor primary species are highly likely to be above the PRI OR If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species
	Met?			N
	Justification	Each element (minor species) is assessed against scoring issue b. If it does not meet SG100, it is treated as though it still meets SG80 (which is blank), which is automatically met by virtue of being a minor species. The following species have been identified as Primary ‘minor’ in the lumpfish fishery (Table 16): Cod, Norwegian coastal cod, saithe, haddock, Redfish (not differentiated between the two species <i>S.norvegicus</i> and <i>S.mentella</i>), Greenland halibut, tusk and ling, and plaice. Considering the location of this fishery (ICES area I + II), the cod concerned is most likely to be Coastal cod.		

⁶⁹ MSC interpretations 24.02.2017, ID 2845: 'If the fishery has no main species, scoring issue (a) is not applicable. In scoring issue (b) each species will score either 80 or 100 depending on whether the SG100 is met or not.'

PI 2.1.1		The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.	
		<p>Table 15 in Section 5.3.1 provides detailed information on reference points and stock status for all the Primary species identified from the catch profiles. From this table it can be seen that saithe, ling, tusk, haddock and Greenland halibut met SG100.</p> <p>From this table it can be seen that the following scoring elements do not meet the SG100:</p> <p>Coastal cod, <i>Sebastes norvegicus</i> in area I + II.</p> <p>There is no ICES fisheries information on plaice in this area, where the lumpfish is caught, SG100 is not met</p> <p>There is inadequate information on king crab and nephrops, SG100 is not met. As not all minor species meet SG100, SG80 is met.</p>	
References		ICES, 2014b; ICES, 2015b; ICES, 2015c; ICES, 2015d; ICES, 2016a; ICES 2016b; ICES, 2016c; ICES, 2016d; ICES, 2016e; ICES, 2016f; ICES, 2016g; ICES, 2016h; ICES, 2016i; ICES, 2016j; ICES, 2016k; ICES, 2016l; ICES, 2016m; ICES, 2016n; ICES, 2016o	
OVERALL PERFORMANCE INDICATOR SCORE:			80
CONDITION NUMBER (if relevant):			

PI 2.1.2 Lumpfish– Primary species management strategy Evaluation Table

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guided post	There are measures in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to above the point where recruitment would be impaired.	There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the point where recruitment would be impaired.	There is a strategy in place for the UoA for managing main and minor primary species.
	Met?	Y	Y	Y
	Justification	By definition of ‘primary species’, which are species of commercial value with management tools controlling exploitation, all elements listed under PI 2.1.1 meet SG 60 and 80. These tools, which comprise a strategy as they are regularly reviewed through the ICES process, include: a requirement for accurate information on landings (via log book and sales notes), stock assessments and management rules such as reference points, harvest control rules, quotas and recovery plans where necessary (see also Table 16). There is a discard ban in the Norwegian fishery, and legislation allows the ‘Fiskeridirektoratet’ to introduce regulation at short notice that regulates by-catch. The available toolbox (closed areas and seasons, TACs, gear restrictions) and experience with the system (testing) including willingness to use the toolbox provides high confidence that the strategy will work.		
b	Management strategy evaluation			
	Guided post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	Y
	Justification	The catch composition data shows small amounts of primary species bycatch, which is largely due to the gear involved, gill net with large mesh size (268mm). The fishery is seasonal only, from April to July, and is weather dependent, as it operates in shallow water (nets deployed between 10-50m depth) and the fishery is closed to larger vessels; only small vessels (13m and less) are allowed in this fishery (interview with IMR, Aug. 2016). The measures/strategy will work because log books, registered landing ports and effective monitoring, control and surveillance give an objective basis confidence that the measures designed to minimise the level of retention on non-target species are effective. The primary species involved are managed through stock management measures, and as all bycatch has to be retained, this data feeds into the relevant stock assessments. SG80 is met. Testing is in place, as the strategy for managing bycatch is reviewed annually by the Directorate and IMR, as part of a wider review of fisheries regulations and technical		

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
		measures (IMR, Directorate interview, Aug 2016), this provides high confidence that the strategy will work. SG100 is met.		
c	Management strategy implementation			
	Guidepost		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a).
	Met?		Y	N
	Justification	Given the low proportion of bycatch, the partial strategy seems to be working in practice for the client fleet, and the species in question appear to be within biological limits. Information on bycatch reported by the fleet, including that collected by trained fishers on board vessels in the reference fleet, coupled with analysis by IMR, and ongoing scientific surveys of the stock status of the species involved, provide an objective basis for confidence that the strategy is working. Furthermore, the discard ban adds substantially to confidence about the nature of the bycatch. SG80 is met as there is some evidence of the strategy being implemented successfully. Testing can only be limited and is unlikely to support high confidence that the strategy will work, given: <ul style="list-style-type: none">a. the lack of biological reference points, and uncertainties about the level of fishing mortality for coastal codb. The uncertainties relating to identification of the two redfish species Therefore SG100 is not met.		
d	Shark finning			
	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	Not applicable – none of the primary species are sharks		
e	Review of alternative measures			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	NR	NR	N

PI 2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.	
	Justification	<p>‘Alternative measures’ are to be interpreted as alternative fishing gear and /or practices, that have been shown to minimise the rate of incidental mortality. ‘Unwanted catch’ is interpreted as the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use (SA3.1.6)</p> <p>The fishery is conducted with very large mesh (~267 mm stretched) and occurs on the spawning sites. The catch composition data shows that percentage of bycatch is small, see Table 16. There is no bycatch of main primary species</p> <p>The regulations are considered, and the technical measures regularly reviewed , by IMR, Fiskeridirektoratet and stakeholders Where necessary, measures can be introduced at short notice, such as closing an area to fishing when incoming data on catches and bycatches show irregularities (IMR, Directorate, interview Aug 2016). Thus fishing practice can be changed at short notice by the fisher, by moving the gear to another area (ie if bycatch of a species is high, move to another area). The assessment team was not made aware of a biennial review of alternative measures – SG100 is not met.</p> <p>As SG60 and SG80 are not relevant, and SG100 not met, then this SI scores 80.</p> <p>.</p>
References		<p>IMR and Directorate of Fisheries interviews</p> <p>Refs as under 2.1.1</p>
OVERALL PERFORMANCE INDICATOR SCORE:		90
CONDITION NUMBER (if relevant):		

PI 2.1.3 Lumpfish– Primary species information Evaluation Table

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guidepost	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	NR	NR	NR
	Justification	There are no main species, Scoring Issue a) is not used.		
b	Information adequacy for assessment of impact on minor primary species			
	Guidepost			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			Y
	Justification	. Minor species are assessed against Scoring Issue b). If it does not meet SG100, it is treated as though it still meets SG80 (which is blank), which is automatically met by virtue of being a minor species. Good quantitative data is available on the minor Primary species, at the point of capture and landing (because of the discards ban), and this is reinforced and verified through the reference fleet, and landings inspections, and landings notes. Synthesis of data, analysis and checks are made by IMR on an on-going basis. All the minor species are listed in Table 15, giving the relevant stock status information. SG100 is met		
c	Information adequacy for management strategy			
	Guidepost	Information is adequate to support measures to manage main primary species.	Information is adequate to support a partial strategy to manage main Primary species.	Information is adequate to support a strategy to manage all primary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	N
	Justification	For some of the Primary species (ie Coastal cod, ‘redfish’), the lack of detailed understanding about stock dynamics means that the landings information obtained is only adequate to		

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
		support measures and a partial strategy to manage Primary species and not adequate to support a comprehensive strategy, or enable a high degree of certainty. SG60 and 80 are met but not SG100.		
References		Catch composition data ICES reports and advice as listed under 2.1.1		
OVERALL PERFORMANCE INDICATOR SCORE:				90
CONDITION NUMBER (if relevant):				

PI 2.2.1 Lumpfish– Secondary species outcome Evaluation Table

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit.		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guidpost	Main Secondary species are likely to be within biologically based limits. OR If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are highly likely to be above biologically based limits OR If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that also have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main secondary species are within biologically based limits.
	Met?	NR	NR	NR
	Justification	There are no Secondary ‘main’ fish species recorded in this fisheries (see Table 16) The amount of Secondary bycatch is small, percentages ranging 0.00% (ie a few kg of a species) to 0.5% of the total catch. All bycatch is landed and recorded, and data of the last 5 years (2012-2016) has been analysed. All birds and marine mammals (‘out of scope species’) shall be scored as “main” (FCR SA 3.7.1.2). Where data are available for sea birds these are on the Norwegian Red List, and are thus scored under ETP. Studies show that diving seabirds can be caught in the gill net (see Section 5.4.3), especially as the nets are positioned closer to shore. There is no direct data on bird bycatch recorded in this fishery, thus seabirds are scored under ETP. Because there are no ‘main’ species Scoring Issue a) is not used ⁷⁰ .		
b	Minor secondary species stock status Seabirds are ‘out of scope species’, and thus considered as Secondary ‘main’.			
	Guidpost			Minor secondary species are highly likely to be above biologically based limits.

⁷⁰ MSC interpretations 24.02.2017, ID 2845: 'If the fishery has no main species, scoring issue (a) is not applicable. In scoring issue (b) each species will score either 80 or 100 depending on whether the SG100 is met or not.'

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit.		
				OR If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			N
	Justification	<p>The very nature of the classification into Secondary species indicates that these species are not managed, and in many cases do not have the necessary analytical assessment to determine the biologically based limits. There is no evidence that these species are highly likely to be above biologically based limits.</p> <p>Each element (minor species) is assessed against Scoring Issue b). If it does not meet SG100, it is treated as though it still meets SG80 (which is blank), which is automatically met by virtue of being a minor species. Since all species are minor and not all meet the requirement for SG100, the performance indicator scores 80.</p> <p>The Secondary 'minor' species identified from the catch composition in this fishery are: Atlantic halibut (<i>Hippoglossus hippoglossus</i>). Listed as endangered on the IUCN Redlist (Though not in Norwegian waters, and the stock is in generally good shape north of 62 degrees where this fishery takes place.). Monkfish/Anglerfish (<i>Lophius piscatorius</i>) Inadequate information Atlantic Wolffish: Inadequate information Spotted Wolffish: Inadequate information <u>Pollack</u>: There is no directed fisheries for pollack in Subarea 4 and Division 3.a and pollack are taken solely as bycatch. There are no reference points for this stock Witch flounder Turbot. There are no reference points for the stock as listed in Area 4 (North Sea). It is managed jointly with brill. There is little information on stock status. Lemon sole: Inadequate information Assorted flounders</p> <p>As above, because there are no 'main' species Scoring Issue a) is not used. Each element (minor species) is assessed against Scoring Issue b). If it does not meet SG100, it is treated as though it still meets SG80 (which is blank), which is automatically met by virtue of being a minor species. Since all species are minor and not all meet the requirement for SG100, the performance indicator scores 80.</p>		
References		<p>Catch composition data</p> <p>Client interviews</p> <p>ICES, 2016r; ICES, 2015e.</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				-

PI 2.2.2 Lumpfish– Secondary species management strategy Evaluation Table

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guided post	There are measures in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a strategy in place for the UoA for managing main and minor secondary species.
	Met?	Y	Y	Y
	Justification	Overall the Norwegian legislation (Nature protection and specifically fishing law) provides for protection of biodiversity including by-catch in the fisheries. The status is monitored through special studies e.g. Fangel et al (2011). The strategy include gear regulations and closed areas and seasons. There are measures (meeting SG 60), which comprise a (partial – meeting SG 80) strategy as they are regularly reviewed through the ICES process, which include: a requirement for accurate information on landings (via log book and sales notes), discard ban, stock assessments and management rules such as research into reference points, quotas and recovery plans where necessary. Legislation allows the ‘Fiskeridirektoratet’ to introduce regulation at short notice that regulates by-catch. Therefore this can be considered a strategy which manages the main and minor secondary species. SG100 is met		
b	Management strategy evaluation			
	Guided post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	Y	Y	N
	Justification	The available toolbox (closed areas and seasons, TACs, gear restrictions) and experience with the system (testing) including willingness to use the toolbox provides an objective basis for confidence that the measures/strategy will work, meeting SG 60. As these are secondary species, and thus little info on stock, experience (practical testing) suggests that the strategy works. SG80 is met. A thorough evaluation is not available. SG100 is not met		
c	Management strategy implementation			
	Guided post		There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
	Met?		Y	N
	Justification	<p>Given the low bycatch, the partial strategy seems to be working in practice for the client fleet.</p> <p>Information on bycatch collected by the fleet, including that collected by scientific observers on board (e.g. for birds), coupled with analysis by IMR, and ongoing scientific surveys of the stock status of the species involved, provide an objective basis for confidence that the strategy is working. Furthermore, the discard ban adds substantially to confidence about the nature of the bycatch.</p> <p>SG80 is met.</p> <p>Testing can only be limited and is unlikely to support high confidence that the strategy will work, given:</p> <ul style="list-style-type: none"> - the lack of biological reference points, and uncertainties about the stock and level of fishing mortality for the Secondary 'minor' species. - The uncertainties relating to identification of the several of the bycatch species. <p>SG100 is not met.</p>		
	Guided post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Y	Y	Y
d	Shark finning			
	Justification	The catch of sharks is very minimal (dogfish) Table 16 (12 kg 2012-2016). There is no market for shark fins and finning is banned. There is a high degree of certain that there is no shark finning.		
e	Review of alternative measures to minimise mortality of unwanted catch			
	Justification	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate.
	Met?	NR	NR	N
	Guided post	<p>'Alternative measures' are interpreted as alternative fishing gear and /or practices, that have been shown to minimise the rate of incidental mortality. 'Unwanted catch' is interpreted as the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use (SA3.1.6)</p> <p>The fishery is conducted with very large mesh (~267 mm stretched) and occurs on the spawning sites. The catch composition data shows that percentage of bycatch is small, see Table 16. . There is no bycatch of main secondary species. SG60 and SG80 are not relevant.</p> <p>The regulations are considered, and the technical measures reviewed by IMR, Fiskeridirektoratet and stakeholders annually . Where necessary, measures can be introduced at short notice, such as closing an area to fishing when incoming data on catches and bycatches show irregularities (IMR, Directorate, interview Aug 2016). Thus fishing</p>		

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.
		<p>practice can be changed at short notice by the fisher, by moving the gear to another area (i.e. if bycatch of a species is high, move to another area).</p> <p>The assessment team was not made aware of a biennial review of alternative measures – SG100 is not met.</p> <p>As SG60 and SG80 are not relevant, and SG100 not met, then this SI scores 80.</p>
References		See 2.1.1 and 2.2.1
OVERALL PERFORMANCE INDICATOR SCORE:		90
CONDITION NUMBER (if relevant):		

PI 2.2.3 Lumpfish– Secondary species information Evaluation Table

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guidepost	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status.
	Met?	NR	NR	NR
	Justification	Because there are no main species Scoring Issue a) is not used. Each element (minor species) is assessed against Scoring Issue b).		
	b	Information adequacy for assessment of impacts on minor secondary species		
Guidepost				Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
Met?				Y
	Justification	Each element (minor species) is assessed against Scoring Issue b). If it does not meet SG100, it is treated as though it still meets SG80 (which is blank), which is automatically met by virtue of being a minor species. The fishery is under a discard ban, all catch is recorded, and a catch profile has been available for the last few years (where the most recent 5 years have been used in this assessment). Some quantitative information is adequate to estimate the impact of the UoA on minor Secondary species with respect to status. Good quantitative data is available on the minor Secondary species (through the catch profile, over the most recent 5 years), at the point of capture and landing (because of the discards ban), and this is reinforced and verified through the scientific observer programme, reference fleet, and landings inspections, and landings notes. Synthesis of data, analysis and checks are made by IMR on an on-going basis. SG 100 is met.		
	c	Information adequacy for management strategy		
Guidepost		Information is adequate to support measures to	Information is adequate to support a partial strategy to	Information is adequate to support a strategy to manage all secondary species, and evaluate with a

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.		
		manage main secondary species.	manage main secondary species.	high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	N
	Justification	<p>There are no main Secondary species.</p> <p>The lack of detailed understanding about stock dynamics of these Secondary species means that the landings information obtained is only adequate to support the measures (meeting SG 60) and a partial strategy to manage Secondary species and not adequate to support a comprehensive strategy, or enable a high degree of certainty.</p> <p>SG80 is met but not SG100.</p>		
References		<p>Client data – catch composition</p> <p>ICES reports as listed in 2.2.1</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				90
CONDITION NUMBER (if relevant):				

PI 2.3.1 Lumpfish– ETP species outcome Evaluation Table

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species		
		The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guidepost	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/stock are known and likely to be within these limits.	Where national and/or international requirements set limits for ETP species, the combined effects of the MSC UoAs on the population/stock are known and highly likely to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a high degree of certainty that the combined effects of the MSC UoAs are within these limits.
	Met?	Not Relevant	Nor Relevant	Nor Relevant
	Justification	From the literature seen, no national or international requirements that set limits for ETP species, in particular seabird species, could be identified (ICES, 2014d; ICES, 2016q).		
b	Direct effects			
	Guidepost	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Known direct effects of the UoA are highly likely to not hinder recovery of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	Y	N	N
	Justification	<p>The catch composition information –Table 16 for the lumpfish fishery shows that dogfish (unidentified species but mostly likely Spiny dogfish <i>Squalus acanthias</i>) was the only ETP species recorded. There is no direct data from the fishery on any seabirds or marine mammals caught.</p> <p>A longstanding concern with respect to seabirds and fishing has been estimates of potential mortalities resulting from seabird–fishing-gear interactions (BirdLife, 2012). The reference fleet vessels record seabird–fishing gear interactions (Table 19) and these data have been subject to review (Bowering <i>et al.</i>, 2011). The reference-fleet data indicate that across the fleet, such interactions are not common, but direct interviews with fishermen yielded estimates deaths of 10 000–12 000 birds per year in 2009–10 (Fangel <i>et al.</i>, 2011). Northern fulmars, cormorants (<i>Phalacrocorax</i> spp.), black guillemots and razorbills are the birds most often drowned in fishing gear in Norway, with the highly specific, targeted inshore gillnet fishery for lumpsucker and the northern longline fishery for Greenland halibut raising particular cause for concern. The total estimate (2009-2010) is about 2,000 birds per year out of populations that are counted in some case in millions.</p> <p>Žydelis et al (2013) present a global review of incidental catch of seabirds in gillnet fisheries. They conclude that species suffering potentially significant impacts of gillnet mortality include common guillemot (<i>Uria aalge</i>) and thick-billed guillemot (<i>Uria lomvia</i>). Also, they conclude that although reports of seabird bycatch in gillnets are relatively numerous, the magnitude of this phenomenon is poorly known for all regions. Further, population modelling to assess effects of gillnet bycatch mortality on seabird populations has rarely been feasible.</p> <p>Considering the location where the gill nets are deployed in the lumpfish fishery, between 10-50m depth anchored at both ends in open areas offshore, there is a greater chance of seabirds getting caught in the net. This has been reported on by Fangel et al (2015) for NINA, whereby several species of diving seabirds have been recorded, including auks, cormorants and wildfowl. No seabirds were recorded by the client fishery, hence the study by Fangel et al (2015) will serve as the primary source of quantitative and qualitative information.</p>		

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species	
		The UoA does not hinder recovery of ETP species	
		<p>Fangel et al (2015) conclude that as the population of black guillemots is small in Norway (an estimated 35,000 nesting pairs in Norway) and the species moves least over the year, the population of guillemots in some areas is significantly affected by the lumpfish fishery.</p> <p>Considering the relatively short fishing season for lumpfish, and fishing dependent on calm conditions, and the fishers actively avoid setting nets in colony areas because of damage to the nets, the UoA is likely to not hinder recovery of ETP species. SG60 is met.</p> <p>It is not clear whether the coastal reference fleet includes lumpfish fishers (IMR, 2011). Bycatch information reported in 2011 provides a list of presence/ absence data on species, including seabirds and seals. The information provided is not specific.</p> <p>As there is no direct catch data from the fishery, SG80 is not met.</p>	
c	Indirect effects		
	Guided post	Indirect effects have been considered and are thought to be highly likely to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?	Y	N
	Justification	<p>Indirect effects may include “ghost” fishing, removal of prey and pollution, as well as e.g. disturbance/interference of feeding or breeding behavior of ETP species.</p> <p>Ghost fishing is not an issue in the lumpfish fishery. Where gear becomes entangled, for example on seabed obstructions, it can and is recovered. Gear is expensive and there is little economic sense in giving up on a recovery attempt. Good local knowledge and gear design further reduces snagging.</p> <p>As noted in the Barents Sea Ecosystem Assessment (Barentsportal, 2016)⁷¹ factors listed as responsible for the declining trends (in seabird populations) in the western parts of the Barents Sea region probably involve food shortage, predation from an increasing population of white-tailed eagles and lagged effects from previous by-catch in fisheries, as well as oceanographic changes.</p> <p>All vessels are fully MARPOL compliant, with waste and oil handling protocols (Client interview). The fishers are actively encouraged to pick up litter from the sea when encountered, and relevant provisions are made on-shore to deal with such collected litter (Client interview, Aug 2016). Pollution from the vessels is therefore not likely to impact on ETP species.</p> <p>In order to reduce bird bycatch, the vessels avoid fishing in the proximity of active breeding colonies, as net-entanglement can result in significant delay and damage of gear. In summary, it is unlikely that indirect effects create unacceptable impacts, SG80 is met.</p> <p>Considering there is no direct quantitative seabird bycatch data from this fishery, it cannot be said with a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species, SG 100 is not met.</p>	
References		<p>https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/Bycatch_of_small_cetaceans_and_other_marine_animals.pdf</p> <p>http://barentsportal.com/barentsportal_v2.5/index.php/en/</p> <p>Client interview</p> <p>Catch profile data</p> <p>IMR 2011. Evaluation of the Norwegian reference fleet. Internal Report.</p>	

PI 2.3.1	The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species	
	ICES. 2016. Report of the Joint OSPAR/HELCOM/ICES Working Group on Seabirds (JWGBIRD), 9–13 November 2015, Copenhagen, Denmark. ICES CM 2015/ACOM:28. 196 pp Fangel <i>et al.</i> , 2011 and 2015; Žydelis <i>et al</i> (2013)	
OVERALL PERFORMANCE INDICATOR SCORE:		70
CONDITION NUMBER (if relevant):		3

PI 2.3.2 Lumpfish– ETP species management strategy Evaluation Table

PI 2.3.2		<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • meet national and international requirements; • ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</p>		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)			
	Guided post	There are measures in place that minimise the UoA-related mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	Y	N	N
	Justification	<p>Several seabird species (see Red List) and marine mammals are protected, including those mammals that are hunted (subject to national legislation⁷²), in that they are covered by one or more of a multiplicity of international conventions for species protection to which Norway is a signatory. In Norway, the role of all these species and habitats, and their role in the marine ecosystems are safeguarded by the Marine Resource Act (DoF, 2008)⁷³ The act introduces important principles that seek to protect both species and habitat, and requires ongoing research to understand and protect the ecosystems and stocks. There are also some marine protected areas designated specifically for marine mammals⁷⁴.</p> <p>Seabirds: Larger fishing vessels (>15m) have to record seabird bycatch (Client interview, Aug 2016) in the e-log. This does not necessarily apply to the smaller vessels, and thus there are no actual records on seabird and marine mammal bycatch in this lumpfish fishery (which is executed by smaller vessels, less than 11m (Client interview, Aug 2017)).</p> <p>There are measures in place to minimise bycatch of ETP species, in particular seabirds, consisting primarily of avoiding to set the nets in areas of high activity near breeding colonies and feeding range. This also reduces damage to the gear. Some areas close to breeding colonies are closed seasonally in order to reduce seabird bycatch. According to information provided by the client (August 2017) there are many protected areas for bird breeding colonies (and other purposes), and they are mapped in the Directorate's mapping tool https://kart.fiskeridir.no/. However, they are not legally closed for lumpfish gillnetting specifically, but the regulations are individual for the areas, and relate to the ability to for example go ashore, use motorized vehicles and so on. The client stressed, however, that it is be highly undesirable for lumpfish fishermen to set gill nets in a bird colony because of considerable damage to the nets.</p> <p>SG60 is met.</p> <p>For fish, there are measures in place, based on the discard ban whereby all bycatch has to be recorded, which are expected to minimise mortality of fish ETPs, including moving the gillnet to another area if bycatch of a non-target species is too high. SG60 is met.</p>		

⁷² Sealing Act (1951); Saltwater Fishing Act (1983); Participation Act (1999); Marine Resources Act (2008);

⁷³ DoF, 2008. The Marine Resources Act: Act of 6 June 2008 no. 37 relating to the management of wild living marine resources. Directorate of Fisheries, Bergen. <http://www.fiskeridir.no/english/fisheries/regulations/acts/the-marine-resources-act>

⁷⁴ <http://www.xn--miljdirektoratet-oxb.no/english/>

PI 2.3.2		The UoA has in place precautionary management strategies designed to: <ul style="list-style-type: none">• meet national and international requirements;• ensure the UoA does not hinder recovery of ETP species. Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.		
		These measures do not amount to a strategy. No such strategy was indicated at during the assessment. SG80 is not met for both seabirds and fish ETPs		
b	Management strategy in place (alternative)			
	Guidepost	There are measures in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species
	Met?	Not scored	Not scored	Not scored
	Justification	SI a) is scored instead		
c	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	Y	N	N
	Justification	<p>The measures are considered likely to work based on plausible argument, principally informed by the understanding of the level of potential impact of the gear with ETP species, in this case, seabirds and fish, as detailed in Section 3.4.4.</p> <p>SG60 is met</p> <p>Regarding fish ETP species, there is quantitative information available as part of the discard ban, and the fish are automatically recorded (see Table 16) allowing for an objective basis for confidence. SG80 is met</p> <p>Research/observer coverage allows the collection of relevant information (Fangel et al 2016), although for this fishery, no bird bycatch has been recorded. There does not appear to be self reporting of bird bycatch (the assessment team did not receive any evidence of self reporting). Gillnetting is implicated in historical declines of diving species (Žydelis et al (2013) and Fangel et al. (2016) point to concerning bycatch levels, particularly for black guillemot (see Section 5.4.3 for estimates).</p> <p>Although there are monitoring initiatives related to seabirds and it is likely that any emerging and significant negative interactions with fisheries will be flagged up, such monitoring does not appear to be fishing gear specific (e.g. SEAPOP is a mapping and monitoring programme for seabird populations in Norwegian waters, initiated by the Norwegian Government (Ministry of Environment, 2011).</p> <p>The management strategy for seabird ETP species does not meet SG80</p> <p>As not all the elements meet the SG80, this SI scores SG60</p> <p>The discard ban ensures that all fish bycatch is recorded, including fish ETP species, thus there is an objective basis for confidence that the measures will work, SG80 is met. No</p>		

PI 2.3.2		The UoA has in place precautionary management strategies designed to: <ul style="list-style-type: none">• meet national and international requirements;• ensure the UoA does not hinder recovery of ETP species. Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.		
		quantitative analysis was provided to the assessment team to show that the strategy will work, SG100 is not met		
d	Management strategy implementation			
	Guidepost	There is some evidence that the measures/strategy is being implemented successfully.	There is clear evidence that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).	
	Met?	Y	N	
	Justification	Temporarily closed areas to fishing in the vicinity of breeding colonies, provide evidence that measures are being implemented successfully. Furthermore, fishers avoid such areas as catching seabirds can damage the gear, which has financial consequences in terms of repairs as well as loss of use. SG80 is met. There does not appear to be a strategy/ comprehensive strategy, hence SG100 is not met.		
e	Review of alternative measures to minimize mortality of ETP species			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	y	N	N
	Justification	'Alternative measures' are to be interpreted as alternative fishing gear and /or practices, that have been shown to minimise the rate of incidental mortality. 'Unwanted catch' is interpreted as the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use (SA3.1.6) The fishery is conducted with very large mesh (~267 mm stretched) and occurs on the spawning sites. The catch composition data shows that percentage of bycatch of ETP species is small, see Table 16, although there are no bird bycatch species listed. Fish ETPs: The regulations are considered, and the technical measures reviewed (meeting SG 60), by IMR, Fiskeridirektoratet and stakeholders regularly (meeting SG 80 and 100). Where necessary, measures can be introduced at short notice, such as closing an area to fishing when incoming data on catches and bycatches show irregularities (IMR, Directorate, interview Aug 2016). Thus fishing practice can be changed at short notice by the fisher, by moving the gear to another area (ie if bycatch of a species is high, move to another area). It was not clear whether alternative measures are reviewed biannually, SG80 is met but not SG100. Bird ETPs: NINA (2016 – in Fangel etal 2016) reviewed measures for gillnets in general and lumpfish gillnets in particular. The main conclusion for gill-nets in general is that set depth was an important factor. For lumpfish, the main factor was the individual fisherman's local knowledge and the researchers found that they did use this to avoid bycatch. It was suggested to evaluate time-limited area regulations, a minimum set depth, and a more systematic use of local expertise. SG60 is met. There does not appear to be a regular review of alternative measures. SG80 is not met		

PI 2.3.2		<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none">• meet national and international requirements;• ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</p>
		As not all the elements meet SG80, this SI meets SG60.
References		<p>DoF, 2008. The Marine Resources Act: Act of 6 June 2008 no. 37 relating to the management of wild living marine resources. Directorate of Fisheries, Bergen. http://www.fiskeridir.no/english/fisheries/regulations/acts/the-marine-resources-act http://en.wikipedia.org/wiki/Norwegian_Directorate_for_Nature_Management Sealing Act (1951); Saltwater Fishing Act (1983); Participation Act (1999); Marine Resources Act (2008); Fangel, K., Aas, Ø., Bærum, K. M., Anker-Nilssen, T. & Christensen- Dalsgaard, S. 2016 (aka NINA 2016). Utilsiktet bifangst av sjøfugl i norske kystfiskerier med garn og line. - NINA Temahefte 64. 20 s.</p>
OVERALL PERFORMANCE INDICATOR SCORE:		65
Total scores: Fish: 75; Seabirds: 65		
CONDITION NUMBER (if relevant):		4

PI 2.3.3 Lumpfish– ETP species information Evaluation Table

PI 2.3.3		Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species. 		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guided post	<p>Qualitative information is adequate to estimate the UoA related mortality on ETP species.</p> <p>OR</p> <p>If RBF is used to score PI 2.3.1 for the UoA:</p> <p>Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.</p>	<p>Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species.</p> <p>OR</p> <p>If RBF is used to score PI 2.3.1 for the UoA:</p> <p>Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.</p>	<p>Quantitative information is available to assess with a high degree of certainty the magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status of ETP species.</p>
	Met?	Y	Y	N
	Justification	<p>The PINRO / IMR Reports on the State of the Barents Sea ecosystem offer an overview of the ETP species which occur in the Barents Sea including their spatial and temporal distribution and ecology (meeting SG 60). Seabird populations are monitored under the auspices of the Norwegian nature conservation agency, NINA (Fangel et al., 2015) and estimates of potential mortalities resulting from seabird–fishing-gear interactions are available (BirdLife, 2012)</p> <p>Since 2002 the distribution of marine mammals in the Barents Sea has been recorded by research vessels, aircraft, fishing vessels and coastguard vessels under the Joint PINRO / IMR ecosystem survey. The surveys are driven in part by ICES advice relating to quotas for commercial harvesting of marine mammals, or species identified as particularly vulnerable. The Norwegian Institute of Marine Research undertakes annual surveys of minke whales and other large baleen whales generating abundance estimates every 6 years.</p> <p>The discard ban and species recording requirements generate high quality data on the catch of a wide range of species, although the analysis presented in sections 5.3 and 5.4 suggests that encounters with ETP species are likely to be rare. In this fishery, which consists of small fishing vessels, there is also no statutory requirement to record bird bycatch.</p> <p>The Norwegian reference fleet provides information on catch of all species, though it is not clear whether the coastal reference fleet includes a lumpfish fishery vessel. Norway submits analysis of gear interaction with key ETP species to the ICES SGBYC.</p> <p>Fangel et al, (2015)(NINA) provided a quantitative estimate of the impact of the lumpfish fishery gear on seabird numbers, caught in the gillnet. Although the sample size is small, and there is considerable variation in the season and proximity to the coast, it nonetheless provides an estimate as to whether the UoA may be a threat to recovery of the ETP.</p> <p>SG80 is met.</p> <p>The vessels are not required to log non-fish bycatch, and therefore there is no high degree of certainty in the assessment of the impact of the UoA on ETPs. SG100 is not met.</p>		

PI 2.3.3	Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species. 			
b	Information adequacy for management strategy			
	Guided post	Information is adequate to support measures to manage the impacts on ETP species.	Information is adequate to measure trends and support a strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	Y	N	N
	Justification	Whilst information is adequate it is not sufficient to measure trends. SG 60 is met. SG80 is not met. Data on fishery interactions with ETP species is limited – in large part because of their rarity, but also because of limited identification skills, non-recording of non-fish species (ie birds are not recorded for example) and analytical resources. To meet this requirement there would need to be an on-board recording system of all ETP encounters and all seabirds (whether ETP or not). This includes good identification skills, and regular synthesis and analysis of the data in conjunction with relevant scientific institutions. This can be done through a specifically designed MSC – log.		
References		Fangel, K., Aas, Ø., Bærum, K. M., Anker-Nilssen, T. & Christensen- Dalsgaard, S. 2015. Utilsiktet bifangst av sjøfugl i norske kystfiskerier med garn og line. - NINA Temahefte 64. 20 s. BirdLife Workshop on Seabird Bycatch in Gillnet Fisheries. Symposium proceedings. http://www.birdlife.org/eu/pdfs/20120703_GillnetSeabirdBycatchWorkshopREPORT.pdf		
OVERALL PERFORMANCE INDICATOR SCORE:				70
CONDITION NUMBER (if relevant):				5

PI 2.4.1 Lumpfish– Habitats outcome Evaluation Table

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guided post	The UoA is unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Y	Y	N
	Justification	Adult females spawn on rocky bottoms in shallower waters closer to shore – and this is where the gillnets are set, over predominantly rocky bottom. The nature and distribution of benthic habitats and their interaction with the client lumpfish fishery vessels has been described in detail in section 5.5. The section also described in detail the various types of habitats and VMEs in the area where the fishery operates. The vessels fish within 12nm of the shore, thus encountering rock and biogenic reefs, sand, rocky bottom and skerries (see also Figure 28 and 31-37)) The commonly encountered habitat is rocky, covered by sessile epibenthic organisms such as algae, encrusting bryozoans and sponges, and gorgonids. Mapping programmes include the MAREANO (2017) programme which maps bathymetry, sediment composition, biodiversity, habitats and biotopes as well as pollution in the seabed in the region (see Figure 30, Figure 31). The gear as deployed (see Section 3.2.6) over rocky bottom, (as this where the females will lay their eggs), anchored at both ends, thus not drifting, has a small footprint on the ground (meeting SG60). Only the weights anchoring the net are in contact with the ground. Static gillnets are considered comparatively low impact gears on habitat, whereby damage to the epibenthos can be as a result of blunt impact from the anchors, and some drag when hauling the gear. Blunt interactions generally result in the dislodgement or crushing of individuals, particularly larger, erect forms that are anchored to the seabed such as corals, sponges, and crinoids (Clark et al., 2015). The study by Clark et al 2015 also showed that static gears, such as bottom set gill nets do not have a significant impact on the benthos Considering the gear used, the UoA is highly unlikely to reduce the structure and function of the rocky benthos. SG80 is met. In order to meet SG100, some quantitative information about the spatial extent of the fishery is needed, the actual footprint in the form of the footprint of each net, the number of nets, and the spawning area of the lumpfish. This evidence is then used to calculate a probability as to impact (CR Table SA9). Such evidence was not available. SG100 is not met.		
b	VME habitat status			
	Guided post	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	Y	Y	N

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.		
	Justification	<p>The Mareano mapping programme has identified the location of <i>Lophelia</i> reefs along the coast of northern Norway. These occur especially on the NW continental slope of Norway (Figure 33). Reefs of <i>Lophelia petusa</i> are found closer inshore in Norwegian territorial waters and are therefore more likely to be encountered by the lumpfish fishery under assessment. The mapping shows <i>Lophelia</i> reefs scattered along the shore, some of which are within protected zones (closed areas) There are 5 such protected zones established through legislation, and are closed to fishing.</p> <p>Hard bottom coral garden aggregations (mainly seafans) can be found in Figure 33, and some may be within the area where lumpfish are fished (within 12nm of the shore), although these aggregations are exposed to strong currents, which is not favoured by lumpfish for laying eggs.</p> <p>The distribution softbottom coral gardens (Figure 36) favours hard bottom or rock to which to attach, and seems to be further offshore than the lumpfish fishery operates.</p> <p>The distribution of seapens (Figure 36) depends on soft muddy substrate, where lumpfish are not found, so the fishery will not affect these.</p> <p>The location of the <i>Lophelia</i> reefs is known and can thus be avoided by the fishing gears. Considering that the reefs have been mapped, and are thus avoided by the fishers (Client interview Aug 2016), it is highly unlikely for the UoA to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm. SG60 and 80 are met.</p> <p>In order to meet SG100, there needs to be evidence that the UoA does not impact on the <i>Lophelia</i> reefs, but such evidence was not available for this assessment (such as VMS for example)</p>		
c	Minor habitat status			
	Guided post			There is evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			N
	Justification	<p>Minor habitats are all those habitats which are not ‘commonly encountered’ or ‘VMES’ Serious or irreversible harm is the reduction in habitat structure, biological diversity, abundance and function such that the habitat would be unable to recover to at least 80% of its unimpacted structure, biological diversity and function within 5-20 years, if fishing were to cease entirely (Table SA8 in MSC CR).</p> <p>Considering the small footprint of the gear, in terms of the anchors only resting on the seafloor, it is highly unlikely that the UoA reduces the structure and function of the minor habitats to a point where there would be serious or irreversible harm. Studies by Clark et al 2015 show the comparatively low impact of static gears. However, in terms of the MSC CR definition of evidence, Table SA9SG, some quantitative information about the spacial extent of the fishery is needed, the actual footprint in the form of the footprint of each net, the number of nets, and the spawning area of the lumpfish and the extent of the minor habitats. This evidence is then used to calculate a probability as to impact (CR Table SA9). Such evidence was not available. SG100 is not met.</p>		
References		http://mareano.no/en/about_mareano Clark et al 2015 Client interview Aug 2016		
OVERALL PERFORMANCE INDICATOR SCORE:				
80				

PI 2.4.1	The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.
CONDITION NUMBER (if relevant):	

PI 2.4.2 Lumpfish– Habitats management strategy Evaluation Table

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Y	Y	N
	Justification	<p>Measures in place to mitigate habitat impacts include on-going mapping programmes to improve access management, and research into habitat impacts of gear types (Clark et al 2015). Fleet specific measures include local knowledge by the fishers, who wish to avoid snagging of the nets and thus cause damage and delays.</p> <p>Move on protocols legally apply to all bottom-contact gears and the impact thresholds are 30kg live coral and 400 kg sponge (harmonized with NEAFC). If a vessel in one haul reaches this threshold value, they are required to report the impact to the Directorate of fisheries and move 2 nautical miles before resuming operations. Although legally and theoretically applicable to lumpfish fisheries, in practice the impact threshold values render them irrelevant for these fisheries where impacts are regarded as light. The problem is low and it is in the fishermen’s interest to avoid gear entanglement.</p> <p>SG60 is met.</p> <p>Fishing practice is modified locally, including small closed areas. The MAREANO programme is aimed at surveying, monitoring and protecting all aspects of the Norwegian marine environment, ecosystem and habitats. EMODnet mapping provides further details of the benthic habitats, in particular on the more predominant benthic substrates. Management measures, which specifically address habitat impact have largely focused on closing inshore waters to fishing and closure of vulnerable reef areas in Norwegian waters, through monitoring the fishery closely by the relevant authorities. Closed areas are enforced with the same rigour that is applied to all fishery regulations. This constitutes a partial strategy. SG80 is met.</p> <p>The term strategy (MSC CR Table SA8) represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and which should be designed to manage impact on that component specifically. It should include feedback mechanisms and testing. No evidence was presented to the assessment team that such a specific strategy exists for the lumpfish fishery. SG100 is not met.</p>		
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	Y	Y	N
	Justification	<p>These measures are required by OSPAR to protect sensitive marine habitats; the measures are observed and closed areas rigorously enforced.</p> <p>SG60 is met.</p>		

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.		
		<p>Monitoring of fishing activity and regular aerial and maritime surveillance patrols ensure that the closed areas are observed and that the sensitive habitats within them are safeguarded. Furthermore, based on the biology of lumpfish, whereby stony/ rocky benthos is needed for the females to lay their eggs, the fishery takes place in particular areas only, which fulfil these criteria.</p> <p>In addition to monitoring the fishery, methods and gear, seabed habitats continue to be monitored and mapped through the MAREANO programme, as well as EMODnet programme. This work has not identified any habitat concerns with respect to the lumpfish fishery, as the gill nets used are considered fairly light footprint on the underlying habitat, and the gears are deployed for a limited season annually.</p> <p>SG80 is met.</p> <p>Testing would require more detail on the geomorphological distribution of benthic habitats close inshore, which was not available to the assessment to such detail. SG100 is not met.</p>		
c	Management strategy implementation			
	Guidepost	There is some quantitative evidence that the measures/partial strategy is being implemented successfully.	There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).	
	Met?	Y	N	
	Justification	<p>The Norwegian enforcement agencies are satisfied that incursions into the closed areas are rare and certainly do not represent a systemic failure of fishery enforcement or malpractice among the lumpfishers. Vessel positions are available through AIS tracking system, which includes the smaller vessels. Although there are no known restrictions to lumpfish gillnet fisheries which limit their areas of operations due to VMEs, the fishery management has referenced the VME protection areas such as national marine parks and the 19 coral reef protection areas at site visits to demonstrate that Norway does have an active management of this in its fisheries where needed. The restrictions tied to these VMEs apply mainly to trawling. Lumpfish fishermen set their nets very close to shore and in a very small scale. There are no known instances of overlap or any infringements of VMEs (Client information August 2017).</p> <p>SG80 is met.</p> <p>Clear quantitative evidence was not available, such as operational plans. SG100 is not met.</p>		
d	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs			
	Guidepost	There is qualitative evidence that the UoA complies with its management requirements to protect VMEs.	There is some quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	Y	Y	N
	Justification	<p>There is qualitative evidence of compliance in the form of interviews and circumstantial evidence (such as no incentive to not-comply, damage to gear if get snagged on biogenic reefs), location of fishery close to shore thus avoiding offshore <i>Lophelia</i> reefs and soft coral gardens (Figure 33 and 36). SG60 is met.</p>		

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.
		<p>The lumpfish fishery vessels are small and thus below the statutory requirement to carry VMS. Detailed records as to where the vessels are fishing was provided in the form of statistical location rectangles, as used by the Fisheries Directorate for relevant fisheries analysis, and location in relation to protected areas enforcement. Real time AIS vessel positioning and coast guard monitoring provides some quantitative evidence that the UoA complies.</p> <p>Monitoring Control and Surveillance in Norwegian fisheries is taken care of through shared responsibility and close collaboration between the Directorate of Fisheries, the Coast Guard and the regional sales organizations. The Directorate of Fisheries keeps track of how much fish is taken of the quotas of individual vessels, different vessel groups and other states at any given time, based on reports from the fishing fleet. The lumpfish fishery is an inshore fishery, and has to comply with the management requirements as laid out in the Marine Resources Act 2008 – as discussed in Principle 3, despite being a relatively small scale fishery, MCS issues apply, as with any other Norwegian fishery. This includes protection measures afforded to VMEs, and includes all fisheries, including non-MS. The lumpfish fishery takes place at specific sites (spawning areas for lumpfish with specific habitat requirements), close to shore, where available maps did not indicate the location of VMEs (Figs. 33-37)</p> <p>SG80 is met.</p> <p>Clear evidence, in the form of vessel specific operational plans for example, were not available to the assessment team. A Recommendation (1) was raised.</p> <p>SG100 not met.</p>
References		<p>WGECO, 2012. Report of the Working Group on Ecosystem Effects of Fishing Activities (WGECO) ICES CM 2012/ACOM:26 http://www.ices.dk/reports/ACOM/2012/WGECO/wgeco_2012.pdf http://www.mareano.no/english/news/seabed_to_be_mapped http://www.mareano.no/kart/viewer.php?language=en&bbox=592707.1,7846700.0,802279.9,7952140.0&KARTBILDE_ID=115 http://www.mareano.no/english/topics/coral_reefs http://www.emodnet-seabedhabitats.eu/</p>
OVERALL PERFORMANCE INDICATOR SCORE:		80
CONDITION NUMBER (if relevant):		

PI 2.4.3 Lumpfish– Habitats information Evaluation Table

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guided post	The types and distribution of the main habitats are broadly understood . OR If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. OR If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	Y	Y	N
	Justification	Background Section 5.5 provides much detail on current habitat information in the Barents Sea and the Norwegian Sea, conveying SG 60 is met. The nature, distribution and vulnerability of benthic habitats of the Barents and Norwegian Seas, are well known and researched to international standards. This information is summarized in various marine atlases, the Mareano mapping programme, EMODnet, the reports by Joint Russian Norwegian Ecosystem Assessment; the review by Jakobsen and Ozhigin; and through scientific studies undertaken by IMR. –. This work is increasingly supplemented with data already coming directly from MSC certified fisheries which operate in the region - in the form of log book data supported by the scientific observer schemes typically for secondary species, which in turn is collated by IMR/ Directorate of Fisheries. More recently, NEAFC has recommended Member States to provide VMS data to ICES and NEAFC constituent bodies to meet the needs of both science and compliance. (Recommendation 10, 2013: made at the 31th Annual Meeting in November 2012 (NEAFC, 2013)). SG 80 is met Detailed habitat maps of the fjords and nearshore skerries, where lumpfish are known to spawn, were not available for this assessment, so it cannot be said that the distribution of all habitats is known. SG100 is not met.		
b	Information adequacy for assessment of impacts			
	Guided post	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear. OR If CSA is used to score PI 2.4.1 for the UoA:	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. OR	The physical impacts of the gear on all habitats have been quantified fully.

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
		Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	Y	Y	N
	Justification	<p>The lumpfish fishery is almost entirely done by gillnets operating the near coastal zone, lumpfish spawning grounds. The potential effect less impactful gears such as static bottom set gears, on coral and sponge communities is understood (Clark et al 2015), meeting SG 60. Clark et al (2015) reviewed the impact of gears on deep benthic organisms. Overall lumpfish gillnets are low impact gears, due to their narrow footprint.</p> <p>Closed areas have been established to protect habitats and communities in selected areas, and are closely monitored through MCS. Lumpfish fishers also know where non-protected areas are to be found and actively avoid them in order to avoid unnecessary damage to the gear (with concomitant loss of time and catch). The distribution and intensity of fishing activity relative to sensitive areas is known, the vessels operate within the 12nm zone. Real time AIS vessel positioning and coast guard monitoring provides reliable information on the spatial extent of interaction of the vessels with the main habitat, and on the timing and location of use of the fishing gear.</p> <p>The operational range of the small boats are very limited and the statistics provide detailed geographical information, see Figure 5.</p> <p>SG80 is met.</p> <p>The physical impact of the gear on all habitat types has not been fully quantified, SG100 is not met.</p>		
c	Monitoring			
	Guided post		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in habitat distributions over time are measured.
	Met?		Y	N
	Justification	<p>The distribution and intensity of fishing activity is monitored through VMS (VMS not obligatory on smaller vessels); habitat mapping and monitoring is ongoing; there is provision for introducing new protection measures if needed, areas can be closed at short notice.</p> <p>SG80 is met.</p> <p>Although habitats are monitored, changes in distribution over time are not</p> <p>SG100 is not met.</p>		
References		<p>See also references listed under P2.4.1 and 2.4.2 and analysis in background section 5.5</p> <p>Larsen, T. Nagoda, D. and Andersen, J.R. (Eds) 2003. A biodiversity assessment of the Barents Sea Ecoregion WWF;</p> <p>"Mareano programme" (http://www.mareano.no/english/index.html);</p> <p>Spiridonov, V.A. Gavrilov, M.V., Krasnova E.D and N.G. Nikolaeva (Eds) 2011. Atlas of Marine and Coastal Biological Diversity of the Russian Arctic. Moscow: WWF Russia,. ISBN 978 5 9902786 2 2</p> <p>NEAFC 2013; Clark et al 2015;</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				

PI 2.5.1 Lumpfish – Ecosystem outcome Evaluation Table

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guided post	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Y	Y	N
	Justification	<p>The individual elements of the ecosystem and their impact is discussed under PI 2.1-2-4. The general impact on the ecosystems are considered under 2.5 and the individual assessments are not repeated. Overall the ling, tusk and lumpfish are small components in the ecosystems affected by the fisheries and at the ecosystem scale the fisheries does not seem to have major impact, The main impacts are from the large fisheries for pelagics and key demersal fish (cod, haddock, saithe). These fisheries accounts for removals of several mill tons of fish annually while the total removals considered in this report is below 100,000t.</p> <p>This is a relatively clean, fishery dominated by the target species, as can be seen from the small percentages of bycatch in the catch composition. Thus, the fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.</p> <p>SG60 is met.</p> <p>This is a relatively clean, fishery dominated by the target species. Thus, the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. The fishery is seasonal, operating over few months only, and targeting females of a certain size, thus not juveniles. The large mesh size allows juveniles of other fish species to pass through.</p> <p>IMR has a wide ranging research and stock assessment programme dating back over half a century, much of which is aimed ultimately at developing an ecosystem model for all Norwegian regional seas. ICES has created a working group (WGINOR) which conducts and further develops Integrated Ecosystem Assessments for the Norwegian Sea as a step towards implementing the ecosystem approach. This is an ongoing process, with changing parameters, such as long term climatic changes for example. Within the ecosystem context, lumpfish has not been identified as playing critical role in the overall stability of the Norwegian Sea marine ecosystem. Adult lumpfish feed on ctenophores, medusas, small crustaceans, polychaetes, jelly fish and small fishes, and are in turn prey to larger fish and marine mammals. The Marine Resources Act makes it an explicit requirement that an ecosystem approach is taken to all aspects of marine resource management. It is highly unlikely therefore that the fishery at the current level will disrupt ecosystem structure or function.</p> <p>SG80 is met. As there is not explicit evidence to support this, SG 100 is not met.</p>		
References		<p>ICES.2017. Interim Report of the Working Group on Integrated Ecosystem Assessments for the Norwegian Sea (WGINOR), 28 November - 2 December 2016 , Bergen, Norway . ICES CM 2016/SSGIEA:10. 28 pp. http://www.Fishbase.org ICES, 2016 Ecosystem Overview Barents Sea ICES, 2016 Ecosystem Overview Norwegian Sea ICES 2016 Ecosystem Overview North Sea</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				80

PI 2.5.1	The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.	
CONDITION NUMBER (if relevant):		

PI 2.5.2–Lumpfish Ecosystem management strategy Evaluation Table

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place, if necessary which take into account the potential impacts of the fishery on key elements of the ecosystem.	There is a partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a strategy that consists of a plan , in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place.
	Met?	Y	Y	N
	Justification	An ecosystem based management plan is in place for the Barents Sea-Lofoten area. This plan includes assessment of threats to ecosystem structure and function and where appropriate identification of measures to address such threats; meeting SG 60. There is a range of more specific measures and initiatives in place to address management of individual ecosystem elements. <ul style="list-style-type: none">Measures described in P1 to ensure that the fishery does not pose a risk to lumpfishA range of technical measures and protocols to minimize bycatch of other fish species (described in 2.1 and 2.2) that may play an important role in ecosystem structure and functionClosed areas to protect the young of a variety of other species.Closed areas to protect the most valuable/vulnerable benthic habitats in the Norwegian zone and to a lesser extent in the Russian zone, and protocols and gear development initiatives to reduce benthic impacts. There is limited interaction with marine mammals and interaction with seabirds, and these are known. The mix of planning and research initiatives, ecosystem monitoring and assessments, seabed mapping, fishing effort distribution monitoring, ICES advice, and the range of individual measures designed to protect different elements of the ecosystem, taken together may be regarded as comprising a partial strategy. SG80 is met.		
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ ecosystems).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved
	Met?	Y	Y	N
	Justification	Rigorous quota control management, technical measures, seasonal and permanent area closures all contribute to minimising adverse effects of fishing on key elements of the ecosystem. SG60 met. There are Norwegian seas management plans and the Marine Resources Act requires an ecosystem approach to environmental management. The act also requires regular monitoring and assessment to ensure that objectives are being met. IMR are maintaining		

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.	
		fishery and biological monitoring programme in support of annual (ICES) stock assessments and reviews aimed at providing the Norwegian government with advice on fishing and environmental effects consistent with long term sustainability. SG80 is met. The UoA is an open fishery, with many small boats, which do not necessarily carry VMS. Although there is robust monitoring and enforcement of fisheries, the inevitable lack of up-to-the moment monitoring and lack of e-logs, make testing regarding special distribution of fishing activities less effective to verify. SG100 is not met.	
c	Management strategy implementation		
	Guided post	There is some evidence that the measures/partial strategy is being implemented successfully .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) .
	Met?	Y	N
	Justification	There is evidence of area closures, there is evidence of research cruises and resulting status reports, and there is evidence of ecosystem elements being given key consideration at fisheries management level – in the form of ICES advice. Evidence relating to successful implementation at the fleet level includes: <ul style="list-style-type: none">• Catch records• Vessel inspections• Observer programme (typically for secondary species)• Review and analysis of fishing activity, species caught and habitats affected - by IMR and the inspectorates. SG 80 is met. There is no VMS data relating to the spatial intensity of fishing effort, and thus compliance with closed area restrictions, SG100 is not met	
References		As in PI2.5.1	
OVERALL PERFORMANCE INDICATOR SCORE:			80
CONDITION NUMBER (if relevant):			

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidepost	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	The long-established and long-term research programmes have built a database that ensures that the key elements of the ecosystem are identified. SG60 is met. The individual components of the IMR research and stock assessment programmes all contribute to the institution’s long term aim of modelling the marine ecosystem. It is understood implicitly, if not explicitly, that each of the fish stocks plays a role within the ecosystem and variations in abundance of stocks, such as lumpfish, can influence the status of both prey and predator populations. Whilst not all these interactions have been investigated in detail, they are understood in principle. The research programmes and associated monitoring of the marine environment, primary production, fish stocks, birds and marine mammals all contribute towards detecting any risk or adverse environmental effects. SG80 is met		
b	Investigation of UoA impacts			
	Guidepost	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail .	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and have been investigated in detail .
	Met?	Y	Y	N
	Justification	Direct fishery interactions are reasonably well understood and indirect effects can be inferred, often from direct experience or comparison with similar species and areas elsewhere. Stock–recruitment relationships are a focus of detailed attention in many stocks, including lumpfish. SG80 is met. However, these main interactions have not been investigated in detail for lumpfish. SG100 is not met.		
c	Understanding of component functions			
	Guidepost		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known .	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood .
	Met?		Y	N
	Justification	The long-established and long-term research programmes have built a database that ensures that the main functions of the components in the ecosystem are known and feature in the various ecosystem models being developed. SG80 is met. Not all aspects of fishery–bycatch–ETP interactions have been studied in detail and until fully functioning ecosystem models have been demonstrated to work it would be premature to say that these components of the ecosystem are understood. SG100 is not met.		
	Information relevance			

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.		
d	Guidepost		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		Y	N
	Justification	The long-established and long-term research programmes have built up a database that ensures that interactions with fish, bird and mammal components can be inferred even if they cannot be quantified explicitly. Such information is central to an ecosystem approach, as required by the Marine Resources Act. SG80 is met. SG100 is not met, as there is not yet adequate information on all the elements.		
e	Monitoring			
	Guidepost		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		Y	Y
	Justification	The long-established and long-term research programmes are ongoing and maintain databases appropriate for monitoring the status of key components in the ecosystem (plankton, fish, birds, mammals), including habitats monitored by MAREANO. SG80 is met. The long-established and long-term research programmes and their associated databases are adequate to support the development of strategies to manage ecosystem interactions. The regional seas management plans are de facto examples of such management strategies. SG100 is met.		
References		<p>NORWECOM.E2E; http://www.imr.no/temasider/modeller/norwecom.e2e/norwecom.e2e/en</p> <p>MFCA, 2012. Integrated Management Plans available at: http://www.fisheries.no/resource_management/Area_management/Integrated_management_plans/</p> <p>Olsen, E., Gjøsæter, H., Røttingen, I., Dommasnes, A., Fossum, P. & Sandberg, P. 2007. The Norwegian ecosystem-based management plan for the Barents Sea. ICES Journal Of Marine Science 64: 599–602. MinEnv, 2009. Report No. 37 to the Storting (2008-2009) Integrated Management of the Marine Environment of the Norwegian Sea Report No. 37 (2008 – 2009) to the Storting.</p> <p>Klif, 2012. Integrated management plan for the North Sea and Skagerrak. Norwegian Climate and Pollution Agency, Oslo. http://www.klif.no/english/english/Areas-of-activity/Integrated-managementplan-for-the-North-Sea-and-Skagerrak/</p> <p>Bjørge, Q. 2008. New research programme focusing on coastal and fjord ecosystems. Marine News 3–2008. http://www.imr.no/epigraph/filarkiv/hi_news_3_eng_web.pdf/nb-no</p> <p>Hjøllo, S.S., 2007. EcoFish WP2 workandWind, NAO and ecosystem-selected articles. IMR, Bergen. http://ecofish.imr.no/_data/page/6432/work_and_Wind,_NAO_and_ecosystemselected_articles080307.pdf</p> <p>Sparre, P. 1984. A computer programme for estimation of food suitability coefficients from stomach content data and multippecies VPA. ICES CM 1984/25.</p> <p>WGSAM, 2009. Report of the Working Group on Multispecies assessment Methods. ICES CM 2009/RMC:10.</p> <p>WGECO, 2012. Report of the Working Group on Ecosystem Effects of Fishing Activities (WGECO) ICES CM 2012/ACOM:26 http://www.ices.dk/reports/ACOM/2012/WGECO/wgeco_2012.pdf</p> <p>http://www.mareano.no/english/news/seabed_to_be_mapped</p>		

PI 2.5.3	There is adequate knowledge of the impacts of the UoA on the ecosystem.	
	<p>Husebø, Å., Nøttestad, L., Fosså, J.H., Furevik, D.M. & Jørgensen, S.B. (2002). Distribution and abundance of fish in deep-sea coral habitats. <i>Hydrobiologia</i> 471: 91–99.</p> <p>WGDEC, 2012. Report of the ICES/NAFO Joint Working Group on Deep-water Ecology (WGDEC), 26–30 March 2012, Copenhagen, Denmark. ICES CM 2012/ACOM:29.</p> <p>Freese, J.L., Auster, P., Heifetz, J., Wing, B.L., 1999. Effects of trawling on seafloor habitat and associated invertebrate taxa in the Gulf of Alaska. <i>Marine Ecology Progress Series</i> 182, 119–126.</p> <p>Freese, J.L. 2001. Trawl-induced damage to sponges observed from a research submersible. <i>Marine Fisheries Review</i> 63: 7–13.</p>	
OVERALL PERFORMANCE INDICATOR SCORE:		
85		
CONDITION NUMBER (if relevant):		

Ling and Tusk Stocks (UoA 1-11)

The scoring of P 1 is done for five stocks.

The stocks are

Ling

- **Ling I+II:** Ling (*Molva molva*) in Subareas I and II (Northeast Arctic). ICES advisory book 9 section 9.3.23 June 2015
- **Ling (Other areas):** Ling (*Molva molva*) in Subareas VI-IX, XII, and XIV, and in Divisions IIIa and IVa (other areas) Most recent scientific advice. ICES advisory book 9 section 9.3.24 June 2015

Tusk

- **Tusk I+II:** Tusk (*Brosme brosme*) in Subareas I and II (Northeast Arctic). Most recent scientific advice ICES advisory book 9 section 9.3.48 June 2015
- **Tusk (NEA):** Tusk (*Brosme brosme*) in Subareas IV, VII-IX, and in Divisions IIIa, Vb, VIa, and XIIb (Northeast Atlantic) Most recent scientific advice ICES advisory book 9 section 9.3.48 June 2015
- **Tusk VIb:** Tusk (*Brosme brosme*) in Division 6.b (Rockall) Most recent scientific advice ICES advisory book 9 section 9.3.45 June 2016

PI 1.1.1 – Ling and Tusk Evaluation table – Stock status

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guided post	It is likely that the stock is above the point where recruitment would be impaired (PRI).	It is highly likely that the stock is above the PRI.	There is a high degree of certainty that the stock is above the PRI.
	Ling I+II	Y	Y	N
	Ling (other areas)	Y	Y	N
	Tusk I+II	Y	Y	N
	Tusk (NEA)	Y	Y	N
	Tusk (VIb)	Y	Y	N
	Justification	Ling I+II, Ling (Other areas), Tusk I+II, Tusk (NEA) These four stocks, see ICES (2016) for details, are all assessed as an ICES Category 3 stock. This means that at least one accepted stock indicator is available and that a TAC (typically TAC for 2012 possibly reduced by 20% as a protection against overexploitation), Table 12 for details. The indicator is for these four stocks the Cpue from the Norwegian Reference fleet.		

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
		<p>No explicit PRI has been defined for any of these stocks beyond the reference point embedded in the ICES category 3 advisory rule. However, the TAC reference point is accepted by ICES as satisfactory to provide precautionary Advice. Therefore, this point is taken as a PRI reference point. This is available for these four ling and tusk stocks, Table 10 and for all these stocks the current level at above or just below the reference point. As, to be precautionary, a buffer is required above the PRI level this is accepted as the stocks are above PRI reference points and recruitment is not impaired. Furthermore, the stock trend for all four stocks are similar, the stocks are increasing during the recent decade, see graphs presented in section 4.5. This indicates that there is a high degree of certainty that the stock is above PRI i.e. recruitment is not impaired. SG 80 is met.</p> <p>The assessment is based on catch rates from the commercial fisheries, the reference points are based on a qualitative evaluation of stock status and this approach is more uncertain than if R/V data had been available combined with data demonstrating where the PRI reference point is likely to be and hence there is not a high degree of certainty that the stock is above PRI. SG 100 is not met.</p> <p>Tusk in VIb</p> <p>There is very little fishing on this stock in recent years and the cpue series is based on few observations are associated with large uncertainty. A length based MSY indicator is available for this stock. ICES (2017) WGDEEP 2017, which found that the exploitation was within MSY levels. A similar conclusion was drawn based on an evaluation in 2013, Table 11 and again in WGDEEP 2017. Effort has been decreasing from a level which in 2013 was deemed to be around MSY and where the recruitment was assessed to be non-impaired. SG 60 and SG 80 are met. Because of the paucity of data, related to the very low effort, SG 100 is not met.</p>		
b	Stock status in relation to achievement of MSY			
	Guided post		The stock is at or fluctuating around a level consistent with MSY.	There is a high degree of certainty that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Ling I+II		Y	N
	Ling (other areas)		Y	N
	Tusk I+II		Y	N
	Tusk (NEA)		Y	Y
	Tusk (VIb)		Y	N
	Justification	<p>Ling I+II</p> <p>The stock status is evaluated based on the Length-based MSY indicator, Figure 13 and the conclusion is that the fishing mortality is below F_{MSY} and has been so for the full time series available 2001-2016 (except for 2011) and likely longer. There is no B_{MSY} or proxy defined. Stock size is increasing and the fishery has remained stable. Furthermore, the category 3 reference point suggests that stock status are consistent with MSY requirements, see Table</p>		

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
		<p>11. SG 80 is met. However, the approach is built on proxies and rather crude approaches and these cannot provide a high degree of certainty. SG 100 is not met.</p> <p>Ling (Other areas)</p> <p>The stock status is evaluated based on the Length-based MSY indicator, Figure 14 and the conclusion is that the current fishing mortality is below F_{MSY} and has been so for most of the years in the time series available 2001-2016. There is no B_{MSY} or proxy defined. Stock size is increasing and the fishery has remained stable. Furthermore, the category 3 reference point suggests that stock status are consistent with MSY requirements, see Table 11. SG 80 is met. However, the approach is built on proxies and rather crude approaches and these cannot provide a high degree of certainty. SG 100 is not met.</p> <p>Tusk I+II</p> <p>There is no MSY indicator advised for this stock. Fishing effort on this stock has decreased in recent periods. The fishery has remained stable in response to this reduced effort. In a historic perspective the catches are at a high level but the stock hase shown no signs of being heavy overexploited, e.g. reduced recruitment, rather, the stock has increased. The category 3 reference point suggests that stock status are consistent with MSY requirements, see Table 11. SG 80 is met.</p> <p>As noted for PI 1.1.1a above this assessment is uncertain. Hence there is no high degree of certainty that the stocks are around MSY. SG 100 is not met.</p> <p>Tusk (NEA)</p> <p>The assessment has been updated with ICES (2017) and now there are both a length based MSY indicator and a SPiCT analysis available to judge the status of this stock . ICES finds that the fishing mortality is well below F_{MSY} and that the biomass is above B_{MSY}, Figure 16. This is a significant improvement over the assessment previously presented and is introduced in the evaluation as a resut of the MSC TO. The biomass has been above B_{MSY} for more than two decades. ICES has evaluated that both for the exploitation rate and the stock biomass status that the stock status is consistent with MSY requirements, see Table 11. SG 80 is met. Although, the approach is built on proxies and rather crude approaches, the confidence limits found in the SPiCT analysis, Figure 16 are such that the probabilitythat biomass is below B_{MSY} is very small, 5% lower limit of B/B_{MSY} is at 1.2 this has been the situation for almost a decade. The lower limit of biomass has not be estimated to be below B_{MSY} for the available time series (2001-2016). Therefore SG 100 is met.</p> <p>Tusk VIb</p> <p>There is a Length based MSY indicator for this stock, ICES (2017). The stock was evaluated by ICES (2016e). The stock was evaluated as being around MSY in 2013 and since then effort and catches has declined. The Norwegian fishery has almost stopped. Based on the 2013 evaluation and the subsequent development of the fishery SG80 is met while SG 100 (not a high degree of certainty) is not met</p>		
References		ICES 2016 a-c, ICES 2016e, ICES 2015a-e ICES (2017) Advice Helle and Pennington (2010) Helle, Pennington, Hareide and Fossen (2015)		
Stock Status relative to Reference Points				

PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue	SG 60	SG 80	SG 100
OVERALL PERFORMANCE INDICATOR SCORE: Ling I+II			80
OVERALL PERFORMANCE INDICATOR SCORE: Ling (Other areas)			80
OVERALL PERFORMANCE INDICATOR SCORE: Tusk I+II			80
OVERALL PERFORMANCE INDICATOR SCORE: Tusk (NEA)			90
OVERALL PERFORMANCE INDICATOR SCORE: Tusk VIb			80
CONDITION NUMBER (if relevant):			N/A

Stock	Reference point Cpue (2010-2012)	Current status (Ratio between current and reference indicator)
Ling I+II	79.92 (Cpue Commercial)	1.13
Ling (Other areas)	104.9 (Cpue Commercial)	1.27
Tusk I+II	102.3 (Cpue Commercial)	1.05
Tusk (NEA)	139.9 (Cpue Commercial)	0.99
Tusk VIb	N/A	N/A

Evaluation Table for PI 1.1.1A - key LTL (NOT RELEVANT)

Evaluation Table for PI 1.1.2 – Stock rebuilding (NOT RELEVANT)

PI 1.2.1 – Ling – Tusk Harvest strategy

PI 1.2.1	Harvest strategy design			
a	Scoring Issue	There is a robust and precautionary harvest strategy in place		
		SG 60	SG 80	SG 100
	Guidepost	The harvest strategy is expected to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in PI 1.1.1 SG80.
	All five stocks	Y	Y	Y
	Justification	<p>The harvest strategy for these five stocks is based on the Norwegian, EU and Faroese strategies. These strategies are all based on similar principles and all three are effectively implemented in the national and community legislation. The strategy is based on the ICES advice; for EU supplemented by advice from STECF and through the implementation of the advice, the strategy is expected to maintain the stocks above PRI, and is responsive to changes in the stock status – SG 60 is met. This applies to all six stocks. In all three cases the Strategy is based on restricting capacity through licence schemes. The strategies are implemented using different tools: TAC (for the EU), effort regulation (Faroe Islands) and technical measures (Norway). Where the stocks are shared (Ling (Other areas), Tusk (NEA) and Tusk Vlb the strategy includes consultations among the involved parties with a view to assure that the fishery is conducted within sustainable limits – SG 80 is met.</p> <p>Similar strategies is applied widely and are expected to achieve stock management objectives reflected in PI 1.1.1.SG80 (Avoid PRI levels and fluctuate around MSY) Because of the regulations being based on the ICES advice and the international consultation the strategy is designed to achieve stock management objectives reflected in PI 1.1.1 SG80. SG100 is met for all six stocks.</p>		
	Harvest strategy evaluation			
	Guidepost	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	All five stocks	Y	Y	N
	Justification	The strategy has a HCR (ICES category 3 advice) embedded which is based on a stock abundance index and thus responsive to stock development – SG60 is met. The strategy is designed to achieve stock status objectives PI 1.1.1.SG80. SG80 is met for all six stocks. The strategy has not been fully tested but is developed using studies of numerous stocks and thereby there is some evidence that the strategy is achieving the PI 1.1.1 objectives.. SG100 is not met as the strategy has not been fully tested.		
c	Harvest strategy monitoring			

	Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	All five stocks	Y		
	Justification	The fisheries are all closely monitored through the statistical and management schemes that operates in the Northeast Atlantic . The data include catches (logbooks), VMS (fishing grounds), landings (landing statistics), Discard monitoring, and biological features of the catch (sampling at landing). There are survey that annually covers five out of the six stocks. These data are combined through ICES that evaluates whether the harvest strategy is working according to expectations or not. SG 60 is met.		
	Harvest strategy review			
d	Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
	All five stocks			Y
	Justification	ICES is keeping the strategy under review through biannual assessments and through benchmarking of the assessment methodology at irregular intervals but aimed at every five years.. Ling and tusk assessments are reviewed together with other deepwater species assessments. SG100 is met.		
	Shark finning			
e	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	All five stocks	Not relevant	Not relevant	Not relevant
	Justification	The fishery is targeting Ling and tusk which are fish not sharks.		
	Review of alternative measures			
f	Guidepost	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	All five stocks	Y	Y	N
	Justification	There is little unwanted catch associated with longlining and gillnetting, trawls are not included in the UoC. Technical measures are part of the management measures and this package is		

		under constant review. SG60 and 80 are met. However, there is no formal biennial review. SG100 is not met.
References	ICES (2015a-e), ICES (2016a-c)	
OVERALL PERFORMANCE INDICATOR SCORE:		90
CONDITION NUMBER (if relevant):		N/A

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a		HCRs design and application		
	Guidepost	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Norwegian HCR Ling I+II Tusk I+II	Y	N	N
	EU HCR Ling (Other areas) Tusk (NEA) Tusk VIb	Y	N	N
	Justification	Norwegian stocks (Ling I+II, Tusk I+II) There is a generally understood HCR in place, i.e. to based the regulation of the ling and tusk fisheries on the ICES advice. SG60 is met. There is no explicit HCR. The HCR includes capacity control through licencing and this controls overall exploitation pressure. Furthermore, the ling and tusk fisheries are controlled by technical measures and area restrictions. There are TACs implemented in the EU fisheries operating in Norwegian waters. On the management level no need for an explicit HCR has been perceived as the current fishing is within sustainable limits. There is no formal HCR adopted and therefore the HCR is not well-defined; SG80 is not met. EU Stocks Ling (Other areas), Tusk (NEA), Tusk VIb The EU fishery operates under a TAC control system with annual quotas. There is no explicit HCR (Multiannual Management plan). The HCR include capacity control through licencing and this controls overall exploitation pressure. Furthermore, the ling and tusk fisheries are controlled by technical measures and area restrictions. There are TACs implemented in the EU fisheries operating in Norwegian waters. On the management level no need for an explicit HCR has been perceived as the current fishing is within sustainable limits. There is no formal HCR adopted and therefore the HCR is not well-defined; SG80 is not met.		
b	HCRs robustness to uncertainty			
	Guidepost		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a wide range of uncertainties including the ecological role of the stock, and there is evidence that the HCRs are robust to the main uncertainties.
	All six stocks		Y	N

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place			
	Justification	The main uncertainties in the HCR relate to variability in commercial CPUE data and changes in the fisheries invalidating the CPUE index as a stock size indicator. The ICES HCR for category 3 stocks is considered to be sufficiently robust to these variabilities and changes to allow scientific advice. The scientists follow the fisheries to be able to document changes in the fishery. As long as the interest in fishing on Rockall is limited the current practise is sufficient to assure that the stock is within sustainable limits. SG80 is met for all stocks. However, the HCR is focusing on the stock development only without considering the wider ecological role and SG100 is not met.			
c	HCRs evaluation				
	Guidepost	There is some evidence that tools used or available to implement HCRs are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the HCRs.	
	Met?	Y	Y	N	
	Justification	There are a wider range of tools available in the fishing laws (Licensing, TAC, effort restrictions, closed areas and seasons, gear limitations etc). Not all of these tools are used in all management schemes relevant for the ling and tusk stocks. Stock development (increasing stock size for five out of six stocks and stable stocks for the Rockall tusk) during the last decade suggests that the current tools are appropriate. SG80 is met. However, the fishery status depends on the situation in the cod fishery and thus evidence that the strategy will be effective in a different cod situation is not available. SG100 is not met.			
References		ICES 2016a-c, ICES 2015a-e			
OVERALL PERFORMANCE INDICATOR SCORE					75
CONDITION NUMBER					6

PI 1.2.3 – Ling – Tusk Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
A	Range of information			
	Guidepost	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	All six stocks	Y	Y	N
	Justification	There is general biological information on stock structure, stock productivity available for ling and tusk throughout the Northeast Atlantic. Fleet composition and fleet capacity that's exploits ling and tusk are well documented through the EU, Faroese and Norwegian fisheries statistics systems. Effort data from logbooks are available for all fleets based on logbook information. SG60 is met. The information includes stock indicators (CPUE from commercial operations, the Norwegian reference fleet and from surveys (Ling Vb). These data are sufficient combined with information on stock structure to trace stock productivity. SG80 is met. However, while the information available is sufficient for the current harvest strategy the information is not comprehensive, e.g. the stock structure is constantly debated. The data are not comprehensive and SG100 is not met.		
B	Monitoring			
	Guidepost	Stock abundance and UoA removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	All five stocks	Y	Y	N
	Justification	The removals are well monitored for all participating fleets (meeting SG 60). There is a fishery-based stock indicator available except for the Tusk Vlb. For the Ling Vb there are also survey data available. The coverage is adequate for the current – somewhat rudimentary - HCR. SG 80 is met. For a full assessment data from a R/V survey would be required. Such R/V data are only available for the Faroese ling. Hence SG100 is not met.		
C	Comprehensiveness of information			
	Guidepost		There is good information on all other fishery removals from the stock.	

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
	Met?		Y	
	Justification	The removals in all fisheries are well documented. Compliance with the regulations is considered to be high suggesting that logbook information is accurate. This applies to all the fisheries that exploits ling and tusk within the UoA.		
References		ICES 2016a-c, ICES 2015 a-e		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				N/A

PI 1.2.4 – Ling – Tusk Assessment of stock status

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guidepost		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Ling I+II, Tusk I+II, Ling (Other areas), Tusk (NEA)		Y	N
	Tusk VIb		Y	N
	Justification	Ling I+II, Tusk I+II, Ling (Other areas), Tusk (NEA) The assessments are based on data from the fishery (catches and Cpue), additional data from the reference fleet(size compositions). The assessments thus include an estimate of the removal and of the stock development. Furthermore, there are analyses presented on the length data. The assessment is appropriate for the HCR (ICES category 3) ICES is able to provide precautionary advice and to judge the stock status relative to MSY. SG 80 is met. However, this approach (Category 3) is taken because some data are lacking and the assessment is not 'best practice' for a demersal fairly long lived stock such as ling or tusk (analytical assessment vs stock trend assessment). The assessments do not account for specific features of the ling and tusk. SG100 is not met. Tusk VIb The fishery for Tusk on Rockall(VIb) has been minimal in recent years and the stock trend data (Cpue) cannot – obviously – not be collected. The most recent period for which there is an evaluation of the status of the Tusk stock is 2013, An evaluation based on legth data was presented in 2017. This demonstrates that the status can be estimated and the JHCR applied, SG 80 is met. As for the other stocks mentioned above the assessment is not ‘best practise’ and SG 100 is not met		
b	Assessment approach			
	Guidepost	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Ling I+II Tusk I+II	Y	N	
	Ling (Other areas) Tusk (NEA)	Y	Y	
	Tusk VIb	Y	N	
	Justification	Ling I+II, Tusk I+II The assessment estimates stock status relative to the 2010-2012 situation. This point is appropriate for providing advice to judge that the stock is above PRI but there is uncertainty about the status vis-à-vis MSY, as argued in PI 1.1.1b the indications are that the current exploitation is around MSY although the MSY level is unknown, ie it is unknown if the current		

PI 1.2.4		There is an adequate assessment of the stock status		
		<p>productivity is in equilibrium. The reference points are presented in Table 10. SG 80 is not met.</p> <p>Ling (Other areas), Tusk (NEA)</p> <p>ICES provides an assessment of the status vis-à-vis for these three EU stocks. The exploitation are for all three stocks found to be consistent with FMSY and for two stocks the biomass indicator suggests that the stock is within a range around BMSY. SG 80 is met.</p> <p>Tusk Vlb</p> <p>The exploitation level is considered to be in accordance with the MSY strategy but the biomass level is unknown. However the current low level of fishing and the decreasing effort suggests the stock is not overfished. Because of the lack of information on the biomass level SG80 is not met</p>		
c	Uncertainty in the assessment			
	Guidepost	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	All five stocks	Y	Y	N
	Justification	The major uncertainty is the variability in the commercial CPUE data and possible changes in fishing practice and gear design. This is explicitly recognised in the assessment and the HCR is built to take this uncertainty into account. SG 80 is met. The assessment is not probabilistic and SG100 is not met		
d	Evaluation of assessment			
	Guidepost			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Five stocks			Y
	Justification	The stock assessments are is regularly scrutinized at ICES benchmarks. At ICES benchmarks, alternative hypotheses and assessment approaches are rigorously explored. The deep water species, among which ling and tusk, were benchmarked in 2010.		
e	Peer review of assessment			
	Guidepost		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Ling and Tusk		Y	Y
	Justification	Ling and Tusk The stocks are assessed under the ICES Aegide. The ICES Benchmark procedures include both internal as well as external peer reviews. Both ling and tusk has been benchmarked under this system. SG 100 is met		
References		ICES 2010. ICES (2015a-e) ICES (2016a-c) ICES (2017) WGDEEP 2017		

PI 1.2.4	There is an adequate assessment of the stock status	
OVERALL PERFORMANCE INDICATOR SCORE: Ling I+II, Tusk I+II		75
OVERALL PERFORMANCE INDICATOR SCORE: Ling (Other areas), Tusk (NEA), Tusk VIb		90
CONDITION NUMBER		7

PI 2.1.1 Long Line Evaluation Table – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.		
Scoring Issue		SG 60	SG 80	SG 100
	Guidepost	<p>Main primary species are likely to be above the PRI</p> <p>OR</p> <p>If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main primary species are highly likely to be above the PRI</p> <p>OR</p> <p>If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.</p>
	Met?	Y	Y	N
	Justification	<p>Ling is the main by-catch in the tusk fishery and vice versa (ie tusk is the main bycatch species in the ling fishery). This is a mixed fishery, and both are target species as described under Principle 1. There are no other 'main' Primary species in the longline Ling and Tusk fishery. All other Primary species are caught at less than 5% of the total catch. See Table 13 in Section 3.4.3.</p> <p>The status of the ling and tusk are described under PI 1 and as scored in PI 1.1.1 both species are highly likely to be above the PRI (meeting SG 60 and 80. As discussed under P1, there is not a high degree of certainty that these are above PRI and fluctuating around a MSY level. SG 100 is not met.</p>		
	Guidepost			<p>Minor primary species are highly likely to be above the PRI</p> <p>OR</p> <p>If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species</p>
	Met?			N
	Justification	<p>The following species have been identified as Primary 'minor' in the ling & tusk longline fishery:</p> <p>Cod, saithe, haddock, Redfish (not differentiated between the two species <i>S.norvegicus</i> and <i>S.mentella</i>), Greenland halibut, hake, whiting.</p> <p>Table 15 in Section 5.3.1 provides detailed information on reference points and stock status for all the Primary species identified from the catch profiles. From this table, saithe, haddock, hake, whiting, and Greenland halibut, mackerel (bait), meet SG100</p> <p>For the two stocks that are depleted Norwegian coastal cod (~40,000 tons annually) and Golden redfish (<i>S. norvegicus</i>)(~3,000 t) annually, see Figure 24 the bycatch is small compared to the total fishery. However, the catch composition data does not differentiate between cod/ coastal cod, and the different redfish species, Therefore SG100 is not met</p> <p>As not all the minor species meet the SG100, this scoring issue is not met..</p>		

PI 2.1.1	The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.	
References	Note: the catch composition data does not distinguish between the different redfish species ICES, 2014b; ICES, 2015b; ICES, 2015c; ICES, 2015d; ICES, 2016a; ICES 2016b; ICES, 2016c; ICES, 2016d; ICES, 2016e; ICES, 2016f; ICES, 2016g; ICES, 2016h; ICES, 2016i; ICES, 2016j; ICES, 2016k; ICES, 2016l; ICES, 2016m; ICES, 2016n; ICES, 2016o	
Overall Performance Indicator Score		80
Condition Number		N/A

PI 2.1.1 Gillnet Evaluation Table – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guided post	<p>Main primary species are likely to be above the PRI</p> <p>OR</p> <p>If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main primary species are highly likely to be above the PRI</p> <p>OR</p> <p>If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.</p>
	Met?	Y	N	N
	Justification	<p>Ling is the main by-catch in the tusk fishery and vice versa (ie tusk is the main bycatch species in the ling fishery). This is a mixed fishery, and both are target species as described under Principle 1. The status of ling and tusk are described under PI 1 and as scored in PI 1.1.1, they are highly likely to be above the PRI (SG80 is met), but there is not a high degree of certainty that these are above PRI and fluctuating around a MSY level (SG100 is not met for tusk (in the ling target fishery) and ling (in the tusk target fishery)).</p> <p>Saithe is a 'main' Primary species in the gillnet Ling and Tusk fishery, see Table 13 in Section 5.3. Saithe is harvested sustainably, and the stock is at full reproductive capacity. There is a high degree of certainty that Saithe is above the PRI and are fluctuating around a level consistent with MSY, see also Table 15. SG100 is met for the saithe scoring element.</p> <p>'Redfish' is a 'main' Primary species in the gillnet ling and tusk fishery, see Table 13 in Section 5.3. Gillnet catch ratio is 4.29% and therefore above the 2% and both species of redfish (which are inseparable in the catch) are categorized as "less resilient". Fishbase attest both species very low resilience and high vulnerability, and the productivity score is equivalent equivalent to low/medium productivity. The stock of <i>Sebastes norvegicus</i> is considered to be below any potential biomass reference point (Blim), and there appear to be no signs of recovery, ICES recommends zero catch and no targeted fishery. The UoA has measures in place, such as no discarding, thus good records are available on all redfish bycatch. SG60 is met. It was not possible to establish the evidence of a demonstrably effective strategy between all MSC UoAs which categorise this species as main. SG80 is not met.</p> <p>As not all the main primary species scoring elements meet the SG80, the overall score is SG60.</p>		
		Minor primary species stock status		

PI 2.1.1		The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.		
b	Guidepost			Minor primary species are highly likely to be above the PRI OR If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species
	Met?			N
	Justification	<p>The following species have been identified as Primary 'minor' in the ling & tusk gillnet fishery:</p> <p>Cod, saithe, haddock, Redfish (not differentiated between the two species <i>S.norvegicus</i> and <i>S.mentella</i>), Greenland halibut, hake, whiting.</p> <p>Table 15 in Section 5.3.1 provides detailed information on reference points and stock status for all the Primary species identified from the catch profiles. From this table, saithe, haddock, hake, whiting, and Greenland halibut, meet SG100</p> <p>For the two stocks that are depleted Norwegian coastal cod (~40,000 tons annually) and Golden redfish (<i>S. norvegicus</i>)(~3,000 t) annually, see Figure 24 the bycatch is small compared to the total fishery. However, the catch composition data does not differentiate between cod/ coastal cod, and the different redfish species, Therefore SG100 is not met</p> <p>As not all the minor species meet the SG100, this scoring issue is not met.</p>		
References		<p>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/had-rock.pdf Note: the catch composition data does not distinguish between the different redfish species ICES, 2014b; ICES, 2015b; ICES, 2015c; ICES, 2015d; ICES, 2016a; ICES 2016b; ICES, 2016c; ICES, 2016d; ICES, 2016e; ICES, 2016f; ICES, 2016g; ICES, 2016h; ICES, 2016i; ICES, 2016j; ICES, 2016k; ICES, 2016l; ICES, 2016m; ICES, 2016n; ICES, 2016o http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/smr-arct.pdf</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				70
CONDITION NUMBER				12

PI 2.1.2 Long Line & Gillnet Evaluation table – Primary species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to above the point where recruitment would be impaired.	There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the point where recruitment would be impaired.	There is a strategy in place for the UoA for managing main and minor primary species.
	Met?	Y	Y	Y
	Justification	By definition of ‘primary species’, which are species of commercial value with management tools controlling exploitation, all elements listed under PI 2.1.1 meet 100. These tools, which comprise a strategy as they are regularly reviewed through the ICES process, include: a requirement for accurate information on landings (via log book and sales notes), stock assessments and management rules such as reference points, harvest control rules, quotas and recovery plans where necessary (see also Table 15). There is a discard ban in the Norwegian fishery, and legislation allows the ‘Fiskeridirektoratet’ to introduce regulation at short notice that regulates by-catch. SG100 is met		
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	Y
	Justification	The measures/strategy will work because log books, registered landing ports and effective monitoring, control and surveillance give high confidence that the measures designed to minimise the level of retention on non-target species are effective. The primary species involved are managed through stock management measures, and as all bycatch has to be retained, this data feeds into the relevant stock assessments. The available toolbox (closed areas and seasons, TACs, gear restrictions) and experience with the system (testing) including willingness to use the toolbox provides high confidence that the strategy will work.		
c	Management strategy implementation			
	Guidepost		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a).
	Met?		Y	Y

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
	Justification	<p>Given the low proportion of bycatch in this longline and gillnet fishery, the partial strategy is working in practice for the client fleet, and the species in question are within biological limits, as regularly evaluated through stock specific ICES workshops. Evidence is in terms of log-books, compliance records, and VMS records, for example.</p> <p>SG80 is met.</p> <p>Information on bycatch reported by the fleet, including that collected by trained fishers on board vessels in the reference fleet, coupled with analysis by IMR, and ongoing scientific surveys of the stock status of the species involved, provide an objective basis for confidence that the strategy is working. Furthermore, the discard ban adds substantially to confidence about the nature of the bycatch. Furthermore, there is good compliance with the regulations as implemented by the strategy.</p> <p>SG100 is met.</p>		
d	Shark finning			
	Guided post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	Not relevant. Ling and Tusk are not sharks.		
e	Review of alternative measures			
	Guided post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	Y	Y	N
	Justification	<p>‘Alternative measures’ are to be interpreted as alternative fishing gear and /or practices, that have been shown to minimise the rate of incidental mortality. ‘Unwanted catch’ is interpreted as the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use (SA3.1.6)</p> <p>The catch composition data shows that percentage of bycatch is small, see Table 13 Ling and Tusk fishery catch composition (in percentage), for 2014-2016. The fishery takes place over a wide range I+II+Vb, VI Source: Fiskeridirektoratet, 2017 – spreadsheet data via client.</p> <p>This is a mixed fishery. The main Primary bycatch in the LL and GN ling fishery is tusk, which is wanted. The main Primary bycatch in the LL and GN tusk fishery is ling, which is wanted. This SG60 and SG80 do not apply for these species.</p> <p>The other main Primary bycatch in the GN fishery is saithe. All bycatch is landed. Saithe is used.</p> <p>The regulations are considered, and the technical measures reviewed, by IMR, Fiskeridirektoratet and stakeholders, annually (meeting SG 60 and 80). Where necessary, measures can be introduced at short notice, such as closing an area to fishing when incoming data on catches and bycatches show irregularities (IMR, Directorate, interview Aug 2016).</p>		

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.
		<p>Thus fishing practice can be changed at short notice by the fisher, by moving the gear to another area (ie if bycatch of a species is high, move to another area). SG80 is met.</p> <p>The assessment team was not made aware of a biennial review of alternative measures – SG100 is not met.</p> <p>For LL - SG60 and SG80 are not relevant, and SG100 not met, then this SI scores 80.</p> <p>For GN – SG60 and SG80 are met, SG100 is not met, overall SI scores 80</p>
References		As in 2.1.1
OVERALL PERFORMANCE INDICATOR SCORE:		95
CONDITION NUMBER (if relevant):		

PI 2.1.3 Longline Evaluation Table – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guidpost	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	Y	Y	Y
	Justification	Good quantitative data is available on all main Primary species (ling in the tusk UoA, tusk in the ling UoA, saithe in the gillnet UoA), at the point of capture and landing (because of the discards ban), and this is reinforced and verified through data from the reference fleet, and landings inspections, and landings notes. Synthesis of data, analysis and checks are made by IMR on an on-going basis. SG 100 is met.		
b	Information adequacy for assessment of impact on minor primary species			
	Guidpost			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			Y
	Justification	. As part of the catch composition data, there is good quantitative and verifiable data available on all minor species – see Table 13 and 15. SG100 is met.		
c	Information adequacy for management strategy			
	Guidpost	Information is adequate to support measures to manage main primary species.	Information is adequate to support a partial strategy to manage main Primary species.	Information is adequate to support a strategy to manage all primary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	Y
	Justification	Good quantitative data is available on all Primary species, at the point of capture and landing (because of the discards ban), and this is enforced and verified through data from the reference fleet, and landings inspections, and landings notes – meeting SG60 & 80. Synthesis		

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species	
		of data, analysis and checks are made by IMR on an on-going basis. The data sets cover a significant period of time to note trends and thus feed into the strategy. SG100 is met	
References		See 2.1.1	
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			

PI 2.1.3 Gillnet Evaluation Table – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guidepost	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	Y	Y	N
	Justification	Good quantitative data is available on almost all main Primary species (ling in the tusk UoA, tusk in the ling UoA, saithe in the gillnet UoA), at the point of capture and landing (because of the discards ban), and this is reinforced and verified through data from the reference fleet, and landings inspections, and landings notes. Synthesis of data, analysis and checks are made by IMR on an on-going basis. SG100 is met. However, regarding redfish (main in gillnet fishery), no differentiation was made in the bycatch recording between the two possible species, Such data is needed to evaluate the impact of the fishery on the S.norvegicus stock. SG 80 is met		
b	Information adequacy for assessment of impact on minor primary species			
	Guidepost			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			Y
	Justification	. As part of the catch composition data, there is good quantitative and verifiable data available on all minor species – see Table 13 and 15. SG100 is met.		
c	Information adequacy for management strategy			
	Guidepost	Information is adequate to support measures to manage main primary species.	Information is adequate to support a partial strategy to manage main Primary species.	Information is adequate to support a strategy to manage all primary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	N
	Justification	Good quantitative data is available on all Primary species, at the point of capture and landing (because of the discards ban), and this is enforced and verified through data from the		

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
		reference fleet, and landings inspections, and landings notes – meeting SG60 & 80. Synthesis of data, analysis and checks are made by IMR on an on-going basis. The data sets cover a significant period of time to note trends and thus feed into the strategy. SG100 is met However, regarding ‘redfish’ not enough bycatch information to species level is available to support a strategy for S.norvegicus. SG80 is met		
References		See 2.1.1		
OVERALL PERFORMANCE INDICATOR SCORE:				85
CONDITION NUMBER (if relevant):				

PI 2.2.1 Long Line & Gillnet Evaluation Table – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit.		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guidepost	Main Secondary species are likely to be within biologically based limits. OR If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are highly likely to be above biologically based limits OR If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that also have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main secondary species are within biologically based limits.
	Met?	NR	NR	NR
	Justification	There are no Secondary ‘main’ fish species recorded in this fisheries (see Table 13). The amount of Secondary species bycatch is small, percentages ranging 0.06% (ie a few kg of a species) to 0.5% of the total catch. All bycatch is landed and recorded, and data of the last 5 years (2012-2016) has been analysed. Because there are no ‘main’ species Scoring Issue a) is not used. The data available includes a component of ‘Not elsewhere identified’. They consist of a long list of species that are seen only a few specimen annually. None of these catches hinder recovery or rebuilding – should that be required.		
b	Minor secondary species stock status			
	Guidepost			Minor secondary species are highly likely to be above biologically based limits. OR If below biologically based limits’, there is evidence that the UoA does not

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit.		
				hinder the recovery and rebuilding of secondary species
	Met?			N
	Justification	<p>Each element (minor species) is assessed against Scoring Issue b). If it does not meet SG100, it is treated as though it still meets SG80 (which is blank), which is automatically met by virtue of being a minor species. Since all species are minor and not all meet the requirement for SG100, the performance indicator scores 80.</p> <p>The very nature of the classification into Secondary species indicates that these species are not managed, and in many cases do not have the necessary analytical assessment to determine the biologically based limits. There is no evidence that these species are highly likely to be above biologically based limits.</p> <p>The Secondary 'minor' species identified from the catch composition in this fishery are: Atlantic halibut (<i>Hippoglossus hippoglossus</i>). Listed as endangered on the IUCN Redlist. Monkfish/Anglerfish (<i>Lophius piscatorius</i>) Inadequate information Wolffish: Inadequate information, not identified to species level Pollack (ICES, 2016o): There is no directed fisheries for pollack in Subarea 4 and Division 3.a and pollack are taken solely as bycatch. There are no reference points for this stock Witch flounder Blue ling: inadequate information; ICES (2015) advises no directed fishery and reduction in bycatch as well as continuing protection of spawning areas Squid (bait – from Taiwan): inadequate information</p> <p>Since all species are minor and do not all meet the requirement for SG100, the performance indicator scores 80.</p>		
References		<p>Catch composition data</p> <p>Client interviews</p> <p>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/pol-nsea.pdf http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/tur-nsea.pdf http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/bli-oth.pdf</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				

PI 2.2.2 Long Line & Gillnet Evaluation Table – Secondary species management strategy

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guided post	There are measures in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a strategy in place for the UoA for managing main and minor secondary species.
	Met?	Y	Y	Y
	Justification	There are tools (meeting SG 60), which comprise a strategy (thus achieving over SG 80) as they are regularly reviewed through the ICES process, which include: a requirement for accurate information on landings (via log book and sales notes), discard ban, stock assessments and management rules such as research into reference points, quotas and recovery plans where necessary. Legislation allows the 'Fiskeridirektoratet' to introduce regulation at short notice that regulates by-catch. SG100 is met		
b	Management strategy evaluation			
	Guided post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	Y	Y	N
	Justification	The available toolbox (closed areas and seasons, TACs, gear restrictions) and experience with the system (testing) including willingness to use the toolbox provides an objective basis for confidence that the measures/strategy will work – SG 60 is met. As these are secondary species, and thus little info on stock, experience (practical testing) suggests that the strategy works. SG80 is met A thorough evaluation is not available. SG100 is not met		
c	Management strategy implementation			
	Guided post		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Y	N

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
	Justification	Given the low proportion of bycatch, the partial strategy seems to be working in practice for the client fleet. Information on bycatch reported by the fleet, including that collected by trained fishers on board vessels in the reference fleet, coupled with analysis by IMR, and ongoing scientific surveys of the stock status of the species involved, provide an objective basis for confidence that the strategy is working. Furthermore, the discard ban adds substantially to confidence about the nature of the bycatch. SG80 is met. Testing can only be limited and is unlikely to support high confidence that the strategy will work, given: <ul style="list-style-type: none">- the lack of biological reference points, and uncertainties about the stock and level of fishing mortality for the Secondary 'minor' species.- The uncertainties relating to identification of the several of the bycatch species. SG100 is not met.		
d	Shark finning			
	Guided post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Y	Y	Y
	Justification	Only spurdog occurs as a rare by-catch in the fishery. It is a member of the shark family. There is no tradition for shark finning and sharkfinning is banned. There is no market in Norway for shark fins. Spurdog is evaluated under ETP species.		
e	Review of alternative measures to minimise mortality of unwanted catch			
	Justification	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate.
	Met?	NR	NR	N
	Guided post	'Alternative measures' are to be interpreted as alternative fishing gear and /or practices, that have been shown to minimise the rate of incidental mortality. 'Unwanted catch' is interpreted as the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use (SA3.1.6) The catch composition data shows that percentage of bycatch is small, see Table 13. There are no main Secondary species. SG60 and SG80 are not scored. The regulations are considered, and the technical measures reviewed, by IMR, Fiskeridirektoratet and stakeholders regularly annually . Where necessary, measures can be introduced at short notice, such as closing an area to fishing when incoming data on catches and bycatches show irregularities (IMR, Directorate, interview Aug 2016). Thus fishing practice can be changed at short notice by the fisher, by moving the gear to another area (ie if bycatch of a species is high, move to another area). The assessment team was not made aware of a biennial review of alternative measures – SG100 is not met.		

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.
		As SG60 and SG80 are not relevant, and SG100 not met, then this SI scores 80.
References		As in 2.2.1
OVERALL PERFORMANCE INDICATOR SCORE:		90
CONDITION NUMBER (if relevant):		

PI 2.2.3 Long Line & Gillnet Evaluation Table – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guidepost	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status.
	Met?	NR	NR	NR
	Justification	Because there are no main species Scoring Issue a) is not used. Each element (minor species) is assessed against Scoring Issue b).		
	b	Information adequacy for assessment of impacts on minor secondary species		
Guidepost				Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
Met?				Y
c	Justification	Each element (minor species) is assessed against Scoring Issue b). If it does not meet SG100, it is treated as though it still meets SG80 (which is blank), which is automatically met by virtue of being a minor species. The fishery is under a discard ban, all catch is recorded, and a catch profile has been available for the last few years (where the most recent 5 years have been used in this assessment). Some quantitative information is adequate to estimate the impact of the UoA on minor Secondary species with respect to status. Good quantitative data is available on the minor Secondary species (through the catch profile, over the most recent 3 years), at the point of capture and landing (because of the discards ban), and this is reinforced and verified through the scientific observer programme, reference fleet, and landings inspections, and landings notes. Synthesis of data, analysis and checks are made by IMR on an on-going basis. SG 100 is met.		
	Information adequacy for management strategy			
c	Guidepost	Information is adequate to support measures to	Information is adequate to support a partial strategy to	Information is adequate to support a strategy to manage all secondary species, and evaluate with

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.		
		manage main secondary species.	manage main secondary species.	high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	N
	Justification	<p>There are no main Secondary species.</p> <p>The lack of detailed understanding about stock dynamics of these Secondary species means that the landings information obtained is only adequate to support a partial strategy to manage Secondary species and not adequate to support a comprehensive strategy, or enable a high degree of certainty.</p> <p>SG80 is met but not SG100.</p>		
References		See 2.2.1		
OVERALL PERFORMANCE INDICATOR SCORE:				90
CONDITION NUMBER (if relevant):				

PI 2.3.1 Long Line & Gillnet Evaluation Table – ETP species outcome

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species		
		The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guided post	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/stock are known and likely to be within these limits.	Where national and/or international requirements set limits for ETP species, the combined effects of the MSC UoAs on the population/stock are known and highly likely to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a high degree of certainty that the combined effects of the MSC UoAs are within these limits.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	Table 13 indicates several ETP species in the catch composition for longline and gillnet gears. From the literature seen, no national or international requirements that set limits for these ETP, in particular seabird species, could be identified (ICES, 2014d; ICES, 2013). Hence this Scoring Issue a) is not relevant.		
b	Direct effects			
	Guided post	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Known direct effects of the UoA are highly likely to not hinder recovery of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	Y	N	N
	Justification	<p>The catch composition information – Figure 24 and Table 13 for the ling and tusk fishery for both longline and gillnet fishery shows the following ETP species bycaught:</p> <p>Spurdog, skates and rays and Porbeagle.</p> <p>The quantity of ETP-fish bycatch is known, there is a discard ban so all catch is recorded. These ETP – fish species and group are part of that e-log, so detailed data is available. However, skates and rays were not identified in the e-log to species level, therefore quantitative information on how much is caught per species is not available. The most common skate in the Northern waters (Barents Sea and Norwegian Sea) is the Thorny (starry) skate (<i>Amblyraja radiata</i>) and this species is likely dominating the by-catch, and bycatch in the Norwegian fishery is estimated to be less than 0.5 tons (see section 2.4.2 on ETP Elasmobranchs).</p> <p>Based on the quantitative data available for bycatch of skates and rays, and the likelihood in terms of species distribution as to which species is caught, the fishery is likely not to hinder the recovery of skates and rays – SG60 is met. In order to meet SG80, identification has to be to species level. This would also improve estimation of actual bycatch of elasmobranchs. For porbeagle and spurdog there is better population status information available (see Section 2.4.2), and together with the quantified data on bycatch, the fishery is highly likely to not hinder recovery of both species, SG80 is met</p> <p>Seabirds:</p> <p>It is a requirement that vessels over 15m have to record bird bycatch on the e-log. (IMR, interview Aug 2016). No such records were available for this assessment, which could either mean that no seabirds were bycaught or no such records were taken. No independent verification was available for the assessment.</p> <p>A longstanding concern with respect to seabirds and fishing has been estimates of potential mortalities resulting from seabird–fishing-gear interactions (BirdLife, 2012). The reference fleet vessels record seabird–fishing gear interactions (Table 19) and these data have been subject to review (Bowering <i>et al.</i>, 2011). The reference-fleet data indicate that across the</p>		

N/A Norwegian Ling & Tusk and N/A Norwegian Lumpfish Fishery

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species	
		The UoA does not hinder recovery of ETP species	
		<p>fleet, such interactions are not common, but direct interviews with fishermen yielded estimates deaths of 10 000–12 000 birds per year in 2009–10for the coastal fisheries (Fangel <i>et al.</i>, 2011). Northern fulmars, cormorants (<i>Phalacrocorax</i> spp.), black guillemots and razorbills are the birds most often drowned in fishing gear in Norway, with the highly specific, targeted inshore gillnet fishery for lumpsucker and the northern longline fishery for Greenland halibut raising particular cause for concern.</p> <p>Žydelis et al (2013) present a global review of incidental catch of seabirds in gillnet fisheries. They conclude that species suffering potentially significant impacts of gillnet mortality include common guillemot (<i>Uria aalge</i>) and thick-billed guillemot (<i>Uria lomvia</i>). Also, they conclude that although reports of seabird bycatch in gillnets are relatively numerous, the magnitude of this phenomenon is poorly known for all regions. Further, population modelling to assess effects of gillnet bycatch mortality on seabird populations has rarely been feasible.</p> <p>Considering the location where the tusk and ling fisheries gill nets and longlines are deployed (which can be verified by VMS) and see also vessel distribution maps in Figs. 3 and 4, and the depth of fishing (below the feeding range of divers), it is likely that the UoAs do not hinder the recovery of ETPs. SG60 is met</p> <p>There is no independent verification that there are indeed no seabirds bycaught in these fisheries as the elog seems to suggest. SG80 is not met</p> <p>Although there is no record of any seabird bycatch, general knowledge of problems elsewhere suggests that more documentation of this lack of by-catch should be available and without this positive documentation one cannot state with a high degree of confidence that the UoAs have no significant direct effect on the ETPs</p> <p>SG100 is not met</p>	
c	Indirect effects		
	Guidepost	Indirect effects have been considered and are thought to be highly likely to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?	Y	N
	Justification	<p>Indirect effects may include “ghost” fishing, removal of prey and pollution, as well as e.g. disturbance/interference of feeding or breeding behavior of ETP species.</p> <p>Ghost fishing is not an issue in the ling and tusk fishery, for both gillnets and longlines. Where gear becomes entangled, for example on seabed obstructions, it can and is recovered. Gear is expensive and there is little economic sense in giving up on a recovery attempt. Good local knowledge and gear design and deployment further reduces snagging.</p> <p>As noted in the Barents Sea Ecosystem Assessment (Barentsportal, 2017) factors listed as responsible for the declining trends (in seabird populations) in the western parts of the Barents Sea region probably involve food shortage, predation from an increasing population of white-tailed eagles and lagged effects from previous by-catch in fisheries, as well as oceanographic changes.</p> <p>All vessels are fully MARPOL compliant, with waste and oil handling protocols (Client interview). The fishers are actively encouraged to pick up litter from the sea when encountered, and relevant provisions are made on-shore to deal with such collected litter</p>	

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species	
		The UoA does not hinder recovery of ETP species	
		<p>(Client interview, Aug 2016). Pollution from the vessels is therefore not likely to impact on ETP species.</p> <p>In summary, it is unlikely that indirect effects create unacceptable impacts: SG80 is met.</p> <p>In order to meet the SG100, better quantitative, verified information on ETP species bycatch has to be available</p>	
	References	<p>https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/Bycatch_of_small_cetaceans_and_other_marine_animals.pdf http://barensportal.com/barensportal_v2.5/index.php/en/ Client interview Catch profile data IMR 2011. Evaluation of the Norwegian reference fleet. Internal Report. ICES. 2016. Report of the Joint OSPAR/HELCOM/ICES Working Group on Seabirds (JWGBIRD), 9–13 November 2015, Copenhagen, Denmark. ICES CM 2015/ACOM:28. 196 pp Fangel, K., Wold, L.C, Aas, Ø., Christensen-Dalsgaard, S., Qvenild, M. & Anker-Nilssen, T. 2011. Bycatch of seabirds in Norwegian coastal fisheries. A mapping and methodology study with focus on gillnet and longline fisheries. NINA Report 719. http://www.nina.no/archive/nina/PppBasePdf/rapport/2011/719.pdf http://www.fao.org/3/a-bh048e.pdf http://barensportal.com/barensportal_v2.5/index.php/en/</p>	
OVERALL PERFORMANCE INDICATOR SCORE: (Gillnet)			70
CONDITION NUMBER			8

PI 2.3.2 Long Line & Gillnet Evaluation Table – ETP species management strategy

PI 2.3.2	<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • meet national and international requirements; • ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</p>		
Scoring Issue	SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)		
Guided post		There are measures in place that minimise the UoA-related mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.
Met?	Y	N	N
Justification	<p>Several seabird species (see Red List) and marine mammals are protected, including those mammals that are hunted (subject to national legislation⁷⁵), in that they are covered by one or more of a multiplicity of international conventions for species protection to which Norway is a signatory. In Norway, the role of all these species and habitats, and their role in the marine ecosystems are safeguarded by the Marine Resource Act (DoF, 2008)⁷⁶. The act introduces important principles that seek to protect both species and habitat, and requires ongoing research to understand and protect the ecosystems and stocks. There are also some marine protected areas designated specifically for marine mammals⁷⁷.</p> <p>Fish species listed on the Red List are also considered under the protection of the Marine Resource Act, and all recorded bycatch of ETP-fish species feeds into the stock distribution and assessment research of the relevant species (collated and conducted by IMR). This includes elasmobranchs.</p> <p>Regarding elasmobranchs, as outlined in Section 4.5.2, the discard ban does not ensure that all fish bycatch is recorded and in case of <i>D. batis</i> there is little independently verified bycatch data, besides reference fleet information.</p> <p>Larger fishing vessels (>15m) have to record seabird bycatch (Client interview, Aug 2016) in the e-log. This is therefore relevant to the ling and tusk fishery (longliners and gillnetters) and records should be available.</p> <p>There are measures in place to minimise bycatch of ETP species, in particular seabirds. In the longline fishery this consists of birdscarers and streamers, as well as laser lights to discourage the birds from approaching the baited line. Both gillnets and longlines are set in deep water, thus out of reach of diving birds. SG60 is met.</p> <p>These measures amount to a strategy as in combination with data collected on ETPs they feed into the ongoing research required by the Marine Resource Act. However, the mitigation measures deployed in the longline fishery are not in line with international best practice for the reduction of seabird bycatch, as identified by the Agreement on the Conservation of Albatrosses and Petrels (ACAP) (which is signposted in the MSC guidance). The ACAP Best Practice Advice - http://www.acap.ag/en/bycatch-mitigation/mitigation-</p>		

⁷⁵ Sealing Act (1951); Saltwater Fishing Act (1983); Participation Act (1999); Marine Resources Act (2008);

⁷⁶ DoF, 2008. The Marine Resources Act: Act of 6 June 2008 no. 37 relating to the management of wild living marine resources. Directorate of Fisheries, Bergen. <http://www.fiskeridir.no/english/fisheries/regulations/acts/the-marine-resources-act>

⁷⁷ <http://www.xn--miljodirektoratet-oxb.no/english/>

PI 2.3.2		<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none">• meet national and international requirements;• ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</p>		
		<p>advice - calls for at least 2 out of 3 of line weighting, night setting and bird scaring lines. It is not clear what the line weighting regime is (and note that irrespective of the depth that the line eventually fishes, the danger occurs when the line is being set and hauled), but it appears that the fishery is not required to follow this best practice mitigation.</p> <p>For the ling and tusk gillnets, the depth at which the nets are set is significant in seabird bycatch, whereby offshore gillnets are less of an issue (NINA 2016). Considering the distribution of gillnetters for ling and tusk, see Figure 3 and Figure 4, it may well be that some gillnetters encounter seabirds. No evidence was provided to the assessment team to demonstrate what strategies are in place in the gillnet fishery, in particular the coastal fleet) to reduce ETP bycatch, SG80 is not met.</p> <p>The strategy does not achieve outcomes above national and international requirements. SG100 is not met.</p>		
b	Management strategy in place (alternative)			
	Guidepost	There are measures in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species
	Met?	Not relevant	Not relevant	Not relevant
	Justification	NR		
c	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	Y	Y	N
	Justification	<p>The degree of confidence in the efficacy of the measures is principally informed by the understanding of the level of potential impact of the gear with ETP species, in this case, seabirds and fish, as detailed in 3.4.4. The measures in place give an objective basis for confidence. Research/observer coverage allows the collection of relevant information (Fangel et al 2015).</p> <p>The discard ban ensures that all fish bycatch is recorded, including ETP species.</p> <p>There are significant monitoring initiatives related to seabirds and it is likely that any emerging and significant negative interactions with fisheries will be flagged up. For example “SEAPOP is a mapping and monitoring programme for seabird populations in Norwegian waters, initiated by the Norwegian Government (Ministry of Environment, 2011)</p> <p>SG80 is met</p> <p>There is little quantitative analysis, directly about the fishery. SG100 is not met</p>		
	Management strategy implementation			

PI 2.3.2		<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • meet national and international requirements; • ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</p>		
d	Guidepost		There is some evidence that the measures/strategy is being implemented successfully.	There is clear evidence that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	Met?		Y	N
	Justification	<p>In the ling and tusk offshore fisheries, all vessels use bird scaring devices (although not mandatory by law). The devices are not subject to a national standardization, and individual skippers use the gear they have best experience with. Additionally approximately a quarter of the boats now have “moonpools”, which basically eradicate bird bycatch Client, August 2017). Upcoming new vessels are reportedly all designed with moonpools.</p> <p>The recording of ETP fish species is standard as part of the catch composition data, feeding into fisheries assessment analyses. The recording of seabird bycatch is mandatory on longliners. SG80 is met.</p> <p>There does not appear to be a strategy/ comprehensive strategy, hence SG100 is not met.</p>		
e		Review of alternative measures to minimize mortality of ETP species		
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	Y	N	N
	Justification	<p>‘Alternative measures’ are to be interpreted as alternative fishing gear and /or practices, that have been shown to minimise the rate of incidental mortality. ‘Unwanted catch’ is interpreted as the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use (SA3.1.6)</p> <p>The catch composition data shows that percentage of bycatch of ETP species is small, see Table 13.</p> <p>For both the longline and gillnet fishery the regulations are considered, and the technical measures reviewed (meeting SG 60), by IMR, Fiskeridirektoratet and stakeholders annually Where necessary, measures can be introduced at short notice, such as closing an area to fishing when incoming data on catches and bycatches show irregularities (IMR, Directorate, interview Aug 2016). Thus fishing practice can be changed at short notice by the fisher, by moving the gear to another area (ie if bycatch of a species is high, move to another area). This also applies to any non-target species caught, including ETP species.</p> <p>In the longline offshore fisheries, all vessels use bird scaring devices (although not mandatory by law). The devices are also here not subject to a national standardization, and individual skippers use the gear they have best experience with. Skippers in the offshore fleet report that the devices they use are effective and that birds are no longer regarded a</p>		

PI 2.3.2		<p>The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none">• meet national and international requirements;• ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</p>
		<p>problem for them (Client 15th August 2017). However, this self-reporting was not independently verified..</p> <p>Additionally, approximately a quarter of the boats now have “moonpools” ⁷⁸, which according to the client (15th August 2017) also eradicates bird bycatch. Upcoming new vessels are reportedly all designed with moonpools.</p> <p>SG60 is met</p> <p>However, following a stakeholder observation, the longline fishery is not in line with international best practice on seabird bycatch reduction (see Sla above), whereby the fishery is not required to follow the best practice mitigation, thus alternative measures are not assessed. For both longlines and gillnets, the assessment team was not made aware of a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate. SG80 is not met</p>
References		<p>DoF, 2008. The Marine Resources Act: Act of 6 June 2008 no. 37 relating to the management of wild living marine resources. Directorate of Fisheries, Bergen.</p> <p>http://www.fiskeridir.no/english/fisheries/regulations/acts/the-marine-resources-act</p> <p>http://en.wikipedia.org/wiki/Norwegian_Directorate_for_Nature_Management</p> <p>Sealing Act (1951); Saltwater Fishing Act (1983); Participation Act (1999); Marine Resources Act (2008);</p> <p>Fangel, K., Aas, Ø., Bærum, K. M., Anker-Nilssen, T. & Christensen- Dalsgaard, S. 2015. Utilsiktet bifangst av sjøfugl i norske kystfiskerier med garn og line. - NINA Temahefte 64. 20 s.</p>
OVERALL PERFORMANCE INDICATOR SCORE:		70
CONDITION NUMBER		9

⁷⁸ The moon-pool or hole in the centre of the vessels is a ‘hauling well’ where the long lines are pulled through. This method ensures the safety and well-being of the crew who are then able to manage the fishing operations better from the factory deck of the vessel and can process the catch more efficiently. The moon-pool system also reduces bruising of the fish as it stops the use of gaffs or hooks to eliminate bruising and leaving “gaff-marks” in the flesh, therefore giving a better quality product.

<http://www.carismafish.com/sustainable-fishing/moon-pool-system>

PI 2.3.3 Long Line & Gillnet Evaluation Table – ETP species information

PI 2.3.3		Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul style="list-style-type: none">• Information for the development of the management strategy;• Information to assess the effectiveness of the management strategy; and• Information to determine the outcome status of ETP species.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guidesp ost	Qualitative information is adequate to estimate the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.	Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.	Quantitative information is available to assess with a high degree of certainty the magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	Y	Y	N
	Justific ation	<p>The PINRO / IMR Reports (Jakobsen & Ozhigin, 2011) on the State of the Barents Sea ecosystem offer an overview of the ETP species which occur in the Barents Sea including their spatial and temporal distribution and ecology. Seabird populations are monitored under the auspices of the Norwegian nature conservation agency, NINA (Fangel et al., 2015), and estimates of potential mortalities resulting from seabird–fishing-gear interactions are available (BirdLife, 2012).</p> <p>Since 2002 the distribution of marine mammals in the Barents Sea has been recorded by research vessels, aircraft, fishing vessels and coastguard vessels under the Joint PINRO / IMR ecosystem survey. The surveys are driven in part by ICES advice relating to quotas for commercial harvesting of marine mammals, or species identified as particularly vulnerable. The Norwegian Institute of Marine Research undertakes annual surveys of minke whales and other large baleen whales generating abundance estimates every 6 years.</p> <p>The discard ban and species recording requirements generate high quality data on the catch of a wide range of species, although the analysis presented in section 5.4 suggests that encounters with ETP species are likely to be rare. In this fishery, Ling and tusk, longline and gillnet, no seabird records were available, although it is a statutory requirement for vessels over 15m to record such interactions.</p> <p>The Norwegian reference fleet provides information on catch of all species, Norway submits analysis of gear interaction with key ETP species to the ICES SGBYC.</p> <p>Fangel et al, (2016) / NINA provided a quantitative estimate of the impact of gears used (gillnet for lumpfish and for coastal cod, and line for Greenland halibut) on seabirds. This study was mainly in the coastal area, shallower water – not where the fishery under assessment operates.</p> <p>SG80 is met.</p> <p>Although the vessels are required to log non-fish bycatch, no such data was made available. Therefore there is no high degree of certainty in the assessment of the impact of the UoA on ETP-birds and elasmobranchs. SG100 is not met.</p>		
	Information adequacy for management strategy			

PI 2.3.3		Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species. 		
b	Guided post	Information is adequate to support measures to manage the impacts on ETP species.	Information is adequate to measure trends and support a strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	Y	N	N
	Justification	<p>Information is adequate to measure trends in ETP fish bycatch, as the discard ban requires all catch to be recorded.</p> <p>No data was available for ETP-bird bycatch, or any other potential gear interaction. It is unlikely that there are no bird interactions with the longliners gear.</p> <p>Whilst information is adequate, from observations, it is not sufficient to measure trends for some of the ETP species.</p> <p>SG 60 is met. SG80 is not met.</p> <p>Data on fishery interactions with ETP species is limited – in large part because of their rarity, but also because of limited identification skills, non-recording of non-fish species (ie birds are not recorded for example) and analytical resources. To meet this requirement there would need to be an on-board recording system of all ETP encounters and all seabirds (whether ETP or not). This includes good identification skills, and regular synthesis and analysis of the data in conjunction with relevant scientific institutions. This can be done through a specifically designed MSC – log.</p>		
References		<p>See also refs. in PI2.3.1</p> <p>http://www.barentsportal.com/barentsportal/index.php/en/joint-norwegian-russian-environmental-status-reports</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				70
CONDITION NUMBER				10

PI 2.4.1 Long Line & Gillnet Evaluation Table – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guided post	The UoA is unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Y	Y	N
	Justification	<p>The nature and distribution of benthic habitats and their interaction with the client fleet has been described in detail in section 5.5 (conveying SG 60 is met). The section also described in detail the various types of habitats and VMEs in the Barents Sea, which may be encountered by the fishery.</p> <p>VMS data and client interviews show that the client fleet normally fishes in areas that are productive and relatively dynamic on the continental slope and on the slopes of banks and trenches within the Norwegian and Barents Seas, as well as the deeper areas off Rockall. These areas are often also characterised by rich benthic habitats and in some cases VMEs, as can be seen from the detailed maps generated by the ongoing MAREANO project.</p> <p>The commonly encountered habitats are shown in Fig 23, and consists predominantly of bathyal sediment and rock with biogenic reefs, when fishing in deeper waters, and shelf sublittoral sediment and coarse sediment as well as rock and biogenic reefs in less deep waters.</p> <p>Clark et al (2015) reviewed the impact of fishing gear on deep water benthic communities. They found that static gears, such as longlines and traps have lower impacts than mobile gear types. However, in certain conditions, for example during retrieval, static gear may move laterally across the seabed, resulting in impacts to the habitat and biota. Longline impacts on sessile fauna such as sponges and corals have been observed, where the animals have been broken by longline weights or by the mainline cutting through them while moving laterally during fishing or hauling (in Clark et al 2015). Line gears alter the seabed to a lesser extent than demersal trawl gears due to their much narrower footprint; lines can, however, drag on the seabed stirring up sediments, as well as interact directly with sessile organisms. Overall gillnets and longlines are low impact gears compared to demersal trawls.</p> <p>The gears, both longline and set gillnet have point contact with the bottom, whereby only the anchor weights sit on the bottom. Both gears are static once set. The tusk and ling longline and gillnet fisheries are highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm. SG80 is met.</p> <p>In order to meet SG100, some quantitative information about the spacial extent of the fishery is needed, the actual footprint in the form of the footprint of each net/ longline, the number of nets/ longlines. This evidence is then used to calculate a probability as to impact (CR Table SA9). Such evidence was not available. SG100 is not met</p>		
b	VME habitat status			
	Guided post	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.		
				would be serious or irreversible harm.
	Met?	Y	Y	N
	Justification	<p>The joint Russian- Norway research programme and the Mareano and EMODnet mapping programmes have identified the location of different types of VMEs as described in Section 5.5.2.</p> <p>The distribution of Lopheila reefs and coral gardens in the Norwegian Sea and SW Barents Sea are shown in Figure 33 and Figure 34, and over a wider area of the NE Atlantic from the OSPAR (2010) survey Figure 35. The area covered by the gillnets and longlines for ling and tusk is known (Figure 3 and Figure 4).</p> <p>There are several areas closed to fishing, for the protection of cold water corals and other vulnerable marine ecosystems (OSPAR 2010), Figure 35</p> <p>Hard bottom coral garden aggregations (mainly seafans) can be found in Figure 33, and some may be within the area where the ling and tusk fishery operates when in the Norwegian Sea. The distribution of coral gardens (Figure 36) favours hard bottom or rock to which to attach, and are further offshore, in the area where the ling and tusk fishery operate when in the Norwegian Sea.</p> <p>The distribution of seapens (Figure 36) depends on soft muddy substrate, and within the area where the fishery operates according to Figure 4 and Figure 5</p> <p>The location of the closed areas, containing Lophelia reefs, is known and can thus be avoided by the fishing gears. Static gears, such as bottom longlines and set gill nets have a lower impact on the benthos (Clark et al 2015). The position of the vessels is verifiable through VMS. Considering that the Lophelia reefs have been mapped, and are thus avoided by the fishers (Client interview Aug 2016, in part to avoid damage to the gear and snagging), it is highly unlikely for the UoA to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm. SG60 and 80 are met.</p> <p>A Recommendation is raised to encourage the creation of closed areas based on other VMEs besides Lophelia reefs, such as coral gardens, seapens and sponge beds for example.</p> <p>In order to meet SG100, some quantitative information about the spacial extent of the fishery is needed, the actual footprint in the form of the footprint of each net and longline, and the number of nets and longlines in relation to the overall fishing area. This evidence is then used to calculate a probability as to impact (CR Table SA9). Such evidence was not available. SG100 is not met.</p>		
c	Minor habitat status			
	Guided post			There is evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			Y
	Justification	<p>Minor habitats are all those habitats which are not ‘commonly encountered’ or ‘VMEs’. Considering the small footprint of the gear, in terms of the anchors only resting on the seafloor, it is highly unlikely that the UoA reduces the structure and function of the minor habitats to a point where there would be serious or irreversible harm. The evidence consists of studies by Clark et al 2015 which show the comparatively low impact of static gears. SG 100 is met.</p>		

PI 2.4.1	The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.	
References	Clark, M. R., Althaus, F., Schlacher, T. A., Williams, A., Bowden, D. A., and Rowden, A. A. 2015. The impacts of deep-sea fisheries on benthic communities: a review. – ICES Journal of Marine Science, doi: 10.1093/icesjms/fsv123 See overview in Section 5.5	
OVERALL PERFORMANCE INDICATOR SCORE:		85
Recommendation		4
CONDITION NUMBER (if relevant):		

PI 2.4.2 Long Line & Gillnet Evaluation Table – Habitat management strategy

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guided post	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Y	Y	N
	Justification	<p>Measures in place to mitigate habitat impacts include on-going mapping programmes to improve access management, and research into habitat impacts of gear types (Clark <i>et al</i> 2015). Another large scale mapping programmes is by OSPAR – see Figure 38. Fleet specific measures include local knowledge by the fishers, who wish to avoid snagging of the nets and lines and thus cause damage and delays. The Norwegian Coast Guard monitors fishing activities in Norwegian waters in real time through VMS, including surveillance of areas closed for fishing.</p> <p>Move on protocols legally apply to all bottom-contact gears and the impact thresholds are 30kg live coral and 400 kg sponge (harmonized with NEAFC). If a vessel in one haul reaches this threshold value, they are required to report the impact to the Directorate of fisheries and move 2 nautical miles before resuming operations. Although legally and theoretically applicable to tusk pots and traps fisheries, in practice the impact threshold values render them irrelevant for these fisheries where impacts are regarded as light. The problem is low and it is in the fishermen’s interest to avoid gear entanglement.</p> <p>SG60 is met.</p> <p>Part of the strategy is to monitor the fishery closely and to ensure that all species and habitat protection measures are complied with in full. The MAREANO mapping programme is ongoing and there are regional seas management plans that include monitoring sensitive habitats. The annual status reports of each of the regional seas are presented to Parliament. Additionally, the Marine Resources Act requires an ecosystem approach to safeguarding biodiversity in addition to managing exploited resources</p> <p>The MAREANO programme is aimed at surveying, monitoring and protecting all aspects of the Norwegian marine environment, ecosystem and habitats. Management measures, which specifically address habitat impact have largely focused on closing inshore waters to fishing and closure of vulnerable reef areas in Norwegian waters. Closed areas are enforced with the same rigour that is applied to all fishery regulations. This constitutes a partial strategy.</p> <p>SG80 is met.</p> <p>A strategy should include regular review of alternative measures to reduce the impact of the UoA on the habitat. The strategy is to monitor the fishery closely and to ensure that all species and habitat protection measures are complied with in full.. The assessment team was not made aware of such a strategy.</p> <p>SG100 is not met.</p>		
b	Management strategy evaluation			
	Guided post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.
	Met?	Y	N	N

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.		
c	Justification	<p>These measures are required by OSPAR and Norwegian legislation (Marine Resources Act) to protect sensitive marine habitats; the measures are observed and closed areas rigorously enforced. This includes a rule to move-on when vulnerable habitats are encountered – see Section 5.5.2.2</p> <p>Monitoring of fishing activity and regular aerial and maritime surveillance patrols ensure that the closed areas are observed and that the sensitive habitats within them are safeguarded. VMS provides real time data on the vessels, verifying their proximity to closed areas.</p> <p>SG60 is met</p> <p>In addition to monitoring the fishery, methods and gear, seabed habitats continue to be monitored and mapped through the MAREANO programme. The OSPAR mapping programme, Fig 30, has identified further offshore areas for protection, in the main Lophelia reefs and seamounts, but not other deep water VMEs (eg coral gardens and sponges). In terms of avoidance of such areas for fishing, it appears that the <i>‘Norwegian authorities have so far been reluctant to impose restrictions on the use of passive gears in coral areas, which are often targeted by longline and gillnet fisheries.’</i> (Fossa et al 2010) This can also be deduced from the fact that current impact thresholds apply to trawl fishing, no such thresholds have been set for demersal longlines and gillnet gears.</p> <p>SG80 is not met.</p> <p>Testing would require more detail on the geomorphological distribution of benthic habitats throughout the fishing range, which was not available to the assessment to such detail In order to meet SG100 testing would also require regular review of the strategy.</p>		
	Management strategy implementation			
	Guided post		There is some quantitative evidence that the measures/partial strategy is being implemented successfully.	There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		Y	N
d	Justification	<p>The Norwegian enforcement agencies are satisfied that incursions into the closed areas are rare and do not represent a systemic failure of fishery enforcement or malpractice among the ling and tusk fishery longliners and gillnetters.</p> <p>There is quantitative evidence indicating that areas containing vulnerable habitats are being closed to fishing by the Norwegian Government. Further areas are being considered, as mapping progresses. OSPAR closed areas are also set up to protect vulnerable habitats, some in international waters (see Figure 38)</p> <p>SG80 is met.</p> <p>Clear quantitative evidence would need to indicate that areas containing vulnerable habitats such as coral gardens and sponges are also being closed to fishing by the Norwegian Government, and some sort of threshold values apply to static gears too.</p> <p>In order to meet SG100 there have to be further areas closed to fishing, in deep water, including areas which protect other vulnerable habitats, besides hard corals. OSPAR closed areas are not necessarily covered by legal compliance measures.</p>		
	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs			
	Guided post	There is qualitative evidence that the UoA complies with its management	There is some quantitative evidence that the UoA complies with both its	There is clear quantitative evidence that the UoA complies with both its

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.		
		requirements to protect VMEs.	management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	Y	Y	N
	Justification	<p>There is qualitative evidence of compliance in the form of interviews and circumstantial evidence (such as no incentive to not-comply, damage to gear if get snagged on biogenic reefs).</p> <p>SG60 is met.</p> <p>Real time VMS and coast guard monitoring provides some quantitative evidence that the UoA complies.</p> <p>The closed areas apply to all fisheries operating in the areas, including non-MSC, and Monitoring and compliance is carried out via the Coastguards and Directory of Fisheries (VMS checking).</p> <p>SG80 is met.</p> <p>Clear evidence, in the form of vessel specific operational plans for example, were not available to the assessment team. A Recommendation (1) was raised.</p> <p>SG100 not met.</p>		
References		<p>WGECO, 2012. Report of the Working Group on Ecosystem Effects of Fishing Activities (WGECO) ICES CM 2012/ACOM:26 http://www.ices.dk/reports/ACOM/2012/WGECO/wgeco_2012.pdf</p> <p>http://www.mareano.no/english/news/seabed_to_be_mapped</p> <p>http://www.mareano.no/kart/viewer.php?language=en&bbox=592707.1,7846700.0,802279.9,7952140.0</p> <p>&KARTBILDE_ID=115</p> <p>http://www.mareano.no/english/topics/coral_reefs [List any references here]</p> <p>Fossa, Jan Helge, and Hein Rune Skjoldal. Conservation of cold-water coral reefs in Norway. Oxford University Press, New York(USA), 2010</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				75
Recommendation: on d)				1
CONDITION NUMBER				13

PI 2.4.3 Long Line & Gillnet Evaluation Table – Habitats information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidpost	<p>The types and distribution of the main habitats are broadly understood.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p> <p>Qualitative information is adequate to estimate the types and distribution of the main habitats.</p>	<p>The nature, distribution and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA.</p> <p>OR</p> <p>If CSA is used to score PI 2.4.1 for the UoA:</p> <p>Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.</p>	<p>The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.</p>
	Met?	Y	Y	N
	Justification	<p>Background Section 3.4.5 provides much detail on current habitat information in the Barents Sea and the Norwegian Sea, and NE Atlantic area – showing SG 60 is met.</p> <p>The nature, distribution and vulnerability of benthic habitats of the Barents and Norwegian Seas, and NE Atlantic are well known and researched to international standards (meeting SG 80). This information is summarized in various marine atlases, OSPAR network of MPAs (OSPAR, 2016) in the NE Atlantic, the Mareano mapping programme, the reports by Joint Russian Norwegian Ecosystem Assessment; the review by Jakobsen and Ozhigin; and through scientific studies undertaken by IMR.</p> <p>This work is increasingly supplemented with data already coming directly from MSC certified fisheries which operate in the region - in the form of log book data supported by closely controlled coast guard inspection. The data are in turn collated by IMR/ Directorate of Fisheries.</p> <p>More recently, NEAFC has recommended Member States to provide VMS data to ICES and NEAFC constituent bodies to meet the needs of both science and compliance. (Recommendation 10, 2013: made at the 31th Annual Meeting in November 2012 (NEAFC, 2013)).</p> <p>SG80 is met.</p> <p>The OSPAR mapping programme, in particular in the High Seas, is a work in progress. VME habitats such as Lophelia petusa reefs and seamounts have been mapped over a wider area, no such maps appear to be completed for other relevant VME habitat types (eg deep sea sponge beds, coral gardens, deep sea seapens and burrowing megafauna etc). SG100 is not met.</p>		
b	Information adequacy for assessment of impacts			
	Guidpost	<p>Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.</p> <p>OR</p>	<p>Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear.</p>	<p>The physical impacts of the gear on all habitats have been quantified fully.</p>

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
		If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	OR If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	Y	Y	N
	Justification	The potential effect of trawling, and less impactful gears such as static bottom set gears, on coral and sponge communities is understood (Clark et al 2015) – SG 60 is met. The MAREANO programme has identified some areas where fishing has had an effect in the past on the seabed and seabed habitats; these are associated with trawl (door)tracks rather than set gillnets. Clark et al (2015) reviewed the impact of gears on deep benthic organisms. Overall gillnets and longlines are low impact gears compared to demersal trawls, due to their narrower footprint. Closed areas have been established to protect habitats and communities in selected areas. Fishers know where these areas are, as they have been involved in the consultations when these areas were established (Client, pers com May 2017). Fishers will also be aware of the bottom topography of their preferred fishing areas, ie experience, and actively avoid such areas where the gers could be snagged in order to avoid unnecessary damage to the gear (with concomitant loss of time and catch). The distribution and intensity of fishing activity relative to sensitive areas is known via VMS records. SG80 is met. The physical impact of the gear on all habitat types has not been fully quantified, SG100 is not met.		
c	Monitoring			
	Guidepost		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in habitat distributions over time are measured.
	Met?		Y	N
	Justification	The distribution and intensity of fishing activity is monitored through compliance programmes through VMS and coast guard monitoring; habitat mapping and monitoring is ongoing; there is provision for introducing new protection measures if needed, areas can be closed at short notice. SG80 is met Although habitats are monitored, changes in distribution over time are not SG100 is not met.		
References		See also references listed under P2.4.1 and 2.4.2 and analysis in background section 5.5 Clark et al 2015; NEAFC 2013; Larsen, T. Nagoda, D. and Andersen, J.R. (Eds) 2003. A biodiversity assessment of the Barents Sea Ecoregion WWF; “Mareano programme” (http://www.mareano.no/english/index.html); Spiridonov, V.A. Gavriilo, M.V.. Krasnova E.D and N.G. Nikolaeva (Eds) 2011. Atlas of Marine and Coastal Biological Diversity of the Russian Arctic. Moscow: WWF Russia,. ISBN 978 5 9902786 2 2		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				

PI 2.5.1 Long Line & Gillnet Evaluation Table – Ecosystem outcome

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guided ost	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Y	Y	N
	Justification	<p>The individual elements of the ecosystem and their impact is discussed under PI 2.1-2-4. The general impact on the ecosystems are considered under 2.5 and the individual assessments are not repeated. Overall the ling, tusk and lumpfish are small components in the ecosystems affected by the fisheries and at the ecosystem scale the fisheries does not seem to have major impact, The main impacts are from the large fisheries for pelagics and key demersal fish (cod, haddock, saithe). These fisheries accounts for removals of several mill tons of fish annually while the total removals considered in this report is below 100,000t.</p> <p>This is are relatively clean fisheries (both longline and gill net lump and tusk fisheries) dominated by the target species, as can be seen from the small percentages of bycatch in the catch composition. Thus, the fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.</p> <p>SG60 is met.</p> <p>IMR has a wide ranging research and stock assessment programme dating back over half a century, much of which is aimed ultimately at developing an ecosystem model for all Norwegian regional seas. ICES has created a working group (WGINOR) which conducts and further develops Integrated Ecosystem Assessments for the Norwegian Sea as a step towards implementing the ecosystem approach. This is an ongoing process, with changing parameters, such as Long term climatic changes for example. Within the ecosystem context, ling and tusk have not been identified as playing critical roles in the overall stability of the Norwegian Sea marine ecosystem. Adult ling feed on other fish such as cod, herring, flatfish, as well as lobster starfish and ctenophores (ie benthic species) , and tusk feed on crustaceans and shellfishes, benthic fishes (flatfishes and gurnard) and on starfish. In turn they are prey to larger fish and marine mammals. The Marine Resources Act makes it an explicit requirement that an ecosystem approach is taken to all aspects of marine resource management. It is highly unlikely therefore that the fishery at the current level will disrupt ecosystem structure or function.</p> <p>SG80 is met</p> <p>As there currently is no quantifiable ecosystem model incorporating the roles of ling and tusk, evidence is circumstantial only, SG100 is not met</p>		
References		<p>Fishbase.org for biology of ling and tusk</p> <p>ICES.2017. Interim Report of the Working Group on Integrated Ecosystem Assessments for the Norwegian Sea (WGINOR), 28 November - 2 December 2016 , Bergen, Norway . ICES CM 2016/SSGIEA:10. 28 pp</p> <p>ICES, 2016 Ecosystem Overview Barents Sea</p> <p>ICES, 2016 Ecosystem Overview Norwegian Sea</p> <p>ICES 2016 Ecosystem Overview North Sea</p>		

PI 2.5.1	The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.	
OVERALL PERFORMANCE INDICATOR SCORE:		80
CONDITION NUMBER (if relevant):		

PI 2.5.2 Long Line & Gillnet Evaluation Table – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidpost	There are measures in place, if necessary which take into account the potential impacts of the fishery on key elements of the ecosystem.	There is a partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a strategy that consists of a plan, in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place.
	Met?	Y	Y	N

	Justification	<p>Two ICES working groups provide annual assessments of the state of the Barents Sea Ecosystem (Arctic Fisheries Working group; WG for Regional Ecosystem Description). A new working group on integrated assessment in the Barents Sea (WGIBAR) has now been established (ICES, 2014a). This information is supplemented by on-going data collected under the Joint Norwegian-Russian Environmental Status Report for the Barents Sea (which issues annual Barents Sea ecosystem status report, trends, highlights expected future situation) and work undertaken as part of implementing the Integrated Management Plan for the Barents Sea-Lofoten area (SG 60 is met).</p> <p>All these assessments suggest that broadly speaking, the Barents Sea Ecosystem is relatively healthy, and that current fishing activities are not disrupting ecosystem structure and function. There has been a decline in seabird populations (similar to that throughout the NE Atlantic), but the reasons for this are unclear (local food shortage; increased predation; historic bycatch in drift net and Long-line fisheries, climate change) and are not attributed to current fishing activity. The high stocks of key species at different trophic levels (cod/haddock and capelin) suggest that the fish related elements of the ecosystem are broadly speaking in good shape. Significant changes are however taking place probably related to climate change causing oceanographic shifts.</p> <p>These surveys and assessments are also supported by a several ecosystem modelling studies related specifically to the Barents Sea, which have explored for example the trophic relations between fish species, and links between capelin, cod, seabirds, marine mammals. These include ecopath type studies by Blanchard <i>et al</i> (2002); EcoCod (which seeks to estimate cod MSY taking into account a range of ecosystem factors), Gadget (multispecies interactions between cod, herring, capelin, minke whale, krill) in the Barents Sea; Biofrost (multispecies model for Barents Sea – addressing primarily cod / capelin dynamics); STOCOBAR (Stock of cod in the Barents Sea). Broader ecosystem models include NORWECOM.E2E, which includes plankton and fish, and is under development and semi-operational, and both PINRO and IMR have developed hydrodynamic models that complement these mainly biologically based models.</p> <p>An ecosystem based management plan is in place for the Barents Sea-Lofoten area. This plan includes assessment of threats to ecosystem structure and function and where appropriate identification of measures to address such threats.</p> <p>There is a range of more specific measures and initiatives in place to address management of individual ecosystem elements.</p> <ul style="list-style-type: none"> • Measures described in P1 to ensure that the fishery does not pose a risk to ling and tusk stocks. • A range of technical measures and protocols to minimize bycatch of other fish species (described in 2.1 and 2.2) that may play an important role in ecosystem structure and function • Closed areas to protect the young of a variety of other species. • Closed areas to protect the most valuable/vulnerable benthic habitats in the Norwegian zone and to a lesser extent in the Russian zone, and protocols and gear development initiatives to reduce benthic impacts. <p>There is limited interaction with marine mammals and interaction with seabirds, and these are known.</p> <p>The mix of planning and research initiatives, ecosystem monitoring and assessments, seabed mapping, fishing effort distribution monitoring, ICES advice, and the range of individual measures designed to protect different elements of the ecosystem, taken together may be regarded as comprising a partial strategy.</p> <p>SG80 is met.</p> <p>The impacts of the fisheries on benthic habitats has been discussed in section 5.5, the knock-on effects on the wider ecosystem are not well understood. There remain concerns relating to some fish species and species groups – in particular redfish, wolffish and elasmobranchs – and again the wider impacts are not well understood. The overall understanding of</p>
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Norwegian Ling & Tusk and Norwegian Lumpfish Fishery

		ecosystem structure and functioning, and the impacts of fisheries therefore remain inadequate to evaluate for all ecosystem elements. SG100 is not met.		
b	Management strategy evaluation			
	Guided post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved
	Met?	Y	Y	N
	Justification	Rigorous quota control management, technical measures, seasonal and permanent area closures all contribute to minimising adverse effects of fishing on key elements of the ecosystem. SG60 met. There are Norwegian seas management plans and the Marine Resources Act requires an ecosystem approach to environmental management. The act also requires regular monitoring and assessment to ensure that objectives are being met. IMR are maintaining a fishery and biological monitoring programme in support of annual (ICES) stock assessments and reviews aimed at providing the Norwegian government with advice on fishing and environmental effects consistent with Long term sustainability. SG80 is met. The development and implementation of an ecosystem approach to manage fisheries and associated habitats is an ongoing process, based on complex modeling of data and factors. A time series of such a management approach needs to be established to test and provide confidence in the partial strategy/ strategy. This is not yet available. SG100 is not met.		
c	Management strategy implementation			
	Guided post		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Y	Y
	Justification	There is evidence of area closures, there is evidence of research cruises and resulting status reports, and there is evidence of ecosystem elements being given key consideration at fisheries management level – in the form of ICES advice. Evidence relating to successful implementation at the fleet level includes: <ul style="list-style-type: none">Catch recordsVessel inspectionsObserver programme (typically for secondary species)Review and analysis of fishing activity, species caught and habitats affected - by IMR and the inspectorates.VMS to relate to spatial intensity of fishing effort SG 100 is met.		

References	<p>Integrated Management of the Marine Environment of the Barents Sea and the sea areas off the Lofoten Islands (management plan) http://www.regjeringen.no/en/dep/md/Selected-topics/hav--og-vannforvaltning/havforvaltning/integrated-management-of-the-barents-sea.html?id=87148 http://arcticgovernance.custompublish.com/norway-and-integrated-oceans-management-the-case-of-the-barents-sea.4651095-142902.html Hoel , A.H., von Quillfeldt, C.H., Olsen, E. 2009 Norway and Integrated Oceans Management – the Case of the Barents Sea. REPORT SERIES NO 129 Norsk Polar Institutt Ottersen, G., Olsen C., van der Meeren, G., Dommasnes., and Loeng H. 2011. The Norwegian plan for integrated ecosystem-based management of the marine environment in the Norwegian Sea. Marine Policy 35(2011)389–398 Quillfeldt, C. Olsen, E., Dommasnes A., and Vongraven, D. 2009. Integrated ecosystem-based management of the Barents Sea-Lofoten Area. In Sakshaug, E., Johnsen, G. and Kovacs, K. (eds) Ecosystem Barents Sea. Tapir Academic Press, Trondheim. Norway, 587 p.</p>
OVERALL PERFORMANCE INDICATOR SCORE:	85
CONDITION NUMBER (if relevant):	

PI 2.5.3 Long Line & Gillnet Evaluation Table – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidepost	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	The Long-established and Long-term research programmes have built a database that ensures that the key elements of the ecosystem are identified. SG60 is met. The individual components of the IMR research and stock assessment programmes all contribute to the institution’s Long term aim of modelling the marine ecosystem. It is understood implicitly, if not explicitly, that each of the fish stocks plays a role within the ecosystem and variations in abundance of stocks, such as ling and tusk, can influence the status of both prey and predator populations. Whilst not all these interactions have been investigated in detail, they are understood in principle. The research programmes and associated monitoring of the marine environment, primary production, fish stocks, birds and marine mammals all contribute towards detecting any risk or adverse environmental effects. SG80 is met.		
b	Investigation of UoA impacts			
	Guidepost	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail.	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and have been investigated in detail.
	Met?	Y	Y	N
	Justification	Direct fishery interactions are reasonably well understood and indirect effects can be inferred, often from direct experience or comparison with similar species and areas elsewhere. Stock–recruitment relationships are a focus of detailed attention in many stocks, including ling and tusk. SG80 is met. However, main interactions have not been investigated in detail for ling and tusk. SG100 is not met.		
c	Understanding of component functions			
	Guidepost		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known.	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood.
	Met?		Y	N
	Justification	The Long-established and Long-term research programmes have built a database that ensures that the main functions of the components in the ecosystem are known and feature in the various ecosystem models being developed. SG80 is met. Not all aspects of fishery–bycatch–ETP interactions have been studied in detail and until fully functioning ecosystem models have been demonstrated to work it would be premature to say that these components of the ecosystem are understood. SG100 is not met.		
	Information relevance			

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.			
d	Guidepost		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred.	
	Met?		Y	N	
	Justification	The Long-established and Long-term research programmes have built up a database that ensures that interactions with fish, bird and mammal components can be inferred even if they cannot be quantified explicitly. Such information is central to an ecosystem approach, as required by the Marine Resources Act. SG80 is met. SG100 is not met, as there is not yet adequate information on all the elements.			
e	Monitoring				
	Guidepost		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.	
	Met?		Y	Y	
	Justification	The Long-established and Long-term research programmes are ongoing and maintain databases appropriate for monitoring the status of key components in the ecosystem (plankton, fish, birds, mammals), including habitats monitored by MAREANO and mapping by OSPAR. SG80 is met. The Long-established and Long-term research programmes and their associated databases are adequate to support the development of strategies to manage ecosystem interactions. The regional seas management plans are de facto examples of such management strategies. SG100 is met			
References		As in SI 2.5.1 and 2			
OVERALL PERFORMANCE INDICATOR SCORE:					85
CONDITION NUMBER (if relevant):					

P2 Tusk Pots and Traps (UoA-7)

PI 2.1.1 Pots & Traps tusk Evaluation Table – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.		
Scoring Issue		SG 60	SG 80	SG 100
	Guided post	<p>Main primary species are likely to be above the PRI</p> <p>OR</p> <p>If the species is below the PRI, the UoA has measures in place that are expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main primary species are highly likely to be above the PRI</p> <p>OR</p> <p>If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a high degree of certainty that main primary species are above the PRI and are fluctuating around a level consistent with MSY.</p>
	Met?	NR	NR	NR
	Justification	<p>There are no 'main' Primary species in the pots and traps Tusk fishery. All Primary species are caught at less than 5% of the total catch. See Table 14 in Section 3.4.3</p> <p>Because there are no 'main' species, scoring issue a) is not used.</p>		
	Guided post			<p>Minor primary species are highly likely to be above the PRI</p> <p>OR</p> <p>If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species</p>
	Met?			N
	Justification	<p>Each element (minor species) is assessed against scoring issue b. If it does not meet SG100, it is treated as though it still meets SG80 (which is blank), which is automatically met by virtue of being a minor species</p> <p>The following species have been identified as Primary 'minor' in the tusk pots and traps fishery:</p> <p>Ling, cod (coastal cod not differentiated), saithe, haddock, Redfish (not differentiated between the two species <i>S.norvegicus</i> and <i>S.mentella</i>), Greenland halibut, hake, plaice, sole, nephrops, King crab, and bait herring and mackerel.</p> <p>Table 15 in Section 5.3.1 provides detailed information on reference points and stock status for all the Primary 'main' and 'minor' species identified from the catch profiles. From this table, ling, saithe, plaice, Haddock, hake, Greenland halibut, sole, herring (bait), mackerel (bait) meet SG100</p> <p>For the two stocks that are depleted Norwegian coastal cod (~40,000 tons annually) and Golden redfish (<i>S. norvegicus</i>)(~3,000 t) annually, see Figure 24 the bycatch is small compared to the total fishery. However, the catch composition data does not differentiate between cod/ coastal cod, and the different redfish species, Therefore SG100 is not met for 'cod' and 'redfish'.</p> <p>There is inadequate information on nephrops and king crab, thus SG100 is not met.</p> <p>As not all the minor species meet the SG100, this scoring issue is not met.</p>		

PI 2.1.1	The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.	
References	<p>Note: the catch composition data does not distinguish between the different redfish species ICES, 2014b; ICES, 2015b; ICES, 2015c; ICES, 2015d; ICES, 2016a; ICES 2016b; ICES, 2016c; ICES, 2016d; ICES, 2016e; ICES, 2016f; ICES, 2016g; ICES, 2016h; ICES, 2016i; ICES, 2016j; ICES, 2016k; ICES, 2016l; ICES, 2016m; ICES, 2016n; ICES, 2016o; ICES . 2016b. Advice basis. In Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 1, Section 1.2. http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/Introduction_to_advice_2016.pdf; ICES Nov 2016, Section 6.3.25 Norway lobster (Nephrops norvegicus) in Division 4.a, Functional Unit10 (northern North Sea, Noup) ICES. 2017. Report of the Working Group on the Biology and Life History of Crabs (WGCRAB), 1–3 November 2016, Aberdeen, Scotland, UK. ICES CM 2016/SSGEPD:10. 78 pp.</p>	
Overall Performance Indicator Score		80
Condition Number		N/A

PI 2.1.2 Pots & Traps tusk Evaluation Table – Primary species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to above the point where recruitment would be impaired.	There is a partial strategy in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the point where recruitment would be impaired.	There is a strategy in place for the UoA for managing main and minor primary species.
	Met?	Y	Y	Y
	Justification	By definition of ‘primary species’, which are species of commercial value with management tools controlling exploitation, all elements listed under PI 2.1.1 meet 100. These tools, which comprise a strategy as they are regularly reviewed through the ICES process, include: a requirement for accurate information on landings (via log book and sales notes), stock assessments and management rules such as reference points, harvest control rules, quotas and recovery plans where necessary (see also Table 15). There is a discard ban in the Norwegian fishery, and legislation allows the ‘Fiskeridirektoratet’ to introduce regulation at short notice that regulates by-catch. SG100 is met		
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	Y
	Justification	The measures/strategy will work because log books, registered landing ports and effective monitoring, control and surveillance give high confidence that the measures designed to minimise the level of retention on non-target species are effective. The primary species involved are managed through stock management measures, and as all bycatch has to be retained, this data feeds into the relevant stock assessments. The available toolbox (closed areas and seasons, TACs, gear restrictions) and experience with the system (testing) including willingness to use the toolbox provides high confidence that the strategy will work therefore meeting SG 60, 80 and 100.		
c	Management strategy implementation			
	Guidepost		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its overall objective as set out in scoring issue (a).
	Met?		Y	Y

NFA Norwegian Ling & Tusk and NFA Norwegian Lumpfish Fishery

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
	Justification	<p>Given the low proportion of bycatch in this pots and traps fishery, the partial strategy is working in practice for the client fleet, and the species in question are within biological limits, as regularly evaluated through stock specific ICES workshops. Evidence is in terms of log-books, compliance records, and VMS records, for example.</p> <p>SG80 is met.</p> <p>Information on bycatch collected by the fleet, coupled with analysis by IMR, and ongoing scientific surveys of the stock status of the species involved, provide an objective basis for confidence that the strategy is working. The discard ban adds substantially to confidence about the nature of the bycatch. Furthermore, there is good compliance with the regulations as implemented by the strategy.</p> <p>SG100 is met.</p>		
d	Shark finning			
	Guided post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	None of the primary species are sharks		
e	Review of alternative measures			
	Guided post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.
	Met?	NR	NR.	N
	Justification	<p>‘Alternative measures’ are to be interpreted as alternative fishing gear and /or practices, that have been shown to minimise the rate of incidental mortality. ‘Unwanted catch’ is interpreted as the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use (SA3.1.6)</p> <p>The catch composition data shows that percentage of bycatch is small, see Table 14. There are no main Primary species bycaught. SG60 and SG80 are not scored</p> <p>The regulations are considered, and the technical measures regularly reviewed, by IMR, Fiskeridirektoratet and stakeholders, . Where necessary, measures can be introduced at short notice, such as closing an area to fishing when incoming data on catches and bycatches show irregularities (IMR, Directorate, interview Aug 2016). Thus fishing practice can be changed at short notice by the fisher, by moving the gear to another area (ie if bycatch of a species is high, move to another area).</p> <p>The assessment team was not made aware of a biennial review of alternative measures – SG100 is not met.</p> <p>As SG60 and SG80 are not relevant, and SG100 not met, then this SI scores 80</p>		
References		As in 2.1.1		
OVERALL PERFORMANCE INDICATOR SCORE:				95

PI 2.1.2	There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.	
CONDITION NUMBER (if relevant):		

PI 2.1.3 Pots & Traps tusk Evaluation Table – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guided post	Qualitative information is adequate to estimate the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is adequate to assess the impact of the UoA on the main primary species with respect to status. OR If RBF is used to score PI 2.1.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is adequate to assess with a high degree of certainty the impact of the UoA on main primary species with respect to status.
	Met?	NR	NR	NR
	Justification	There are no main species, Scoring Issue a) is not used.		
	b	Information adequacy for assessment of impact on minor primary species		
Guided post				Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
Met?				Y
Justification		Good quantitative data is available on the minor Primary species, at the point of capture and landing (because of the discards ban), and this is reinforced and verified through landings inspections, and landings notes. Synthesis of data, analysis and checks are made by IMR on an on-going basis. All the minor species are listed in Table 15, giving the relevant stock status information. SG100 is met		
c	Information adequacy for management strategy			
	Guided post	Information is adequate to support measures to manage main primary species.	Information is adequate to support a partial strategy to manage main Primary species.	Information is adequate to support a strategy to manage all primary species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	Y
	Justification	Good quantitative data is available on all Primary species, at the point of capture and landing (because of the discards ban), and this is enforced and verified through data from the reference fleet, and landings inspections, and landings notes – meeting SG60 & 80. Synthesis		

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species	
		of data, analysis and checks are made by IMR on an on-going basis. The data sets cover a significant period of time to note trends and thus feed into the strategy. SG100 is met	
References		See 2.1.1	
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			

PI 2.2.1 Pots & Traps tusk Evaluation Table – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit.		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guidepost	Main Secondary species are likely to be within biologically based limits. OR If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are highly likely to be above biologically based limits OR If below biologically based limits, there is either evidence of recovery or a demonstrably effective partial strategy in place such that the UoA does not hinder recovery and rebuilding. AND Where catches of a main secondary species outside of biological limits are considerable, there is either evidence of recovery or a, demonstrably effective strategy in place between those MSC UoAs that also have considerable catches of the species, to ensure that they collectively do not hinder recovery and rebuilding.	There is a high degree of certainty that main secondary species are within biologically based limits.
	Met?	NR	NR	NR
	Justification	There are no Secondary ‘main’ species recorded in this fisheries (see Table 14) Because there are no ‘main’ species Scoring Issue a) is not used.		
b	Minor secondary species stock status			
	Guidepost			Minor secondary species are highly likely to be above biologically based limits. OR If below biologically based limits’, there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			N
	Justification	The amount of Secondary species bycatch is small, percentages ranging from a few kg of a species to 1.32% of the total catch. The data available includes a component of ‘Not elsewhere identified’. They consist of a long list of species that are seen only a few specimen annually. None of these catches hinder recovery or rebuilding – should that be required.		

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit.
		<p>All bycatch is landed and recorded, and data of the last 3 years (2014-2016) has been available and analysed for this assessment.</p> <p>The very nature of the classification into Secondary species indicates that these species are not managed, and in many cases do not have the necessary analytical assessment to determine the biologically based limits. There is no evidence that these species are highly likely to be above biologically based limits.</p> <p>The Secondary ‘minor’ species identified from the catch composition in this fishery are: Atlantic halibut (<i>Hippoglossus hippoglossus</i>). Listed as endangered on the IUCN Redlist. Monkfish/Anglerfish (<i>Lophius piscatorius</i>) Inadequate information Wolffish: Inadequate information, not identified to species level <u>Pollack (ICES, 2016o)</u>: There is no directed fisheries for pollack in Subarea 4 and Division 3.a and pollack are taken solely as bycatch. There are no reference points for this stock Lemon sole: inadequate information Dab: inadequate information Lobster: inadequate information Blue ling: inadequate information; ICES (2015) advises no directed fishery and reduction in bycatch as well as continuing protection of spawning areas . Since all species are minor and not all meet the requirement for SG100, the performance indicator scores 80.</p>
References		<p>Catch composition data</p> <p>Client interviews</p> <p>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/pol-nsea.pdf</p> <p>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/tur-nsea.pdf</p> <p>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/dab-nsea.pdf</p>
OVERALL PERFORMANCE INDICATOR SCORE:		80
CONDITION NUMBER (if relevant):		

PI 2.2.2 Pots & Traps tusk Evaluation Table – Secondary species management strategy

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guidepost	There are measures in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a partial strategy in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be within biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a strategy in place for the UoA for managing main and minor secondary species.
	Met?	Y	Y	Y
	Justification	There are tools (meeting SG 60), which comprise a strategy (thus achieving over SG 80) as they are regularly reviewed through the ICES process, which include: a requirement for accurate information on landings (via log book and sales notes), discard ban, stock assessments and management rules such as research into reference points, quotas and recovery plans where necessary. Legislation allows the 'Fiskeridirektoratet' to introduce regulation at short notice that regulates by-catch. SG100 is met.		
b	Management strategy evaluation			
	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	Y	Y	N
	Justification	The available toolbox (closed areas and seasons, TACs, gear restrictions) and experience with the system (testing) including willingness to use the toolbox provides an objective basis for confidence that the measures/strategy will work – SG 60 is met. As these are secondary species, and thus little info on stock, experience (practical testing) suggests that the strategy works. SG80 is met A thorough evaluation is not available. SG100 is not met		
c	Management strategy implementation			
	Guidepost		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Y	N

NFA Norwegian Ling & Tusk and NFA Norwegian Lumpfish Fishery

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.		
	Justification	<p>Given the low proportion of bycatch, the partial strategy seems to be working in practice for the client pots and traps fishery fleet.</p> <p>Information on bycatch collected by the fleet, and at landing points, coupled with analysis by IMR, and ongoing scientific surveys of the stock status of the species involved, provide an objective basis for confidence that the strategy is working. Furthermore, the discard ban adds substantially to confidence about the nature of the bycatch.</p> <p>SG80 is met.</p> <p>Testing can only be limited and is unlikely to support high confidence that the strategy will work, given:</p> <ul style="list-style-type: none">- the lack of biological reference points, and uncertainties about the stock and level of fishing mortality for the Secondary ‘minor’ species.- The uncertainties relating to identification of the several of the bycatch species. <p>SG100 is not met.</p>		
d	Shark finning			
	Guided post	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Y	Y	Y
	Justification	Only spurdog occurs as a rare by-catch in the fishery. There is no tradition for shark finning and sharkfinning is banned. There is no market in Norway for shark fins. Spurdog is evaluated under ETP species		
e	Review of alternative measures to minimise mortality of unwanted catch			
	Justification	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main secondary species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all secondary species, and they are implemented, as appropriate.
	Met?	NR	NR	N
	Guided post	<p>‘Alternative measures’ are to be interpreted as alternative fishing gear and/or practices, that have been shown to minimise the rate of incidental mortality. ‘Unwanted catch’ is interpreted as the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use (SA3.1.6)</p> <p>The catch composition data shows that percentage of bycatch is small, see Table 14. There are no main Secondary species. SG60 and SG80 are not relevant.</p> <p>The regulations are considered, and the technical measures reviewed regularly , by IMR, Fiskeridirektoratet and stakeholders . Where necessary, measures can be introduced at short notice, such as closing an area to fishing when incoming data on catches and bycatches show irregularities (IMR, Directorate, interview Aug 2016). Thus fishing practice can be changed at short notice by the fisher, by moving the gear to another area (i.e. if bycatch of a species is high, move to another area).</p> <p>The assessment team was not made aware of a biennial review of alternative measures – SG100 is not met.</p>		

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch.	
		As SG60 and SG80 are not relevant, and SG100 not met, then this SI scores 80	
References		As in 2.2.1	
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			

PI 2.2.3 Pots & Traps tusk Evaluation Table – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guidepost	Qualitative information is adequate to estimate the impact of the UoA on the main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and adequate to assess the impact of the UoA on main secondary species with respect to status. OR If RBF is used to score PI 2.2.1 for the UoA: Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and adequate to assess with a high degree of certainty the impact of the UoA on main secondary species with respect to status.
	Met?	NR	NR	NR
	Justification	Because there are no main species Scoring Issue a) is not used. Each element (minor species) is assessed against Scoring Issue b).		
	b	Information adequacy for assessment of impacts on minor secondary species		
Guidepost				Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
Met?				Y
Justification		Each element (minor species) is assessed against Scoring Issue b). If it does not meet SG100, it is treated as though it still meets SG80 (which is blank), which is automatically met by virtue of being a minor species. The fishery is under a discard ban, all catch is recorded, and a catch profile has been available for the last few years (where the most recent 5 years have been used in this assessment). Some quantitative information is adequate to estimate the impact of the UoA on minor Secondary species with respect to status. Good quantitative data is available on the minor Secondary species (through the catch profile, over the most recent 5 years), at the point of capture and landing (because of the discards ban), and this is reinforced and verified through the scientific observer programme, reference fleet, and landings inspections, and landings notes. Synthesis of data, analysis and checks are made by IMR on an on-going basis. SG 100 is met.		
c	Information adequacy for management strategy			
	Guidepost	Information is adequate to support measures to	Information is adequate to support a partial strategy to	Information is adequate to support a strategy to manage all secondary species, and evaluate with

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species.		
		manage main secondary species.	manage main secondary species.	high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	N
	Justification	<p>There are no main Secondary species.</p> <p>The lack of detailed understanding about stock dynamics of these Secondary species means that the landings information obtained is only adequate to support a partial strategy to manage Secondary species and not adequate to support a comprehensive strategy, or enable a high degree of certainty.</p> <p>SG80 is met but not SG100 given the lack of comprehensive strategy and confidence.</p>		
References		See 2.2.1		
OVERALL PERFORMANCE INDICATOR SCORE:				90
CONDITION NUMBER (if relevant):				

PI 2.3.1 Pots & Traps tusk Evaluation Table – ETP species outcome

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species		
		The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guided post	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/stock are known and likely to be within these limits.	Where national and/or international requirements set limits for ETP species, the combined effects of the MSC UoAs on the population/stock are known and highly likely to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a high degree of certainty that the combined effects of the MSC UoAs are within these limits.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	Table 14 indicates several ETP species in the catch composition for pots and traps gears. From the literature seen, no national or international requirements that set limits for these ETP, in particular seabird species, could be identified (ICES, 2014d; ICES, 2013). Hence this Scoring Issue a) is not relevant.		
b	Direct effects			
	Guided post	Known direct effects of the UoA are likely to not hinder recovery of ETP species.	Known direct effects of the UoA are highly likely to not hinder recovery of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	Met?	Y	Y	N

	Justification	The catch composition information – Table 14 for the tusk fishery using pots and traps shows the following ETP species bycaught: Spurdog, and Skates and Rays – these have not been defined to species level. As Common skate/ Blue skate <i>Dipturus batis</i> is an ETP species, a precautionary approach has been taken and Skates and Rays considered ETP as a whole. The quantity of ETP-fish bycatch is known, there is a discard ban so all catch is recorded, and the catch is small. Seabirds: Vessels over 15m have to record bird bycatch on the e-log. (IMR, interview Aug 2016). However, seabird bycatch is not an issue in this pots and traps fishery, as the pots are located in water too deep to be of interest to feeding seabirds, entanglement with the pots and traps gear is not an issue. Marine mammals: Usually for trap fisheries, the main ETP concern is entanglement by marine mammals, depending mainly on whether the traps have vertical lines to the surface. There are no reports of such entanglements. Considering that the traps and pots are deployed within 12nm of the shore, interaction with marine mammals could be likely. A Recommendation (3) has been raised to record any marine mammal interaction. Considering the location where the tusk pots and traps are deployed (within 12nm, which can be verified by the Fisheries Directorate and statistical rectangles were provided to the assessment team, see also Table 3) and the depth of fishing (200-400m below the feeding range of diving seabirds), it is highly likely that the UoAs do not hinder the recovery of ETPs. SG60 and 80 are met As actual catch of Skates and rays was not defined to species level, and the stock status of the fish ETPs is not known to a high degree of accuracy, one cannot state with a high degree of confidence that the UoAs have no significant direct effect on the ETPs SG100 is not met		
c	Indirect effects			
	Guided post		Indirect effects have been considered and are thought to be highly likely to not create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.
	Met?		Y	N

	<p>Justification</p> <p>Indirect effects may include “ghost” fishing, removal of prey and pollution, as well as e.g. disturbance/interference of feeding or breeding behavior of ETP species.</p> <p>The pots <u>can</u> be rigged to be ghost fishing proof by attaching external floats with biodegradable rope such as hemp. This would cause the pots to collapse as soon as rope has disintegrated and floats are released. However, this practice is <u>not mandated by law</u> and it is presumed that the practice of rigging pots with external floats/hemp vs. internal floats/synthetic varies from fisher to fisher (Client, August 2017)</p> <p>.</p> <p>As noted in the Barents Sea Ecosystem Assessment (Barentsportal, 2017) factors listed as responsible for the declining trends (in seabird populations) in the western parts of the Barents Sea region probably involve food shortage, predation from an increasing population of white-tailed eagles and lagged effects from previous by-catch in fisheries, as well as oceanographic changes.</p> <p>All vessels are fully MARPOL compliant, with waste and oil handling protocols (Client interview). The fishers are actively encouraged to pick up litter from the sea when encountered, and relevant provisions are made on-shore to deal with such collected litter (Client interview, Aug 2016). Pollution from the vessels is therefore not likely to impact on ETP species.</p> <p>In summary, it is unlikely that indirect effects create unacceptable impacts: SG80 is met.</p> <p>Considering that there is no information on the frequency of lost traps, there is no high degree of confidence that there are no indirect effects, SG100 is not met</p>	
<p>References</p>	<p>https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/Bycatch_of_small_cetaceans_and_others_marine_animals.pdf http://barentsportal.com/barentsportal_v2.5/index.php/en/ Client interview Catch profile data IMR 2011. Evaluation of the Norwegian reference fleet. Internal Report. ICES. 2016. Report of the Joint OSPAR/HELCOM/ICES Working Group on Seabirds (JWGBIRD), 9–13 November 2015, Copenhagen, Denmark. ICES CM 2015/ACOM:28. 196 pp Fangel, K., Wold, L.C., Aas, Ø., Christensen-Dalsgaard, S., Qvenild, M. & Anker-Nilssen, T. 2011. Bycatch of seabirds in Norwegian coastal fisheries. A mapping and methodology study with focus on gillnet and longline fisheries. NINA Report 719. http://www.nina.no/archive/nina/PppBasePdf/rapport/2011/719.pdf http://www.fao.org/3/a-bh048e.pdf http://barentsportal.com/barentsportal_v2.5/index.php/en/</p>	
<p>OVERALL PERFORMANCE INDICATOR SCORE:</p>		<p>80</p>
<p>CONDITION NUMBER (if relevant):</p> <p>Recommendation 3: Regarding PI 2.3.1 marine mammal interaction for the tusk pots and traps fishery: recording of any interaction of the gears with marine mammals. If possible, establish a system to independently verify such self-recording.</p>		

PI 2.3.2 Pots & Traps tusk Evaluation Table – ETP species management strategy

PI 2.3.2		The UoA has in place precautionary management strategies designed to: <ul style="list-style-type: none">• meet national and international requirements;• ensure the UoA does not hinder recovery of ETP species. Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)			
	Guided post	There are measures in place that minimise the UoA-related mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	Y	Y	N
	Justification	Several seabird species (see Red List) and marine mammals are protected, including those mammals that are hunted (subject to national legislation ⁷⁹), in that they are covered by one or more of a multiplicity of international conventions for species protection to which Norway is a signatory. In Norway, the role of all these species and habitats, and their role in the marine ecosystems are safeguarded by the Marine Resource Act (DoF, 2008) ⁸⁰ The act introduces important principles that seek to protect both species and habitat, and requires ongoing research to understand and protect the ecosystems and stocks. There are also some marine protected areas designated specifically for marine mammals ⁸¹ . Fish species listed on the Red List are also considered under the protection of the Marine Resource Act, and all recorded bycatch of ETP-fish species feeds into the stock distribution and assessment research of the relevant species (collated and conducted by IMR). Larger fishing vessels (>15m) have to record seabird bycatch (Client interview, Aug 2016) in the e-log. However, the pots and traps fishery for tusk is primarily conducted by smaller vessels, below 15m. The pots and traps are passive gears, positioned in deeper waters (average 200m). The catch profile shows that only a small number and amount of ETP species were caught in the traps. There are measures in place to minimise bycatch of ETP species, which consists for example of avoidance of areas where there is a likelihood of catching ETP species in large amounts. SG60 is met. These measures amount to a strategy as in combination with data collected on ETPs they feed into the ongoing research required by the Marine Resource Act. SG80 is met. The strategy does not achieve outcomes above national and international requirements. SG100 is not met.		
	Management strategy in place (alternative)			

⁷⁹ Sealing Act (1951); Saltwater Fishing Act (1983); Participation Act (1999); Marine Resources Act (2008);

⁸⁰ DoF, 2008. The Marine Resources Act: Act of 6 June 2008 no. 37 relating to the management of wild living marine resources. Directorate of Fisheries, Bergen. <http://www.fiskeridir.no/english/fisheries/regulations/acts/the-marine-resources-act>

⁸¹ <http://www.xn--miljdirektoratet-oxb.no/english/>

PI 2.3.2		The UoA has in place precautionary management strategies designed to: <ul style="list-style-type: none"> • meet national and international requirements; • ensure the UoA does not hinder recovery of ETP species. Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.		
b	Guided post	There are measures in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a strategy in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a comprehensive strategy in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species
	Met?	Not relevant	Not relevant	Not relevant
	Justification	NR		
c		Management strategy evaluation		
	Guided post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved.	The strategy/comprehensive strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	Y	Y	N
	Justification	<p>The degree of confidence in the efficacy of the measures is principally informed by the understanding of the level of potential impact of the gear with ETP species, in this case, the passive gear of traps and pots on fish. The measures in place give an objective basis for confidence. Research/observer coverage allows the collection of relevant information via IMR and the Fisheries Directorate, which analyses catch data.</p> <p>The discard ban ensures that all fish bycatch is recorded, including ETP species.</p> <p>There are significant monitoring initiatives related to seabirds and it is likely that any emerging and significant negative interactions with fisheries will be flagged up. For example "SEAPOP is a mapping and monitoring programme for seabird populations in Norwegian waters, initiated by the Norwegian Government (Ministry of Environment, 2011)</p> <p>SG60 and 80 are met</p> <p>There is little quantitative analysis of some ETPs to species level, thus high confidence is not met. SG100 is not met</p>		
d		Management strategy implementation		
	Guided post		There is some evidence that the measures/strategy is being implemented successfully.	There is clear evidence that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	Met?		Y	N
	Justification	The deployment of pots and traps, a small scale fishery with passive gears, is considered to cause little bycatch of ETP species as the catch composition analysis showed. Comprehensive local knowledge of the fishing grounds and seasonality allows the fishers to avoid large		

PI 2.3.2		The UoA has in place precautionary management strategies designed to: <ul style="list-style-type: none">• meet national and international requirements;• ensure the UoA does not hinder recovery of ETP species. Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.		
		bycatch of unwanted fish, including ETPs. The recording of ETP fish species is standard as part of the catch composition data, feeding into fisheries assessment analyses. SG80 is met. There does not appear to be a strategy/ comprehensive strategy, hence SG100 is not met.		
e	Review of alternative measures to minimize mortality of ETP species			
	Guidepost	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a biennial review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	Y	Y	N
	Justification	'Alternative measures' are to be interpreted as alternative fishing gear and /or practices, that have been shown to minimise the rate of incidental mortality. 'Unwanted catch' is interpreted as the part of the catch that a fisher did not intend to catch but could not avoid, and did not want or chose not to use (SA3.1.6) The catch composition data shows that percentage of bycatch of ETP species is small, see Table 14. The regulations are considered, and the technical measures reviewed (meeting SG 60), by IMR, Fiskeridirektoratet and stakeholders annually (meeting SG 80). Where necessary, measures can be introduced at short notice, such as closing an area to fishing when incoming data on catches and bycatches show irregularities (IMR, Directorate, interview Aug 2016). Thus fishing practice can be changed at short notice by the fisher, by moving the gear to another area (ie if bycatch of a species is high, move to another area). SG80 is met There does not appear to be a biannual review to assess effectiveness of alternative measures to reduce ETP bycatch. SG100 is not met.		
References		DoF, 2008. The Marine Resources Act: Act of 6 June 2008 no. 37 relating to the management of wild living marine resources. Directorate of Fisheries, Bergen. http://www.fiskeridir.no/english/fisheries/regulations/acts/the-marine-resources-act http://en.wikipedia.org/wiki/Norwegian_Directorate_for_Nature_Management Sealing Act (1951); Saltwater Fishing Act (1983); Participation Act (1999); Marine Resources Act (2008); Fangel, K., Aas, Ø., Bærum, K. M., Anker-Nilssen, T. & Christensen- Dalsgaard, S. 2015. Utilsiktet bifangst av sjøfugl i norske kystfiskerier med garn og line. - NINA Temahefte 64. 20 s.		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				

PI 2.3.3		Relevant information is collected to support the management of UoA impacts on ETP species, including: <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species. 		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts			
	Guidesp ost	<p>Qualitative information is adequate to estimate the UoA related mortality on ETP species.</p> <p>OR</p> <p>If RBF is used to score PI 2.3.1 for the UoA:</p> <p>Qualitative information is adequate to estimate productivity and susceptibility attributes for ETP species.</p>	<p>Some quantitative information is adequate to assess the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species.</p> <p>OR</p> <p>If RBF is used to score PI 2.3.1 for the UoA:</p> <p>Some quantitative information is adequate to assess productivity and susceptibility attributes for ETP species.</p>	<p>Quantitative information is available to assess with a high degree of certainty the magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status of ETP species.</p>
	Met?	Y	Y	N
	Justification	<p>The PINRO / IMR Reports (Jakobsen & Ozhigin, 2011) on the State of the Barents Sea ecosystem offer an overview of the ETP species which occur in the Barents Sea including their spatial and temporal distribution and ecology. Seabird populations are monitored under the auspices of the Norwegian nature conservation agency, NINA (Fangel et al., 2015), and estimates of potential mortalities resulting from seabird–fishing-gear interactions are available (BirdLife, 2012).</p> <p>Since 2002 the distribution of marine mammals in the Barents Sea has been recorded by research vessels, aircraft, fishing vessels and coastguard vessels under the Joint PINRO / IMR ecosystem survey. The surveys are driven in part by ICES advice relating to quotas for commercial harvesting of marine mammals, or species identified as particularly vulnerable. The Norwegian Institute of Marine Research undertakes annual surveys of minke whales and other large baleen whales generating abundance estimates every 6 years.</p> <p>The discard ban and species recording requirements generate high quality data on the catch of a wide range of species, although the analysis presented in section 5.4 and Table 14 suggests that encounters with ETP species are likely to be rare. In this pots and trap fishery for tusk no seabird records were available, and such encounters would be unlikely, considering the gear and its deployment.</p> <p>The Norwegian reference fleet provides information on catch of all species, Norway submits analysis of gear interaction with key ETP species to the ICES SGBYC.</p> <p>Fangel et al, (2015) (NINA) provided a quantitative estimate of the impact of gears used (gillnet for lumpfish and for coastal cod, and line for Greenland halibut) on seabirds. This study was mainly in the coastal area, shallower water, and it did not look at pots and traps gears.</p> <p>SG60 and 80 are met.</p> <p>Smaller vessels are not required to log non-fish bycatch, so it is not clear whether there are additional interactions of the gear with non-fish species. The bycatch of skates and rays was not differentiated to species level in the catch composition records. Therefore there is no high degree of certainty in the assessment of the impact of the UoA on non-fish ETPs and skates and rays.</p> <p>SG100 is not met.</p>		

b	Information adequacy for management strategy			
	Guideline	Information is adequate to support measures to manage the impacts on ETP species.	Information is adequate to measure trends and support a strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	Y	N	N
	Justification	<p>Information is adequate to measure trends in ETP fish bycatch, as the discard ban requires all catch to be recorded.</p> <p>No data was available for Skates and rays to species level, or any other potential gear interaction. Although it is unlikely that there are seabird interactions with the pots and traps gear, there was no information or study/ observation to back this up (no observer reports and/or independent verification).</p> <p>Whilst information is adequate, from observations, it is not sufficient to measure trends for some of the ETP species.</p> <p>SG 60 is met. SG80 is not met.</p> <p>Data on fishery interactions with ETP species is limited – in large part because of their rarity, but also because of limited identification skills, non-recording of non-fish species (ie birds are not recorded for example) and analytical resources. To meet this requirement there would need to be an on-board recording system of all ETP encounters and all seabirds (whether ETP or not). This includes good identification skills, and regular synthesis and analysis of the data in conjunction with relevant scientific institutions.</p>		
References		<p>See also refs. in PI2.4.1</p> <p>http://www.barentsportal.com/barentsportal/index.php/en/joint-norwegian-russian-environmental-status-reports</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				70
CONDITION NUMBER				11

PI 2.4.1 Pots & Traps tusk Evaluation Table – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guidepost	The UoA is unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	Y	Y	N
	Justification	<p>The nature and distribution of benthic habitats and their interaction with the client fleet has been described in detail in section 5.5 (conveying SG 60 is met). The section also described in detail the various types of habitats and VMEs in the Barents Sea, which may be encountered by the fishery.</p> <p>It may be concluded from this analysis that:</p> <p>Vessel location data and client interviews show that the client pots and traps fleet fishes in areas along the Norwegian coast, within 12nm, including within fjords. These areas are often also characterised by rich benthic habitats and in some cases VMEs, as can be seen from the detailed maps generated by the ongoing MAREANO project.</p> <p>The commonly encountered habitats are shown in Fig 23, and consist predominantly of bathyal sediment and rock with biogenic reefs, when fishing in deeper waters, and shelf sublittoral sediment and coarse sediment as well as rock and biogenic reefs in less deep waters.</p> <p>The pots and traps gears have point contact with the bottom, and are passive gears. The gear is static once set. Clark <i>et al</i> (2015) reviewed the impact of fishing gear on deep water benthic communities. They found that static gears, such as longlines and traps have lower impacts than mobile gear types. However, in certain conditions, for example during retrieval, static gear may move laterally across the seabed, resulting in impacts to the habitat and biota. Line gears alter the seabed to a lesser extent than demersal trawl gears due to their much narrower footprint; lines can, however, drag on the seabed stirring up sediments, as well as interact directly with sessile organisms. Overall pots and traps are low impact gears, compared with for example demersal trawls.</p> <p>The UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.</p> <p>SG60 and 80 are met.</p> <p>In order to meet SG100, some quantitative information about the spacial extent of the fishery is needed, the actual footprint in the form of the footprint of each net, the number of nets, and the spawning area of the lumpfish. This evidence is then used to calculate a probability as to impact (CR Table SA9). Such evidence was not available. SG100 is not met</p>		
b	VME habitat status			
	Guidepost	The UoA is unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is evidence that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.		
	Met?	Y	Y	N
	Justification	<p>The joint Russian- Norway research programme and the Mareano and EMODnet mapping programmes have identified the location of different types of VMEs as described in Section 5.5.2.</p> <p>The pots and traps fishery occurs within the 12nm zone, following a depth contour of 200m-400m (see Section 3.2.3.3).</p> <p>The distribution of Lopheila reefs and coral gardens in the Norwegian Sea and SW Barents Sea are shown in Figure 33 and Figure 34, and over a wider area of the NE Atlantic from the OSPAR (2010) survey Figure 35. The area covered by the tusk pots and traps is along the coast within 12nm.</p> <p>There are several areas closed to fishing, for the protection of cold water corals and other vulnerable marine ecosystems (OSPAR 2010), Figure 35</p> <p>Hard bottom coral garden aggregations (mainly seafans) can be found in Figure 33, and some may be within the area where the tusk pots and traps fishery operates within 12nm.</p> <p>The distribution of softbottom coral gardens (Figure 36) favours hard bottom or rock to which to attach, and are further offshore, in the area where the tusk pots and traps fishery operates within 12nm.</p> <p>The distribution of seapens (Figure 36) depends on soft muddy substrate, the traps, however, tend to be deployed over rocky, hard bottom substrate, and thus this VME is less likely encountered..</p> <p>The location of the closed areas for the protection of VMEs, is known and can thus be avoided by the fishing gears. Static gears, such as pots and traps have a lower impact on the benthos (Clark et al 2015). The position of the vessels is verifiable through AIS. The vessels are too small to carry VMS as a statutory requirement, but open AIS⁸² is becoming increasingly common in the Norwegian small vessel fleet (Client pers.comm May 2017), thus vessel positions can be identified. Considering that the reefs have been mapped, and are thus avoided by the fishers (Client interview Aug 2016, in part to avoid damage to the gear and snagging), it is highly unlikely for the UoA to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.</p> <p>SG60 and 80 are met.</p> <p>In order to meet SG100, some quantitative information about the spacial extent of the fishery is needed, the actual footprint in the form of the footprint of each net and longline, and the number of nets and longlines in relation to the overall fishing area. This evidence is then used to calculate a probability as to impact (CR Table SA9). Such evidence was not available. SG100 is not met</p>		
c	Minor habitat status			
	Guided post			There is evidence that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			Y
	Justification	Minor habitats are all those habitats which are not ‘commonly encountered’ or ‘VMEs’. Considering the small footprint of the gear, in terms of the traps resting on the seafloor, it is highly unlikely that the UoA reduces the structure and function of the minor habitats to a point where there would be serious or irreversible harm.		

⁸² AIS – automatic identification system, is an automatic vessel tracking system to avoid collisions, and is increasingly used to find the location of vessels worldwide.

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates.	
		point where there would be serious or irreversible harm. The evidence consists of studies by Clark <i>et al</i> 2015 which show the comparatively low impact of static gears. SG 100 is met.	
References		Clark, M. R., Althaus, F., Schlacher, T. A., Williams, A., Bowden, D. A., and Rowden, A. A. 2015. The impacts of deep-sea fisheries on benthic communities: a review. – ICES Journal of Marine Science, doi: 10.1093/icesjms/fsv123 See overview in Section 5.5	
OVERALL PERFORMANCE INDICATOR SCORE:			85
CONDITION NUMBER (if relevant):			

PI 2.4.2 Pots & Traps tusk Evaluation Table – Habitat management strategy

PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guided post	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	Met?	Y	Y	N
	Justification	<p>Measures in place to mitigate habitat impacts include on-going mapping programmes to improve access management, and research into habitat impacts of gear types (Clark <i>et al</i> 2015). Another large scale mapping programmes is by OSPAR – see Figure 38. Fleet specific measures include local knowledge by the fishers, who wish to avoid snagging of the nets and lines and thus cause damage and delays. The Norwegian Coast Guard monitors fishing activities in Norwegian waters in real time through VMS, including surveillance of areas closed for fishing.</p> <p>Move on protocols legally apply to all bottom-contact gears and the impact thresholds are 30kg live coral and 400 kg sponge (harmonized with NEAFC). If a vessel in one haul reaches this threshold value, they are required to report the impact to the Directorate of fisheries and move 2 nautical miles before resuming operations. Although legally and theoretically applicable to tusk pots and traps fisheries, in practice the impact threshold values render them irrelevant for these fisheries where impacts are regarded as light. The problem is low and it is in the fishermen’s interest to avoid gear entanglement. (Client interview May 2017) SG60 is met.</p> <p>The MAREANO programme is aimed at surveying, monitoring and protecting all aspects of the Norwegian marine environment, ecosystem and habitats. Management measures, which specifically address habitat impact have largely focused on closing inshore waters to fishing and closure of vulnerable reef areas in Norwegian waters. Closed areas are enforced with the same rigour that is applied to all fishery regulations. This constitutes a partial strategy. The OSPAR mapping programme, Fig 30, has identified further offshore areas for protection.</p> <p>The strategy is to monitor the fishery closely and to ensure that all species and habitat protection measures are complied with in full. The MAREANO mapping programme is ongoing and there are regional seas management plans that include monitoring sensitive habitats. The annual status reports of each of the regional seas are presented to Parliament. Additionally, the Marine Resources Act requires an ecosystem approach to safeguarding biodiversity in addition to managing exploited resources.</p> <p>SG80 is met.</p> <p>A strategy should include regular review of alternative measures to reduce the impact of the UoA on the habitat. The strategy is to monitor the fishery closely and to ensure that all species and habitat protection measures are complied with in full.. The assessment team was not made aware of such a strategy.</p> <p>SG100 is not met.</p>		
b	Management strategy evaluation			
	Guided post	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or habitats involved.

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PI 2.4.2		There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.		
			the UoA and/or habitats involved.	
	Met?	Y	Y	N
	Justification	<p>These measures are required by OSPAR and Norwegian legislation (Marine Resources Act) to protect sensitive marine habitats; the measures are observed and closed areas rigorously enforced.</p> <p>SG60 is met.</p> <p>Monitoring of fishing activity and regular aerial and maritime surveillance patrols ensure that the closed areas are observed and that the sensitive habitats within them are safeguarded. VMS provides real time data on the vessels, verifying their proximity to closed areas.</p> <p>In addition to monitoring the fishery, methods and gear, seabed habitats continue to be monitored and mapped through the MAREANO programme. This work has not identified any habitat concerns with respect to the tusk pots and traps fishery, as the gears used are considered a comparatively small footprint on the underlying habitat.</p> <p>SG80 is met.</p> <p>Testing would require more detail on the geomorphological distribution of benthic habitats throughout the fishing range, which was not available to the assessment to such detail In order to meet SG100 testing would also require regular review of the strategy.</p> <p>SG100 is not met.</p>		
c	Management strategy implementation			
	Guided post		There is some quantitative evidence that the measures/partial strategy is being implemented successfully.	There is clear quantitative evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		Y	N
	Justification	<p>The Norwegian enforcement agencies are satisfied that incursions into the closed areas are rare and do not represent a systemic failure of fishery enforcement or malpractice among the small scale traps and pots tusk fishery (IMR interview Aug 2016)</p> <p>SG80 is met.</p> <p>Clear quantitative evidence would need to indicate that areas containing vulnerable habitats such as coral gardens and sponges are also being closed to fishing by the Norwegian Government, and some sort of threshold values apply to static gears too. Further areas are being considered, as mapping progresses. OSPAR closed areas are also set up to protect vulnerable habitats, some in international waters (see Figure 38)</p>		
d	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs			
	Guided post	There is qualitative evidence that the UoA complies with its management requirements to protect VMEs.	There is some quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is clear quantitative evidence that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	Y	Y	N

PI 2.4.2	There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.	
	Justification	<p>There is qualitative evidence of compliance in the form of interviews and circumstantial evidence (such as no incentive to not-comply, damage to gear if get snagged on biogenic reefs).</p> <p>SG60 is met.</p> <p>Real time AIS vessel positioning and coast guard monitoring provides some quantitative evidence that the UoA complies, as well as other non-MSC vessels.</p> <p>SG80 is met.</p> <p>Clear evidence, in the form of vessel specific operational plans for example, were not available to the assessment team. A Recommendation (1) was raised.</p> <p>SG100 not met.</p>
References	<p>WGECO, 2012. Report of the Working Group on Ecosystem Effects of Fishing Activities (WGECO) ICES CM 2012/ACOM:26 http://www.ices.dk/reports/ACOM/2012/WGECO/wgeco_2012.pdf http://www.mareano.no/english/news/seabed_to_be_mapped http://www.mareano.no/kart/viewer.php?language=en&bbox=592707.1,7846700.0,802279.9,7952140.0 &KARTBILDE_ID=115 http://www.mareano.no/english/topics/coral_reefs</p> <p>Fossaa, Jan Helge, and Hein Rune Skjoldal. Conservation of cold-water coral reefs in Norway. Oxford University Press, New York(USA), 2010</p>	
OVERALL PERFORMANCE INDICATOR SCORE:		80
Recommendation: on d)		1
CONDITION NUMBER (if relevant):		

PI 2.4.3 Pots & Traps tusk Evaluation Table – Habitats information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidpost	The types and distribution of the main habitats are broadly understood . OR If CSA is used to score PI 2.4.1 for the UoA: Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution and vulnerability of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. OR If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	Y	Y	N
	Justification	Background Section 5.5 provides detail on current habitat information in the Barents Sea and the Norwegian Sea, conveying SG 60 is met. The nature, distribution and vulnerability of benthic habitats of the Barents and Norwegian Seas, are well known and researched to international standards. This information is summarized in various marine atlases, the Mareano mapping programme, the reports by Joint Russian Norwegian Ecosystem Assessment; the review by Jakobsen and Ozhigin; and through scientific studies undertaken by IMR and EMODnet. This work is increasingly supplemented with data already coming directly from MSC certified fisheries which operate in the region - in the form of log book data supported by the scientific observer scheme, which in turn is collated by IMR/ Directorate of Fisheries. More recently, NEAFC has recommended Member States to provide VMS data to ICES and NEAFC constituent bodies to meet the needs of both science and compliance. (Recommendation 10, 2013: made at the 31th Annual Meeting in November 2012 (NEAFC, 2013). SG80 is met The detail provided by the Mareano maps available do not appear to extend further south along the Norwegian coast where the pots and traps fishery also operates. The OSPAR map on VME distribution in the NE Atlantic (Figure 35) is on too large a scale to state clearly that all vulnerable habitat distributions are known, SG100 is not met.		
b	Information adequacy for assessment of impacts			
	Guidpost	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear. OR If CSA is used to score PI 2.4.1 for the UoA:	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. OR	The physical impacts of the gear on all habitats have been quantified fully.

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PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat.		
		Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	If CSA is used to score PI 2.4.1 for the UoA: Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	Met?	Y	Y	N
	Justification	The potential effect of less impactful gears such as static bottom set gears such as traps and pots, on coral and sponge communities is understood (Clark <i>et al</i> 2015), meeting SG60. The MAREANO programme has identified some areas where fishing has had an effect in the past on the seabed and seabed habitats; these are associated with trawl (door) tracks rather than bottom set gears. Clark <i>et al</i> (2015) reviewed the impact of gears on deep benthic organisms. Overall traps and pots are low impact gears compared to other gears such as demersal trawls, due to their narrow footprint. Closed areas have been established to protect habitats and communities in selected areas. Coastal traps and pots fishers know where these are, as they have been involved in the consultation process when these areas were established (Clinet, pers. com.). The distribution and intensity of fishing activity relative to sensitive areas is known, the vessels operate within the 12nm zone. SG80 is met. The physical impact of the gear on all habitat types has not been fully quantified, SG100 is not met.		
c	Monitoring			
	Guided post		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in habitat distributions over time are measured.
	Met?		Y	N
	Justification	The distribution and intensity of fishing activity is monitored through compliance programmes and where possible through VMS/AIS (VMS not obligatory on smaller vessels); habitat mapping and monitoring is ongoing; there is provision for introducing new protection measures if needed, areas can be closed at short notice. SG80 is met. Although habitats are monitored, changes in distribution over time are not. SG100 is not met.		
References		See also references listed under P2.4.1 and 2.4.2 and analysis in background section 5.5 Larsen, T. Nagoda, D. and Andersen, J.R. (Eds) 2003. A biodiversity assessment of the Barents Sea Ecoregion WWF; “Mareano programme” (http://www.mareano.no/english/index.html); Spiridonov, V.A. Gavrilov, M.V., Krasnova E.D and N.G. Nikolaeva (Eds) 2011. Atlas of Marine and Coastal Biological Diversity of the Russian Arctic. Moscow: WWF Russia,. ISBN 978 5 9902786 2 2 NEAFC 2013; Clark et al 2015;		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				

PI 2.5.1 Pots & Traps tusk Evaluation Table – Ecosystem outcome

PI 2.5.1		The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Ecosystem status			
	Guided post	The UoA is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the UoA is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Y	Y	N
	Justification	<p>The individual elements of the ecosystem and their impact is discussed under PI 2.1-2-4. The general impact on the ecosystems are considered under 2.5 and the individual assessments are not repeated. Overall the ling, tusk and lumpfish are small components in the ecosystems affected by the fisheries and at the ecosystem scale the fisheries does not seem to have major impact, The main impacts are from the large fisheries for pelagics and key demersal fish (cod, haddock, saithe). These fisheries accounts for removals of several mill tons of fish annually while the total removals considered in this report is below 100,000t. The traps and pots fishery for tusk is a relatively clean fisheries, dominated by the target species, as can be seen from the small percentages of bycatch in the catch composition. Thus, the fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. SG60 is met.</p> <p>IMR has a wide ranging research and stock assessment programme dating back over half a century, much of which is aimed ultimately at developing an ecosystem model for all Norwegian regional seas. ICES has created a working group (WGINOR) which conducts and further develops Integrated Ecosystem Assessments for the Norwegian Sea as a step towards implementing the ecosystem approach. This is an ongoing process, with changing parameters, such as Long term climatic changes for example. Within the ecosystem context, tusk has not been identified as playing critical roles in the overall stability of the Norwegian Sea marine ecosystem. Adult tusk feed on crustaceans and shellfishes, benthic fishes (flatfishes and gurnard) and on starfish. In turn they are prey to larger fish and marine mammals. The Marine Resources Act makes it an explicit requirement that an ecosystem approach is taken to all aspects of marine resource management. It is highly unlikely therefore that the fishery at the current level will disrupt ecosystem structure or function. SG80 is met</p> <p>As there currently is no quantifiable ecosystem model incorporating the role of tusk, evidence is circumstantial only, SG100 is not met</p>		
References		<p>Fishbase.org for biology of ling and tusk</p> <p>ICES.2017. Interim Report of the Working Group on Integrated Ecosystem Assessments for the Norwegian Sea (WGINOR), 28 November - 2 December 2016 , Bergen, Norway . ICES CM 2016/SSGIEA:10. 28 pp</p> <p>ICES, 2016 Ecosystem Overview Barents Sea</p> <p>ICES, 2016 Ecosystem Overview Norwegian Sea</p> <p>ICES 2016 Ecosystem Overview North Sea</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				80

PI 2.5.1	The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.	
CONDITION NUMBER (if relevant):		

PI 2.5.2 Pots & Traps tusk Evaluation Table – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guided post	There are measures in place, if necessary which take into account the potential impacts of the fishery on key elements of the ecosystem.	There is a partial strategy in place, if necessary, which takes into account available information and is expected to restrain impacts of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a strategy that consists of a plan, in place which contains measures to address all main impacts of the UoA on the ecosystem, and at least some of these measures are in place.
	Met?	Y	Y	N
	Justification	<p>Two ICES working groups provide annual assessments of the state of the Barents Sea Ecosystem (Arctic Fisheries Working group; WG for Regional Ecosystem Description). A new working group on integrated assessment in the Barents Sea (WGIBAR) has now been established (ICES, 2014a). This information is supplemented by on-going data collected under the Joint Norwegian-Russian Environmental Status Report for the Barents Sea (which issues annual Barents Sea ecosystem status report, trends, highlights expected future situation) and work undertaken as part of implementing the Integrated Management Plan for the Barents Sea-Lofoten area (SG 60 is met).</p> <p>All these assessments suggest that broadly speaking, the Barents Sea Ecosystem is relatively healthy, and that current fishing activities are not disrupting ecosystem structure and function. There has been a decline in seabird populations (similar to that throughout the NE Atlantic), but the reasons for this are unclear (local food shortage; increased predation; historic bycatch in drift net and Long-line fisheries, climate change) and are not attributed to current fishing activity. The high stocks of key species at different trophic levels (cod/haddock and capelin) suggest that the fish related elements of the ecosystem are broadly speaking in good shape. Significant changes are however taking place probably related to climate change causing oceanographic shifts.</p> <p>These surveys and assessments are also supported by a several ecosystem modelling studies related specifically to the Barents Sea, which have explored for example the trophic relations between fish species, and links between capelin, cod, seabirds, marine mammals. These include ecopath type studies by Blanchard <i>et al</i> (2002); EcoCod (which seeks to estimate cod MSY taking into account a range of ecosystem factors), Gadget (multispecies interactions between cod, herring, capelin, minke whale, krill) in the Barents Sea; Biofrost (multispecies model for Barents Sea – addressing primarily cod / capelin dynamics); STOCOBAR (Stock of cod in the Barents Sea). Broader ecosystem models include NORWECOM.E2E, which includes plankton and fish, and is under development and semi-operational, and both PINRO and IMR have developed hydrodynamic models that complement these mainly biologically based models.</p> <p>Similarly, the MAREANO programme is aimed at surveying, monitoring and protecting all aspects of the Norwegian marine environment, ecosystem and habitats. Management measures, which specifically address ecosystem and habitat impact have largely focused on inventory creation, surveys, and subsequently closing inshore waters to fishing and closure of vulnerable reef areas in Norwegian waters.</p> <p>Sustainable management of fisheries within the waters of the European Union, and thus the wider North Sea, are facilitated and effected under the framework of the Common Fisheries Policy. For the future, the CFP recognises the need to manage fisheries collectively on a multispecies basis as well as recognising the need to increasingly take into account ecosystem aspects and influences in formulating future fishery management policy and in</p>		

		<p>developing management plans. Significant advances are being made at scientific level principally through ICES e.g. Working Group on Multispecies Assessment Methods (WGSAM), in order to support the development of multispecies assessment methodologies. The Greater North Sea ecoregion system studies and its management is being addressed and /or collated by ICES (for example) through various in depth studies. Similarly, the Norwegian Sea ecoregion.</p> <p>An ecosystem based management plan is in place for the Barents Sea-Lofoten area, as well as for the North Sea. This plan includes assessment of threats to ecosystem structure and function and where appropriate identification of measures to address such threats.</p> <p>There is a range of more specific measures and initiatives in place to address management of individual ecosystem elements.</p> <ul style="list-style-type: none"> • Measures described in P1 to ensure that the fishery does not pose a risk to ling and tusk stocks. • A range of technical measures and protocols to minimize bycatch of other fish species (described Section 5.3 and evaluated under PI 2.1 and PI 2.2) that may play an important role in ecosystem structure and function • Closed areas to protect the young of a variety of other species. • Closed areas to protect the most valuable/vulnerable benthic habitats in the Norwegian zone, and protocols and gear development initiatives to reduce benthic impacts. <p>There is limited interaction with marine mammals and interaction with seabirds, and these are known.</p> <p>The mix of planning and research initiatives, ecosystem monitoring and assessments, seabed mapping, fishing effort distribution monitoring, ICES advice, and the range of individual measures designed to protect different elements of the ecosystem, taken together may be regarded as comprising a partial strategy.</p> <p>SG80 is met.</p> <p>The impacts of the fisheries on benthic habitats has been discussed in section 5.5, the knock-on effects on the wider ecosystem are not well understood. There remain concerns relating to some fish species and species groups – in particular redfish, wolffish and elasmobranchs – and again the wider impacts are not well understood. The overall understanding of ecosystem structure and functioning, and the impacts of fisheries therefore remain inadequate to evaluate for all ecosystem elements.</p> <p>SG100 is not met.</p>
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b	Management strategy evaluation			
	Guided post	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	There is some objective basis for confidence that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved	Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved
	Met?	Y	Y	N
	Justification	<p>Rigorous quota control management, technical measures, seasonal and permanent area closures all contribute to minimising adverse effects of fishing on key elements of the ecosystem. SG60 met.</p> <p>There are Norwegian seas management plans and the Marine Resources Act requires an ecosystem approach to environmental management. The act also requires regular monitoring and assessment to ensure that objectives are being met. IMR is maintaining a fishery and biological monitoring programme in support of annual (ICES) stock assessments and reviews aimed at providing the Norwegian government with advice on fishing and environmental effects consistent with long term sustainability. SG80 is met.</p> <p>The development and implementation of an ecosystem approach to manage fisheries and associated habitats is an ongoing process, based on complex modeling of data and factors. A time series of such a management approach needs to be established to test and provide confidence in the partial strategy/ strategy. This is not yet available. SG100 is not met.</p>		
c	Management strategy implementation			
	Guided post		There is some evidence that the measures/partial strategy is being implemented successfully.	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a).
	Met?		Y	N
	Justification	<p>There is evidence of area closures, there is evidence of research cruises and resulting status reports, and there is evidence of ecosystem elements being given key consideration at fisheries management level – in the form of ICES advice. Evidence relating to successful implementation at the fleet level includes:</p> <ul style="list-style-type: none">• Catch records• Vessel inspections• Observer programme (typically for secondary species)• Review and analysis of fishing activity, species caught and habitats affected - by IMR and the inspectorates.• VMS/AIS to relate to spatial intensity of fishing effort <p>SG 80 is met.</p> <p>Clear evidence in the form of Observer reports and AIS/VMS related maps (not just statistical rectangles, but actual an idea of the intensity of fishing activity) was not available for this assessment. SG 100 is not met.</p>		

References	<p>Integrated Management of the Marine Environment of the Barents Sea and the sea areas off the Lofoten Islands (management plan) http://www.regjeringen.no/en/dep/md/Selected-topics/hav--og-vannforvaltning/havforvaltning/integrated-management-of-the-barents-sea.html?id=87148</p> <p>http://arcticgovernance.custompublish.com/norway-and-integrated-oceans-management-the-case-of-the-barents-sea.4651095-142902.html</p> <p>Hoel , A.H., von Quillfeldt, C.H., Olsen, E. 2009 Norway and Integrated Oceans Management – the Case of the Barents Sea. REPORT SERIES NO 129 Norsk Polar Institutt</p> <p>Ottersen, G., Olsen C., van der Meeren, G., Dommasnes., and Loeng H. 2011. The Norwegian plan for integrated ecosystem-based management of the marine environment in the Norwegian Sea. Marine Policy 35(2011)389–398</p> <p>Quillfeldt, C. Olsen, E., Dommasnes A., and Vongraven, D. 2009. Integrated ecosystem-based management of the Barents Sea-Lofoten Area. In Sakshaug, E., Johnsen, G. and Kovacs, K. (eds) Ecosystem Barents Sea. Tapir Academic Press, Trondheim. Norway, 587 p.</p> <p>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/Greater_North_Sea_Ecoregion-Ecosystem_overview.pdf</p> <p>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/Ecosystem_overview-Norwegian_Sea.pdf</p> <p>http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/SSGEPI/2016/01%20WGSAM%20-%20Report%20of%20the%20Working%20Group%20on%20Multispecies%20Assessment%20Methods.pdf</p>
OVERALL PERFORMANCE INDICATOR SCORE:	80
CONDITION NUMBER (if relevant):	

PI 2.5.3 Pots & Traps tusk Evaluation Table – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guidepost	Information is adequate to identify the key elements of the ecosystem.	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	<p>The long-established and long-term research programmes have built a database that ensures that the key elements of the ecosystem are identified. These include: habitats, productivity, plankton, fish, seabirds, marine mammals, non-indigenous species, interaction with abiotic factors (eg currents, water temperature etc). SG60 is met.</p> <p>The individual components of the IMR research and stock assessment programmes all contribute to the institution’s long term aim of modelling the marine ecosystem. It is understood implicitly, if not explicitly, that each of the fish stocks plays a role within the ecosystem and variations in abundance of stocks, such as ling and tusk, can influence the status of both prey and predator populations. Whilst not all these interactions have been investigated in detail, they are understood in principle. The research programmes and associated monitoring of the marine environment, primary production, fish stocks, birds and marine mammals all contribute towards detecting any risk or adverse environmental effects. SG80 is met.</p>		
b	Investigation of UoA impacts			
	Guidepost	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and some have been investigated in detail.	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and have been investigated in detail.
	Met?	Y	Y	N
	Justification	<p>Direct fishery interactions are reasonably well understood and indirect effects can be inferred, often from direct experience or comparison with similar species and areas elsewhere. Stock–recruitment relationships are a focus of detailed attention in many stocks, including tusk. SG60 and 80 are met.</p> <p>However, main interactions have not been investigated in detail for the tusk fishery using pots and traps. For example, ghost fishing, where a trap continues to collect fish without being hauled as it may have become lost from the chain of traps. A Recommendation is raised to collect information on the frequency and incidence of ghost fishing, in order to evaluate the impact of this gear when lost. SG100 is not met.</p>		
c	Understanding of component functions			
	Guidepost		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are known.	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are understood.
	Met?		Y	N

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem.	
	Justification	The long-established and long-term research programmes have built a database that ensures that the main functions of the components in the ecosystem are known and feature in the various ecosystem models being developed. SG80 is met. Not all aspects of fishery–bycatch–ETP interactions have been studied in detail and until fully functioning ecosystem models have been demonstrated to work it would be premature to say that these components of the ecosystem are understood. SG100 is not met.	
d	Information relevance		
	Guided post	Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?	Y	N
	Justification	The long-established and long-term research programmes have built up a database that ensures that interactions with fish, bird and mammal components can be inferred even if they cannot be quantified explicitly. Such information is central to an ecosystem approach, as required by the Marine Resources Act. SG80 is met. SG100 is not met, as there is not yet adequate information on all the elements.	
e	Monitoring		
	Guided post	Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?	Y	Y
	Justification	The long-established and long-term research programmes are ongoing and maintain databases appropriate for monitoring the status of key components in the ecosystem (plankton, fish, birds, mammals), including habitats monitored by MAREANO and mapping by OSPAR. SG80 is met. The long-established and long-term research programmes and their associated databases are adequate to support the development of strategies to manage ecosystem interactions. The regional seas management plans are de facto examples of such management strategies. SG100 is met	
References		As in SI 2.5.1 and 2 http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/Greater_North_Sea_Ecoregion-Ecosystem_overview.pdf http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/Ecosystem_overview-Norwegian_Sea.pdf	
OVERALL PERFORMANCE INDICATOR SCORE:			85
CONDITION NUMBER (if relevant):			
Recommendation to assess the occurrence of ghost fishing in this traps and pots fishery.			2

P3 Management (All UoAs)

PI 3.1.1 Evaluation Table – Legal and/or customary framework

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: <ul style="list-style-type: none"> Is capable of delivering sustainability in the UoA(s); and Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; Incorporates an appropriate dispute resolution framework. 		
Scoring Issue		SG 60	SG 80	SG 100
a	Compatibility of laws or standards with effective management			
	Guided	There is an effective national legal system and a framework for cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and organised and effective cooperation with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and binding procedures governing cooperation with other parties which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	Y	Y	Y for lumpfish N for ling and tusk
	Justification	<p>Norway has a well-established system for fisheries management, which has evolved over more than a century and is now codified in the 2008 Marine Resources Act and secondary legislation. The Act applies to all catch and use of marine resources and their genetic material (§ 3) and covers issues such as bioprospecting (Chapter 2), catch levels and quotas (Chapter 3), catch and use of marine resources (Chapter 4), arrangements on the fishing fields, liability for damage and local regulations (Chapter 5) and monitoring, enforcement, sanctions and criminal liability (Chapters 6–12) (see PI 3.2.3 below).</p> <p>The Marine Resources Act is a framework law, which in the main authorizes the Government to issue specific regulations within designated fields. The most important rules are found in the Regulation on the Execution of Marine Fisheries, which is updated annually. The Regulation contains rules for mesh size, selection and limitations on the use of specific catch gear (Chapters II–V), seasonal restrictions (Chapter VI), bycatch (Chapters VII–VIII), minimal fish size (Chapter IX), discard ban (Chapter X), restrictions on the use of trawl in specific areas (Chapters XI–XII), protection of coral reefs (Chapter XIII), documentation on hold volumes (Chapter XIV), marking of vessels and gear (Chapters XV–XVI), loss of gear (Chapter XVII) and fish welfare (Chapter XVIII). Other important legal instruments are the 1999 Act on the Right to Participate in Fisheries, the 2015 Act on First-Hand Sales of Wild Catch of Marine Resources, the 2016 Regulation on Participation in Fisheries, the 2016 Regulation on Licencing and the 2016 Regulation on Landing and Sales Notes. All Regulations are subject to running modifications and additions through so-called J-orders, which are distributed to the fishing fleet electronically.</p> <p>The executive body at governmental level is the Ministry of Trade, Industry and Fisheries, while the practical regulation of fisheries is delegated to the Directorate of Fisheries. Enforcement at sea is taken care of by the Coast Guard, which is part of the Royal Norwegian Navy, but performs tasks on behalf of several ministries, including the Ministry of Trade, Industry and Fisheries. Scientific research is performed by the Institute of Marine Research. Fisheries management authorities coordinate their regulatory work with that of other bodies of governance, for instance the Ministry of Climate and Environment and the Norwegian Environmental Agency, which are responsible for the implementation of the integrated management plans for different marine areas.</p> <p>Unlike lumpfish, ling and tusk are fished also in EU and international waters in the Northeast Atlantic. Fisheries here are managed within the context of the North East Atlantic Fisheries Commission (NEAFC), bilateral negotiations between Norway and the EU, and EU's Common Fisheries Policy (CFP). Norway and the EU concluded a framework agreement on fisheries</p>		

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: <ul style="list-style-type: none">• Is capable of delivering sustainability in the UoA(s); and• Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood;• Incorporates an appropriate dispute resolution framework.		
		<p>cooperation in 1980 (in force 1981). The agreement provides the legal basis for the setting of TACs for joint stocks, transfers of fishing possibilities, joint technical measures and issues related to control and enforcement. The TACs for the jointly managed North Sea stocks are agreed in annual negotiations between the EU and Norway and split according to fixed distribution formulas. The CFP's provisions are transposed into the national legal systems of the EU countries and apply to all fishing activities in EU waters, including the exclusive economic zone (EEZ), and to the activities of EU vessels outside EU's marine jurisdiction. The EU quota is divided among member states according to the principle of relative stability.</p> <p>At Norwegian and EU level, there are effective and binding procedures in place to deliver management outcomes consistent with MSC Principles 1 and 2. At the international level, the 1980 cooperation agreement between Norway and the EU is binding, but it is not very specific; e.g it does not define which stocks are to be jointly managed or how quotas should be divided. In turn, the bilateral cooperation regime for the North Sea fish stocks works effectively, but management decisions made in the annual negotiations between Norway and the EU, including on quota distribution, are not binding. Therefore SG100 is met for lumpfish, which is fished only in Norwegian waters, but not for ling and tusk.</p>		
b	Resolution of disputes			
	Guidepost	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the UoA.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.
	Met?	Y	Y	Y for lumpfish N for ling and tusk
	Justification	<p>At the national level in Norway, as well as in EU countries involved in the ling and tusk fishery, there are effective, transparent dispute resolution systems in place, as fishermen can take their case to court if they do not accept the rationale behind an infringement accusation by enforcement authorities, or the fees levied against them. Verdicts at the lower court levels can be appealed to higher levels. There are instances from recent years that management authorities have lost cases against fishermen and accepted the verdict, which is a clear demonstration that the system works.</p> <p>At the international level, a state can institute proceedings against another state through mechanisms such as the International Court of Justice (ICJ) and the International Tribunal for the Law of the Sea (ITLOS), or bring a dispute before the Permanent Court of Arbitration (PCA). At the regional level, the North-East Atlantic Fisheries Commission (NEAFC) in 2004 adopted a recommendation for compulsory dispute settlement. None of these mechanisms have so far been widely used as means for solving fisheries disputes, but ICJ has over many decades had a number of cases regarding fisheries jurisdiction, and ITLOS has in recent years had cases on the prompt release of detained fishing vessels and the use of provisional measures. PCA was called upon in 2013 to solve certain aspects of the dispute between the EU and Faroe Islands regarding the coastal state management regime of Atlanto-Scandian herring. (The case was terminated a year later as agreement between the parties was reached.) There are no explicit mechanisms for the resolution of disputes in the EU-Norway regime for the North Sea fisheries, but – as is mostly the case also at the national levels – disagreement is sorted out through dialogue, negotiation and compromise. Furthermore,</p>		

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: <ul style="list-style-type: none">Is capable of delivering sustainability in the UoA(s); andObserves the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood;Incorporates an appropriate dispute resolution framework.		
		the above goes to show that there are mechanisms in place within the Law of the Sea, and international law more widely, that the parties can invoke in cases of serious disagreement. However, these mechanisms have not yet been tested and proven to be effective in cases most likely to arise in the context of the fishery under assessment, e.g. disputes on quota allocation or the technical regulation of fisheries. Therefore SG100 is not met for ling and tusk, but for lumpfish, which is fished only in Norwegian waters.		
c	Respect for rights			
	Guided post	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	Y	Y	Y
	Justification	The Norwegian system for fisheries management includes various mechanisms that generally respect and observe the rights of the coastal population along the country's northern, western and southern coast. For the most important species, significantly and proportionately larger quota shares are allotted to coastal fisheries than to the ocean going fleet (see, for instance, the Regulation on Participation in Fisheries for an overview), with particular attention to the traditional fisheries of the coastal Sami population in the northernmost part of the country. The Sami Parliament, which is a consultative body for the indigenous Sami population on Norwegian territory, is consulted on all management measures, including the distribution of the national quota, related to species of particular historic importance to the Sami, e.g. lumpfish. The Government has formally committed to this through the 2005 Royal Decree on Consultations with the Sami Parliament. Ling and tusk are fished also outside the Norwegian EEZ. At the international level, the NEAFC Convention states as its objective to ensure the long-term conservation and optimum utilization of the fishery resources in the Convention Area, providing sustainable economic, environmental and social benefits (Art. 2). At EU level, member states are obliged, according to the 2013 CFP, to include social and economic dimensions in their criteria for allocation of quota rights, among them the contribution to the local economy and historic catch levels (Art. 17). Protection of the interests of coastal communities dependent on fisheries is also one of the rationales for the principle of relative stability in fishing rights between the member states (Recital (35)). Among the objectives of the CFP is to foster job creation and economic development in coastal areas (Recital (12)) and to contribute to a fair standard of living for those who depend on fishing activities, bearing in mind coastal fisheries and socio-economic aspects (Art. 2 f)). Marine biological resources in the outermost parts of the Union shall be secured special protection due their importance to the local economy, and certain types of fishing activities shall be limited to fishing vessels registered in the ports of those territories (Recital (21)). Hence, mechanisms to formally commit to the rights of people dependent on fishing for food and livelihood are in place also in the wider management system.		

PI 3.1.1	<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> • Is capable of delivering sustainability in the UoA(s); and • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; • Incorporates an appropriate dispute resolution framework.
References	<p>Agreed Record of Fisheries Consultations between Norway and the European Union for 2017, Bergen, 2 December 2016.</p> <p>Agreement on Fisheries between the European Economic Community and the Kingdom of Norway, signed 27 February 1980, in force 16 June 1981.</p> <p>Convention on Future Multilateral Cooperation in North-East Atlantic Fisheries, 2006.</p> <p>COUNCIL REGULATION (EU) 2017/127 of 20 January 2017 fixing for 2017 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters.</p> <p>Deltakerloven, LOV-1999-03-26-15, 1999 (Act on the Right to Participate in Fisheries).</p> <p>Interview with representatives of the Directorate of Fisheries during the site visit.</p> <p>J-36-2016: Forskrift om landings- og sluttseddel (landingsforskriften), 2016 (Regulation on Landing and Sales Notes).</p> <p>J-115-2016: Konesjonsforskriften, 2016 (Regulation on Licencing).</p> <p>J-122-2016: Deltakerforskriften, 2016 (Regulation on Participation in Fisheries).</p> <p>J-125-2016: Forskrift om utøvelse av fisket i sjøen, 2016 (Regulation on the Execution of Marine Fisheries).</p> <p>Lov om førstehandsomsetning av viltlevande marine ressursar (fiskesalslagslova), LOV-2015-06-19-65, 2015 (Act on First-Hand Sales of Wild Catch of Marine Resources).</p> <p>Lov om forvaltning av viltlevande marine ressursar (havressurslova), LOV-2008-06-06-37, 2008 (Marine Resources Act).</p> <p>Meld. St. 10 (2010–2011) Oppdatering av forvaltningsplanen for det marine miljø i Barentshavet og havområdene utenfor Lofoten, 2011 (Update of the [Integrated] Management Plan for the Marine Environment in the Barents Sea and the Marine Area outside Lofoten).</p> <p>Meld. St. 37 (2012–2013) Helhetlig forvaltning av det marine miljø i Nordsjøen og Skagerrak (forvaltningsplan), 2013 (White Paper on the Integrated Management Plan for the North Sea and Skagerrak).</p> <p>NEAFC Dispute Resolution Mechanism, Annex K – Amendment of the Convention on Dispute Settlement, 2004.</p> <p>Prosedyrer for konsultasjoner med Sametinget, Kgl. res. 04/186, 2005 (Royal Decree on Procedures for Consultations with the Sami Parliament).</p> <p>Regulation (EU) No. 1380/2013 of the European Parliament and of the Council on the Common Fisheries Policy, amending Council Regulations (EC) No. 1954/2003 and (EC) No. 1224/2009 and repealing Council Regulations (EC) No. 2371/2002 and (EC) No. 639/2004 and Council Decision 2004/585/EC.</p> <p>St. meld. nr. 37 (2008-2009) Helhetlig forvaltning av det marine miljø i Norskehavet (forvaltningsplan), 2009 (White Paper on the Integrated Management Plan for the Norwegian Sea).</p> <p>Wakefield, J., Reforming the Common Fisheries Policy, Cheltenham: Edward Elgar, 2016.</p>
OVERALL PERFORMANCE INDICATOR SCORE:	<p>100 for lumpfish</p> <p>85 for ling and tusk</p>

PI 3.1.1	<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> • Is capable of delivering sustainability in the UoA(s); and • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; • Incorporates an appropriate dispute resolution framework.
CONDITION NUMBER (if relevant):	

PI 3.1.2 Evaluation Table – Consultation, roles and responsibilities

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties.		
		The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring Issue		SG 60	SG 80	SG 100
a	Roles and responsibilities			
	Guided post	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	Y	Y	Y for lumpfish N for ling and tusk
	Justification	The most important organizations involved in Norwegian fisheries management are government bodies such as the Ministry of Trade, Industry and Fisheries, the Directorate of Fisheries and the Coast Guard, sales organizations such as the Norwegian Fishermen’s Sales Organization, fishermen’s organizations such as the Norwegian Fishermen’s Association and environmental NGOs such as Bellona, Greenpeace, WWF and the Norwegian Society for the Conservation of Nature. The Sami Parliament is consulted in the management of fisheries that are of historical importance to the Sami people (SG 60 is met). The roles, functions and responsibilities of the various actors are clearly defined in longstanding practice and are now codified in the Marine Resources Act and secondary legislation. According to interviews at site visit, they are well understood by all involved entities in all areas of responsibility and interaction (SG 80 and 100 are met).		
		Unlike lumpfish, ling and tusk are fished also outside Norwegian waters. It follows from the EU–Norway agreement and subsequent annual agreements that these stocks do not fall into either of the two defined categories of ‘jointly managed’ or ‘joint, but not jointly managed’ stocks. This is explicitly defined and well understood among the parties for key areas of responsibility and interaction (e.g. who sets quotas and technical regulations where) (hence SG 80 is met), but the fact that there are two ‘national’ systems managing the stocks instead of one overarching international system leaves a level of uncertainty that makes it hard to conclude that functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction. SG 100 is not met for ling and tusk.		
b	Consultation processes			
	Guided post	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.
	Met?	Y	Y	Y

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties			
c	Justification	<p>Norway has a long tradition of including non-governmental organizations in fisheries management, with continuous consultation and close cooperation between governmental agencies and user-group organizations, in particular the Norwegian Fishermen’s Association, but also the more specialized organizations such as the fishermen’s sales organizations. As these organizations have regional branches, whose representatives are actively involved in policy-making, ensuring that local knowledge is also taken into consideration in the management process. So-called Regulatory Meetings are organized twice a year – they are open to all and actively facilitated by the authorities; user-group organizations and NGOs attend on a regular basis. In addition there is day-to-day contact by telephone and email between authorities, user groups and other interested parties. Distribution of the national quota between different gear and fishing fleets has in practice been delegated to the Norwegian Association of Fishermen, which includes all fishermen from the smallest coastal vessels to ocean-going trawlers. Hence, the inherent conflict of interest between different vessel types is handled at the level of the Fishermen’s Association, and the outcome is formalized by the Ministry or Directorate after agreement has been reached within the Association. Technical regulation measures are to a large extent decided upon in direct consultations ‘over the table’ between authorities and user groups at the Regulatory Meetings. As mentioned under PIs 3.1.1 c) and 3.2.1 b) above, the Sami Parliament is formally consulted in the management of fisheries that are of historical importance to the Sami population.</p> <p>In addition to formal and informal consultation on the running regulation of the fisheries, user-group organizations and authorities work together – e.g. in designated working groups – to tackle new and emerging challenges to the fishery, such as conflicts with the petroleum sector, marine litter, ghost fishing and other threats to the marine environment.</p> <p>User groups such as the Norwegian Fishermen’s Association also participate in the annual negotiations conducted between Norway and other countries. Norwegian management authorities actively seek advice from user groups in preparation for all international consultations and negotiations, and user groups are included in the Norwegian delegation.</p> <p>Consultation processes are inclusive and transparent, and according to views expressed by user-group representatives and individual fishermen during the site visit, authorities explain how the information is used or not used. In addition to other formal and informal feedback mechanisms, comprehensive minutes are produced after all Regulatory Meetings (normally several hundred pages long).</p> <p>The situation is similar at the international level, where user groups participate in meetings in NEAFC and the North Sea Advisory Council (NSAC); NGOs are also allowed to participate as observers. The Advisory Councils are the main consultation mechanism through which industry engages with management authorities at EU level. They include European industry and NGO representatives ensuring local knowledge is considered within the management system. They actively develop policy advice to the European Commission and are considered as part of the EU’s management system.</p>			
		Participation			
		Guided post		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
		Met?		Y	Y

PI 3.1.2		<p>The management system has effective consultation processes that are open to interested and affected parties.</p> <p>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</p>
	Justification	<p>As follows from PI 3.1.2 b), the consultation processes provide ample opportunity for all interested and affected parties to be involved in discussions about fisheries management in Scotland. Authorities invite relevant stakeholders to meetings and seminars and actively seek their opinion on management measures, in direct meetings and in writing. The level of active encouragement and practical facilitation is considered appropriate to the scope and context of the fishery. SG 100 is met.</p>
References		<p>Agreed Record of Fisheries Consultations between Norway and the European Union for 2017, Bergen, 2 December 2016.</p> <p>Convention on Future Multilateral Cooperation in North-East Atlantic Fisheries, 2006.</p> <p>Interview with representatives of the Directorate of Fisheries, representatives of the Norwegian Fishermen’s Association and individual fishermen during the site visit.</p> <p>Lov om førstehandsomsetning av viltlevande marine ressursar (fiskesalslagslova), LOV-2015-06-19-65, 2015 (Act on First-Hand Sales of Wild Catch of Marine Resources).</p> <p>Lov om forvaltning av viltlevande marine ressursar (havressurslova), LOV-2008-06-06-37, 2008 (Marine Resources Act).</p> <p>Lov om kystvakten (kystvaktloven), LOV-2015-06-19-65, 1997 (Coast Guard Act).</p> <p>Referat fra reguleringsmøtet 2. og 3. november 2016, Directorate of Fisheries, 2016 (Minutes from the Regulatory Meeting 2 and 3 November 2016).</p> <p>Prosedyrer for konsultasjoner med Sametinget, Kgl. res. 04/186, 2005 (Royal Decree on Procedures for Consultations with the Sami Parliament).</p> <p>Wakefield, J., Reforming the Common Fisheries Policy, Cheltenham: Edward Elgar, 2016.</p>
OVERALL PERFORMANCE INDICATOR SCORE:		100 for lumpfish 90 for ling and tusk
CONDITION NUMBER (if relevant):		

PI 3.1.3 Evaluation Table – Long term objectives

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC fisheries standard, and incorporates the precautionary approach.		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guided post	Long-term objectives to guide decision-making, consistent with the MSC fisheries standard and the precautionary approach, are implicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach, are explicit within and required by management policy.
	Met?	Y	Y	Y
	Justification	<p>At the international level, the 2006 amendments to the NEAFC Convention require states to apply the precautionary approach (Art. 4).</p> <p>The 2008 Marine Resources Act requires that Norwegian fisheries management be guided by the precautionary approach, in line with international treaties and guidelines (§ 7 a)), and by an ecosystem approach that takes into account habitats and biodiversity (§ 7 b)). The same objectives are found in the most relevant policy documents, such as the integrated management plans for the Barents and Norwegian Seas, and for the North Sea and Skagerrak.</p> <p>In the EU, the current CFP regulation requires that member states, in accordance with international treaties such as the 1982 Law of the Sea Convention, the 1993 FAO Compliance Agreement and the 1995 Fish Stocks Agreement, apply the precautionary approach to fisheries management, and aim to ensure that exploitation of living marine biological resources restores and maintains populations of harvested species above levels which can produce the maximum sustainable yield (Recital (6), Art. 2). It is specifically mentioned that when targets relating to the maximum sustainable yield cannot be determined, multiannual (management) plans shall provide for measures based on the precautionary approach, ensuring at least a comparable level of protection for the relevant fish stocks (Art. 9). The maximum sustainable yield exploitation rate shall be achieved by 2015 where possible and, on a progressive, incremental basis at the latest by 2020 for all stocks (Art. 2). Since these objectives are both explicit and required by management policy, SG 60, 80 and 100 are all met.</p>		
References		<p>Amendments To The Convention On Future Multilateral Cooperation In Northeast Atlantic Fisheries (Amendments to Preamble, Article 1, 2 and 4).</p> <p>Lov om forvaltning av viltlevande marine ressursar (havressurslova), LOV-2008-06-06-37, 2008 (Marine Resources Act).</p> <p>Meld.St. 10 (2010–2011) Oppdatering av forvaltningsplanen for det marine miljø i Barentshavet og havområdene utenfor Lofoten, 2011 (Update of the [Integrated] Management Plan for the Marine Environment in the Barents Sea and the Marine Area outside Lofoten).</p> <p>Meld. St. 37 (2012–2013) Helhetlig forvaltning av det marine miljø i Nordsjøen og Skagerrak (forvaltningsplan), 2013 (White Paper on the Integrated Management Plan for the North Sea and Skagerrak).</p> <p>Regulation (EU) No. 1380/2013 of the European Parliament and of the Council on the Common Fisheries Policy, amending Council Regulations (EC) No. 1954/2003 and (EC) No. 1224/2009 and repealing Council Regulations (EC) No. 2371/2002 and (EC) No. 639/2004 and Council Decision 2004/585/EC.</p> <p>St. meld. nr. 37 (2008-2009) Helhetlig forvaltning av det marine miljø i Norskehavet (forvaltningsplan), 2009 (White Paper on the Integrated Management Plan for the Norwegian Sea).</p>		

PI 3.1.3	The management policy has clear long-term objectives to guide decision-making that are consistent with MSC fisheries standard, and incorporates the precautionary approach.	
OVERALL PERFORMANCE INDICATOR SCORE:		100
CONDITION NUMBER (if relevant):		

PI 3.2.1 Evaluation Table - Fishery-specific objectives

PI 3.2.1		The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			
	Guided post	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery-specific management system.	Short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.	Well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.
	Met?	Y	Y	N
	Justification	Explicit short and long-term objectives consistent with achieving the outcomes of MSC Principles 1 and 2 are expressed in the Norwegian Marine Resources Act and supporting legislation on the Norwegian ling, tusk and lumpfish fishery). This includes objectives to maintain fish stocks at sustainable levels and protect other parts of the ecosystem, such as habitats (meeting SG 80). Although these objectives are well defined it is not clear how they are measurable for both P1 and P2 issues – SG100 is not met..		
References		J-125-2016: Forskrift om utøvelse av fisket i sjøen, 2016 (Regulation on the Execution of Marine Fisheries). Lov om forvaltning av viltlevande marine ressursar (havressurslova), LOV-2008-06-06-37, 2008 (Marine Resources Act).		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				

PI 3.2.2 Evaluation Table – Decision-making processes

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery.		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guided post	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	Y	Y	
	Justification	Established decision-making procedures at national level in Norway (SG60 and 80 are met) – evolved over several decades and now codified in the 2008 Marine Resources Act and secondary legislation – ensure that strategies are produced and measures taken to achieve the fishery-specific objectives. The Ministry of Trade, Industry and Fisheries decides on policy and regulatory schemes, while the Directorate of Fisheries acts as a technical body with a main responsibility for secondary legislation (see PI 3.1.1 above). The Directorate and the Coast Guard perform compliance control, on shore and at sea respectively. The decision-making processes include the allocation of national quotas to different fleet groups according to an elaborate distributional scheme based on vessel groups defined by gear and length of the vessels. Further, technical regulations are defined by the Directorate of Fisheries, after consultations with user groups and other stakeholders (see PI 3.1.2 above). The enforcement system is further described under PI 3.2.3 below.		
b	Responsiveness of decision-making processes			
	Guided post	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	Y	Y	Y
	Justification	The well-established decision-making procedures in the Norwegian system for fisheries management respond to issues identified in research, monitoring, evaluation or by groups with an interest in the fishery through the arenas for regular consultations between governmental agencies and the public. This happens first and foremost at the Regulatory Meetings, further through ad hoc consultation with the industry and other stakeholders (see PI 3.1.2 above). In addition, there is close contact between authorities and scientific research institutions, primarily between the Directorate of Fisheries and the Institute of Marine Research. Both scientists and user-group representatives claim that the relevant governmental agencies are open to any kind of input at any time. They feel that the authorities’ response is transparent and timely and that the ensuing policy options take adequate account of their advice. It is a principal challenge to claim that absolutely ‘all’ issues are responded to, which is required to achieve a 100 score on this SI, but from an opposite point of view, we cannot see that there issues that are not responded to in this fishery.		
c	Use of precautionary approach			
	Guided post		Decision-making processes use the precautionary	

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery.		
			approach and are based on best available information.	
	Met?		Y	
	Justification	Decision-making processes are based on scientific recommendations from ICES (for ling and tusk) and the Institute for Marine Research (for lumpfish). The Norwegian Marine Resources Act, which applies to the capture of all marine species, requires fisheries management to be based on the precautionary approach (see PI 3.1.3 above). SG 80 is met.		
d	Accountability and transparency of management system and decision-making process			
	Guided post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	Information on the fishery's performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on the fishery's performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Y	Y	N
	Justification	The Ministry of Trade, Industry and Fisheries submits annual reports to the Parliament on behalf of the entire system for fisheries management (see PI 3.2.4 below). Other involved agencies, such as the Institute of Marine Research, the Directorate of Fisheries and the Coast Guard, produce annual reports that are available to the public on request. In these reports, actions taken or not taken by the relevant authority are accounted for, including those proposed on the basis of information from research, monitoring, evaluation and review activity, meaning SG 60 and 80 are met. However, no formal reporting to all interested stakeholders takes place, and SG 100 is not met.		
e	Approach to disputes			
	Guided post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Y	Y	Y
	Justification	The Norwegian system for fisheries management is not subject to continuing court challenges. When occasionally taken to court by fishing companies, the management authority complies with the judicial decision in a timely manner. There are, for instance, recent examples of authorities losing court cases and immediately accepting the verdict. However, the management authority works proactively to avoid legal disputes. This is done partly through the tight cooperation with user groups at the regulatory level (see PI 3.1.2 above), ensuring as high legitimacy as possible for regulations and other management decisions. Regulatory and enforcement authorities offer advice to the fleet on how to avoid infringements, on request but often on their own initiative (see PI 3.2.3 below). For example,		

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery.	
		Coast Guard inspectors work in a dedicated manner to communicate with fishers on the fishing grounds, keeping them updated on changes in regulations and explaining the rationale of the rules in an attempt to increase their legitimacy. In 2012, the enforcement agencies were given the authority to issue administrative penalties for minor infringements (serious enough to be met by a reaction above a written warning), thus referring only the more serious cases to prosecution by the police and possible transfer to the court system. The combination of this evidence is that SG 60, 80 and 100 are all met.	
References		Interviews with representatives of the Directorate of Fisheries, the Institute of Marine Research, the Norwegian Fishermen’s Association and individual fishermen during the site visit. Lov om forvaltning av viltlevande marine ressursar (havressurslova), LOV-2008-06-06-37, 2008 (Marine Resources Act). Referat fra reguleringsmøtet 2. og 3. november 2016, Directorate of Fisheries, 2016 (Minutes from the Regulatory Meeting 2 and 3 November 2016).	
OVERALL PERFORMANCE INDICATOR SCORE:			95
CONDITION NUMBER (if relevant):			

PI 3.2.3 Evaluation Table – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guided post	Monitoring, control and surveillance mechanisms exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	Y	Y	Y
	Justification	<p>The 2008 Marine Resources Act contains provisions in Chapter 6 on fishermen's duties to contribute to an effective control (see, e.g., § 36 and § 39 on catch log and sales notes requirements, respectively); in Chapter 7 on authorities' responsibilities for control and enforcement (including, in § 48, the sales organizations' control obligations); in Chapter 8 measures to combat illegal, unreported and unregulated (IUU) fisheries (including § 50 on the ban to land IUU catch); and in Chapter 9 on illegally caught fish (SG 60 is met).</p> <p>The Marine Resources Act places the overall responsibility for monitoring, control and surveillance in Norwegian fisheries with the Directorate of Fisheries (§ 44) (SG 80 is met). The 1997 Coast Guard Act provides the Coast Guard with the authority to conduct inspections in waters under Norwegian jurisdiction, within the fields covered by the Marine Resources Act and secondary legislation given with statutory authority in that Act (§ 9). Hence, MCS in Norwegian fisheries is taken care of through shared responsibility and close collaboration between the Directorate of Fisheries, the Coast Guard and the regional sales organizations. The Directorate of Fisheries keeps track of how much fish is taken of the quotas of individual vessels, different vessel groups and other states at any given time, based on reports from the fishing fleet. Norwegian vessels are required to have electronic logbooks, or more specifically Electronic Reporting Systems (ERS). This implies that real-time data are forwarded to the Directorate of Fisheries, with the possibility to make corrections of data submitted each day within 12 hours into the next day. Norway has agreements in place with a number of other countries about exchange of ERS data, including the EU. The self-reported catch data can be checked at sales operations through the sales organizations, which have monopoly on first-hand sale of fish in Norway, and through physical checks performed by the sales organizations, the Directorate of Fisheries and the Coast Guard. The sales organizations are required to record all landings of fish in Norway and keep track of how much remains of a vessel's quota at any given time, on the basis of the landings data. This information is compared to the figures provided by the vessels to the Directorate of Fisheries through the electronic logbook. The value of any catch delivered above a vessel's quota is retained by the sales organization and used for control purposes. The sales organizations have their own inspectors who carry out physical controls of landings. They check, among other things, weighing equipment, quantity and size distribution of the catch, the quality of the fish and documentation. The Directorate has seven regional offices along the coast, staffed with inspectors that carry out independent physical control of the fish at the point of landing, including total volume, species and fish size. All landings have to be reported six hours in advance in order to give the inspectors the possibility to check the landed catch. The landed volumes are compared to the volumes reported to the Directorate through the logbooks. Both landing and at-sea control is conducted using a risk-based framework aimed at utilizing resources to optimize compliance at any given moment.</p> <p>As mentioned under PI 3.1.1 a) above, the Coast Guard is administratively part of the Norwegian Navy but performs tasks on behalf of several ministries, including the Ministry of Trade, Industry and Fisheries. Its most important field of work in practice is fishery</p>		

NPA Norwegian Ling & Tusk and NPA Norwegian Lumpfish Fishery

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.		
		<p>inspections. Coast Guard inspectors board fishing vessels and control the catch (e.g. catch composition and fish size) and fishing gear (e.g. mesh size) on deck and the volume of fish in the holds. Using the established conversion factors for the relevant fish product, the inspectors calculate the volume of the fish in round weight and compare this with the catches reported to the Directorate through the logbooks.</p> <p>Hence, there are a number of possibilities for enforcement authorities to physically check whether the data provided by fishers through self-reporting are indeed correct. In addition VMS data enables control of whether area restrictions are observed, among other things. SG 100 is met.</p>		
b	Sanctions			
	Guided post	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	Y	Y	Y
	Justification	<p>Statutory authority for the use of sanctions in the event of infringements of fisheries regulations is given in Chapters 11 and 12 of the Marine Resources Act. Intentional or negligent violations are punished with fines or prison up to one year (§§ 60–63), while infringements committed with gross intent or negligence may be punished with prison up to six years. In the judgment of the seriousness of the infringement, the economic gain of the violation, among other things, is to be taken into consideration (§ 64). Alternatively, catch, gear, vessels or other properties can be confiscated (§ 65).</p> <p>The Norwegian enforcement agencies use a graduated sanctioning system, with sanctions ranging from oral warnings, written warnings and administrative fines to formal prosecution. If the fishers do not accept the fines issued by the enforcement or prosecution authority, the case goes to court. The decision of a lower-level court can then be appealed to higher-level courts. Therefore, sanctions to deal with non-compliance exist, Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.and thought to provide effective deterrence so SG 60 and 80 are met.</p> <p>The comprehensive enforcement system (see PI 3.2.3 a) above) combined with the high level of compliance (see PI 3.2.3 c) below) makes it reasonable to assume that the system provides effective deterrence, meeting SG 100.</p>		
c	Compliance			
	Guided post	Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	Y	Y	Y
	Justification	<p>Enforcement authorities report the level of compliance in the fishery to be high. In 2015, the Coast Guard carried out approx. 1500 inspections at sea. 293 inspections (20 %) resulted in a warning and 44 inspections (3 %) in a fine or prosecution. The Directorate of Fisheries performed 2788 landing controls in the period from 1 January 2015 to 25 August 2016. Some form of reaction was given in 16 % of the inspections (either warning or fine/prosecution). Included in this total were 478 landings of ling, tusk or lumpfish, mainly taken in mixed</p>		

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.	
		<p>fisheries. Four vessels with ling in the catch and one with tusk were fined (1 %). Warning was issued in 34 of these inspections (7 %).</p> <p>As follows from PIs 3.2.3 a) and b) above, the fishery has in place a comprehensive system for monitoring, control and surveillance, including physical checks of fishing operations, catch and gear, as well as a fine-meshed sanctioning system. In addition to these coercive compliance mechanisms, various forms of norm-, legitimacy- and communication-related mechanisms have also proved effective to deliver compliance in Norwegian fisheries. First, there is a degree of social control in the small coastal communities from which the fishery takes place, and the high level of user-group involvement (see PI 3.1.2 above) may provide regulations with a degree of legitimacy that increases fishermen’s inclination to comply with them. The same applies to the relationship between fishermen and enforcement officers, which is reported to be good. Inspectors are trained to approach the fishermen in as forthcoming a manner as possible and perceive themselves as having a guidance-providing and not only a policing role towards the fishing fleet. Therefore SG 60, 80 and 100 are met.</p>	
d	Systematic non-compliance		
	Guidepost		There is no evidence of systematic non-compliance.
	Met?		Y
	Justification	As demonstrated under PI 3.2.3 c) above, there is no evidence of systematic non-compliance in the fishery so SG 80 is met.	
References		<p>Email correspondence with representatives of the Coast Guard and the Directorate of Fisheries.</p> <p>Gezelius, S.S. (2003/2012), Regulation and Compliance in the Atlantic Fisheries: State/Society Relations in the Management of Natural Resources, Dordrecht: Springer.</p> <p>Hønneland, G. (2000/2012), Coercive and Discursive Compliance Mechanisms in the Management of Natural Resources: A Case Study from the Barents Sea Fisheries, Dordrecht: Springer.</p> <p>Hønneland, G. (2013), Making Fishery Agreements Work: Post-Agreement Bargaining in the Barents Sea, Cheltenham: Edward Elgar.</p> <p>Interview with representatives of the Directorate of Fisheries during the site visit.</p> <p>Lov om forvaltning av viltlevande marine ressursar (havressurslova), LOV-2008-06-06-37, 2008 (Marine Resources Act).</p> <p>Lov om førstehandsomsetning av viltlevande marine ressursar (fiskesalslagslova), LOV-2015-06-19-65, 2015 (Act on First-Hand Sales of Wild Catch of Marine Resources).</p> <p>Lov om kystvakten (kystvaktloven), LOV-2015-06-19-65, 1997 (Coast Guard Act).</p>	
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			

PI 3.2.4 Evaluation Table – Monitoring and management performance evaluation

PI 3.2.4		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives.		
		There is effective and timely review of the fishery-specific management system.		
Scoring Issue		SG 60	SG 80	SG 100
a	Evaluation coverage			
	Guidepost	There are mechanisms in place to evaluate some parts of the fishery-specific management system.	There are mechanisms in place to evaluate key parts of the fishery-specific management system	There are mechanisms in place to evaluate all parts of the fishery-specific management system.
	Met?	Y	Y	N
	Justification	There are various mechanisms in place to evaluate key parts of the fishery-specific management system (SG 60 and 80 are met), but at varied levels of ambition and coverage. At the Regulatory Meetings that take place twice a year (see PI 3.1.2 above), management authorities receive feedback on management practices from the industry and other interested stakeholders, including NGOs. The scientific research component of the fisheries management system is reviewed in ICES reports and advice. The enforcement component is subject to continuous evaluation at meetings between the various bodies involved in enforcement activities, where priorities are hammered out on the basis of risk-based monitoring of past experience. The international side to the Norwegian fisheries management system is reviewed by the Parliament upon submission by the Government (through the Ministry of Trade, Industry and Fisheries) of annual reports on the agreements concluded with other states for the coming year, and the previous year's fishing in accordance with such agreements. The Office of the Auditor General conducts annual reviews of the financial performance of the fishery management system. It is a principal challenge to claim that absolutely 'all' parts of a fisheries management system are subject to review, but it seems reasonable to expect some sort of a holistic evaluation of the system as such. The Office of the Auditor General regularly carries out holistic reviews of different sectors of the Norwegian bureaucracy (so-called 'management audits', as opposed to the more traditional, annual financial audits). Such a review of the fisheries management system was undertaken in 2003–2004. At the initiative of the Russian Auditor General, a parallel audit of the Norwegian and Russian management systems for the Barents Sea fisheries was carried out in 2006–2007 and updated in 2011. While this PI, as opposed to PI 3.2.4 b) below, asks about the <i>extent</i> of the reviews and not their <i>frequency</i> , it is the opinion of the assessment team that some level of regularity and consistency in initiative, intent and approach must be present for a series of two or more reviews to qualify as reflecting a 'mechanism'. The parallel revision in 2006–2007 came about at the initiative of the Russian Auditor General, and a decade has passed since then (with a lesser update in 2011). The last 'management review' proper, performed by the Office of the Auditor General at its own initiative, took place 12-13 years ago. So while holistic evaluations of the Norwegian system for fisheries management have been carried out, in the opinion of the assessment team they fall short of reflecting a 'mechanism'. Hence, SG 100 is not met.		
b	Internal and/or external review			
	Guidepost	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	Y	Y	N
	Justification	This PI, as opposed to 3.2.4 a) above, does not ask about the <i>extent</i> of reviews (covering some/key/all parts of the management system), but rather about their <i>frequency</i> and whether they are internal or external to the management system. (If that were not the case, scoring 3.2.4 b) would have made no sense in cases where 3.2.4 b) does not reach a 100 score, i.e. if not 'all' parts of the management system are subject to review.) Hence, various		

PI 3.2.4		<p>There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives.</p> <p>There is effective and timely review of the fishery-specific management system.</p>
		<p>forms of evaluation can be taken into consideration under this PI even if they do not comprise the entire management system. But as discussed under PI 3.2.4 a) above, some level of interrelationship between these PIs must be assumed. For instance, external reviews of only peripheral components of the management system should not automatically lead to a positive score on the external review indicator (whether ‘occasional’ for SG 80 or ‘regular’ for SG 100), in the opinion of the assessment team.</p> <p>The fishery-specific management system is subject to various forms of internal self-evaluation within the Norwegian bodies of governance (see PI 3.2.4 a) above); these take place on a regular basis. Hence, the requirement for SG 80 is met completely, and a 100 score is met as far as internal reviews are concerned.</p> <p>The system is also subject to various mechanisms for external review. The international component – Norway’s fishery agreements with other states – is annually reviewed by Parliament following the submission of status reports by the Ministry of Trade Industry and Fisheries. None of the stocks under assessment here are subject to joint management with other states, but are managed by Norway alone. Hence, this review mechanism does not qualify as a relevant external review mechanism here (which is required to achieve an 80 score). The same applies to the financial audits performed by the Office of the Auditor General, which cover only a minor and rather peripheral aspect of the fisheries management system, seen in the context of an MSC assessment.</p> <p>As mentioned under PI 3.2.4 a) above, the Office of the Auditor General conducted comprehensive evaluations of the Norwegian system for fisheries management in 2003–2004 and 2006–2007, so the system is indisputably subject to external reviews, thus meeting the criterion for an 80 score. And although it can be debated how often (and at what intervals) reviews must be carried out to meet the SG 100 requirement of ‘regular’ external reviews, we conclude that it is not met here. While only three years passed between the two mentioned evaluations, none has been carried out for nearly a decade now. SG 100 is not met.</p>
References		<p>Forvaltning og kontroll av fiskeressursene i Barentshavet: en parallellevisjon mellom norsk og russisk Riksrevision, Office of the Auditor General, Oslo, 2007 (Management and Control of the Fish Resources in the Barents Sea: A Parallel Audit between the Norwegian and Russian Auditors General).</p> <p>Meld. St. 20 (2015–2016) Noregs fiskeriavtaler for 2016 og fisket etter avtalene i 2014 og 2015, 2016 (White Paper on Norway’s [International] Fisheries Agreements and Fishing in Accordance with the Agreements in 2014 and 2015).</p> <p>Riksrevisjonens oppfølging av parallellevisjonen med Den russiske føderasjons riksrevisjon om forvaltningen av fiskeressursene i Barentshavet og Norskehavet, Dokument 3:8 (2010–2011), Office of the Auditor General: Oslo, 2011 (The Office of the Auditor General’s Follow-up of the Parallel Audit with the Auditor General of the Russian Federation on the Management of the Fish Resources in the Barents Sea and the Norwegian Sea).</p> <p>Riksrevisjonens undersøkelse av forvaltningen av fiskeressursene, Dokument nr. 3:13 (2003–2004), Office of the Auditor General, 2004 (The Office of the Auditor General’s Investigation on the Management of Fish Resources).</p>
OVERALL PERFORMANCE INDICATOR SCORE:		80
CONDITION NUMBER (if relevant):		

Appendix 1.2 Conditions and Recommendations

Lumpfish

Condition 1 Lumpfish PI 1.2.2a Missing well-defined HCR (UoA 12)

Performance Indicator	PI 1.2.2 There are well defined and effective harvest control rules (HCRs) in place
Score: 75	1.2.2 (a) Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.
Rationale	PI 1.2.2a There is a generally understood HCR in place (from 2017 a total TAC and earlier setting boat quota and monitoring the total number of vessels involved) combined with an annual assessment that that stock trends are not marked negative. This HCR is not institutionalized and there is no precise reference points hence the HCR is not well-defined. The current HCR includes no proxy for MSY fishing or a PRI reference point that ensures that the exploitation rate is reduced as PRI is approached. There are no studies to demonstrate that the effort levels laid down in the current harvest control rule are expected to keep the stock fluctuating around a target level consistent with (or above) MSY.
Condition	The client shall encourage the development and implementation of a well defined HCR. A well defined HCR should ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.
Milestones	1 st Audit The Client shall demonstrate that steps have been taken that might eventually lead to the development and implementation of a well-defined HCR. No revision (75) 2 nd Audit The Client shall present a proposal for a HCR and demonstrate that this proposal is being discussed at appropriate level. No revision (75) 3 rd Audit. The Client shall demonstrate that a HCR has been adopted and is being implemented. No revision (75). 4 th Audit. The Client shall demonstrate that a HCR has been implemented. PI 1.2.2 is rescored and SG 80 is met
Client action plan	In conjunction with condition 2: Action 1.1 NFA will engage with the IMR and Ministry of Trade, Industry and Fisheries ("the Ministry") to evaluate the current status and potential progress towards implementing a HCR with appropriate reference points. Action 1.2 In year 2 NFA will evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate. Action 1.3 In year 3 NFA will support and assist an implementation process by the management authorities as appropriate. Reference points should be adopted by this stage. Action 1.4 If, successful the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.

<p>Consultation on condition</p>	<p>Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be <u>guaranteed</u>, NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.</p>
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Condition 2 Lumpfish PI 1.2.4b Missing explicitly defined reference point (UoA-12)

Performance Indicator	1.2.4 There is an adequate assessment of the stock status
Score 75	The SG 80 was not met because there is no PRI and MSY reference points or proxies defined for such points.
Rationale	The assessment is measured relative to a exploitation rate (yield/swept area biomass) reference point, this has been estimated and is considered to be appropriate. However, there is no reference point defined explicitly.
Condition	The Client shall in cooperation with relevant institutions develop appropriate reference points or proxies and seek adoption of these reference points at the appropriate research level.
Milestones	<p>Year 1: The Client shall present evidence that he has approached relevant institutions and urged them to promote research that may lead to the definition and adoption of reference points (75)</p> <p>Year 2: The Client shall present evidence that the process on agreeing appropriate reference points is progressing at the relevant level and involving the competent authorities. If possible the Client shall present a proposal for reference points. (75)</p> <p>Year 3: The Client shall present proposal and evidence that this proposal is discussed at the appropriate level. (75)</p> <p>Year 4: The Client shall present the outcome of the process. The PI 1.2.4b to be rescored and should meet SG 80.</p>
Client action plan	<p>Action 2.1 NFA will engage with the IMR and the Ministry to evaluate the current status and potential progress towards implementing a HCR with appropriate reference points.</p> <p>Action 2.2 In year 2 NFA will evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.</p> <p>Action 2.3 In year 3 NFA will support and assist an implementation process by the management authorities as appropriate. Reference points should be adopted by this stage.</p> <p>Action 2.4 If, successful the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.</p>
Consultation on condition	Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be guaranteed, NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.

Condition 3 Lumpfish PI 2.3.1b Missing Bird by-catch data (UoA 12)

Performance Indicator	<p>PI 2.3.1 The UoA meets national and international requirements for the protection of ETP species; The UoA does not hinder recovery of ETP species</p> <p>b) Known direct effects of the UoA are highly likely to not hinder recovery of ETP species (Lumpfish)</p>
Score	70
Rationale	<p>It is known from research that seabirds can get caught in the gillnets but there is no direct bird bycatch data from the lumpfish fishery. There is no system of recording ecological information on all vessels participating in this fishery, such as recording seabird interactions. An absence of interactions is also relevant to demonstrate the impact of the fishery. There is need for independent verification of this self-reported bycatch data through observers, reference vessels or cameras.</p>
Condition	<p>The client shall address the deficiencies in information about the direct effects of the UoA and a high likelihood of not hindering recovery.</p>
Milestones	<p>1st Audit: Demonstrate that steps have been taken to introduce such a recording system across the lumpfish fleet, for both self-reporting and independent verification. No revision of score - 70</p> <p>2nd Audit: Demonstrate that a system is being implemented which records seabird interactions across the fleet, including independent verification. No revision - 70</p> <p>3rd Audit: Demonstrate that seabird interactions are being recorded by the lumpfish fishery, including independent verification. No Revision – 70</p> <p>4th Audit: Demonstrate that seabird interactions continue to be recorded and that these records are being compiled and analysed. SG80 is reached.</p>
Client action plan	<p>Action 3.1 NFA will propose to the Directorate of Fisheries that non-fish bycatch becomes a part of the coastal logbook “app”, and that measures are taken to also include it in the manual logbooks temporarily. The Directorate is in the process of gradually introducing the “app” reporting system to all coastal vessels, but they are approaching the vessel groups year-by-year, presumably to ensure a smoother technical transition. NFA needs to work such improvements in to the Directorate’s software development cycle.</p> <p>Action 3.2 In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed. NFA will aim to have the reporting system under the official data collection performed by the Directorate of Fisheries and mandated by law. As a result, it would be subject to the same scrutiny and independent verification as other catch data collected by the Directorate.</p> <p>Action 3.3 Data will be analyzed at 4th audits, and any trends will be shown in conjunction with data from NINA studies.</p>
Consultation on condition	<p>Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be guaranteed, NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and</p>

	reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.
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Condition 4 Lumpfish PI 2.3.2 Strategy to minimise seabird by-catch (UoA 12)

Performance Indicator	<p>PI 2.3.2 The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • meet national and international requirements; • ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</p> <p>a) There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species (Lumpfish)</p> <p>d) There is an objective basis for confidence that the measures/strategy will work, based on information directly about the fishery and/or the species involved (seabirds)</p> <p>e) There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate (seabirds)</p>
Score	65
Rationale	<p>There are measures in place to minimise bycatch of ETP species, in particular seabirds, consisting primarily of avoiding to set the nets in areas of high activity near breeding colonies and feeding range. This also reduces damage to the gear. Some areas close to breeding colonies are closed seasonally in order to reduce seabird bycatch. The current lack of technical mitigation (as exists for e.g. longlines) increases reliance on these spatial or temporal closures to reduce bycatch. These measures do not amount to a strategy. No such strategy was indicated during the assessment. This lack of mitigation testing does not support other international efforts to develop mitigation measures and reduce reliance on closures. As bycatch reporting is weak in the lumpfish fishery, any strategies to reduce bycatch are difficult to assess (and the resulting economic impacts).</p>
Condition	Design and implement a precautionary management strategy and review process to minimise ETP (specifically seabird) bycatch which result in an objective basis for confidence around the impact of the fishery on those ETP species.
Milestones	<p>1st Audit: The client has to show that a strategy has been designed and will be implemented, and alternative measures considered. No revision – 65</p> <p>2nd Audit: The client has to provide evidence that the strategy is being implemented and is actively followed by the fishers, and alternative measures reviewed. No revision – 65</p> <p>3rd Audit: The client has to provide continued evidence that the strategy is being implemented successfully, alternative measures reviewed, and is now part of the management of the fishery, as a matter of course. No revision – 65</p> <p>4th Audit: The client has to provide continued evidence that the strategy is being implemented, as well as reviewed. SG80 is met</p>
Client action plan	<p>Action 4.1 NFA will have meetings with the IMR, Directorate of Fisheries, and –if necessary- other research bodies to explore potential seabird bycatch mitigation strategies. Technical mitigation measures will be explored, together with spatial and temporal limitations.</p> <p>Action 4.2 In year 2 a strategy will be drafted and proposed by the NFA to the Directorate of Fisheries.</p> <p>Action 4.3 In year 3-4 this strategy should be implemented and a part of the management of the fishery, allowing for a rescoring above 80 level.</p>

Consultation on condition	Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be <u>guaranteed</u> , NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.
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Condition 5 Lumpfish PI 2.3.3b Information to support ETP strategy (UoA 12)

Performance Indicator	<p>PI 2.3.3 Relevant information is collected to support the management of UoA impacts on ETP species, including:</p> <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and <p>Information to determine the outcome status of ETP species</p> <p>b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Lumpfish)</p>
Score	70
Rationale	Data on fishery interactions with ETP species is limited – in large part because of their rarity, but also because of limited identification skills, non-recording of non-fish species (ie birds are not recorded for example) and analytical resources. Data collected is not verified by observers, reference vessels or cameras. The vessels don't demonstrate an on-board recording system for any ETP encounters and any seabirds (whether ETP or not). There is a lack of demonstrated identification skills or regular synthesis and analysis of the data in conjunction with relevant scientific institutions.
Condition	Information will be provided which is adequate to measure trends and support a strategy to manage UoA impacts on ETP species..
Milestones	<p>1st Audit: Demonstrate that tools are being introduced to fishers to enable them to identify seabirds as well as ETPs to species level. Demonstrate that steps are being taken to introduce a recording system across the lumpfish fleet, which will record encounters with ETPs/ seabirds on a per trip basis. Demonstrate that steps are being taken to independently verify bycatch data on ETPs. No revision – 70</p> <p>2nd Audit: Demonstrate that the ETP/ seabird recording system is being implemented across the lumpfish fishery, and information is noted on a per trip basis, and independently verified. No revision – 70</p> <p>3rd Audit: Demonstrate that the ETP/seabird recording system is being applied across the fishery, and independently verified. No revision – 70</p> <p>4th Audit: Demonstrate that ETP/seabird interaction (including 'no interaction') data is being compiled and forms part of an analysis. The SG80 is met</p>
Client action plan	<p>Action 5.1 NFA will propose to the Directorate of Fisheries that non-fish bycatch becomes a part of the coastal logbook "app", and that measures are taken to also include it in the manual logbooks temporarily. The Directorate is in the process of gradually introducing the "app" reporting system to all coastal vessels, but they are approaching the vessel groups year-by-year, presumably to ensure a smoother technical transition. NFA needs to work such improvements in to the Directorate's software development cycle.</p> <p>Action 5.2 In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed. NFA will aim to have the reporting system under the official data collection performed by the Directorate of Fisheries and mandated by law. As a result, it would be subject to the same scrutiny and independent verification as other catch data collected by the Directorate.</p> <p>Action 5.3 Data will be analysed at 4th audits, and any trends will be shown in conjunction with data from the NINA studies.</p>
Consultation on condition	Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three

	parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be <u>guaranteed</u> , NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.
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Ling and Tusk

Condition 6 Ling and Tusk PI 1.2.2a HCR not well defined (UoAs 1-11)

Performance Indicator	PI 1.2.2 There are well defined and effective harvest control rules (HCRs) in place
Score: 75	1.2.2 (a) Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.
Rationale	<p>PI 1.2.2a</p> <p>SG 80 was not met because there is no well-defined HCR for the ling and tusk fisheries. There is a generally understood HCR in place, i.e. to base the regulation of the ling and tusk fisheries on the ICES advice and hence the HCR is implemented at the advisory level. However, there is no explicit HCR beyond the general regulation based on the ICES assessment and therefore the HCR is not well-defined (SG80). The HCR includes only a crude measure (capacity control through licencing) that controls overall exploitation pressure. Furthermore, the ling and tusk fisheries are controlled by technical measures and area restrictions. Overall capacity is controlled through access restriction to the Norwegian fishery. There are TACs implemented in the EU fisheries. On the management level no need for an explicit HCR has been perceived as the current fishery is within sustainable limits. This applies to all six ling and tusk stocks. There are no studies to demonstrate that the effort levels laid down in the current harvest control rule are expected to keep the stock fluctuating around a target level consistent with (or above) MSY.</p>
Condition	The Client shall take steps to ensure that an appropriate PRI is defined. Further, the client shall encourage the development and implementation of a HCR that ensures that the exploitation rate is reduced as PRI is approached,
Milestones	<p>1st Audit The Client shall demonstrate that steps has been taken that might eventually lead to the development and implementation of a well-defined HCR. No revision (75)</p> <p>2nd Audit The Client shall present a proposal for a HCR and demonstrate that this proposal is being discussed at appropriate level. No revision (75)</p> <p>3rd Audit. The Client shall demonstrate that a HCR has been adopted and is being implemented. No resvision (75)</p> <p>4th Audit. The Client shall demonstrate that a HCR has been implemented. PI 1.2.2 is rescored and SG 80 is met</p>
Client action plan	<p>In conjunction with condition 8:</p> <p>Action 6.1 NFA will engage with the IMR and the Ministry to evaluate the current status and potential progress towards implementing a HCR with appropriate reference points (PRI and MSY).</p> <p>Action 6.2</p>

	<p>In year 2 NFA evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.</p> <p>Action 6.3 In year 3 NFA will support and assist an implementation process by the management authorities as appropriate. Reference points should be adopted by this stage.</p> <p>Action 6.4 If successful, the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.</p>
Consultation on condition	<p>Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be <u>guaranteed</u>, NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.</p>

Condition 7 Ling and Tusk PI 1.2.4 (UoAs 1+2)

Performance Indicator	1.2.4 There is an adequate assessment of the stock status b) The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.
Score 75	The SG 80 was not met because there is no PRI and MSY reference points or proxies defined for such points.
Rationale	The assessment estimates stock status relative to the 2012 situation corrected with a 'precautionary buffer'. ICES accepts this point as appropriate for providing advice to judge that the stock is above PRI but is uncertain about the status vis-à-vis MSY, the MSY level is unknown.
Condition	The Client shall in cooperation with relevant institutions develop appropriate reference points and seek adoption of these reference points at the appropriate research level
Milestones	<p>1st Audit The Client shall demonstrate that steps have been taken that might eventually lead to the development and implementation of reference points possibly in a well-defined HCR. The Client shall present evidence that he has approached relevant institutions and urged them to promote research that may lead to the definition and adoption of reference points No revision – (75)</p> <p>2nd Audit The Client shall present evidence that the process on agreeing appropriate reference points is progressing at the relevant level and involving the competent authorities. If possible the Client shall present a proposal for reference points. (75)</p> <p>3rd Audit: The Client shall present proposal and evidence that this proposal is discussed at the appropriate level. (75)</p> <p>4th Audit: The Client shall present the outcome of the process. The PI 1.2.4b to be rescored and should meet SG 80</p> <p>PI 1.2.4 is rescored and SG 80 is met</p>
Client action plan	<p>In conjunction with condition 7:</p> <p>Action 7.1 NFA will engage with the IMR and the Ministry to evaluate the current status and potential progress towards implementing a HCR with appropriate reference points (PRI and MSY).</p> <p>Action 7.2 In year 2 NFA evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.</p> <p>Action 7.3 In year 3 NFA will support and assist an implementation process by the management authorities as appropriate. Reference points should be adopted by this stage.</p> <p>Action 7.4 If successful, the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.</p>

Consultation on condition	<p>Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be guaranteed, NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.</p>
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Condition 8 Ling and Tusk PI 2.3.1b Longline & Gillnet fishery (UoA 1-6 and 8-11)

Performance Indicator	PI 2.3.1 The UoA does not hinder recovery of ETP species b) Known direct effects of the UoA are highly likely to not hinder recovery of ETP species (LL GN)
Score	70
Rationale	<p>The identification of skates and rays is not know to species level, making it difficult to assess direct impact, even though some bycatch quantity is know for the group. Norwegian vessels are landing 500-1000 tons of skates annually, but generally do not report the species composition and relative proportion of the catch. Neither the fishing vessels nor the landing sites are obliged to report skate catch and landings by species, and more than 98% of the landed skates are reported by the generic category "Skates and rays" WGEF (WD2016-07). Gillnet and longline fisheries targeting demersal fish generate the bulk of the chondrichthyan bycatch along the northern coast of Norway (Williams et al. 2008). Based on interviews of the Norwegian Reference Fleet and landing sites, the expected discards of skates varied extensively between species and are assumed almost 100% for specimens below 50 cm (ICES WGEF REPORT 2016).</p> <p>It is known from research that seabirds can get caught in longline and gillnet fisheries. There is no direct, independently verified bird bycatch data from the ling and tusk LL and GN fishery.</p> <p>There are no systems in place for recording bycatch information to species level (in particular for skates and rays) on the vessels participating in this fishery, in order to contribute effectively to ICES WGEF assessments. There is an absence of independent verification of this self-reported bycatch data through observers, reference vessels or cameras.</p>
Condition	The client shall provide information to demonstrate that known direct effects of the UoA are highly likely to not hinder recovery of ETP species (LL GN)
Milestones	<p>1st Audit: Demonstrate that steps have been taken to introduce such a recording system to species level across the LL and GN ling and tusk fleet, for both self-reporting and independent verification. No revision of score - 70</p> <p>2nd Audit: Demonstrate that a system is being implemented which records seabird, skates and rays, and other ETP interactions across the fleet, including independent verification. No revision - 70</p> <p>3rd Audit: Demonstrate that all ETP interactions (including Seabirds, skates and rays etc) are being recorded by the LL and GN ling and tusk fishery, including independent verification. No Revision – 70</p> <p>4th Audit: Demonstrate that all ETP interactions (including seabirds, skates and rays etc) continue to be recorded and that these records are being compiled and analysed. SG80 is reached.</p>
Client action plan	<p>Action 8.1 NFA will propose to the Directorate of Fisheries that non-fish bycatch becomes a part of the coastal logbook "app", and that measures are taken to also include it in the manual logbooks temporarily. The Directorate is in the process of gradually introducing the "app" reporting system to all coastal vessels, but they are approaching the vessel groups year-by-year, presumably to ensure a smoother technical transition. NFA needs to work such improvements in to the Directorate's software development cycle.</p> <p>Action 8.2 In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed. NFA will aim to have the reporting system under the official data collection</p>

	<p>performed by the Directorate of Fisheries and mandated by law. As a result, it would be subject to the same scrutiny and independent verification as other catch data collected by the Directorate.</p> <p>Action 8.3 Data will be analyzed at 4th audit, and any trends will be shown.</p>
Consultation on condition	<p>Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be guaranteed, NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.</p>

Condition 9 Ling and Tusk PI 2.3.2 Longline & Gillnet (UoA 1-6 and 8-11)

Performance Indicator	<p>PI 2.3.2 The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • meet national and international requirements; • ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</p> <p>a) There is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species</p> <p>e) There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate</p>
Score	70
Rationale	<p>The mitigation measures deployed in the longline fishery are not in line with international best practice for the reduction of seabird bycatch, as identified by the Agreement on the Conservation of Albatrosses and Petrels (ACAP) (which is signposted in the MSC guidance). The ACAP Best Practice Advice - http://www.acap.aq/en/bycatch-mitigation/mitigation-advice - calls for at least 2 out of 3 of line weighting, night setting and bird scaring lines. It is not clear what the line weighting regime is (and note that irrespective of the depth that the line eventually fishes, the danger occurs when the line is being set and hauled), but it appears that the fishery is not required to follow this best practice mitigation. No evidence was provided to the assessment team to demonstrate what strategies are in place in the fishery to reduce non-seabird ETP bycatch. The efficacy of current measures is not assessed, and nor are well established, scientifically tested and regularly reviewed bycatch mitigation methods implemented. There is no independent verification of bycatch species, including elasmobranchs, that would be expected to be part of the strategy for managing impact on ETP species.</p>
Condition	<p>The client shall demonstrate that there is a strategy in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.</p> <p>Additionally, the client shall demonstrate that a regular review is in place of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species are implemented as appropriate</p>
Milestones	<p>1st Audit: The client has to show that a strategy has been designed and will be implemented, and alternative measures considered. No revision – 75</p> <p>2nd Audit: The client has to provide evidence that the strategy is being implemented and is actively followed by the fishers, and alternative measures reviewed. No revision – 75</p> <p>3rd Audit: The client has to provide continued evidence that the strategy is being implemented successfully, alternative measures reviewed, and is now part of the management of the fishery, as a matter of course. No revision – 75</p> <p>4th Audit: The client has to provide continued evidence that the strategy is being implemented, as well as reviewed. SG80 is met</p>
Client action plan	<p>Action 9.1</p> <p>NFA will engage with the Directorate of Fisheries to evaluate current practice of bird mitigation devices in the coastal longline fleet. The degree of usage of mitigation devices across the fleet will be evaluated, together with its total effectiveness. Current practice and legislation will be evaluated according to national and international</p>

	<p>requirements, and it will be assessed whether it may hinder recovery of ETP species. Progress report at SA1 and SA2</p> <p>Action 9.2 If deemed necessary at 9.1, NFA will draft changes to mitigation strategies together with the Directorate of fisheries, and propose its implementation to authorities. Completed by SA2.</p> <p>Action 9.3 Management measures decided at 9.2 shall be implemented at SA3.</p> <p>Action 9.4 The management measures, if implemented, will be evaluated and reported at SA4</p>
Consultation on condition	<p>Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be <u>guaranteed</u>, NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.</p>

Condition 10 Ling and Tusk PI 2.3.3b Longline & Gillnet (UoA 1-6 and 8-11)

Performance Indicator	<p>PI 2.3.3 Relevant information is collected to support the management of UoA impacts on ETP species, including:</p> <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and <p>Information to determine the outcome status of ETP species</p> <p>b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Ling and Tusk)</p>
Score	70
Rationale	<p>Data on fishery interactions with ETP species is limited – in large part because of their rarity, but also because of limited identification skills, non-recording of non-fish species (ie birds, mammals are not recorded for example) and analytical resources. There is an absence of any on-board recording system for all ETP encounters and all seabirds (whether ETP or not). There is a lack of proven identification skills or a regular synthesis and analysis of the data in conjunction with relevant scientific institutions. Information collected from the fishery under assessment cannot be examined to quantify the extent of interactions with all ETP species, including elasmobranchs to species level (not just 'skates and rays'). The records would be expected to be independently verified through reference fleet and observers to verify its accuracy..</p> <p>Hence, there is insufficient analysis to demonstrate when interactions are found to be unacceptable too trigger appropriate actions to minimize interactions or eliminate mortalities of these affected ETP species, including all elasmobranch species.</p>
Condition	The client will provide information adequate to measure trends and support a strategy to manage impacts on ETP species
Milestones	<p>1st Audit: The client has to provide evidence that all the fishers have the ability and tools to identify ETPs, including seabirds, to species level – such as an on-board identification guide. The client has to design a bycatch log for the vessels/ fishers, to species level. Independent verification has to be set up. No revision – 70</p> <p>2nd Audit: the client has to provide evidence that the ETP/ species-level bycatch log is being used by the fishers and that incoming data is being analysed, and independently verified. No revision – 70</p> <p>3rd Audit: the client has to provide evidence that the incoming data is being analysed to show trends, and independently verified. No revision – 70</p> <p>4th Audit: The client has to provide evidence that the data is being analysed to show trends. The SG80 is met</p>
Client action plan	<p>Action 8.1 NFA will propose to the Directorate of Fisheries that non-fish bycatch becomes a part of the coastal logbook "app", and that measures are taken to also include it in the manual logbooks temporarily. The Directorate is in the process of gradually introducing the "app" reporting system to all coastal vessels, but they are approaching the vessel groups year-by-year, presumably to ensure a smoother technical transition. NFA needs to work such improvements in to the Directorate's software development cycle.</p> <p>Action 8.2 In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed. NFA will aim to have the reporting system under the official data collection performed by the Directorate of Fisheries and mandated by law. As a result, it would be subject to the same scrutiny and independent verification as other catch data collected by the Directorate.</p>

	<p>Action 8.3 Data will be analyzed at 4th audit, and any trends will be shown.</p>
Consultation on condition	<p>Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be <u>guaranteed</u>, NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.</p>

Condition 11 Tusk PI 2.3.3b Pots & Traps Information to reliably measure trends in ETP species (UoA 7)

Performance Indicator	<p>PI 2.3.3 Relevant information is collected to support the management of UoA impacts on ETP species, including:</p> <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and <p>Information to determine the outcome status of ETP species</p> <p>b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Tusk – pots and traps)</p>
Score	70
Rationale	Data on fishery interactions with ETP species is limited – in large part because of their rarity, but also because of limited identification skills, non-recording of non-fish species (ie birds, mammals are not recorded for example) and analytical resources. There is an absence of any on-board recording system of ETP encounters to species level and all seabirds (whether ETP or not). There is no evidence of good identification skills, or regular synthesis and analysis of the data in conjunction with relevant scientific institutions. Self-reported data would be expected to be cross-checked with the reference fleet and observers to verify its accuracy
Condition	The client will provide information adequate to measure trends and support a strategy to manage impacts on ETP species
Milestones	<p>1st Audit: The client has to provide evidence that all the fishers have the ability and tools to identify ETPs, including seabirds, to species level – on-board identification guide. The client has to design an ETP log for the vessels/ fishers. Independent verification has to be set up. No revision – 70</p> <p>2nd Audit: the client has to provide evidence that the ETP log is being used by the fishers and that incoming data is being analysed, and independently verified. No revision – 70</p> <p>3rd Audit: the client has to provide evidence that the incoming data is being analysed to show trends, and independently verified No revision – 70</p> <p>4th Audit: The client has to provide evidence that the data is being analysed to show trends, and independently verified. The SG80 is met</p>
Client action plan	<p>Action 11.1 NFA will propose to the Directorate of Fisheries that non-fish bycatch becomes a part of the coastal logbook “app”, and that measures are taken to also include it in the manual logbooks temporarily. The Directorate is in the process of gradually introducing the “app” reporting system to all coastal vessels, but they are approaching the vessel groups year-by-year, presumably to ensure a smoother technical transition. NFA needs to work such improvements in to the Directorate’s software development cycle.</p> <p>Action 11.2 In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed. NFA will aim to have the reporting system under the official data collection performed by the Directorate of Fisheries and mandated by law. As a result, it would be subject to the same scrutiny and independent verification as other catch data collected by the Directorate.</p> <p>Action 11.3 Data will be analyzed at 4th audit, and any trends will be shown.</p>
Consultation on condition	Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three

	parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be <u>guaranteed</u> , NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.
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Condition 12 Ling and Tusk PI 2.1.1 Gillnet (UoA 2,4,6,9,11)

Performance Indicator	<p>PI 2.1.1 The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.</p> <p>a) Main primary species are highly likely to be above the PRI; OR If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.</p>
Score	70
Rationale	<p>'Redfish' is not differentiated between the two species, <i>S. norvegicus</i> and <i>S. mentella</i>, in the data provided to the assessment. <i>S. norvegicus</i> is below PRI. 'Redfish' is a 'main' Primary species in the gillnet ling and tusk fishery, see Table 13 in Section 5.3. Gillnet catch ratio is 4.29% and therefore above the 2% and both species of redfish (which are inseparable in the catch) are categorized as "less resilient". Fishbase attest both species very low resilience and high vulnerability, and the productivity score is equivalent to low/medium productivity. The stock of <i>Sebastes norvegicus</i> is considered to be below any potential biomass reference point (Blim), and there appear to be no signs of recovery, ICES recommends zero catch and no targeted fishery. The UoA has measures in place, such as no discarding, thus good records are available on all redfish bycatch. SG60 is met. It was not possible to establish the evidence of a demonstrably effective strategy between all MSC UoAs which categorise this species as main. SG80 is not met.</p>
Condition	<p>The client will demonstrate that the UoA aims to maintain <i>S. norvegicus</i> and <i>S. mentella</i> above the PRI and does not hinder recovery of <i>S. norvegicus</i> in particular. The client will provide either evidence of recovery of <i>S. norvegicus</i> or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.</p>
Milestones	<p>1st Audit: Provide evidence that species can be differentiated and are recorded separately into <i>S. norvegicus</i> and <i>S. mentella</i>. No revision – 70</p> <p>2nd Audit: Provide evidence of <i>S. norvegicus</i> bycatch data, and liaising with other MSC UoAs as to design of strategy to collectively not hinder recovery and rebuilding of <i>S. norvegicus</i> and/or evidence of recovery. No revision – 70</p> <p>3rd Audit: Provide evidence of <i>S. norvegicus</i> bycatch data, and liaising with other MSC UoAs as to design of strategy to collectively not hinder recovery and rebuilding of <i>S. norvegicus</i> and/or evidence of recovery. No revision – 70</p> <p>4th Audit: The client has to provide evidence of a strategy that collectively with other MSC UoAs the recovery of <i>S. norvegicus</i> is not hindered; or provide evidence of recovery of the stock. The SG80 is met</p>
Client action plan	<p>Action 12.1 NFA is a member of the Directorate of Fisheries redfish working group established in 2014. The group's mandate is to review the regulations in the redfish fisheries and suggest appropriate measures to rebuild the redfish stocks. NFA participates in this working group, together with representatives from the Directorate and IMR. The group suggests the following changes in regulations:</p> <ul style="list-style-type: none"> · General reduction to 10 % weekly bycatch levels. · Reduction to 30 % weekly bycatch levels for conventional vessels below 21 meters between august 1st and December 31st. · Exemption for handline fisheries. <p>NFA will follow up the working group's findings, support the proposed regulations, and work towards their implementation.</p>

	<p>Timeframe: progress reports at each surveillance audit.</p> <p>Action 12.2 NFA and the working group advice that observation and evaluation of the regulatory measures are necessary, and that adjustment will be made if these measures are not proving to be effective. Timeframe: progress reports at each surveillance audit.</p> <p>Action 12.3 NFA will provide data on the distribution of S.Norvegicus and S.Mantella catches, at SA1 and SA2</p>
Consultation on condition	<p>Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be <u>guaranteed</u>, NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.</p>

Condition 13 Longline and Gillnet PI 2.4.2b (UoA 1-6 and 8-11)

Performance Indicator	PI 2.4.2 There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats. b) There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved
Score	75
Rationale	There are no thresholds implemented for static gears which would trigger a move on rule – despite ICES Advice ⁸³ on threshold limits for longliners (ICES advises the use of a threshold of 10 VME indicators caught per 1000 hook segment or per 1200 m section of long line, whichever is the shorter, to indicate the presence of a VME).
Condition	The client will demonstrate that there is a strategy in place designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats thus providing an objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved.
Milestones	1 st and 3 rd Audit: Provide evidence that discussions with relevant authorities are taking place regarding threshold limits for longliners are being considered. No revision – 75 4 th Audit: A new threshold limit for demersal longliners is implemented The SG80 is met
Client action plan	Action 13.1 NFA will engage with the Directorate of Fisheries and the IMR to assess current protective measures of VMEs within the UoA and whether current practice may cause serious or irreversible harm to VMEs. Action 13.2 Strategies to avoid VMEs will be drafted together with the Ministry of Fisheries. These may include move-on rules and spatial closures. These will be evaluated according to national and international legislation. NFA will lobby for their implementation into official legislation in year 2-3. Action 13.3 The protective measures will be in place by SA4, allowing for a rescoring to 80 level or above.
Consultation on condition	Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects. Although successful outcomes cannot be <u>guaranteed</u> , NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.

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https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2013/Special%20requests/NEAFC_threshold_levels_%20for_%20longline_%20fishing.pdf

Recommendations

Recommendation 1

Regarding PI 2.4.2 for all fisheries: Ensure all relevant fishers know about and location of vulnerable habitats, including those outside closed areas. Ensure that fishers have the relevant maps/ coordinates available, regularly updated, as survey programmes improve knowledge base.

Recommendation 2

Regarding PI 2.5.3 ecosystem impacts for the pots and trap fishery: evaluate the possibility of ghost fishing by lost traps/pots by recording frequency and location of such loss.

Recommendation 3

Regarding PI 2.3.1 marine mammal interaction for the tusk pots and traps fishery: recording of any interaction of the gears with marine mammals. If possible, establish a system to independently verify such self-recording.

Recommendation 4

Regarding PI 2.4.1 for all fisheries: to encourage the creation of closed areas based on other VMEs besides Lophelia reefs, such as coral gardens, seapens and sponge beds for example.

There are no closed areas for the protection of coral gardens and sponge beds. Compared to the number of known Lophelia reef sites, few are under protection within a closed area. Those identified in closed areas through OSPAR in the High Seas have little legal protection.

Appendix 1.3 Risk Based Framework (RBF) Outputs

Not applicable

Appendix 2 Peer Review Reports

Peer Reviewer 1

Summary of Peer Reviewer Opinion

<i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i>	Yes/No Not always	CAB Response
<i>Justification:</i> I think that the standard is not always interpreted right – e.g. in relation to classification of secondary vs. ETP species. But the main problem is that the report presents insufficient evidence in various places to make a judgement about scoring (e.g. lumpfish stock status and survey, impacts on ETP species, bait, non-Norwegian management framework).		<i>The assessment team has tried to clarify the text where appropriate</i>

<i>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCR 7.11.1 and sub-clauses]</i>	Yes/No Not always	CAB Response
<i>Justification:</i> The milestones for the condition on data-gathering for ETP species do not suggest that the SG80 level will be reached within the specified timeframe. The milestones for outcome (2.3.1) do not included any provision for taking action if data reveal unacceptable impacts. Also (a more side issue), information and management condition milestones relating to the same issue could be better integrated (you can't really have the strategy before you have the data).		<i>The conditions are issued in good faith and the consequence of not meeting the milestones and ultimately if data changing the perception of the impact made by the fishery is – through the annual surveillance – a rescoring of the fishery. This is embedded in the surveillance programme and the assessment team does see no need to specify this in the condition. The MSC specification for setting conditions are seen as blocking such very reasonable proposals</i>

If included:

<i>Do you think the client action plan is sufficient to close the conditions raised? [Reference FCR 7.11.2-7.11.3 and sub-clauses]</i>	Yes/No	CAB Response
<i>Justification:</i> The action plans are OK, except that we need to know how the client will react if data show unacceptable impacts. Also, more information is required on consultation to ensure that the client has support for implementation – or the CAB should demonstrate that the client can implement the action plan by itself.		<i>The MSC system should react through the surveillance audits</i>

Performance Indicator Review Reviewer 2

Table 26 For reports using one of the default assessment trees:

Lumpfish (Principle 1 and Principle 2)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
LUMPFISH					
1.1.1	Y ?hard to judge	N	n/a	<p>SlA. I don't disagree with the scoring but no detail is given either here or in the main text as to what this 1% exploitation rate is 1% of, how it is evaluated etc. With the present rationale, the reader is being asked to take the figures on trust rather than being able to make any evaluation as to their validity.</p> <p>Slb. The rationale does not provide a basis for justifying the scoring. The first two sentences contradict each other (?) and insufficient detail is given on the survey in the main report to</p>	<p>The report text has been clarified. The harvest rate is calculated as the swept area female (30cm+) biomass estimated in the IESSNS survey and the removal (based on roe) in the Norwegian fishery</p> <p>The text has been clarified taking the reviewer comments into account</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				<p>be able to make any judgement – we don't know what it is surveying or where or how. The most detail given is in the rationale for 1.2.4a, which states that it is a survey for juvenile fish in general? which further begs the question as to how it provided an accurate index for mature female lumpfish, even if it covers all the relevant areas (which we don't know). I'm not saying that it is not adequate, I'm just saying that based on this report we can't tell if it is adequate or not.</p> <p>No figures are provided which give us a basis for anchoring the survey trends to any absolute estimates of population size or status – they are going up but how do we know that this is not the stock going from very</p>	The estimated harvest rate is minimal

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				depleted to only slightly depleted? (Again, I'm not saying this is the case, I'm just saying we can't tell.) There is only this 1% figure which is also provided without explanation or background.	
1.1.2					

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.1	Y	N		<p>Sla. This 'Norge saltfiske lag' is not explained anywhere in the report so we have no idea what is the Norwegian approach to MSY. As far as we have been told there are no estimates of any MSY reference points for this stock. Conversely I have no issue with the scoring at SG80, but at SG100 I find it a bit of a stretch to say that it is 'designed' – it seems quite ad hoc to me.</p> <p>Slf – I'm sure you're right but just confirm that there is no bycatch of males.</p>	<p>'Norges saltfiske lag' Norwegian marine fishing law, text has been updated</p> <p>The Norwegian strategy as it is implemented in the regulation of th lumpfish fishery is to be based on scientific input – for international and other large stock through ICES and for minor stocks such as lumpfish through IMR and to establish catch limits – not necessarily TACs – to assure sustainable fisheries.</p> <p>The by-catch of males is recorded in Table 16 and is 0.03% < 0.5 t in 2016.</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.2	Y	Y	N	Re consultation on condition, the CAB needs to be clear whether the client could implement a HCR meeting the SG80 requirements by itself, or whether it needs actions by other stakeholders e.g. the Ministry. If the latter, an indication of support is required from the relevant stakeholders (letter, email, comment in report etc.) which should be included in the report.	The option of an industry based or a formal regulation (e.g. J melding) is left to the Client. The Norwegian system is that integrated that it includes implicitly the support letter.
1.2.3	Y	Y			
1.2.4	Y	N	N	Sl.a. As already noted, we need more information about this survey to judge whether it provides an appropriate basis for evaluating stock status or not. Sl.b. I guess this 'reference	The survey is documented in cruise reports by IMR and in descriptions of the survey see IMR home page http://www.imr.no The two surveys are an 0-group survey see Figure 20 and the

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				<p>point' relates to the %ages given in 1.1.1, the basis of which are not explained that I can find. The rationale says that SG80 is not met because the ref point is not explicit, but that it not what the scoring issue is asking – it is asking whether the ref point is generic or appropriate to the stock. If there really is no reference point, then normally the RBF should be used. I sympathise with why it was not used; in my opinion the default tree is always a more robust option if it is possible. But perhaps there should be a discussion somewhere in the report as to what is the nature and status of these implicit reference points, and how that relates to the requirements in Table 3?</p>	<p>IESSNS survey see Figure 21. The o-group survey has been running since 1965 while the IEENS (ecosystem survey) in the present form is relative new.</p> <p>The cloing of the condition requires that the reference points are defined.</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				Condition: Milestones don't say anywhere 'reference points implemented'. Same comment as above in relation to consultation.	
Both 2.1.1	Y	N		I think this has been interpreted wrong – SG100 also refers to 'main' species; if there are no 'main' species my understanding is that SG100 should be met also. So I believe that the score should be 90. (In the previous version of the standard, SG100 related to all species main and minor, so I see where this comes from.)	Scoring has been changed

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.1.2	Y	N		SG100b – is there really high confidence that it is working for coastal cod, redfish or plaice? judging by the rationale for 2.1.1b maybe not?	The extend of the lumpfish fishery comcentrated in area 04 and is conducted by a small effort. The area of distribution for coastal cod, refish and plaice is much wider than the extend of the lumpfish fishery Also given the large mesh size 267 mm in the gillnet there is little impact on the cod, redfish and plaice. So based on the extend of the fishery, the low effort, short season and large mesh here is a high degree of certainty that the lumpfish fishery is not impacting the stocks significantly, e.g the total catch of coastal cod is around 40,000 t annually of which the catch in the lumpfish fishery is during 2012-2016 (Table 16) 40 t (1‰.)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.1.3	Y	N		SG100a is missing. Presumably since there are no main it is met by default? Otherwise I'm quite confused by the interpretation set out in SIb – could this also relate to version 1.3??	SG100a scored "Y" by default. This is slightly perverse but based on advice from MSC secretariat.
2.2.1	N	Y		In my view, there might be 'main' secondary species based on an incorrect interpretation of the requirements for categorising species as ETP – see comments at the end of this document. The team should consider recategorising the ETP fish species (spurdog/dogfish) as main secondary. Likewise the birds can only be classified as ETP if they are red-listed as vulnerable or above (SA3.1.5.3), so possibly some of the seabirds should be dealt with here too? but I haven't checked each one.	All birds and marine mammals are main secondary species (FCR SA 3.7.1.2) and are scored as such. The basic source for information on the status of the species in Norwegian waters is 'Artsdatabanken which is a Norwegian institution changed with tracking status in the Norwegian biodiversity.'. The classification has been done based on this informatio. Having checked the information the team see no reason for reclassification.

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				Slb – You could take the approach of evaluating the bycatch in lumpfish nets in comparison to estimates of overall catch on the stock – if it is negligible you can argue that 'there is evidence that the UoA does not hinder recovery'; possibly not worth the effort though.	Thank you for the proposal, the result is that in all cases the catch in the lumpfish fishery is insignificant
2.2.2	N	Y		Same comment as above; i.e. spurdog and some of the birds should maybe be 'main'?	The text has been clarified. The classification is based on national legislation 'Artsdatabanken'
2.2.3	N	N		Ditto.	The text has been clarified. The classification is based on national legislation 'Artsdatabanken'
2.3.1	N	N	N	Slb. The rationale is quite confusing; if the bycatch	The report text has been updated to include estimates

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				<p>averages 0.84 birds per trip (and why not 1.6 birds per trip?), how many birds in total (by species) does that add up to? and what is the population size of these species? Then we can start to evaluate the population-level impact. This has only been attempted for guillemots. Also I do not really buy the argument as to why SG60 is met; it depends what the season is – the birds are also only present inshore for a short season; do the seasons coincide? In which case a short season for fishing makes no difference. SG60 needs better justification looking at estimated total levels of catch and trends in all the relevant populations.</p> <p>Slc. Could consider disturbance</p>	<p>from Dangel et al (2011). The populations are more than 1 mill while the catch in the lumpfish fishery is in the order of 2,000 birds per year based on a special study in 2009-2010.</p> <p>The justification text has been updated.</p> <p>Not with the low takes that are documented.</p> <p>Error corrected</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				<p>as well, if you think it might be relevant – this applies to the other gear types as well.</p> <p>With the scoring as it is now, the overall score should be 70 (two issues at SG80, one met, one not).</p> <p>Condition: I take the point about integrating with ongoing work, but it doesn't seem likely from the action plan that the SG80 level will be met by the end of the certification cycle. Could something be added in the meantime; e.g. voluntary data recording by a reference fleet? observers?</p> <p>More important; the milestones and action plan do not include anything about what will be done to improve</p>	<p>The assessment team has inserted this proposal into a recommendation</p> <p>The surveillance audit procedures take care of these concerns</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				outcome status (as opposed to data) – what happens if the data reveal outcomes that do not reach the SG80 level?	
2.3.2	Y	N	Y	The rationale for Sla is a bit weak, but the seasonal closed areas near colonies could be sufficient for SG60 to be met if we had a little more detail – where, when, which colonies of which species, how important are these colonies for the overall population, closed for how long, closed by who? And what about the non-bird ETP species; what are the measures for those? It would be good to start the rationale with a reminder of what the ETP species are, actually, and then go through species by species or group by group.	There is no non-bird ETP species except the dogfish (spurdog). The regulations are local assuring appropriate protection. A special study on bird by-catch Fangel et al (2011) and follow-

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				<p>Slc – I do not see an objective basis for confidence based on the data provided here. There seems to be very little data on bird bycatch in this fishery, which is nevertheless significant. How about the impact on guillemots where the overall Norwegian population is quite small? How about the species which are in decline according to the paragraph above Table 20 – e.g. eider ducks etc.</p> <p>Sld. None of this 'evidence' is provided in the report. The section on bird bycatch mitigation (5.4.2.1) only deals with longlines.</p> <p>Condition: The condition is OK, but the milestones could be better integrated with the previous condition – it seems</p>	<p>up studies 2012-2015 provide confidence in the estimates.</p> <p>Text has been updated</p> <p>MSC guidelines are not promoting integration however the assessment team agrees.</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				that data is a pre-requisite for a reasonable strategy, but the milestones for data-gathering are later than those for the strategy.	
2.3.3	Y	N	N	Slā. It might be true that quantitative information is sufficient to estimate the impact on the various relevant bird populations, but no evidence of this is provided in the report. Where are the estimates of total bycatch by the fishery? Where are the figures for total population size and trends for each relevant species? Lacking that, I'd say that only SG60 is met. Even using the Fangel report, I would ask the team to question whether SG80 should be met, based on the comment about sample sizes being small and	The text has been updated the total take is is 2-3,000 birds annually with black gillnet as the major concern. Takes have because of the reduced effort decreased in recent years, the study is 2009-2010 when the lumpfish fishery peaked (2008). NINA has since 2008 conducted sea bird studies with special emphasis on the effects of coastal line and gillnet fishing. The level (birds per net) is confirmed at more recent studies

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				<p>bycatch highly variable (this can only be judged if you have read the report in question).</p> <p>Slb. CABs are not supposed to tell clients how conditions should be met, just so ASI don't give you a hard time.</p> <p>Condition: See comments on 2.3.1 condition.</p>	<p>Point taken; the team considers the Condition 5 to be general</p> <p>See answer to 2.3.1</p>
2.4.1	N	N		<p>Sla. You are really citing Figure 27 as providing relevant habitat information? It is a map of the entire North Sea, Norwegian Sea and Barents Sea – while this fishery operates in limited inshore areas, as I understand it. I agree with the argument for SG80 based on the operation of the gear and the general nature of the grounds, but SG100 requires 'evidence' which is not</p>	<p>Point taken. Text amended. The coastal zone is skerries (rocky) and sandy, Figure 27 expanded with a more detailed map based on EMOD data</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				<p>provided. MSC is starting to require analysis in the form of a (semi)quantitative assessment of the footprint of the fishery in relation to each habitat type – this could be a good place to start for this fishery, considering the footprint is likely to be small (i.e. footprint of each net x number of net sets x area of lumpfish spawning habitat).</p> <p>Sib. Is Lophelia really the only relevant VME? Could there not be others e.g. (by comparison with Scotland) flame shell reefs, Modiolus reefs, seapens, Arctica islandica beds etc etc?? I am not familiar with inshore marine habitats in Norway; the point is that there is no discussion of anything other than Lophelia and no evidence</p>	<p>The adult Lumpfish inhabit rocky bottom and many of examples mentioned are not relevant in this context. The legislation is wider than Lophelia mounds and include in principle the list mentioned not least sponges and sea pens. However, the concerns have focused on Lophelia sp.</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				<p>is provided as to habitats in the lumpfish areas specifically.</p> <p>A good place to start would probably be to consider the types of habitat in which female lumpfish like to spawn??</p>	The expanded Figure 27 is in response to the proposal by the reviewer.
2.4.2	Y	N		<p>Sla. MSC provide a definition of a strategy in Table SA8 as below. I'm not sure that the last element (adapting fishing practices in the light of identification of impacts) is met. I am also concerned that you are using a general wide-ranging habitat mapping exercise (MAREANO) to apply to a context where it doesn't really apply; i.e. localised inshore fishing areas?</p> <p>A "strategy" represents a cohesive and strategic arrangement which may</p>	<p>Fishing practise is modified locally including small closed areas where appropriate.</p> <p>The source for the maps are EMODNET data, the Mareano programme is as indicated focusec on the offshore areas.</p> <p>The definition of a strategy is that it is strategic which is not much use. OED defines the strategy as "A plan of action designed to achieve a long-</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				<p>comprise one or more measures, an understanding of how it/they work to achieve an outcome and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts</p> <p>SIb. We need more evidence as to the habitats in the specific lumpfish areas in order to judge.</p> <p>SIId. State which if any MSC UoAs are overlapping in relation to impacts on habitats in this area. Probably none but at SG80 it has to be addressed.</p>	<p>term or overall aim". The plan of action includes measures implemented in the fishery to avoid habitat damage (long term goal)</p> <p>Figure 27 expanded</p> <p>Justification amended</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.4.3	N	N		<p>As noted above, I don't really buy the fact that MAREANO mapping over a really wide area is sufficient to evaluate habitat impacts for this fishery in specific inshore areas. We need information about what the habitats are in those areas specifically (i.e. what habitats do female lumpfish like?). For vulnerable habitats, only Lophelia is mentioned in the rationales, whereas (and I am extrapolating here from Scottish sealochs) it seems possible that in fjords, many other interesting habitats could occur.</p> <p>Slb. SG80 requires that 'there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear' – which doesn't seem to be met? or at</p>	<p>Figure 27 (EMODNET) has been expanded</p> <p>Justification moified, Figure 5 demonstrate that there is very detailed geographical information available for the fishery.</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				least is not justified by the rationale.	
2.5.1	Y	Y			
2.5.2	Y	N		If there is an ecosystem plan could this not be 'a strategy that consists of a plan'? – i.e. SG100 met. If you think that the measures listed justify the definition of 'strategy' given above.	The general plan for the Barents Sea is non binding. The team does not feel that SG 100 is met.
2.5.3	Y	Y			

Ling and Tusk (Principle 1 and Principle 2)

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1.1.1	N	Y		<p>For VIb tusk, Table 11 is referenced in relation to stock status but Table 11 says that stock status relative to the ref point is 'unknown'?</p> <p>Conversely the rationale for the other stocks could also note the reference points (?) in Table 11; it makes reference to 0.5*BMSY, suggesting that there is a BMSY, somewhere somehow. Anyway, I don't disagree with the scoring for these stocks but it's a bit confusing.</p>	The comment is given in the specific ICES content (Blim, Bpa etc) and not in a more wider content of all possible proxies, the ICES language is slightly confusing.
1.1.2					
1.2.1	Y	N		<p>SlA. I'm not sure that the harvest strategy is 'designed' – even the objectives are pretty ad hoc. For VIb tusk, part of the stock is in international waters; that needs a mention.</p> <p>Slb. I don't disagree with the scoring but the rationale is a bit confusing – it's not asking about whether it is designed here; it is asking about whether there is evidence that it is achieving its objectives (which there is).</p>	The strategy is designed to to achieve sustainable fishery as confirmed by Norwegian authorities at the site visit.
1.2.2	Y	Y	N	<p>(something has gone a bit wrong with the table, here and below)</p> <p>See comments on 1.2.2 condition for lumpfish which also apply here.</p>	
1.2.3	Y	Y			

1.2.4	N	Y	N	<p>Sla. One of the stocks is category 5. You could mention that it is appropriate based on the evidence that exploitation levels are very light; this seems like a key point to me. The further away you are from the danger zone, the wider you can allow your confidence intervals to be.</p> <p>Slb. I don't necessarily disagree with the scoring (the information provided on reference points is a little bit confusing) but the reference points in Table 10 are not 'generic'; they are specific to the fishery in question. Furthermore, MSC explicitly allows for 'empirical approaches' in defining ref. points (see Table 3).</p> <p>For the condition, same comment on consultation; it's hard to see how the client can do this by themselves.</p>	<p>Justification Text updated Tusk Bib discussed separately.</p> <p>The reference points are of course specific at the stock level but generic in as much as they include the full stock, they are not generic at the species level.</p> <p>Ther same answer with reference to the surveillance audits</p>
2.1.1 longline	N	N		<p>Sla. The wording of the rationale contradicts the Ys as to whether SG100 is met. See also my comments on 2.1.1 for lumpfish – since SG100 also refers to 'main' spp and there are none, it should be met as I understand it.</p> <p>Slb. According to Table 15, several stocks of cod and redfish are depleted; I very much doubt that this fishery plays any part in that but more information is needed in the rationale to justify the scoring for these stocks (the second part of SG100 needs to be met).</p>	<p>Justification amended</p> <p>The catch in these ling-tusk fisheries is minimal relative to the total catch of the coastan cod, and redfish. Justification expanded. Figure 24 has been inserted to explain this point</p>

2.1.1 gillnet	N	N		Same comment as above for SIb	See answer above
2.1.2 longline gillnet	Y	Y		(SIe a cross-ref has come adrift)	Reference corrected
2.1.3 II gn	Y	Y		See comment under 2.3.1 lumpfish re interpretation; missing Y next to SG100a. SIb: All spp are not minor; also that the minor meet 2.1.1b 100 requires further justification in my opinion.	Corrected, PI 2.1.1b has been updated
2.2.1 II gn	N	N		SG100a also refers to main spp. See my comments under lumpfish in relation to fish and birds which are red-listed; some of these need to be considered here (see also below).	The species are considered under 2.3.1
2.2.2 II gn	N	N		SIId. The question is whether any of the secondary spp are sharks, which they are (skates and rays, spurdog, porbeagle). Currently these are categorised as ETP based on the Norwegian red list but this is not a valid interpretation of MSC's requirements, I don't think (see details in comments at the end). They therefore probably need to be considered under secondary.	The classification is based on national legislation "Artsdatabanken"..
2.2.3 II gn	Y	Y		Same comment – 100a should be met.	

2.3.1 ll gn	N	N		<p>See comment under secondary above. What about the skates and rays? Their catch is not known since not identified to species. They are ignored in the rationale.</p> <p>In relation to birds, I do not agree that SG80 is met based on the arguments given; I'm not sure it even justifies SG60. For example, while the fishing depth of the gear is deeper than diving birds, most bird bycatch comes on setting and hauling (for longlines). If vessels have to record bird bycatch, how come we don't have any actual figures? except for an out-of-date figure of 10-12,000 birds (is this gillnets or longlines or both?). It would be better to separate out the two gears in the rationale, which in any case needs to provide better data on the impact by species of the fishery, relative to the population size and trends in those species, for SG80 to be met.</p>	<p>Justification is updated to account for skates and rays Figure 24 provides further details on the amounts involved.</p> <p>The 10-12,000 bird estimate is updated 2012-2015 and the level is confirmedT this estimates refers to the coastal fishery (both longline and gillnets) while the dominating part of the tusk and ling fisheries are offshore at depths 200- 500 m.</p> <p>The report has been updated with population size estimates.</p>
2.3.2 ll gn	N	N		<p>Sla 'records should be available' – so where are they? Evaluate whether the measures meet MSC's definition of a 'strategy' (see comments under lumpfish) In Sla you say there is a strategy, but in Sld you say there isn't. What about the 'skates and rays' (species undetermined)?</p> <p>Sle. I'd like to know more about how this is done in relation to birds; how are impacts quantified in relation to populations for each species; how is it decided whether a given level of bycatch is acceptable or not?</p>	<p>There is no record of bird by-catch but based on the general knowlegde of other fisheries this require further documentation, hence the condition.</p>

2.3.3	Y	N	N	<p>Sla 'In this fishery, Ling and tusk, longline and gillnet, no seabird records were available, although it is a statutory requirement for vessels over 15m to record such interactions'</p> <p>in addition skates are not identified to species, apparently. This doesn't seem compatible with a score of 80.</p> <p>Condition: Same comment as for lumpfish 2.3.1. But I thought that reporting all ETP bycatch was already a requirement for most of these vessels? Does this really qualify as a 'coastal fishery'?</p>	<p>There is no reports of bird by-catch and the scoring must be based on the available information not suspicions that the non-reports are a result of non-compliance. There is a condition to request such more documentation.</p> <p>Skates and ray are few the dominating species is Thorny (starry) skate (<i>Amblyraja radiata</i>), text inserted in section 5.4.2. The fishery has a coastal component as well as a dominating offshore component.</p>
2.4.1	N	N		<p>Sib. Only Lophelia is considered in the rationale, whereas the habitats section of the report has quite a comprehensive discussion of various kinds of VME.</p>	<p>Considerations of VME are based on the FAO criteria. The scope of the MAREANO program and consequently management of the areas is a general mapping of the habitats.</p>

2.4.2	N	N		<p>Scoring for SG100a needs to consider the cumulative impact of all fisheries in the area on habitats; in this case there are plenty.</p> <p>Slc. How can there be 'quantitative evidence' that Norway plans to do something (close more areas) in the future? And if it's going to be done in the future, how can it be achieving its objective now? Also, OSPAR has no ability to close areas itself – it is the role of national jurisdictions (e.g. UK) or in the case of international waters in Vlb, NEAFC.</p> <p>Sld Scoring at SG80 needs to deal with the second part of SG80 ('protection afforded to VMEs by other MSC UoAs/non- MSC fisheries, where relevant') bearing in mind that there are a lot of other fisheries in this area.</p>	<p>The trawl fisheries in the areas ICES I+ II are MSC certified and the impact by the line and gillnet are minimal. Text has been updated.</p> <p>The strategy as expressed to the assessment team by competent authorities is to continue collection of information through further surveys and information from the fishing fleet and introduce appropriate regulations (e.g. closed areas) as documentaion is forthcoming.</p> <p>The regulations are general aplying to all fisheries operating in the areas. Text has been updated</p>
2.4.3	Y	Y			
2.5.1	Y	Y			
2.5.2	Y	N		See comment under lumpfish – 100a could be met??	See answer for Lumpfish
2.5.3	Y	Y			
TRAPS					

2.1.1	Y	N		<p>Slb. Same comment as for longline re cod, redfish. By the way, Table 15 is wrong in relation to IVa nephrops (see comment below)</p> <p>Sld. The question is whether any of the primary spp are sharks.</p>	
2.1.2	Y	N		<p>Sla. 100 met.</p> <p>Slb. See comment under 2.1.1.</p>	
2.1.3	Y	N		Sla. 100 met.	
2.2.1	N	N		<p>See comments above regarding ETP vs main secondary spp.; also interpretation of SG100a.</p> <p>What about trap bait? 5.3.3 only considers longline bait.</p>	See comment for 2.2.1 Line/Gillnet
2.2.2	Y	Y		(but may need to add new spp)	
2.2.3	Y	Y		ditto	
2.3.1	N	N		<p>Usually for trap fisheries, the main ETP concern is entanglement by marine mammals, depending mainly on whether the traps have vertical lines to the surface; there is no consideration of that.</p>	There is no report of such entanglements, justification text has been updated
2.3.2	N	Y		<p>Consider marine mammals, also given the lack of data whether MSC's definition of a 'strategy' is met.</p>	MSC definition of a 'strategy' is circular so it is always met. The Norwegian management is extensive in its considerations of the marine mammals and there is a clear strategy for assuring the sustainability of the populations.

2.3.3	Y	N	N	<p>According to the rationale for SIa, there are no data specific to this fishery on non-fish bycatch. Given that it is small, it might be reasonable to infer low impacts as per SG60, but I don't see how 'some quantitative data' is adequate to assess the UoA-related mortality'.</p> <p>(Are you sure that the reference to 'refs in 2.4.1' is correct? It seems odd, but I could be wrong.)</p> <p>Condition: Same comment as lumpfish 2.3.3.</p>	<p>There are detailed data presented in Table 16. These data include all takes including ETP species.</p> <p>Thank you for pointing this out, corrected, should be 2.3.1</p> <p>See answer on Lumpfish</p>
2.4.1	N	N		See comment for lumpfish re identification of habitats in inshore areas – if this fishery is operating similarly inshore. Also for VMEs only Lophelia is considered in the rationale for SIb.	More detailed map presented,
2.4.2	N	N		See lumpfish if applicable	See answer on lumpfish
2.4.3	N	N		See lumpfish if applicable	See answer on lumpfish
2.5.1	Y	Y			
2.5.2	Y	N		See above	
2.5.3	Y	Y			

3.1.1	Y	N		<p>Sl.a. I believe that the harmonised approach for scoring this issue for demersal stocks, in relation to EU-Norway cooperation, is that cooperation is effective but not binding – i.e. SG80 is met but not SG100. For example, in relation to pelagic stocks you can see that Coastal States agreements have broken down and cannot be enforced. The rationale also needs to mention the Faroes and the question of international waters in VIb (NEAFC).</p> <p>Sl.b. How about international disputes?</p>	Information on NEAFC and the EU management system, as well as international dispute resolution, has been added to the report.
3.1.2	N	Y		How about roles and responsibilities at international level? e.g. NEAFC? other coastal states?	Information on NEAFC and the EU management system has been added to the report.
3.1.3	N	Y		Not all the fishery is taking place in Norwegian waters; how about in EU/UK/Danish waters? International waters?	The Norwegian fisheries are under Norwegian authority, but is following EU fishing rules as part of the TAC transfer. Information on NEAFC and EU has been added to the report.
3.2.1	N	Y		Need to consider non-Norwegian fishery-specific objectives for parts of the fishery or stocks not in Norwegian waters.	Unlike 3.1., which deals with the wider management context of the fishery, 3.2. is about the fishery-specific management system.
3.2.2	N	Y		Decision-making processes at international level (for shared stocks, non-Norwegian waters)?	Unlike 3.1., which deals with the wider management context of the fishery, 3.2. is about the fishery-specific management system. Neither ling, tusk or lumpfish are defined as shared stocks in the EU–Norway regime.

3.2.3	N	Y		The discard ban has been relied on quite a lot in scoring parts of Principle 2, but how is this enforced in areas of the fishery outside Norwegian jurisdiction?	It is too early to assess the recently introduced discard ban in EU waters. This will be addressed at surveillance audits, which is in line with the stance taken in other ongoing North Sea assessments.
3.2.4	Y	Y			

Table 27 For reports using the Risk-Based Framework:

Performance Indicator	Does the report clearly explain how the process(es) applied to determine risk using the RBF has led to the stated outcome? Yes/No	Are the RBF risk scores well-referenced? Yes/No	Justification: Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response:
1.1.1				
2.1.1				
2.2.1				
2.3.1				
2.4.1				
2.5.1				

Table 28 For reports assessing enhanced fisheries:

<p><i>Does the report clearly evaluate any additional impacts that might arise from enhancement activities?</i></p> <p>Note: Justification to support your answers is only required where answers given are 'No'.</p>	<p>Yes/No</p>	<p>CAB Response:</p>
<p><u>Justification:</u></p>		

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

Comments on the report (some overlap with the comments above because I did this first):

- I'm not sure that the first picture on the front cover is a ling? In fact, I'm pretty sure it's not. (By the way, your cod on the front of the DFPO cod report is not a cod, either.)
- UoA 3 says NE Arctic instead of Atlantic (typo)
- Section 3.1.1 of report - summary of UoAs (2nd para below tables with definition of UoAs, last para of p16) is not correct (out of date?); there are 10 UoAs and 1-8 can't be scored together for P1 because they include two different spp.
- 3.1.3.1 3rd line typo 'regulations'; last sentence has an extra 'that'
- 3.1.3.2 LOA not oal normally
- Table 6 – the %ages are is a bit misleading if they are supposed to imply the % of the total 'TAC' (roe quota) taken, since it doesn't account for vessels which partly use their quota – but I guess if there is no limit on entry for small vessels then there is no ceiling. In which case, I don't think the %age is particularly meaningful – it might be better to delete it?
- 3.2.2 2nd para 2nd sentence grammatically incorrect, ditto 3.2.5.2 2nd para second-last sentence.

- p40 1st para (2 paras above Table 10) – extra ‘ICES’ in the first sentence? Regarding the 2nd sentence, personally I don’t really see how it integrates the ecosystem approach – it’s all based on single stock assessments even if there is also mixed fisheries advice. In fact, this entire paragraph doesn’t add a great deal except waffle, but it’s up to you.
- Table 10 – I think you should make clear that these are not reference points in the usual sense i.e. fixed, but rather sliding averages of CPUE; the reference points don’t tell you anything about the absolute status of the stock – only the relative direction of change. It might be a little misleading to call them reference points?
- para below Table 10 – EU landings obligation does not apply to ling and tusk as yet, as far as I know; full implementation due in 2019.
- Table 11 doesn’t tell us what is the stock status in relation to these reference points as far as I can see – it only tells us what are the estimates of the reference point values?? So the legend is wrong?
- Figure 18 – Those FishBase maps give probability of presence not distribution per se.
- Section 4.7.1 – Well done by the way for not giving us 5 pages of irrelevant blah blah about lumpfish biology. Conversely Section 5.1 is that really necessary? We all know where the North Sea is by now. I know it’s in the template but the part that is relevant to the assessment can be disposed of in about 3 lines. Ditto 5.2 – there is more background blah blah on the Barents Sea in this report than there is explanation of lumpfish stock status, assessment and reference points, which I would say is more important to the assessment.
- Last paragraph p.50 ‘The current estimate of the exploitation rate is around 1%.’ This seems like a pretty crucial point so it would be good to have a bit more detail – i.e. what is the 1% 1% of? e.g. total biomass? mature female biomass? egg production? some other biomass measures? It would also be nice to know a bit more about the survey since that is the main biomass indicator – how is it done, what areas does it cover, what part of the stock is it surveying etc.
- Last paragraph of 5.3 – I think this interpretation is incorrect. The section of the standard quoted (SA3.5.1-5) applies to primary not secondary species. Relevant is SA3.7.1.2: For species that are defined as ‘out of scope’ (amphibians, reptiles, birds, mammals) that are not classified as ETP, all species impacted by the UoA shall be considered ‘main’ – i.e. regardless of the quantities caught.
- Table 13, 16, 18 skates and rays, blue ling, spurdog, porbeagle: SA3.1.5 sets out the criteria under which species should be designated ETP. Red listing is not a criteria except for out-of-scope species (i.e. not for fish) – hence would not be a relevant for these species. Note however GSA3.4.2: *In all cases teams may still designate species as main, even though it falls under the designated weight thresholds of 5% or 2%, as long as a plausible argument is provided as to why the species should warrant that consideration.*
- Table 15 is wrong about IVa nephrops. There is a TAC set for Subarea IV, but for each individual FU there are UWTV surveys and defined reference points (some more complete than others, but very extensive for the main FUs). I don’t suppose, however, that this fishery has much of an impact on these stocks.
- 5.3.3 if a longline fishery is using <5% of bait by weight of catch, it is doing well; it’s usually more than that. Either way, the report needs some justification for the statement that bait ‘will be less than 5% of the total longline catch’ for me to believe it. Also, how about trap bait? This is not mentioned.

- *Squalus acanthias* is normally called spurdog in English – dogfish is alternative name for catsharks (*Scyliorhinus canicula* and similar); make sure they are not muddled up because the stock status is very different (but probably it's just a typo).
- *Dipturus batis* is now divided into three species (batis, intermedia and flossada) – I seem to recall that in the North Sea it is mainly intermedia but for the other areas I don't know.
- Table 20 – Why are black guillemots, cormorants and eider duck not relevant? They are mentioned above.
- 5.4.2.1 – the time of day/night when lines are set and hauled is also relevant – is there any information about that?
- 5.4.2.2 – For the longline fishery, is marine mammal depredation an issue?
- Habitats 5.5.2 The fishery operates in IVa, VIa and VIb i.e. in Scottish waters as well as Norwegian. Aside from a few passing comments about OSPAR and the Marine Strategy Framework Directive, I am missing any discussion of habitat protection in Scottish waters. There are some closed areas in VIb for corals and carbonate mounds, I believe, but the offshore MPAs in VIa and IVa are for the most part not yet managed; for an up-to-date summary of the situation see the Final Report for SFSAG cod (due to be published in the next few days). There is also NEAFC for international waters in VIb.
- Section 6 – 6.1 notes the relevant jurisdictions to be Norway, EU and international waters; but the rest of Section 6 discusses only Norway.

Peer Reviewer 2

Summary of Peer Reviewer Opinion

<i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i>	No	CAB Response The assessment team does not agree, see detailed comments to the specific objections in the following
<u>Justification:</u> The assessment covers a number of stocks, species and fisheries, so is inevitably going to be complicated. However, the report is not as clearly laid out and the information not as well articulated as it could have been, while the high scores that are awarded for P1 and P2 in particular are not as well justified as they need to be. The main points are provided in the review against the particular PIs, below. More importantly, I believe there are critical failings in some areas, and I would encourage the Assessment Team to reconsider their approach before the report proceeds further. The main concerns are as noted, below. 1) The assessment refers to and scores tusk in ICES VIb (Rockall), but this stock is not included in any of the UoAs (i.e., UoAs 1 and 2 are for ICES I and II, UoAs 3 and 4 include ICES Vb and VIa, and UoA 10 is for the Norwegian coastal zone). I would presume that a separate UoA would be required for this stock as it is assessed by ICES separately from those that are assessed in the other UoAs? 2) The stocks under consideration in this assessment fall in to two categories – those for which estimates of status with respect to proxies for msyBtrigger and/or Fmsy have been determined through an ICES precautionary framework process (i.e., UoA 3 and 4 – Tusk-other, UoAs 7 and 8 – Ling-other, and UoA 10 – Tusk in Norwegian coastal waters), and those which ICES considers to have no reference points at all (UoA 1 and 2 – Tusk in ICES I-II, UoA 5 and 6 – Ling in ICES I-II, and UoA 9 – Lumpfish). As an example for stocks in this latter group, the most recent ICES advice for Ling in ICES I and II (ICES 2015) states: “No reference points are defined for this stock” and “The stock status relative to candidate reference points is unknown”. However, given that Table 3 (MSC CRv2) requires that: “Stock status reference points are available, derived either from analytical stock assessment or using empirical approaches”, and the closest thing to a reference point is a historic TAC or a CPUE ratio (i.e., as the report states (despite the text in the ICES Advice stating that there are no reference points) “The ICES reference point is the TAC for 2012, in many cases with the application of the		<u>The structure is complicated because of the UoCs. The ling/tusk and lumpfish fisheries are distinct fisheries: Lumpfish (small boats) coastal ling (coastal) and ling and tusk (long-line) offshore.</u> <u>The team thanks the reviewer for a very competent, thorough and comprehensive review. The assessment team, of course, is sorry that the reviewer takes such a dark view of the report. However, the assessment team disagrees with the evaluation as argued in the CAB response.</u> <u>UoA-3a (Tusk in VIb longline) and UoA-4a (Tusk in VIb gillnet) inserted; an oversight; apologies</u> <u>The stocks (except Tusk in VIb) dealt with fall into ICES advisory category 3 (stocks for which there are data on stock trends but no analytical assessment is possible). The stock trend indicator is for the stocks based on cpue data for the Norwegian long line fleet, Advice on Category 3 stocks is based on an evaluation of the stock status and the whether the TAC level is precautionary, for these stocks the evaluation refers to the 2012 situation. The ICES advice reflecting stock trend is considered (by ICES) to be precautionary and provide advice in an MSY context. There thus advice that is precautionary (avoiding recruitment impairment) and are given in an MSY context. The advice is based on a reference point (the reference TAC level combined with the reference Cpue level)</u> <u>The PRI and MSY reference points are integrated and should be clarified hence the Condition.</u>

precautionary buffer”), then it seems inappropriate to have proceeded without applying the RBF for these stocks.

In this regard, it is noted that Condition 7 was set on PI 1.2.4 for UoAs 1 and 2, and the note in the Condition text included alongside the score of 75 is that “*The SG 80 was not met because there is no PRI and MSY reference points or proxies defined for such points.*” Essentially, the Assessment Team seems to agree that the RBF is required. In fact, if the RBF isn’t needed here, then I struggle to see where it would ever be needed?

- 3) UoA 9 – For P1, the MSC requires that the whole stock is assessed (i.e., SA2.1.1, CRv2). However, the assessment for lumpfish has been done on what appears to be only a component of the stock.

The report states: “Pampoulie et al. (2014) show that lumpfish in the North Atlantic is genetically structured on a large geographic scale and three genetically distinct populations are present: Maine – Canada – Greenland, Iceland – Norway, and the Baltic Sea. However, because of the spawning site fidelity (homing) and because there is no significant fishery on the lumpfish in its oceanic stages, in assessment terms the lumpfish in the Norwegian Sea and the Barents Sea can be considered an isolated unit. This means that the Danish (IIIa) and Icelandic (Va) components of the Northeast Atlantic lumpfish are separated from the Norwegian component. The homing tendency seems to be 75% based on Icelandic tagging data and the same study suggests that lumpfish in the open sea originating from different spawning grounds are well mixed.”

This justification for assessing just the ICES I and II component while ignoring the Pampoulie data seems inadequate, and I believe that, in MSC assessment terms, lumpfish in the Norwegian Sea and Barents Sea cannot be considered an isolated unit. The report even notes: “There is little distinction between Norwegian and Icelandic lumpfish and surveys indicate almost continuous distribution.”

Even if most of the adults do home for spawning (noting therefore that some do not home, and the evidence is not from the ICES I and II areas in any case), the larvae may be mixed by water movement post hatching.

The reason for not conducting an assessment on the basis of just a component is clear when considering an extreme example – if adult site fidelity was the key issue then any particular scallop bed could be assessed on an individual basis (well mixed oceanic stages but the adults are always home in the same location). Experience shows this doesn’t work!

In the same regard, I note the harmonised fishery assessment states: “The lumpfish fisheries at the westcoast of Greenland and around Iceland are MSC certified (April 2017). These two fisheries however exploit

The RBF in the ICES context is rather appropriate for category 4-6 stocks (stocks for which on catch data are available rather than including the category 3 stocks.

The Lumpfish fishery is well documented based on detailed fisheries statistics and data from a survey. There is a discard ban which in Norway is closely controlled. The reference point used in the advice is the harvest rate. If this insufficient for a default tree assessment I doubt that there will be many fisheries except cod, , saithe and the large pelagic fisheries that will qualify for application of the default tree. The MSC standard is not specific on which reference points to use, ICES set is a subset of those which have been proposed and besides ICES is currently extending its tool box for data deficient stocks /WKLIFE and WK PROXY)

Lumpfish the entire stock is covered by the survey, the stock is assumed to be that which spawns along the Norwegian coast. The argument proposed is related to the homing tendency of lumpfish (there is no fishery outside the spawning grounds). This is unknown and currently it is assumed that the spawning concentrations can be assessed individually. see also assessment of the Icelandic lumpfish.

The genetic data provides information of stock distinction. A fairly small exchange will wipe out genetic difference, ie the data do not contradict that the stocks in management terms are isolated.

different populations, operate on different grounds and under different management. No harmonization activity was required.” Without more convincing justification, I believe the Pampoulie data do show that the Iceland fishery exploits the same population.

- 4) UoA 10 – This UoA targets two tusk stocks – one in ICES I and II, and the other in ICES IIIa, Iva and IVb. However, SA 2.2.5 (CRv2) requires that “Where several species or stocks are fished as stock complexes, they may be treated as separate UoAs, or as separate scoring elements within a single UoA.” While I understand that the two tusk stocks are the same as those scored elsewhere in the assessment, there is no mention of addressing this requirement / explaining the approach that I could find in the report.
- 5) On harmonisation, it is noted that this is not the first fishery to be assessed in Norwegian waters or in areas subject to EU management. As such, I believe the report is deficient in not considering harmonization issues for P3. I would encourage the Assessment Team to review the harmonisation requirements as specified in the MSC interpretation “What are the MSC requirements on harmonisation (multiple questions)”
- 6) Generally, a lot of the P2 scoring appears to rely heavily on the catch data presented (which I believe is commercial landings data) being entirely accurate because of the discard ban that applies in Norwegian waters, together with the existence of scientific observers and a reference fleet. However, there is no information provided on the level of observer coverage achieved, the data that observers and the reference fleet collect are not presented, and there is no indication of how the catches as recorded by observers or from the reference fleet correspond to the catches from the wider fishing fleet. Instead, readers are required to take it on trust that what is presented (landings data?) is what is caught. This is concerning, to me at least, in part because there is relatively little incentive for fishermen to record bycatch, and it may be easier / less hassle for them just to discard it than bring it ashore, and because the scoring text for PI 2.3.3 hints that, actually, fishermen don't record bird bycatch reliably. But, if they don't record bird bycatch, what else is not being reported reliably?? My suspicions are also raised because the report indicates that compliance warnings are issued to fishermen in 1 in every 5 at-sea inspections – this is considered to reflect ‘good’ compliance, but, frankly, I disagree, and it makes me wonder what the compliance issue is – no information is provided, but is it discarding, perhaps??

Essentially, at present we are required to take the high scores provided on the basis of trust alone, but in order to justify the high scores given for P2 – the MSC provides some guidance on this in GSA3.6.3.1 and Table GSA5 (CRv2). Essentially, I would expect to see some information on the actual level of observer coverage achieved, the coverage of the reference fleet, and some evidence that the (landings?) data presented closely

Scallops beds should be assessed individually once they have been established, the productions may require a wider perspective.

See comment above, there is research to come on the lumpfish.

The fisheries exploit the stocks as separate items and this is not exploitation of a stock complex.

Harmonisation of PI 3 inserted

The Norwegian fishery is subject to a long standing and tightly enforce discard ban and it is generally assumed that landings = catch.

Compliance is high in the Norwegian fishery and the control is very tight. There is a discard ban and the landing data are generally accepted as well representing the catches. The observer programmes are primarily directed at secondary species e.g. sea birds. The prime information of fish catches is from the landing statistics (discard ban) detailed data from the reference fleet and an extensive programme of R/V surveys. Text has been updated and clarified.

<p>resemble those of the observers and the reference fleet. Without this verification, and given the compliance level, I am skeptical that the fishery is performing as well as scored, and that is reflected in a lot of my comments.</p> <p>7) The report states in the introduction that “Around 600 coral reefs have been documented and mapped but many more (possibly ten times as many) (Mareano, no date) remain to be documented.” and “Guidance on encounters with VMEs are being developed by NEAFC, and it is arguable that the fishery should also adopt some form of avoidance rule.”</p> <p>Unfortunately for any fishery encountering VMEs that is assessed against CRv2, the requirement for PI 2.4.2 Sla, even at SG60, is for move on rules to be in place (SA3.14.2.3 – my bold): “In scoring issue (a) at the SG60 level, “measures” for a UoA that encounters VMEs shall include, at least, the following points: b. Implementation by the UoA of precautionary measures to avoid encounters with VMEs, based on commonly accepted move-on rules.”</p> <p>In other words, the fishery does not appear to have move on rules in place and, therefore, PI 2.4.2, Sla, SG60 is not met.</p> <p>8) The report does not use element scoring at any point. Not only would laying the elements out clearly help the Assessment Team to meet the requirements (See CR 7.10.7), it would also really help the reader to understand how the fishery has been scored. At present, there are a number of PIs (mainly primary and secondary species PIs) where I am not convinced scoring is correct.</p>	<p><u>Norwegian fisheries are subject to 1) move-on rule based on catch of juveniles, 2) move-on rules based on corals and sponges, 3) reporting requires for dumentation of where move-on criteria are met, 4) closed areas where corals and sponges are known to exist.</u></p> <p><u>Each by-catch population is reviewed and its status determined. The scoring is based on the information (by element) that is summarised in Table 15.</u></p>
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<p>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCR 7.11.1 and sub-clauses]</p>	<p>Yes</p>	<p>CAB Response</p>
<p><u>Justification:</u></p> <p>Generally, the Conditions are appropriate, although I have commented that the language used (‘the client should’) would be better replaced with something along the lines of ‘the client shall’. It may be semantics, but the effect would be more convincing. However, in general again, the milestones are more definitive and mean this is a relatively minor concern.</p>		

If included:

<p>Do you think the client action plan is sufficient to close the conditions raised? [Reference FCR 7.11.2-7.11.3 and sub-clauses]</p>	<p>Yes, although letter of support?</p>	<p>CAB Response</p>
<p><u>Justification:</u></p>		

I have no particular concerns with the CAP. However, it is noted that I would expect a letter of support to have been included from the Ministry, IMR and the Directorate of Fisheries, as these bodies were identified in the CAP. However, no letter of support was provided.

Lumpfish (Principle 1 and Principle 2)

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.1.1 Lumpfish	Yes, but RBF?	Yes	N/A	<p>I believe the level of the score is appropriate – the fishery appears to be lightly exploited and the multi-species 0-group survey has shown high numbers of young fish. However, there are a couple of points.</p> <p>Firstly, I note that I 1.2.2 states: <i>"This HCR is not institutionalized and there is no precise reference points hence..."</i>, while PI 1.2.4 states: <i>"...However, there is no reference point defined explicitly"</i>. In this context, it is not clear why the RBF was not used when Table 3 specifies that the RBF is to be used if the answer to "Stock status reference points are available, derived either from analytical stock assessment or using empirical approaches." is negative.</p>	The RBF is not applied as IMR provides an annual assessment on stock status based on fisheries data and survey information. The Harvest rate is low beyond any reference points conceivable

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				<p>Secondly, although less significant, I will simply say that the justification could do with a little context being added: <i>"The stock has yielded significantly higher yields than is the case in most recent years. Current catches are around 3-500 t while catches peaked at more than 6,000 tons (~1,100 tons roe), see Figure 19."</i></p> <p>The point is, history is littered with examples of stocks that used to produce more than they do now – without commenting on the relative levels of fishing effort over time, this situation could simply reflect an overfished stock.</p>	
1.1.2 Lumpfish	N/A	N/A	N/A	Not scored	
1.2.1 Lumpfish	Yes	Yes	N/A	Scoring is appropriate.	

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1.2.2 Lumpfish	Yes	Yes	Yes	It may be semantics, but the condition text states that "The client should encourage the development and implementation of a HCR". This is a somewhat weak requirement, and it would be better if it read something to the effect that 'The client is required to ensure that HCRs are developed and implemented.' Nevertheless, the milestones mostly save the situation, although it would still be better if Year 4 read 'The client shall demonstrate...', rather than ;The client should demonstrate...'. 	The text is formulated to be polite. The condition is changed as requested.
1.2.3 Lumpfish	Yes	Yes	N/A	Scoring is appropriate.	
1.2.4 Lumpfish	Yes, but RBF?	Yes	Yes	Scoring is appropriate (noting that a condition is applied, which partly reflects a need for using the RBF). Regarding the condition, similar to PI 1.2.2, 'shall ...' would be better than	

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				'should...', but otherwise it's OK.	
2.1.1 Lumpfish	Yes, mainly	Yes, but I think the score should be higher.	N/A	<p>SlA: As there are no Main primary species, I think the score here is 100.</p> <p>-----</p> <p>Slb: The scoring text is generally appropriate, but I will highlight that SA3.1.3.1 is relevant here (see the comment in scoring PI 2.1.1 for ling and tusk for more details) – I do not think that ling and tusk can be ignored in scoring P2 lumpfish (i.e., the assessment can't say: <i>"Both tusk and ling are a target species under this fisheries assessment and are not discussed further here – please refer to Section 3.3 of this report."</i>)</p> <p>Also, the report states: "There is no ICES fisheries information on plaice in this area, where the lumpfish is caught." Does that not make it a</p>	<p>SlA The 100 score is a slightly perverse scoring but it is based on advice by MSC, the scoring is changed</p> <p>The plaice is retained and is therefore a minor retained species</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				secondary species in this case? Finally, (and this comment applies to all the P2 scoring in the report) it would help readers and possibly the Assessment Team considerably if the fishery was scored using elements, and that these were laid out clearly. For example, if just one minor element is not meeting 100, but Sla is 100 and two other minor elements are scored 100 then the overall PI score should be 95.	Thank you for the advice which we are sure will be seriously considered in future reports.
2.1.2 Lumpfish	Yes	No	N/A	Noting that 2.1.1 is scored 80, only, because coastal cod at least is not performing well, and there is no information on plaice, I find it difficult to justify scoring Slb 100 (covering the strategy for main and minor primary species) on the basis that <i>"Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery"</i>	The coastal cod is subject to close management control and regulation. This regulation includes the lumpfish fishery. Hence there is a strategy in place. Scoring is readjusted to SG 80 as the coastal cod stock is still at a low level. Besides the regulation of the coastal cod is correctly focusing on

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				<p><i>and/or species involved."</i></p> <p>-----</p> <p>Sld is scored correctly here: <i>"Not applicable – none of the primary species are sharks"</i>. In every other place in the document it is not.</p> <p>-----</p> <p>Sle: As noted elsewhere (and described in more detail against ling and tusk PI 2.1.2, the scoring for Sle is missing the point slightly – just moving area does not comprise consideration of alternative measures. The aim is to consider options to minimise catch in the first place, not to just react to higher levels of catch once they occur. More information is needed to demonstrate consideration of a range of alternative measures, and evidence needs to be provided that they are implemented.</p>	<p>the coastal demersal fisheries. The lumpfish fishery is not a major issue.</p> <p>The reaction to higher unwanted catch (which needs to be observed before a reaction is possible) is to move. The preferred option is to design gears that do not catch the 'unwanted catch' in the first place. The report has preferred this wider interpretation,</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.1.3 Lumpfish	Yes	No	N/A	<p>Sib is scored 100, where the requirement is "Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status."</p> <p>The scoring text then states: "Each element (minor species) is assessed against Scoring Issue b). If it does not meet SG100, it is treated as though it still meets SG80 (which is blank), which is automatically met by virtue of being a minor species. Since all species are minor and all meet the requirement for SG100, the performance indicator scores 100 in b)"</p> <p>However, as is apparent in the scoring for 2.1.1, not all minor elements meet SG100 (coastal cod and plaice, for example), so this justification does not work.</p>	The discard ban is faithfully observed and include sea birds. Information presented to assessment team suggest that compliance is high in the fishery.

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2.2.1 Lumpfish	No	No	N/A	<p>Scoring this PI illustrates my concern that the fishery may not performing as well as it has been scored. The report states:</p> <p>"All bycatch is landed and recorded, and data of the last 5 years (2012-2016) has been analysed. Observer reports have shown that diving seabirds can be caught in the gill net, especially as the nets are positioned closer to shore. Seabirds are 'out of scope species', and thus considered as Secondary 'main'. There is no data on bird bycatch recorded in this fishery."</p> <p>In other words, it is known that the fishermen catch birds and that this bird bycatch is not recorded, but it is thought (although no data are presented to show that this is the case) that everything else is faithfully recorded.</p>	The concern expressed in the report relate to the potential catch by gillnet of sea birds operating in coastal waters. The information on which the assessment is based is that the is very little catch of sea birds. Sea bird catch has to be recorded and reported to the authorities. There is no records of such catches.

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				My feeling is that, without presenting some information on observer coverage levels in this fishery, and a comparison/analysis to determine how similar the observer data are to the fishery data, a score of 100, here, is simply too high.	
2.2.2 Lumpfish	No	No	N/A	Again, Sla is scored 100, but most of the justification is not applicable to secondary species (which by definition, for example, do not have stock assessments, research into reference points, quotas, etc). A score of 80 may be appropriate, but not 100 for all minor species (for example, looking back to the 'unspecified fish' component of the catch – if they're not identified to species level then how is the science being done?). Same comments apply to Sld (sharks) and Sle (alternative measures) as for	The Norwegian fisheries law includes a clear strategy for avoiding by-catch that being marine mammals or sea birds. The fisheries law authorises Fiskeridirektoratet to close areas based on information of unwanted catches. The overall statistics ensure that impact is kept under control. The impact of the coastal fisheries including the lumpfish fishery is reviewed also with respect to unwanted by-catch.

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				PI 2.1.2 – these need to be scored appropriately.	There is particular attention to shark catches which because of the distribution are rare so closed to the shore as where the lumpfish fishery takes place.
2.2.3 Lumpfish	No	No	N/A	Noting again that Table 14 indicates that there are 'unspecified fish' that comprise a small percentage of the catch but are not addressed anywhere, and that under CRv2 the MSC has removed the ability of Assessment Team's to call some small parts of the catch 'negligible', it is not clear how the fisheries meet the SIb - SG100 requirement if these are considered.	The 'unspecified' is mainly 'Not elsewhere identified' and cover a range of fishes where the catch is only a few specimen annually.
2.3.1 Lumpfish	Yes	Yes	Yes	Scoring seems appropriate. For the condition, again similar to PI 1.2.2, 'shall...' would be better than 'should...', but otherwise it's OK.	

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2.3.2 Lumpfish	Yes	Yes in general	Yes	<p>Sle:</p> <p>As noted elsewhere (and described in more detail against ling and tusk PI 2.1.2, the scoring for Sle is missing the point slightly – just moving area does not comprise consideration of alternative measures. The aim is to consider options to minimise catch in the first place, not just reacting to higher levels of catch once they occur. More information is needed to demonstrate consideration of a range of alternative measures, and evidence needs to be provided that they are implemented.</p> <p>-----</p> <p>In this case, the condition appears to be entirely appropriate.</p>	Moving area may not be an alternative measure but it would avoid further fishing in areas where unwanted catch (e.g. juveniles) occur. Alternative measures may be interpreted as gear modifications only avoiding catching juveniles and other unwanted catch. The assessment team took a wider definition of the term 'unwanted catch'
2.3.3 Lumpfish	Yes	Yes	Yes	<p>Scoring seems appropriate.</p> <p>-----</p> <p>The condition appears to be entirely appropriate.</p>	

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2.4.1 Lumpfish	Yes	Yes but see note	N/A	To note, if there are three SIs scored at 100, and two score 100 and one scores 80, the score would be 95 not 90 (see CR7.10.5). Worth checking to make sure scoring has been calculated correctly throughout.	Scoring corrected.
2.4.2 Lumpfish	No	No	N/A	<p>Sla See the note at the top of the peer review – even at SG60, Sla requires that move on rules are in place. Given that there is no discussion of these in the Sla scoring text, and the introduction highlights that the MAREANO project indicates many more VMEs are yet to be found, while also stating that it is only arguable that the fishery should also adopt some form of avoidance rule (i.e., there are none in place), it is apparent that SG60 is not met.</p> <p>-----</p> <p>Sld The small (<13m) vessels in this</p>	The lumpfish fishery is coastal with fixed gillnets which have very little impact on habitat, the Mareano data are not really relevant as these covers the deeper offshore waters.

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				fishery do not carry VMS and the justification for a score of 80 includes the statement that "Real time AIS vessel positioning and coast guard monitoring provides some quantitative evidence that the UoA complies." Given that these are small vessels, I would be very surprised if they carry AIS (which I think is typically only a requirement for vessels of 300 t or more)? So, do they really carry AIS?	According to the information received security concerns including AIS is prominent in the fishery
2.4.3 Lumpfish	Yes	Yes but see note	N/A	Just a note on scoring again – the three SIs here are scored a) 100, b) 80 (100 possible), c) 80 (100 possible). In this case, the score should be 85, not 90. So, worth checking throughout.	Scoring corrected
2.5.1 Lumpfish	Yes, possibly	Yes, possibly	N/A	I am always troubled when the 'key ecosystem elements' are not defined. If they are not defined then what is it that is being scored?	The fishery is minute in the context of the Barents Sea ecosystem and the outtake is minimal compared to other fisheries in the Barents

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				<p>Anyway, I wouldn't have doubted the general comment in scoring PI 2.5.1 that lumpfish is not a critical component of the ecosystem (i.e., <i>"Within the ecosystem context, lumpfish has not been identified as playing critical role in the overall stability of the Norwegian Sea marine ecosystem"</i>), but for the fact that it is stated in scoring PI 2.5.2 that measures are in place <i>"to ensure that the fishery does not pose a risk to lumpfish stocks, which are important species in the Norwegian Sea ecosystem."</i> So, is lumpfish a key ecosystem element, or not??</p> <p>Overall, though, if it isn't stated up front what it is that is being scored, then readers are not able to judge whether the scoring is truly appropriate. However, PI2.5.3 Sla states up front: <i>"The long-established and long-term research programmes have built a database</i></p>	<p>Sea (notably the cod, haddock and saithe fisheries). The conclusion is that the lumpfish is not a critical component of the ecosystem. Text has been clarified.</p> <p>A section on ecosystem impact has been inserted into the report including</p>

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				<p><i>that ensures that the key elements of the ecosystem are identified."</i> If this is the case, it would be useful to identify them in scoring</p> <p>In this regard, it is highlighted that Table 22 in the report doesn't specify the habitat or ecosystem scoring elements, which it should (i.e., in the full assessment report template, it is stated <i>"The report shall include, using Table 3 [i.e., Table 22 in the case of the current report], below: a) The set of scoring elements (e.g. species or habitats) that have been considered in each outcome PI in Principles 1 and 2").</i></p>	references to fundamental ICES ecosystem overviews. Justification text has been clarified, references to the report text is inserted.
2.5.2 Lumpfish	Yes	Yes	N/A	Nothing to add.	
2.5.3 Lumpfish	Yes	Yes	N/A	Nothing to add.	

Ling and Tusk

1.1.1 Ling and Tusk	No	No	N/A	<p>As noted in my overall observation, the stocks under consideration in this assessment fall in to two categories – those which estimates of status with respect to msyBtrigger and/or Fmsy proxies calculated for them (i.e., Ling-other, Tusk-other and Tusk-rockall – ICES 2016s), and those which apparently have no reference points (Ling I-II, Tusk I-II).</p> <p>Also as noted at the top of this review, with respect to the stocks without indicators, I believe the assessment should have used the RBF (see Table 3, CRv2). An index based on a TAC or a CPUE is not a reference point that allows a determination of status with respect to PRI or MSY. The Assessment Team apparently concurs in setting Condition 7, which states – <i>“The SG 80 was not met because there is no PRI and MSY reference points or proxies defined for such points.”</i></p> <p>Nevertheless, even if the use of RBF was not required, the score of 80 for Sib is inadequately justified, where it is stated: “MSY levels are unknown for these three stocks. The stocks have been increasing in response to reduced effort while the fishery has either decreased or remained stable. This suggests that fishery is around MSY or below. SG 80 is met.”</p> <p>There are any number of examples of stocks which have trickled along or increased in response to reduced exploitation whilst still in fact being critically below a level equating to MSY. Essentially, the requirement is “The stock is at or fluctuating around a level consistent with MSY”, so if the Assessment Team in fact cannot determine what MSY is, and is instead relying on a ‘suggestion’, then how can the stock be scored 80 here?</p> <p>-----</p> <p>The justifications for the group which have had proxies</p>	<p>The stocks are assessed by ICES based on fisheries data including a stock indicator (cpue in the commercial fisheries). The stocks are categories under category 3 which includes a precautionary reference point. (see further comments in the general introduction.</p> <p>The MSC interpretation of the MSY B trigger is as a PRI reference point and this suggests together with the acceptance of the about 1.4 factor between Bpa and Blim ($\exp(1.645 \cdot 0.2)$) that a MSY proxy ($MSY = Bpa$) would be around $1.4 \cdot MSY$ Btrigger as suggested in the guide on assessment of ICES stocks.</p> <p>Justification text is clarified. The current catch level in response to high stock level suggests that the stocks are in good shape no recruitment impairment has been suggested.</p>
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			<p>calculated (UoAs 3, 4, 7, 8, 10) are also somewhat inadequate. For SIb, the report states: <i>“For these two stocks ICES has evaluated that both for the exploitation rate and the stock biomass status that the stock status are consistent with MSY requirements, see Table 11. SG 80 is met”</i></p> <p>However, Table 11 indicates status against Fmsy and msyBtrigger, and in this regard I would encourage the team to review the MSC interpretation entitled “Scoring stock status against Bmsy for ICES stocks”. In particular, this states: <i>“It [ICES] does define MSYB_{trigger} (hereafter B_{trigger}), which should not be interpreted by CABs as a target reference point equal in intent and outcome to B_{MSY}.”</i></p> <p>In other words, the fact that the ICES advice indicates a desirable status against msyBtrigger does not mean that it meets SG80.</p> <p>-----</p> <p>I am uncomfortable with the justification for a conventionally-scored SIb score of 80 for Tusk-Rockall (which is presumably considered to be included in UoA 3 and 4, although as noted at the start of this review, those UoAs do not include ICES VIb tusk in the UoA description).</p> <p>The scoring text states: “The stock was evaluated by ICES (2016e). The stock was evaluated as being around MSY in 2013 and since then effort and catches has declined.” However (noting that the reference is included in the reference list as ICES 2016a), the advice indicates that there is no B-based reference point and status with respect to B is unknown, and states that “The effort for the fleet has declined substantially and the index can no longer be used as an indicator of stock development.” In other words, no one really knows what the status is, and I would have thought that the RBF was needed.</p>	<p>Fmsy is an indicator for MSY fishing.</p> <p>The Tusk at Rockall is hardly fished in 2014 and 2015 while it was judged to be fished at FMSY in 2013 when the catches were slightly higher and anyway in a historic perspective at a very low level.</p>
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1.1.2 Ling and Tusk	N/A	N/A	N/A	Not scored	
1.2.1 Ling and Tusk	No	No	N/A	<p>The report states: “Because of the regulations being based on the ICES advice and the international consultation the strategy is designed to achieve stock management objectives reflected in PI 1.1.1 SG80. SG100 is met for all six stocks.”</p> <p>However, as noted elsewhere, the ICES advice for these stocks is based on little more than a CPUE index, with considerable uncertainty in actual status with respect to MSY. For example, the scoring text for PI 1.2.2 states <i>“The main uncertainties in the HCR relate to variability in commercial CPUE data and changes in the fisheries invalidating the CPUE index as a stock size indicator.”</i></p> <p>Given this, it seems overly generous to determine that regulations based on this type of advice meet the SG100 level for there being “...a robust and precautionary harvest strategy in place”. The fact that effort has reduced in some areas and CPUE gone up appears to have little to do with regulations and probably more to do with market demand and the price of the fish relative to inputs. Essentially, the fishery might manage SG80, but 100 is too much and cannot be justified in the context of other MSC fisheries that have much more information available, and a more robust strategy, and still only score 80.</p> <p>-----</p> <p>Slc states that there is discard monitoring. I see no evidence of this, which is important given that the CPUE-based approach depends on there being good information on catch. How does ICES determine that discarding is negligible – because fishermen mark zero discards on their logsheets, or through some other method?</p>	<p>The cpue index is a result of a thorough analysis and while the reviewer may have reservations on this particular stock indicator the cpue is generally accepted.</p> <p>Yes, there are examples where the Cpue has been misleading (f.ex. the Grand Bank cod) and there are examples of sequential downfishing. I trust that the assessment experts are aware of these reservations and only accept the indices (here it is based on long lining) taking these consideration into account. The assessment team does not have access to the original data have not reanalysed the data and have not particular detailed insight in the fishery. The justification is based on the ICES assessment.</p>

				<p>-----</p> <p>For 1.2.1 Slf, the report states: "There is little unwanted catch associated with longlining and gillnetting, trawls are not included in the UoC. Technical measures are part of the management measures and this package is under constant review. SG60 and 80 are met. However, there is no formal biennial review. SG100 is not met."</p> <p>The point here is that the MSC is aiming to incentivise efforts to continuously reduce unwanted catch, from whatever the current level is, and whether or not it is 'little'. As such, the requirement at SG80 is that the measures are implemented 'as appropriate'. As there is no information on this latter issue, the fishery does not meet SG80. If evidence is provided on this, then the fishery apparently would also meet SG100, given the 'constant review'.</p>	<p>The fishery operates under the Norwegian discard ban which is assessed to being met with high compliance.</p> <p>The Norwegian fisheries management is based on coast guard sea going inspections. The scientific data sampled at landing are supplemented by information from the 'reference fleet' fishing vessels which for IMR provided additional and detailed data on the catches.</p>
1.2.2 Ling and Tusk	Yes	Yes	Mostly Yes	As for lumpfish PI 1.2.2, it would be better if Year 4 read something to the effect that 'The client shall...', rather than 'The client should...'	Change has been introduced

1.2.3 Ling and Tusk	No	No	N/A	<p>Slb states: "The removals are well monitored for all participating fleets (meeting SG 60)."</p> <p>As elsewhere, I am not convinced that this is the case, as no information has been presented on observer coverage, and monitoring catch is a different thing to monitoring landings. Essentially, there is no information on the level of observer coverage or on how the observer catch data reflect the landings data from the fishery as a whole, and this is needed in order to be confident that removals are in fact well monitored.</p> <p>Note that GSA 3.6.3.1 and table GSA5 are relevant, here, and that the enforcement data provided in the report showing that 20% of the 1500 at-sea inspections resulted in a warning (for what?) do not provide high confidence.</p>	<p>There is no observer programme in the Norwegian fleet And hence no data are presented. The control is based on coast guard sea going inspection which is considered tight by the fishers involved.</p> <p>The warnings issues are in almost all cases related to administrative issues.</p>
1.2.4 Ling and Tusk	No	No	Yes, generally.	<p>The report notes: "<i>The assessment is appropriate for the HCR (ICES category 3) SG 80 is met.</i>". However, even ignoring that this is a statement rather than a justification, the requirement for SlA, SG80 is that "<i>The assessment is appropriate for <u>the stock</u> and for the harvest control rule.</i>"</p> <p>Currently, therefore, the justification is, at the very least, incomplete.</p> <p>-----</p> <p>Slc states: "The major uncertainty is the variability in the commercial CPUE data and possible changes in fishing practice and gear design. This is explicitly recognised in the assessment."</p> <p>I agree that there is considerable uncertainty associated with an assessment based solely on CPUE. However, I cannot see in the ICES stock assessment summaries where this is explicitly recognised, so please provide more information.</p>	Text is clarified

				<p>-----</p> <p>The stocks assessed under the precautionary Category 3 framework have only just been assessed (i.e, report produced in 2016), so it is very hard to see how they meet any of the SG100 requirements here that “The assessment has been <u>tested</u> and <u>shown to be robust</u>. Alternative hypotheses and assessment approaches have been <u>rigorously explored</u>.”</p> <p>It may be that the argument is that it’s general approach of assessing stocks in this manner that is worthy of a score of 100, but I would argue it is the specific assessments for these species that are under consideration, here. If the assessment has only been operationalised this year, then I fail to see how it can have been shown to be robust.</p> <p>-----</p> <p>The condition appears in general to be appropriate, although, again, ‘shall’ is better than ‘should’.</p>	
2.1.1 Longline	No	No	N/A	<p>It is stated that there are no Main Primary species. However, I was picked up recently by ASI for a fishery that had two separate UoAs for two separate species taken in the same gear, and for not having the ‘other’ species listed as a Main Primary in each of the UoAs.</p> <p>The issue is SA3.1.3 and SA3.1.3.1 (“The team shall assign primary species in P2 where all the following criteria are met: Species in the catch that are not covered under P1 because they are not included in the UoA”). It requires that The team shall assign primary species in P2 where all the following criteria are met: SA3.1.3.1 Species in the catch that are not covered under P1 because they are not included in the UoA.</p> <p>Essentially, and despite it not being entirely intuitive, because</p>	<p>Thank you for bringing this to our attention. Here, Tusk and ling are assessed under PI 1 and should not be assessed under PI 2. This is a mixed tusk ling fishery with varying mix dependent on the fishing ground.</p>

				<p>tusk and ling comprise greater than 5% of the catch in the longline and gillnet fishery, the tusk have to be scored as Main Primary species in the ling UoAs, and ling have to be scored as Main Primary species in the tusk UoAs.</p> <p>-----</p> <p>Minor species are listed as Cod, saithe, haddock, Redfish (not differentiated between the two species <i>S.norvegicus</i> and <i>S.mentella</i>), Greenland halibut, hake, whiting. It is commented that <i>"From this table (15) it can be seen that all the scoring elements meet the SG100."</i></p> <p>However, for example, cod in I+II, VIa and VIb are listed as stock depleted or harvest unsustainable. The same is true for Haddock in IV, VIa, IIIa, and whiting in VIb.</p> <p>Clearly, the first way to meet SG100 (<i>"Minor primary species are highly likely to be above the PRI"</i>) is not met outright for every element, and a different justification is needed if the second way to attain the SG100 (<i>"OR If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species"</i>) is to be convincingly met for each species.</p> <p>Essentially, there are 17 minor elements (as far as I can tell from Table 15) and each needs to be scored separately.</p>	<p>This means that Tusk and ling are assessed twice which cannot be the intention.</p> <p>Cod in I+II must be Norwegian coastal cod. The 17 elements are considered separately, Table 15 in the report.</p>
2.1.1 Gillnet	No	No	N/A	Same comment as for PI 2.1.1 Longline.	See answer above
2.1.2 LL and GN	Yes	Possibly Yes	N/A	The general feeling I get from the text here is that a score of 100 is given because ICES provides advice and the fishery is managed, so it must be 100. However, this is not a convincing argument when, for example, some of the elements are listed in Table 15 as being harvested unsustainably!	

				<p>I am also far from convinced that a fishery that results in warnings being given on 20% of at-sea inspections can be said to have 'good' compliance. What are the fishers being warned about? If it is discarding (I would be happy for the Assessment Team to prove me wrong, but this is my thought, and there is no information to the contrary) then the idea that the discard ban is working and the management strategy is working at SG100 cannot be justified. More information is needed.</p> <p>-----</p> <p>SId:</p> <p>This is scored as not relevant – tusk and ling are not sharks. But this is not the issue – for P2, the issue is whether there are any sharks in the primary species catch.</p> <p>-----</p> <p>Sle is scored 100, and the report notes that “The regulations are considered, and the technical measures reviewed (meeting SG 60), by IMR, Fiskeridirektoratet and stakeholders annually (meeting SG 80 & 100). Where necessary, measures <u>can be</u> introduced at short notice, such as closing an area to fishing when incoming data on catches and bycatches show irregularities (IMR, Directorate, interview Aug 2016). Thus fishing practice <u>can be</u> changed at short notice by the fisher, by moving the gear to another area.”</p> <p>However, SG100 requires that “alternative measures to minimise UoA-related mortality ETP species, and they <u>are</u> implemented, as appropriate.” and no evidence is provide to show that the implementation requirement is met. Also, for SG100, ‘alternative measures’ should comprise more than simply moving areas, so more consideration is required, here.</p>	<p>The warnings are no indication of non-compliance but of the fishers problems with administrative matters, the warnings are in virtually all cases of this nature and therefore the consequence is a guidance and a warnig rather than fines and court cases.</p> <p>The criticism is accepted, text is changed</p>
2.1.3	Yes	ProbablyYes		Notwithstanding the concern about the accuracy/reliability of	The catch data are believed to be of high

LL and GN				the catch data and what the enforcement warnings are issued for, this is OK.	quality
2.2.1 LL and GN	Mostly Yes	Yes	N/A	Table 13 indicates that there are 'Other deepwater fish' and 'other fish species not listed elsewhere' that comprise a small percentage of the catch. These do not appear to have been considered anywhere, but under CRv2 the MSC has removed the ability of Assessment Team's to call some small parts of the catch 'negligible'. I would expect them to appear here, as minor secondary elements. Please lay these out and score them as such.	The data available includes a component of 'Not elsewhere identified'. They consist of a long list of species that are seen only a few specimen annually. The Justification has been adjusted.
2.2.2 LL and GN	No	No	N/A	<p>Sla is scored 100, and it is stated: "There are tools (meeting SG 60), which comprise a strategy (thus achieving over SG 80) as they are regularly reviewed through the ICES process, which include: a requirement for accurate information on landings (via log book and sales notes), discard ban, stock assessments and management rules such as research into reference points, quotas and recovery plans where necessary. Legislation allows the 'Fiskeridirektoratet' to introduce regulation at short notice that regulates by-catch. SG100 is met."</p> <p>However, most of this is not applicable to secondary species (which by definition, for example, do not have stock assessments, and I am very doubtful as to whether there will be research into reference points, quotas, etc). A score of 80 may be appropriate, but not 100 for all minor species (for example, what about the 'other deepwater species' – I would be very surprised if they are considered with such scientific vigour).</p> <p>Same comments apply to SId (sharks) and SId (alternative measures) as for PI 2.1.2 – these need to be scored appropriately.</p>	<p>The legislation is aimed at general environmental protection together with the rational exploitation of the fish resources and in connection with the protection of ETP species allows for protective measures, f.ex. the rule on releasing Atlantic Halibut, closed areas to protect habitats, move-on rules to protect both habitats and juvenile fish.</p> <p>Text changed</p>
2.2.3	Yes	No	N/A	Noting again that Table 13 indicates that there are 'Other	The data available includes a component

LL and GN				<p>deepwater fish' and 'other fish species not listed elsewhere' that comprise a small percentage of the catch but are not addressed anywhere, and that under CRv2 the MSC has removed the ability of Assessment Team's to call some small parts of the catch 'negligible', it is not clear how the fisheries meet the Slb - SG100 requirement if these are considered.</p>	<p>of 'Not elsewhere identified'. They consist of a long list of species that are seen only a few specimen annually. The Justification has been adjusted.</p>
2.3.1 LL and GN	Yes	No	N/A	<p>For 2.3.1 Slb, the report states: "direct interviews with fishermen yielded estimates deaths of 10 000–12 000 birds per year in 2009–10"</p> <p>and "Also, they [Zydelis et al] conclude that although reports of seabird bycatch in gillnets are relatively numerous, the magnitude of this phenomenon is poorly known for all regions. Further, population modelling to assess effects of gillnet bycatch mortality on seabird populations has rarely been feasible."</p> <p>and "As actual catch of bird bycatch has not been available for this fishery.... "</p> <p>I might summarise these sections by saying 'rough estimates are available showing there is a significant catch of seabirds, but the actual level of bycatch is not known, nor is it known how this catch affects their populations'.</p> <p>As for the justification that the gear is generally deployed in water deeper than that fished by divers, I note that fulmars are not divers.</p> <p>Essentially, it is far from clear how the fishery meets SG80 - Known direct effects of the UoA are highly likely to not hinder recovery of ETP species. As such, although there is a condition</p>	<p>The estimate quoted is for the entire Norwegian fishery. The Norwegian bird catch statistics does no distinct the ling/tusk fishery from other both gillnet and long line fisheries. There is a special study that identify the lumpfish gillnet fishery and the Greenland halibut gillnet fishery as being of particular concern (Engel 2015) in relation to bird by-catch. This is accounted for in the report text. Hence the longline fisheries for ling and tusk are not considered to be of particular concern in relation to sea bird catch. Hence known effects does not suggest that the tusk/ling fisheries are hindering rebuilding of the stocks.</p>

				<p>on PI 2.3.3, a condition feels appropriate here, also.</p> <p>-----</p> <p>For SIc, I note the report says: "Ghost fishing is not an issue in the ling and tusk fishery, for both gillnets and longlines. Where gear becomes entangled, for example on seabed obstructions, it can and is recovered."</p> <p>Ignoring that ghost fishing isn't an indirect impact, it is just possible, but extremely unlikely, that this statement on nets being recovered is accurate. I say this because there is no justification provided to back up the claim, and instead there is abundant evidence that gillnets are not always retrieved by fishermen if lost (eg., see the EU project called 'Deep Clean', or FANTARED, and as a non-European example, http://www.nwstraitsfoundation.org/project/derelict-fishing-gear-removal/ shows that, even in shallow water, it is not always possible or deemed necessary by fishers to find and retrieve lost nets). Finally, it is also worth highlighting that https://academic.oup.com/icesims/article/66/2/323/595693/Lost-and-abandoned-nets-in-deep-water-gillnet indicates that a net retrieval operation is undertaken in Norwegian waters. This report states: "Each year, the Norwegian Directorate of Fisheries sends out a questionnaire to the local fishers' organizations to collect information on the position and number of lost nets.". Clearly, this operation is a good thing, but it also highlights that Norwegian fishermen can and do lose nets.</p>	<p>The offshore long line fishery has only little gear loss and the information presented to assessment team by the client is that lost gear is recovered.</p> <p>Fiskeridirektoratet conducts an annual campaign mainly inside the skerries and in the fjords for recovering lost gillnets in order to avoid ghost fishing. The information presented to the assessment team at the site visit supports the claim.</p>
2.3.2 LL and GN	Yes	No	N/A	<p>I believe that 2.3.2 SIb should have been scored instead of 2.3.2 SIa, as there is no indication of the national or international requirements for ETP species (where they exist, I'd expect these to be in the form of something like maximum permitted take threshold).</p> <p>-----</p>	

			<p>The report notes that “Larger fishing vessels (>15m) have to record seabird bycatch (Client interview, Aug 2016) in the e-log. This is therefore relevant to the ling and tusk fishery (longliners and gillnetters) and records <u>should be</u> available.”</p> <p>Given that there is very limited (no?!) incentive for fishers to self-report ETP species bycatch, it would be useful to comment on the level of observer coverage – some independently collected data are very useful in confirming the veracity of any fisher-dependent data. GSA3.6.3.1 and Table GSA5 provide relevant guidance.</p> <p>Nevertheless, ‘records should be available’ also implies that the fisher-collected data have not been reviewed by the assessment team. Given that a ‘strategy’ <i>“should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts.”</i> (CR v2), it is required that data are in fact collected and that some level of analysis undertaken to determine the impact. This does not necessarily appear to be the case in this fishery.</p> <p>In fact, reading to PI 2.3.3, I note that the report states: “No data was available for ETP-bird bycatch, or any other potential gear interaction”</p> <p>Also: “Data on fishery interactions with ETP species is limited – in large part because of their rarity, but also because of limited identification skills, non-recording of non-fish species (ie birds are not recorded for example) and analytical resources.”</p> <p>As such, it appears to be simply a statement of the Assessment Team’s opinion that ‘records should be available’, and in fact it does not appear to be the case that they are. In this case, I am finding it hard to reconcile the differences between the positive</p>	<p>The Norwegian system is based on data from the reference fleet, not scientific observers. These data are considered to be accurate and show no significant catch of ETP species. Scoring 2.3.1 and 2.3.2 is based on this information. The discussions at the site visit also made it clear that authorities as well as the Client is accurately aware of the importance to report such catches</p> <p>See answer on the Lumpfish if there was a catch of sea birds then records should be available. No catch = no record. There may be an issue of non-compliance with</p>
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				<p>scoring tone of 2.3.1/2.3.2 and more negative scoring tone of 2.3.3.</p> <p>-----</p> <p>Sle is scored 100. Similar to what is noted elsewhere, SG100 requires that “alternative measures to minimise UoA-related mortality ETP species, and they <u>are</u> implemented, as appropriate.” and no evidence is provide to show that the implementation requirement is met. Also, simply moving gear does not comprise ‘alternative measures’ for ETP species.</p>	<p>the regulations but the assessment team has no indication that this is the case.</p> <p>It is difficult to introduce alternative measures to minimise catch when this catch is not documented.</p>
2.3.3 LL and GN	Yes	Yes	Yes	Nothing further – scored appropriately	
2.4.1 LL and GN	Yes	No	N/A	<p>Slb is score 100, and the text states “The location of the <i>Lophelia</i> reefs is known and can thus be avoided by the fishing gears. Considering that the reefs have been mapped, and are thus avoided by the fishers (Client interview Aug 2016), it is highly unlikely for the UoA to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.”</p> <p>However, this justification is not supported by information presented in the introduction, which states: “<i>Around 600 coral reefs have been documented and mapped but many more (possibly ten times as many) (Mareano, no date) remain to be documented</i>”</p> <p>I.e., it is known where some but not all VMEs are, and the rest remain vulnerable to impacts. SG100 is not met.</p>	<p>The area is surveyed, VMEs are identified and closed to fishing, there are move-on rules implemented and the fishers are obliged – and confirm that they stick with this obligatio – to report any encounter with VME indications. The ‘10 times more’ is speculation which within the fishing grounds does not seems to bare out. Outside the fishing ground the survey information is the only avaialble and this is much more scanty and this may justify the guess.</p> <p>The area is one of the best surveyed areas in the open sea on habitats.</p>

2.4.2 LL and GN	Yes	No	N/A	As noted previously, SIa requires that move-on rules are in place at SG60. As this does not appear to be the case, and noting that there are VMEs present, more are thought very likely to exist, and the gear can impact VMEs, I do not think SG60 is met.	There are move-on rules implemented. There are also requirement for reporting such encounters improving the database on the fishing grounds This is clarified in the text.
2.4.3 LL and GN	Yes	Yes	N/A	Nothing further	
2.5.1 LL and GN	No	No	N/A	<p>The same criticisms appear here as for 2.5.1 lumpfish – the key ecosystem elements have not been specified in the scoring text or in Table 22.</p> <p>Further, very similar and confusing text is provided as for lumpfish: PI 2.5.1 states that “<i>Within the ecosystem context, ling and tusk have not been identified as playing critical roles in the overall stability of the Norwegian Sea marine ecosystem</i>”, while 2.5.2 states that measures have been described to ensure that the fishery “<i>does not pose a risk to ling and tusk stocks, which are important species in the Norwegian Sea ecosystem</i>”. So, it is not clear if they are important or not, and currently it appears to depend on whether it benefits scoring or not.</p>	The report text has been expanded and references inserted. Justification updated. The key elements are defined in the general multi species /ecosystem models. These models either include fish as groups or specific species (Cod, haddock, Saithe, ... but not ling and tusk). Text has been clarified.
2.5.2 LL and GN	Yes	Yes	N/A	Nothing to add.	
2.5.3 LL and GN	Yes	Yes	N/A	Nothing to add.	
2.1.1 Pots and traps	No	No	N/A	Same comment as for PI 2.1.1 Longline – there are components of the Minor Primary species group that are not performing at SG100 (e.g., Norwegian coastal cod in I+II). As such, SG100 is not automatically met for all elements, and proper element scoring is needed.	See answer on long lines

2.1.2 Pots and traps	No	No	N/A	<p>The PI is scored 100. But I have the same comment as for 2.1.2 Longline - the general feeling I get from the text here is that a score of 100 is given because ICES provides advice and the fishery is managed, so it must be 100 – this is not a convincing argument when, for example, some of the elements are listed in Table 15 as being harvested unsustainably!</p> <p>All the other comments also apply with respect to the compliance issues (what is the cause for the warnings?), and the concern that there is confidence, but no evidence, that the discard ban is working. More information is needed.</p> <p>-----</p> <p>SIc: Same issue – the issue is whether there are any sharks in the primary species catch.</p> <p>-----</p> <p>Sle: Same issue –there is no evidence that the implementation requirement is met, and at SG100 I would expect ‘alternative measures’ to comprise more than simply moving areas.</p>	<p>See answer on long lines</p> <p>See answer on long lines</p> <p>Text corrected</p> <p>Text corrected</p>
2.1.3 Pots and traps	Yes	No	N/A	<p>Notwithstanding that some of the minor species do not appear to be meeting SG100 for PI 2.1.1, the text for SIc states: “Good quantitative data is available on all Primary species, at the point of capture and landing (because of the discards ban), and this is enforced and verified through the scientific observer programme, reference fleet, and landings inspections, and landings notes – meeting SG60 & 80. Synthesis of data, analysis and checks are made by IMR on an on-going basis. The data sets cover a significant period of time to note trends and thus feed into the strategy. SG100 is met ”</p> <p>If there is all this verification, data analysis and checks are</p>	<p>The use of observer scheme in the Norwegian documentation has been clarified in the text and in the Justifications. There are major programmes that documents the Norwegian biodiversity and this a collected and evaluated in ‘Artsdatabanken’. The system has been working for about a decade.</p>

				ongoing, then show it – provide some information rather than just stating it occurs! Even at a basic level – over what time period (i.e, how many years, not just a ‘significant’ period) are the data available?? At the moment, we are being asked to take the high score on trust, and I am not able to confirm that SG100 is justified.	
2.2.1 Pots and traps	No	No	N/A	Table 14 indicates that, amongst other non-species specific categories, there are ‘Unspecified fishes’ taken. Although these comprise a small percentage of the catch, they have not been considered in scoring the fishery at 100 for Sla, which is now required. As for scoring PI 2.2.1 for the other UoAs, please lay out the and score elements individually.	See comment for long line Gillnet
2.2.2 Pots and traps	No	No	N/A	Again, Sla is scored 100, but most of the justification is not applicable to secondary species (which by definition, for example, do not have stock assessments, research into reference points, quotas, etc). A score of 80 may be appropriate, but not 100 for all minor species (for example, looking back to the ‘unspecified fish’ component of the catch – if they’re not identified to species level then how is the science being done?). Same comments apply to Sld (sharks) and Sle (alternative measures) as for PI 2.1.2 – these need to be scored appropriately.	See answer to Long line/Gillnet Text has been corected
2.2.3 Pots and traps	No	No	N/A	Noting again that Table 14 indicates that there are ‘unspecified fish’ that comprise a small percentage of the catch but are not addressed anywhere, and that under CRv2 the MSC has removed the ability of Assessment Team’s to call some small parts of the catch ‘negligible’, it is not clear how the fisheries meet the S1b - SG100 requirement if these are considered.	Comment as for long/gillnet

2.3.1 Pots and traps	Yes	Yes	N/A	Scoring seems appropriate.	
2.3.2 Pots and traps	Yes	Yes, mostly	N/A	Scoring in general seems appropriate. But S1e is missing the point slightly – just moving area does not comprise consideration of alternative measures. The aim is to consider options to minimise catch in the first place, not just reacting to higher levels of catch once they occur.	Comment as for Long line/gillnets
2.3.3 Pots and traps	Yes	Yes	Yes	Nothing further – scored appropriately	
2.4.1 Pots and traps	Yes	No	N/A	As for longline and gillnets, and scoring text that states “ <i>The location of the Lophelia reefs is known and can thus be avoided by the fishing gears</i> ”. A score of 100 for S1b at least does not appear to be justified adequately.	Pots and traps are used in the local coastal fisheries where the habitat including VME areas are well known
2.4.2 Pots and traps	Yes	No	N/A	As noted previously, S1a requires that move-on rules are in place at SG60. As this does not appear to be the case, and noting that there are VMEs present, more are thought very likely to exist, and the gear can impact VMEs, I do not think SG60 is met.	Move-on rules exist but would for these fisheries rather be implemented as closed areas.
2.4.3 Pots and traps	Yes	Yes	N/A	Nothing further	
2.5.1 Pots and traps	Not clear	Yes Probably	N/A	The same criticisms appear here as for 2.5.1 longline and gillnet – the key ecosystem elements have not been specified in the scoring text or in Table 22, and the role of tusk is either not critical (PI 2.5.1), or they are important species (PI 2.5.2).	Text have been amended
2.5.2	Yes	Yes	N/A	Nothing to add.	

Pots and traps					
2.5.3 Pots and traps	Yes	Yes	N/A	Nothing to add.	

Principle 3 Management

3.1.1	Yes	Yes	N/A	Nothing further	
3.1.2	Yes	Not quite yet	N/A	<p>Slc</p> <p>In order to score SG100, here (“The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.”), I would expect to see clear evidence of the ability of NGOs or other non-fishing groups to participate in the consultation process, and a comment on how their involvement was facilitated. This is not apparent in the scoring text at this time.</p>	As follows from the rationales in the scoring table, Norwegian authorities not only provide opportunity and encouragement for all interested parties to be involved, but actively facilitate their effective engagement, e.g. through the Regulatory Meetings, where all steps are taken to ensure the participation of NGOs and other non-state stakeholders, including representatives of the Sami population. Extensive minutes from these meetings are published, and provided as evidence in the reference list of the PI 3.1.3 scoring table.
3.1.3	Yes	Yes	N/A	Nothing further	
3.2.1	Yes	Yes	N/A	Nothing further	

3.2.2	Yes	Yes	N/A	Just a comment – I have always been challenged about scoring SIb at 100 (all issues), but I think the approach taken to scoring this, here, is reasonable.	Thank you.
3.2.3				<p>Scoring for PI 2.3.3 indicates that “<i>no seabird records were available, although it is a statutory requirement for vessels over 15m to record such interactions.</i>”</p> <p>and</p> <p>“<i>No data was available for ETP-bird bycatch, or any other potential gear interaction. It is unlikely that there are no bird interactions with the longliners gear.</i>”</p> <p>and</p> <p>“<i>Data on fishery interactions with ETP species is limited – in large part because of their rarity, but also because of limited identification skills, non-recording of non-fish species (ie birds are not recorded for example.</i>”</p> <p>Whilst the introductory section states</p> <p>“<i>In 2015, the Coast Guard carried out approx. 1500 inspections at sea. 293 inspections (20 %) resulted in a warning and 44 inspections (3 %) in a fine or prosecution. The Directorate of Fisheries performed 2788 landing controls in the period from 1 January 2015 to 25 August 2016. Some form of reaction was given in 16 % of the inspections (either warning or fine/prosecution).</i>”</p> <p>These texts do not paint a picture of a fishery that meets SG100, here (one wonders how bad compliance would have to be for the Norwegian Coastguard to consider compliance to be a problem, and simply saying compliance is ‘good’ doesn’t make it so!?). In any case, SIc requires “There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of</p>	<p>‘available’ = no record has been filed</p> <p>The relevant percentage here is how many inspections result in the discovery of a serious infringement, for 2015: 3 %. The other infringements revealed are minor in character and often relate more to technical issues (e.g. inaccuracies in reporting <i>format</i>, not in its <i>content</i>), that have little or no influence on the sustainability of the fisheries. An important context here is that Norway is generally considered to have a very comprehensive enforcement system (reflected, e.g., in the fact that a 100 score is the harmonized MSC score for PI 3.2.3). Inspections at sea, for instance, in addition to document, gear and catch control involves a comprehensive inspection of all catch on board. Holds are measured and boxes counted at every single inspection (which take several hours) and green weight calculated using the relevant conversion factors. As a result, even minor deviations in reporting are detected and recorded as infringements in the compliance statistics. Such thorough physical control at sea is rare with other countries in the region, but that does not imply that compliance is higher – quite</p>

				<p>importance to the effective management of the fishery.” and this simply does not seem to be met.</p> <p>-----</p> <p>SId</p> <p>The text states: “As demonstrated under PI 3.2.3 c) above, there is no evidence of systematic non-compliance in the fishery so SG 80 is met.”</p> <p>As stated above, I do not consider that the text of SId demonstrates a fishery operating at SG100. Instead, I would be interested to know what the infractions are that are identified in 20% of at-sea inspections. A description of what they are related to would be helpful – how much is associated with discarding and reporting?</p>	<p>the opposite can be expected, since the risk of being detected in underreporting catch is lower.</p> <p>Along the same lines, Norwegian enforcement authorities are more transparent in the handling of their compliance statistics than most other national enforcement authorities in the region. Some EU countries in the Northeast Atlantic do not provide inspection or compliance statistics at all, but only inform MSC assessment teams that ‘there are no specific problems in this fishery’. Other national authorities provide figures, but far less detailed than the Norwegian enforcement authorities do, e.g. publishing the number of arrests, but not of warnings issued. In sum, there is a risk that compliance might appear higher in countries with less transparent enforcement authorities, and even with less comprehensive enforcement systems, than in those with comprehensive systems and a high degree of transparency. As said, 100 is the generally harmonized score for PI 3.2.3 for Norwegian fisheries, and the assessment team sees no justification for departing from that score here.</p>
3.2.4	Yes	Yes	N/A	Nothing further	

Appendix 3 Stakeholder submissions following PCDR

Appendix 3.1 Stakeholder submissions following PCDR

MSC Technical Oversight

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	Pi	CABComment
22317	27139	210, 92	Major	FCR-7.10.6.1 v2.0	PI2.4.2. SI (a). Longline/Gillnet Ling/Tusk Fishery. SG100 achieved however no encounter protocol or specific avoidance measure (SG60) (E.g. Move-on rule) seems to be adopted to avoid impact on VMEs identified. Further the report states that the fishery should adopt some form of avoidance rule (page 92) but this is not evident in the relevant rationale. See SA3.14.2.3.b and related guidance for more context. Additionally see related interpretation, http://msc-info.accreditation-services.com/questions/move-on-rules-at-sg60-for-pi2-4-2a/	2.4.2	<p>Thank you for the link to the interpretations website, which can only be accessed by password – it provided clarity to the relevant CR section. Considering the wide area over which the ling and tusk fisheries operate, all gears, see also Figs 3 and 4, the likelihood of encountering VMEs is there (see Fig. 35). Hence a move-on rule at SG60 is needed).</p> <p>The move-on rule mentioned on p94 (section 5.5.2.2) is a NEAFC recommendation, which has been largely adopted by Norwegian legislation, in particular in relation to existing fishing areas (less than 1000m). From the regulations it appears to apply to bottom trawling (>30kg live coral, > 400kg live sponge) Additional text has been added to the justification at SG60.</p>
22317	27140	Page 19	Guidance	FCR_7.12.1.1 v2.0	Would also be useful to clarify that ICES Divisions III, VI-IX and XII, and traps and pots tusk fishery UoA are not the final UoCs		Paragraph amended

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	Pi	CABComment
22317	27141	108	Guidance	FCR-7.6.2 v2.0	As the target eligibility date is set before the certification date, please ensure any fish harvested after this date is handled in conformity with relevant under-assessment product requirements 5.6 in the MSC CoC Standard.		The client is aware of the requirements
22317	27142	108	Guidance	*N/A vn/a	In section 8.2 of the report page 108, it makes reference to section 3.5 however this section is absent from the report..		Amended
22317	27143	109	Guidance	FCR_7.12.1.3 v2.0	The MSC recommends documenting the traceability risk factors using Table 4 in "MSC Full Assessment Reporting Template v2.0 for clear reporting of key issues. Also kindly identify risks including: (1) the potential for non-certified gear/s to be used within the fishery; (2) mitigation measures for vessels outside of the UoC or client group fishing the same stock - as highlighted in page 25 section 3.2.1 by other EU vessels		Noted – Table will be inserted in future reporting template. Clarification sought from client and relevant section added in Traceability
22317	27145	34-35, 67	Major	FCR-SA3.1.7 v2.0	The assessment team include some background information that bait is used in the UoAs, but do not assesses bait species in the assessment. Bait must be assessed as either primary or secondary species.		An oversight, thanks. Mackerel has been added to Table 15, and included in 2.1.1 – minor, longline Herring has been added to Table 15, and included in 2.1.1 – minor, pots and traps
22317	27146	134	Major	FCR-SA3.1.4.1 v2.0	PI 2.2.1-2.2.3 and PI2.3.1-2.3.3: All gears: It is unclear what seabirds are considered as scoring elements in this fishery. If seabirds are caught in the UoAs then they must be designated as either secondary species or ETP (SA3.1.4.2). Seabirds are listed as ETP in Tables	2.2.1, 2.3.1	No seabirds were recorded as caught in these fisheries – there was no direct data, no observer data, although mentioned as risk in lumpfish gillnets in NINA 2015. Hence seabirds were discussed under ETP.

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	Pi	CABComment
					18,19,20 but specific species are not explicitly referenced in PIs. It is recognised in the report that the fishery does interact with seabirds (e.g. page 73) but is not recorded on vessels.		Following comments from a stakeholder, the scoring of ETPs has been re-evaluated and amended for lumpfish. Table 18 is the Norwegian Red List; Table 19 presents seabird bycatch from 2010 for the coastal reference fleet, but does not distinguish between gears; and Table 20 provides a list of seabirds from the Norway artsdatenbanken – 2015. None of these tables provide specific observer data for the fisheries under assessment, hence seabirds were evaluated under ETP as a general group – a combined element rather than individual species – as opposed to fish. Otherwise there would have been extensive repetition. The end result is the same in terms of scoring, with conditions against each ETP PI.
22317	27147	106	Major	FCR-7.10.7 v2.0	It is unclear from Table 22 which scoring elements are assessed in each UoA/gear type assessed in Principle 2. No mention of seabirds as scoring elements (but these are referenced in PI2.3.1), nor habitats or ecosystems. In addition, the assessment team have inconsistently referenced scoring elements within the P2 PIs making it very difficult for the reviewer to know what species are being assessed in each PI.		Table 22 has been amended. P2 PIs amended where noticed.
22317	27148	139	Major	FCR-7.10.6.1 v2.0	PI 2.1.3 scoring issue (b): For the lumpfish scoring: Rationale has not been presented to	2.1.3	Rationale has been amended

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	Pi	CABComment
					support the team's conclusion that minor primary species meet SG100.		
22317	27149	148	Major	FCR-SA3.10.1 v2.0	PI2.3.1 scoring issue a lumpfish: Rationale presented does not support the team's conclusion, no reference made to national and/or international requirements, any limits set on ETP species to support conclusion that scoring issue is 'not relevant'. The additional information provided is not needed to assess this scoring issue.	2.3.1	Rationale text has been amended
22317	27150	266	Major	FCR-7.10.6.1 v2.0	PI 3.1.1 Scoring Issue (b): The rationale presented for the lumpfish fishery does not provide evidence of the management system being tested and proven to be effective. This is required at the SG100 level.	3.1.1	The Norwegian system for fisheries management, which is the overarching management framework for the Norwegian lumpfish fishery, has been in operation for more than a century, with both the Directorate of Fisheries and Institute for Marine Research established in 1900. During this time, a continuous process of self-evaluation, external evaluation and refinement has taken place. The major fish stock, found mainly in the northern waters of the Norwegian EEZ, have been in excellent shape for several decades, Whenever a problem of some significance has arisen, such as the Russian overfishing in Norwegian waters in the early 1990s and mid-2000s, steps have immediately been taken to solve it. Extensive evaluations by the Auditor General, partly in cooperation with similar bodies in other countries and covering the

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	Pi	CABComment
							entire chain of fisheries management from scientific research to enforcement and compliance, conclude that the management system as such is effective. See PI 3.2.4 for details on these reviews.
22317	27151	275	Major	FCR-7.10.6.1 v2.0	PI 3.2.1 Scoring Issue (a): The rationale presented does not provide evidence of how short and long term objectives are measurable for Principle 1. This is required at the SG100 level.	3.2.1	Score has been changed
22317	27152		Major	FCR-7.10.6.1 v2.0	PI 2.3.1-2.3.3: All UoAs: Inconsistent reporting of observer coverage through PI scoring issues, e.g. PI 2.3.2 scoring issue c (all gears) states "Research/observer coverage allows the collection of relevant information" but observer coverage is not referenced in PI2.3.3, nor is extent of observer coverage referenced anywhere in P2 scoring.	2.3.1, 2.3.2, 2.3.3	Evaluations have been clarified where appropriate, following additional consultation on observer procedures with client
22317	27153	139, 229, 199,154, 205, 236	Major	FCR-SA3.6.3 v2.0	PI2.1.3, 2.2.3 and 2.3.3: All UoAs: The assessment team should consider the adequacy of information and level of verifiability of information used to assess the impact of the UoA on P2 species with respect to status. See guidance GSA3.6.3. Applies to primary, secondary and ETP species GSA3.9 and GSA3.12.	2.1.3, 2.2.3	The wording has been changed in order to improve clarity. Detailed catch composition data is available (see Tables 13-16), as there is a discard ban in the Norwegian fishery. There is good information available on all Primary species (ICES verified), and Secondary species (ICES researched and evaluated). ETP scores have been addressed in a condition.
22317	27154	183	Major	FCR-7.10.6.2 v2.0	PI2.1.1 scoring issue a longline: The rationale does not make direct reference to every scoring issue (SG 60, SG80).	2.1.1	Edited

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22317	27155	134-135, 183-134, 224-225	Major	FCR-7.10.6.1 v2.0	PI2.1.1 scoring issue (b): All UoAs: Rationale does not support the team's conclusion, the assessment team do not consistently score minor species across gears. Some of the same minor species are recorded for all gears, including cod and redfish which are reported to not meet SG100 level due to stock status (Table 15, 16), but are not assessed as the same in longline and gillnet and traps and pots PI2.1.1.	2.1.1	The text has been edited to improve rationale and conclusion. Additional evidence has been used to change the scoring.
22317	27160	124	Major	FCR-7.10.6.1 v2.0	PI 1.1.1.: UOA 12: The team presents rationale for the lumpfish stock having a high degree of certainty that the stock is above the PRI and a high degree of certainty that the stock is fluctuating around a level consistent with MSY. However, the information presented states that "general indications are that the PRI reference points would correspond to exploitation rates in the range of 10-30%, and MSY reference point in the 30% range." Additional information as to why these values are 'general indications' or appropriate proxy indicators for stock status is lacking. At present the rationale does not justify the score of the high degree of certainty.	1.1.1	The evidence is based on data from an annual survey (with a long time series) and data from another survey with a shorter time series. There is therefore good information on stock trends. The exploitation rate is low (~1%) well below any likely MSY or PRI reference points.
22317	27161	126	Major	FCR-7.10.6.1 v2.0	PI 1.2.1. scoring issue (a) for lumpfish: The team presents rationale to justify that the harvest strategy meets the SG80 level. However, the information presented for the harvest strategy being responsive (required at SG80 and SG100) relies on evidence that in	1.2.1	The advice is responsive because of the obligations invested in the IMR, "Forskning og råd fra Havforskningsinstituttet skal legge grunnlaget for at samfunnet også i fremtiden skal kunne høste av de store

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					<p>2002 the catch was reduced from 6.5t to 3t. However it is not clear whether this reduction was in response to stock status or yield reflecting effort, as previously stated. Furthermore, it is not clear what the 'Norwegian marine fishing law' is nor how the "Norwegian approach" relates to lumpfish, given the species does not appear to be managed to MSY.</p> <p>Additionally, information is lacking to show that the harvest strategy is designed to achieve stock management objectives for lumpfish. At present, the rationale does not justify the score.</p> <p>PI 1.2.1. scoring issue (b): The team presents rationale to meet SG80. However, as per SA2.4.1.2, "Tested" at SG80 means "the involvement of some sort of structured logical argument and analysis that supports the choice of strategy." In the background section the team presents information to show that increasing water temperature results in increased biomass. Therefore, at present the rationale does not justify the score as it is not clear the the harvest strategy is the reason that the stock is increasing.</p>		<p>verdiene i havet og langs kysten." . IMR is mandated to advise the Norwegian Government on sustainable exploitation, hence the IMR advice must necessary be responsive to the state of the stock. The 2002 case is an illustration that IMR is living up to its responsibilities.</p> <p>The harvest strategy is as explained to keep the exploitation rate at a very low level, (around 1%) far below any likely level of MSY. Typical MSY level will be around a factor of 10 higher. In that respect the harvest strategy does not achieve standard stock objectives but rather represent a significant under exploitation</p> <p>The harvest strategy is designed to avoid stock decrease outside sustainable limits, the stock is increasing if this is a result of increased productivity – which the temperature increase might imply – and the fishery is constant this implies that the exploitation rate is decreasing and the that the stock remains within sustainable exploitation.</p>
22317	27163	128 - 129	Major	FCR-7.10.6.1 v2.0	PI 1.2.2. scoring issue (a): The team presents information relevant to the fishery meeting SG60. However, there is no information about	1.2.2	There is no overall TAC. The fishery is regulated at a boat quota which under current conditions is satisfactory to

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					<p>the TAC setting mechanism nor if/how that is adjusted in a way that is expected to reduce the exploitation rate as the point of recruitment impairment is approached.</p> <p>Scoring issue (c): The team presents information to score the fishery at the SG80 level. However, there is no explanation of how the tools are used for the fishery to control exploitation. The increasing stock levels could simply be an artefact of increasing temperatures and poor market conditions, as stated by the team in other sections. At present, the rationale does not justify the score.</p>		<p>achieve exploitation rates far below likely MSY levels. There is a licence scheme implemented which can be tightened should exploitation increase and MSY concerns become relevant. The increasing stock level is most likely in response to a combination of increased productivity and low fishing although the low fishing pressure is a fairly recent phenomenon. The justification for scoring issue c) has been revised.</p>
22317	27164	171-172	Major	FCR-7.10.6.1 v2.0	<p>PI 1.1.1: UOA 1-11: The team presents information relevant to the ling and tusk stocks meeting an overall score of 80. However the use of the proxy indicators relevant to an MSY level (as per MSC guidance GSA2.2.3.1) and how this relates to the MSC interpretation on scoring ICES stocks (http://msc-info.accreditation-services.com/questions/scoring-stock-status-against-bmsy-for-ices-stocks/) is unclear. As such, the rationale does not justify the score.</p>	1.1.1	<p>The UoA 1-11 concern the ling and tusk stocks, in total five stocks. The report has been updated with the assessments now available from ICES (2017) Advice. These assessments are based on further analysis of the the status and include some further reference points. The justifications have been revised and scoring reconsidered taking the TO into account. The stock trends have been confirmed.</p> <p>Table 11 Stock status classification relative to MSY proxies. The period shown in (brackets) under 'value of proxy' are the years of data used. Extract from Table 5.4.2.1 ICES (2016s) is still applicable.</p>

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	Pi	CABComment
22317	27165	156, 88	Major	FCR-7.10.7 v2.0	PI2.4.1. SI(b). Lumpfish fishery. A number of VMEs are referenced in the habitat section of the report (e.g. Soft coral gardens, sea pens etc.) which are known to interact with the fishery but the scoring rationale only considers Lophelia Reefs which are protected. It is unclear how all the different habitat/VME scoring elements have been considered.	2.4.1	The text has been edited to clarify.
22317	27166	158, 92	Major	FCR-7.10.6.1 v2.0	PI2.4.2.SI(a). Lumpfish fishery. Score of 100 obtained but no encounter protocol or specific measure (SG60) seems to be adopted to avoid impact on VME. Further the report states that the fishery should adopt some form of avoidance rule (page 92) but this is not evident in the relevant rationale. See SA3.14.2.3.b and related guidance for more context. Additionally see related interpretation, http://msc-info.accreditation-services.com/questions/move-on-rules-at-sg60-for-pi2-4-2a/	2.4.2	The score in a) has been changed. Additional checks made with client regarding move-on rule for lumpfishers and verification
22317	27167	162	Major	FCR-7.10.6.1 v2.0	PI2.4.3.SI (b). Lumpfish fishery. Score of 95 achieved. However data/information on the position of the UoA relative to VME is absent from the report. See SA3.15.6 (and related guidance) for fishery assessment information requirements for fisheries which encounter VMEs.	2.4.3	Following additional information from stakeholders, score in a) was changed. The text has been edited in b) to clarify.
22317	27168	207	Major	FCR-7.10.6.1 v2.0	PI2.4.1.SI(a). Ling/Tusk Gillnet/Longline/Pot/Trap fishery. Score of 100 determined however there is limited quantitative information	2.4.1	Following peer reviewer comment this SI was amended and score changed.

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	Pi	CABComment
					provided relating to the consideration of UoA specific impact on commonly encountered habitats (e.g. recovery times of habitats impacted in the relevant area; habitat range vs UoA overlap etc.). See SA3.13.4/5 and relevant guidance.		
22317	27169	208, 91, 250	Major	FCR-7.10.7 v2.0	PI2.4.1. SI(b). Longline/Gillnet/Trap/Pot for Ling/Tusk. Score of 100 achieved however, a number of VMEs are referenced in the habitat section of the report (e.g. Soft coral gardens, sea pens etc.) which are known to interact with the fishery but the scoring rationale only considers Lophelia Reefs which are protected. It is unclear how all the different habitat/VME scoring elements have been considered.	2.4.1	Clarification has been added and scores have been amended accordingly
22317	27170	90	Guidance	*N/A vn/a	There are references to VMS maps (Figure 3 and 4) but these are not present in the report.		The maps are a compilation of VMS data, and were supplied in this format by the Department of Fisheries.
22317	27171	253, 211, 159	Major	FCR-7.10.6.1 v2.0	PI2.4.2.SI (d). All UoAs. Score of 80 achieved, however, no reference or assessment evident relating to protective measures afforded to VMEs by other MSC UoAs/non-MSC fisheries.	2.4.2	Clarification added
22317	27172	279	Major	FCR-7.10.6.1 v2.0	PI 3.2.3 Scoring Issue (a): The rationale provided does not provide sufficient evidence of how the MCS system has demonstrated a consistent ability to enforce management measures, strategies and/or rules for the fishery. This is required at SG100.	3.2.3	There is an 'inconsistency' in the certification standard insofar as SIs 3.2.3 a), b) and c) mainly ask about different issues (enforcement, sanctions and compliance, respectively), but still presuppose a knowledge on the level of compliance in the fishery. Compliance is the main focus of SI c), but at the same time an assessment of compliance in the

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	Pi	CABComment
							fishery is implicitly expected also in SIs a) (is the enforcement system effective, e.g. able to achieve compliance in the fishery?) and c) (are sanctions effective, e.g. 'strong' enough to provide deterrence of a level that ensures compliance in the fishery?). In the opinion of the assessment team – and in line with established practice in other MSC assessments, as well as accepted by the peer reviewers – the discussion of the level of compliance in the fishery cannot be repeated under all three SIs. So it is discussed under SIc), where the level of compliance is explicitly asked for. Then we refer to SI c) (level of compliance) in our assessments of SIs a) (effectiveness of the enforcement system as such) and b) (effectiveness of sanctions). The team's rationale under c) does not only discuss the level of compliance, but also how compliance is achieved (as asked for by MSC in this TO), i.e. through coercive and discursive compliance mechanisms, respectively. The causal relationship between coercive elements (including sanctions) and norms, communication and other 'discursive' compliance mechanisms has been the topics of PhDs and comprehensive research projects – it is by far beyond the capacity of an MSC

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	Pi	CABComment
							assessment team to discuss the causal relationship between the effectiveness of the enforcesystem, the deterrence potential of sanctions (empirically based), other compliance mechanisms and the actual level of compliance. Then there is the so-called 'first-order compliance', which entails that compliance would have taken place even in the absence of a enforcement system (see MSC TO comment 22317/27174 below). That said, the effectiveness of the Norwegian enforcement system is among those best studied in a global context, and there is agreement in the literature (see references in the scoring tables) that the level of compliance is high (relevant for SI c)), that sanctions provide effective deterrence (relevant for SI b)), and that the enforcement system is such is sufficiently comprehensive given the context of the fishery, and effective (relevant for SI a)). In addition, a 100 score here is harmonized with all other Norwegian fisheries.
22317	27173	138, 144, 188, 195, 234. 244	Major	FCR-SA3.1.6 v2.0	PI2.1.2 scoring issue (e) and PI2.2.2 scoring issue (e): It is not clear what alternative measures are considered in this scoring issue, what species interactions are considered and how the measures are implemented or if not implemented why not.	2.1.2, 2.2.2	Lumpfish: 2.1.2, 2.2.2 no main; evaluation edited to accommodated no SG100 Pots and traps: ditto LL and GN: Primary – evaluation edited and rescored; Secondary – no 'main', scoring changed to accommodate SG100

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	Pi	CABComment
22317	27174	280	Major	FCR-7.10.6.1 v2.0	PI 3.2.3 Scoring Issue (b): The rationale provided does not provide evidence of how sanctions demonstrably provide effective deterrence. This is required at SG100. As indicated in the Guidance GSA4.9, an absence of sanctions and penalties does not necessarily indicate that the sanctions themselves provide effective deterrence; it could mean that MCS is in fact ineffective and what's happening is an absence of detection.	3.2.3	Same as for MSC TO comment 2317/27172 above (see, in particular, the note on so-called 'first-order compliance', which is thoroughly discussed in the academic literature on enforcement and compliance in Norwegian fisheries).
22317	27176	208	Major	FCR-7.10.6.1 v2.0	PI 2.4.1 Scoring Issue (b). Long Line Gillnet Evaluation Table for ling and tusk. Limited quantification of likely impact of UoA on VME is presented. More information could be provided on what is the likely overlap between UoA and VME (and potential VME) encountered and what is the likely impact of that interaction. Furthermore, whilst there are studies referenced, its unclear how related inferences have been made with respect to scale and intensity of the UoA on VME identified. See SA3.13.4. and related guidance.	2.4.1	Clarification provided
22317	27177		Guidance	*N/A vn/a	For future reference, due to the amount of UoAs (12), although it is more efficient to combine rationales where possible, it made it difficult to comprehend which rationales pertain to which UoAs in Principle 2, especially when combined with the scoring element approach.		Upon reflection the team agrees. This report could have been better served as two separate reports.

Comments from Birdlife – Rory Crawford

Assessment Stage	Fishery	Date	Name of Individual/Organisation Providing Comments
<input checked="" type="checkbox"/> Public review of the draft assessment report ⁸⁴ Opportunity to review and comment on the draft report, including the draft scoring of the fishery.	NFA Norwegian Ling & Tusk and NFA Norwegian Lumpfish	June 2017	BirdLife International
<input checked="" type="checkbox"/> I wish to comment on the evaluation of the fishery against specific Performance Indicators. <i>A table with these indicators and the scores and rationales provided by CABs can be found in Appendix 1 of the draft assessment report.</i> <p>Nature of comment <i>(Please insert one or more of these codes in the second column of the table below for each PI.)</i></p> <ol style="list-style-type: none"> 1. I do not believe all the relevant information⁸⁵ available has been used to score this performance indicator <i>(please provide details and rationale)</i>. 2. I do not believe the information and/or rationale used to score this performance indicator is adequate to support the given score⁸⁶ <i>(please provide details and rationale)</i>. 3. I do not believe the condition set for this performance indicator is adequate to improve the fishery's performance to the SG80 level⁸⁷ <i>(please provide details and rationale)</i>. 4. Other <i>(please specify)</i> 			

84 [MSC Fisheries Certification Requirements, v2.0 section 7.15](#)

85 [MSC Fisheries Certification Requirements, v2.0 section 7.10](#)

86 [MSC Fisheries Certification Requirements, v2.0 section 7.10](#)

87 [MSC Fisheries Certification Requirements, v2.0 section 7.11](#)

Performance Indicator	Nature of Comment Indicate relevant code(s) from list above.	Justification Please support your comment by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Team Response
2.3.2 (c, e) [Lumpfish gillnets]	2	<p>The CAB considers that the fishery achieves SG80 under 2.3.2c ('there is an objective basis for confidence that the measures will work, based on information directly about the fishery and/or species involved'). Given that the report paints a mixed (but overall weak - demonstrated by the condition raised on information PIs) picture of bycatch reporting in the lumpfish fishery (e.g. p286 '<i>It is known from research that seabirds can get caught in the gillnets. There is no direct bird bycatch data from the lumpfish fishery</i>' and p.155 '<i>non-recording of non-fish species (i.e. birds...)</i>'), we believe this scoring is excessive. Further, gillnetting is implicated in historical declines of diving species (p.72) and Fangel et al. (2015) points to concerning bycatch levels, particularly for black guillemot.</p> <p>It should be noted that since the Fangel et al. (2015) paper was published, there has been bycatch observation of this fleet by NINA, using a lumpsucker reference fleet approach (so there are direct data available now), and they should be approached for data if at all possible. The sample size is not large, but gives a good indication of the effects of the fishery.</p> <p>Given all this, it is difficult to see that there is truly an objective basis that existing measures are working, since (i) there are limited data coming from the fishery, with almost zero self-reporting of bycatch (which is clearly occurring) (ii) no evidence of decreases in bycatch off the back of the measures in place (no baseline to measure bycatch reductions against, and contemporary data suggesting bycatch still an issue) (iii) population estimates and changes for black guillemot (one of the species most vulnerable to bycatch in lumpsucker fisheries) are not available (iv) the proposed measures are rather limited in scope. Taken together, we believe the fishery should score under 80, and closer to 60 on this issue.</p> <p>The CAB has given the fishery a score of 100 under 2.3.2e. Since data are</p>	<p>Thank you for the additional information. The evaluation table has been amended. The scoring has changed.</p>

Performance Indicator	Nature of Comment Indicate relevant code(s) from list above.	Justification Please support your comment by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Team Response
		<p>deemed insufficient to fully discern impacts (as per scores elsewhere in this PI), how can they be sufficient to carry out an adequate review of the efficacy of alternative measures to reduce bycatch? Further, if there is annual review of the measures taken to reduce bycatch, why has this not resulted in more than the limited 'measures' currently utilized for bycatch reduction in the fishery? Bycatch (particularly of seabirds) evidently remains an issue. Surely this annual review should have flagged further spatio-temporal measures to reduce bycatch beyond the existing closures near breeding colonies? The score should be sub-100 for this issue. <i>[NB. We also note that in the rationale, catch composition is not a very useful metric in terms of assessing bycatch impacts on seabirds - these are best assessed on an individual species basis to determine population level impacts.]</i></p>	
2.3.1, 2.3.2, 2.3.3 Lumpfish gillnets	3	<p>We support the CAB's inclusion of conditions (3 and 5) to improve the monitoring of seabird bycatch in the lumpfish fishery. However, we do not believe that self-reporting on its own will be sufficient to resolve this issue, and therefore consider it essential that the condition incorporates the need for independent verification of this self-reported bycatch data through observers, reference vessels or cameras.</p> <p>Other lumpsucker fisheries (i.e. the MSC certified Icelandic fishery) had existing requirements to self-report seabird bycatch which were not fully complied with, and further gave significantly lower bycatch figures than those collected by observers (see Icelandic Lumpfish PCR). In order to avoid the unsatisfactory outcome of non-verified bycatch data through self-reporting, we suggest that it should cross-checked for reliability with observers (plus a reference vessel or camera-collected data) monitoring a proportion of the fleet. The experience of collecting and analysing such data has already been built by NINA in Norway.</p>	The evaluation tables have been amended to include the additional observations. The scoring has changed.

Performance Indicator	Nature of Comment Indicate relevant code(s) from list above.	Justification Please support your comment by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Team Response
		<p>We also support condition 4, but recommend that the action plan should be explicit about considering the development of technical mitigation to reduce seabird bycatch in gillnets as a useful part of the strategy. The existing lack of technical mitigation (as exists for e.g. longlines) increases reliance on spatial or temporal closures to reduce bycatch - building in mitigation testing would support other international efforts to develop mitigation measures which will reduce the reliance on closures (and the resulting economic impacts).</p>	
2.3.2 (a, d, e) Tusk and Ling longlines/gillnets	2	<p>The CAB has scored the fishery at 80, 80 and 100 respectively for 2.3.2 (a) (d) and (e). We believe these scores are excessive as there is poor evidence for the implementation, success and efficacy of review of these measures.</p> <p>With regard to (d), there is no evidence of compliance with the use of bird scaring lines etc. presented in the report - are there enforcement/observer data available to verify the use of bird scaring lines on longline vessels? Our understanding is that the scaring lines are not standardized across the fleet (i.e. do not follow particular guidelines, see paragraph below), and that this will result in variable efficacy in bycatch reduction.</p> <p>With regard to (a) and (e), it should be noted that the mitigation measures deployed in the longline fishery are not in line with international best practice for the reduction of seabird bycatch, as identified by the Agreement on the Conservation of Albatrosses and Petrels (ACAP) (which is signposted in the MSC guidance). The ACAP Best Practice Advice - http://www.acap.aq/en/bycatch-mitigation/mitigation-advice - calls for at least 2 out of 3 of line weighting, night setting and bird scaring lines. It is not clear what</p>	The evaluation table has been amended to accommodate the additional observations. The scoring has changed.

Performance Indicator	Nature of Comment Indicate relevant code(s) from list above.	Justification Please support your comment by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Team Response
		the line weighting regime is (and note that irrespective of the depth that the line eventually fishes, the danger occurs when the line is being set and hauled), but it is evident that the fishery is not required to follow this best practice mitigation, and it seems that the annual review of measures has failed to assess these measures (instead calling for poorly evidenced measures like lasers). We therefore consider that the fishery should receive sub-80 scores for (a) and (e), and that a condition similar to condition 4 on the lumpsucker fishery should be raised, assessing the efficacy of the current measures and implementing well-established, scientifically tested and regularly reviewed bycatch mitigation for longlines (as recommended by ACAP)	
2.3.3	3	We support the inclusion of condition 8 (and 9) requiring systematic bycatch data collection, but as per our comments on the lumpfish fishery above, believe this needs to be independently verified to be robust. As such, the condition should be clear that it is necessary for the self-reported data to be cross-checked with the reference fleet and observers to verify its accuracy.	The condition text has been amended.

Peer Reviewer 1 Responses to Team Responses

<p><i>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</i> <i>[Reference: FCR 7.11.1 and sub-clauses]</i></p>	<p>Yes/No Not always</p>	<p>CAB Response</p>	<p>Reviewer response</p>	<p>Team Final comment</p>
<p><u>Justification:</u> The milestones for the condition on data-gathering for ETP species do not suggest that the SG80 level will be reached within the specified timeframe. The milestones for outcome (2.3.1) do not included any provision for taking action if data reveal unacceptable impacts.</p> <p>Also (a more side issue), information and management condition milestones relating to the same issue could be better integrated (you can't really have the strategy before you have the data).</p>		<p><i>The conditions are issued in good faith and the consequence of not meeting the milestones and ultimately if data changing the perception of the impact made by the fishery is – through the annual surveillance – a rescoring of the fishery. This is embedded in the surveillance programme and the assessment team does see no need to specify this in the condition.</i></p> <p><i>The MSC specification for setting conditions are seen as blocking such very reasonable proposals</i></p>	<p><i>I don't doubt everyone's good faith; the point is that milestones have to be set such that the SG80 level is met within the timeframe of certification. This is not done here. See 7.11.1.3-5.</i></p> <p><i>The last sentence of the response I do not understand.</i></p>	<p><i>Following additional stakeholder comments, the need for independent verification of ETP bycatch data was added to the condition.</i></p> <p><i>The need of good data is important to manage the fishery properly, in order to reduce uncertainty. However, better data should not be used to beat the fishery with, ie the more detailed the data the lower the chance of a fishery passing – it should instead lead to the improvement of the management and gear design of the fishery. However, if independently verified observations show a high bycatch of ETPs, then the fishery would need to be suspended in order to establish what went wrong. But this is a theoretical observation, and it will be up to the MSC in cooperation with the fishery to decide what to do – a milestone cannot pre-empt such an eventuality. There are procedures in place to say what happens when a milestone is not met at an audit.</i></p>

<i>Do you think the client action plan is sufficient to close the conditions raised? [Reference FCR 7.11.2-7.11.3 and sub-clauses]</i>	Yes/No	CAB Response	Reviewer response	Team Final comment
<p><u>Justification:</u> The action plans are OK, except that we need to know how the client will react if data show unacceptable impacts. Also, more information is required on consultation to ensure that the client has support for implementation – or the CAB should demonstrate that the client can implement the action plan by itself.</p>		<p>The MSC system should react through the surveillance audits</p>	<p><u>The requirements of 7.11.3-4 are not met; and are not covered by this response.</u></p>	<p>The collaboration between the NFA and the agencies involved in responding to the conditions is well documented and the team is satisfied. If the data collected by the client fishery show unacceptable impacts, then the MSC will be consulted as to what to do next; the data could be a result of a one off situation, a 'rogue' fisher, poor data collection strategy, etc etc. The objective is to improve the management of the fishery, good data will decrease uncertainty, and will impact on the practical management. This will be discussed at the time, but it seems futile to me to worry about it at this stage.</p>

Performance Indicator Review

Please complete the appropriate table(s) in relation to the CAB's Peer Review Draft Report:

- For reports using one of the default assessment trees (general, salmon or enhanced bivalves), please enter the details on the assessment outcome using Table 26.

- For reports using the Risk-Based Framework please enter the details on the assessment outcome at

Table 27.

- For reports assessing enhanced fisheries please enter the further details required at

- Table 28.

Table 29 For reports using one of the default assessment trees:

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
LUMPFISH				
1.1.1	<p>1.1a. I don't disagree with the scoring but no detail is given either here or in the main text as to what this 1% exploitation rate is 1% of, how it is evaluated etc. With the present rationale, the reader is being asked to take the figures on trust rather than being able to make any evaluation as to their validity.</p> <p>1.1b. The rationale does not provide a basis for justifying the scoring. The first two sentences contradict each other (?) and insufficient detail is given on the survey in the main report to be able to make any judgement – we don't know what it is surveying or where or how. The most detail given is in the rationale for 1.2.4a, which states that it is a survey for juvenile fish in general? which further begs the question as to how it provided an accurate index for mature female lumpfish, even if it covers all the relevant areas (which we don't know). I'm not saying that it is not adequate, I'm just saying that based on this report we can't tell if it is adequate or not.</p> <p>No figures are provided which give us a basis for anchoring the survey trends to any absolute estimates of population</p>	<p>The report text has been clarified. The harvest rate is calculated as the swept area female (30cm+) biomass estimated in the IESSNS survey and the removal (based on roe) in the Norwegian fishery</p> <p>The text has been clarified taking the reviewer comments into account</p>	<p>By clarified you mean 'a footnote has been added'..? But the rationale is more clear now as to the source of this 1% - it would still be good to have further details but that's more an issue for the scoring of 1.2.4 – see below.</p> <p>The rationale is better, although it would still be nice to have some more detail in the main body of the report – e.g. how they arrived at the estimates of MSY harvest rates, details of the survey, how female catch is back-calculated</p>	

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
	size or status – they are going up but how do we know that this is not the stock going from very depleted to only slightly depleted? (Again, I'm not saying this is the case, I'm just saying we can't tell.) There is only this 1% figure which is also provided without explanation or background.	The estimated harvest rate is minimal	from roe... but again, more an issue for 1.2.4. Yes, the 1% is more clear now.	
1.1.2				
1.2.1	Sla. This 'Norge saltfiske lag' is not explained anywhere in the report so we have no idea what is the Norwegian approach to MSY. As far as we have been told there are no estimates of any MSY reference points for this stock. Conversely I have no issue with the scoring at SG80, but at SG100 I find it a bit of a stretch to say that it is 'designed' – it seems quite ad hoc to me.	'Norges saltfiske lag' Norwegian marine fishing law, text has been updated The Norwegian strategy as it is implemented in the regulation of the	Better	

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
	Slf – I'm sure you're right but just confirm that there is no bycatch of males.	lumpfish fishery is to be based on scientific input – for international and other large stock through ICES and for minor stocks such as lumpfish through IMR and to establish catch limits – not necessarily TACs – to assure sustainable fisheries. The by-catch of males is recorded in Table 16 and is 0.03% < 0.5 t in 2016.	OK, fine, sorry I missed that	
1.2.2	Re consultation on condition, the CAB needs to be clear whether the client could implement a HCR meeting the SG80 requirements by itself, or whether it needs actions by other stakeholders e.g. the Ministry. If the latter, an indication of support is required from the relevant stakeholders (letter, email, comment in report etc.) which should be included in the report.	The option of an industry based or a formal regulation (e.g. J melding) is left to the Client. The Norwegian system is that integrated that it includes implicitly the support letter.	I see – well, I leave you to convince MSC of that.	
1.2.3				

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
1.2.4	<p>Sla. As already noted, we need more information about this survey to judge whether it provides an appropriate basis for evaluating stock status or not.</p> <p>S1b. I guess this 'reference point' relates to the %ages given in 1.1.1, the basis of which are not explained that I can find. The rationale says that SG80 is not met because the ref point is not explicit, but that it not what the scoring issue is asking – it is asking whether the ref point is generic or appropriate to the stock. If there really is no reference point, then normally the RBF should be used. I sympathise</p>	<p>The survey is documented in cruise reports by IMR and in descriptions of the survey see IMR home page http://www.imr.no The two surveys are an 0-group survey see Figure 20 and the IEENS survey see Figure 21. The o-group survey has been running since 1965 while the IEENS (ecosystem survey) in the present form is relative new.</p>	<p>It's all very well to give me IMR's homepage but their website is very large and entirely in Norwegian, therefore I would say that it is up to you to give a better description, or at least to answer some specific questions, i.e. how are the two surveys used to estimate female lumpfish biomass in terms of swept area of the survey relative to the geographical distribution of the stock, survey catchability etc.; and how is this related to the fishery to come up with the famous 1%? It seems to me that this whole process is likely to be quite uncertain, and while I don't dispute that the harvest rate is precautionary, the uncertainties need to be</p>	

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
	<p>with why it was not used; in my opinion the default tree is always a more robust option if it is possible. But perhaps there should be a discussion somewhere in the report as to what is the nature and status of these implicit reference points, and how that relates to the requirements in Table 3?</p> <p>Condition: Milestones don't say anywhere 'reference points implemented'. Same comment as above in relation to consultation.</p>	<p>The closing of the condition requires that the reference points are defined.</p>	<p>considered by the assessment team (see S1c and S1d). Personally, I think it's a basic requirement of describing the stock assessment which is not met by this assessment in relation to lumpfish.</p> <p>Yes, but that's not the point I'm making; the point I'm making is that the rationale does not answer the question posed in the SGs. But anyway, it's not a big deal for the assessment.</p>	

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
2.1.1	I think this has been interpreted wrong – SG100 also refers to 'main' species; if there are no 'main' species my understanding is that SG100 should be met also. So I believe that the score should be 90. (In the previous version of the standard, SG100 related to all species main and minor, so I see where this comes from.)	Scoring has been changed		Actually, no, the score remains at 80. The MSC Interpretations website states the following: MSC interpretations 24.02.2017, ID 2845: 'If the fishery has no main species, scoring issue (a) is not applicable. In scoring issue (b) each species will score either 80 or 100 depending on whether the SG100 is met or not.'
2.1.2	SG100b – is there really high confidence that it is working for coastal cod, redfish or plaice? judging by the rationale for 2.1.1b maybe not?	The extend of the lumpfish fishery concentrated in area 04 and is conducted by a small effort. The area of distribution for coastal cod, refish and plaice is much wider than the extend of the lumpfish fishery Also given the large mesh size 267 mm in the gillnet there is little impact on the cod, redfish and plaice. So based on the extend of the fishery, the low effort, short season and large mesh here is a high degree of certainty that the lumpfish fishery is not impacting the stocks significantly, e.g the	Fine – in that case they could score 100 for 2.1.1b ('evidence that the fishery is not hindering recovery and rebuilding')	

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
		total catch of coastal cod is around 40,000 t annually of which the catch in the lumpfish fishery is during 2012-2016 (Table 16) 40 t (1‰.)		
2.1.3	SG100a is missing. Presumably since there are no main it is met by default? Otherwise I'm quite confused by the interpretation set out in SIb – could this also relate to version 1.3??	SG100a scored “Y” by default. This is slightly perverse but based on advice from MSC secretariat.	OK, far be it from me to dispute MSC's advice	
2.2.1	<p>In my view, there might be 'main' secondary species based on an incorrect interpretation of the requirements for categorising species as ETP – see comments at the end of this document. The team should consider recategorising the ETP fish species (spurdog/dogfish) as main secondary. Likewise the birds can only be classified as ETP if they are red-listed as vulnerable or above (SA3.1.5.3), so possibly some of the seabirds should be dealt with here too? but I haven't checked each one.</p> <p>SIb – You could take the approach of evaluating the bycatch in lumpfish nets in comparison to estimates of overall catch on the stock – if it is negligible you can argue</p>	All birds and marine mammals are main secondary species (FCR SA 3.7.1.2) and are scored as such. The basic source for information on the status of the species in Norwegian waters is 'Artsdatabanken which is a Norwegian institution changed with tracking status in the Norwegian biodiversity.'. The classification has been done based on this information. Having checked the information the team see no reason for reclassification.	<p>If you are happy that the MSC requirements for ETP species (SA3.1.5) are met then that's OK.</p> <p>But the main secondary bird species are not included in the rationale for SIa anywhere – it says there are no 'main' secondary species.</p>	The catch profile for the fishery under assessment did not list any birds caught. There is no quantitative data to indicate this, although conditions elsewhere in this assessment have been raised to improve quantitative information, including independent verification through observers and/or gear

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	that 'there is evidence that the UoA does not hinder recovery'; possibly not worth the effort though.	Thank you for the proposal, the result is that in all cases the catch in the lumpfish fishery is insignificant		specific reference fleet data
2.2.2	Same comment as above; i.e. spurdog and some of the birds should maybe be 'main'?	The text has been clarified. The classification is based on national legislation 'Artsdatabanken'	OK. But where are the birds?	Birds are dealt with under ETP, as none appear in the catch profile.
2.2.3	Ditto.	The text has been clarified. The classification is based on national legislation 'Artsdatabanken'	Birds? Sla again says that there are no main secondary species, which is not correct.	Birds are dealt with under ETPs, where conditons have been raised to improve the quality of information too, which may in future indicate that some of the bird species caught would appear under Secondary main.
2.3.1	Slb. The rationale is quite confusing; if the bycatch averages 0.84 birds per trip (and why not 1.6 birds per trip?), how many birds in total (by species) does that add up to? and what is the population size of these species?	The report text has been updated to include estimates from Fangel et al (2011). The populations	The figures given here are not given in the rationale; lots of new (but not very relevant) information is	The evaluation table has been edited for clarity. I agree with the suggestion

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	<p>Then we can start to evaluate the population-level impact. This has only been attempted for guillemots. Also I do not really buy the argument as to why SG60 is met; it depends what the season is – the birds are also only present inshore for a short season; do the seasons coincide? In which case a short season for fishing makes no difference. SG60 needs better justification looking at estimated total levels of catch and trends in all the relevant populations.</p> <p>Slc. Could consider disturbance as well, if you think it might be relevant – this applies to the other gear types as well.</p> <p>With the scoring as it is now, the overall score should be 70 (two issues at SG80, one met, one not).</p> <p>Condition: I take the point about integrating with ongoing work, but it doesn't seem likely from the action plan that the SG80 level will be met by the end of the certification cycle. Could something be added in the meantime; e.g. voluntary data recording by a reference fleet? observers?</p> <p>More important; the milestones and action plan do not include anything about what will be done to improve outcome status (as opposed to data) – what happens if the</p>	<p>are more than 1 mill while the catch in the lumpfish fishery is in the order of 2,000 birds per year based on a special study in 2009-2010.</p> <p>The justification text has been updated.</p> <p>Not with the low takes that are documented.</p> <p>Error corrected</p>	<p>given in the rationale for Sla, but this is not scored so I presume it is in the wrong place? For future reference, it would be useful at the start of 2.1.1, 2.2.1 and 2.3.1 to provide a list of (main) primary, (main) secondary and ETP species, just so everyone is clear what we are talking about. Otherwise species get lost as per the birds from main secondary species.</p> <p>Anyway, the rationale for SG60b being met has not been improved, as far as I can tell; there is still no information about fishing vs foraging seasons and areas.</p>	<p>of a summary table to show under which component to evaluate a species.</p> <p>I don't understand the point made. Please provide a published reference which highlights this comment</p> <p>The Condition has been tightened to include the need for verifiable data, not just self-recording.</p>

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	data reveal outcomes that do not reach the SG80 level?	<p>The assessment team has inserted this proposal into a recommendation</p> <p>The surveillance audit procedures take care of these concerns</p>	<p>Not really, the condition should explicitly improve outcome to the SG80 level.</p>	<p>As the Condition is written now, it should improve outcome to the SG80 level. However, if incoming bycatch data analysis shows up a problem with ETP bycatch then this will be addressed at future audit, using available MSC tools (suspension/variation to update condition, etc) but it seems premature to me to cover 'what-if' eventualities now in the condition.</p>
2.3.2	The rationale for SIa is a bit weak, but the seasonal closed areas near colonies could be sufficient for SG60 to be met if we had a little more detail – where, when, which	There is no non-bird ETP species except the dogfish (spurdog). The regulations	So where is spurdog in the rationale for 2.3.1? and here? None of the	Yes, it would be lovely to write an essay on each species, but there was not

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	<p>colonies of which species, how important are these colonies for the overall population, closed for how long, closed by who? And what about the non-bird ETP species; what are the measures for those? It would be good to start the rationale with a reminder of what the ETP species are, actually, and then go through species by species or group by group.</p> <p>Slc – I do not see an objective basis for confidence based on the data provided here. There seems to be very little data on bird bycatch in this fishery, which is nevertheless significant. How about the impact on guillemots where the overall Norwegian population is quite small? How about the species which are in decline according to the paragraph above Table 20 – e.g. eider ducks etc.</p> <p>Sld. None of this 'evidence' is provided in the report. The section on bird bycatch mitigation (5.4.2.1) only deals with longlines.</p> <p>Condition: The condition is OK, but the milestones could be better integrated with the previous condition – it seems that data is a pre-requisite for a reasonable strategy, but the milestones for data-gathering are later than those for the strategy.</p>	<p>are local assuring appropriate protection</p> <p>A special study on bird by-catch Fangel et al (2011) and follow-up studies 2012- 2015 provide confidence in the estimates.</p> <p>Text has been updated</p> <p>MSC guidelines are not promoting integration however the assessment team agrees.</p>	<p>questions raised in the review have been answered.</p> <p>What estimates? You don't provide any estimates in the rationale.</p> <p>The section on bird bycatch mitigation hasn't. There is no information in the main</p>	<p>enough time available. A definition of ETP has been given at the start of section 5.4.</p> <p>Interviews with fishers indicated that breeding colonies are avoided because entangled birds are expensive in terms of gear and lost fishing time. The evaluation table has been edited to distinguish between fish and seabirds in the SIs.</p> <p>The estimates, based on studies and not this fishery, are explained in section 5.4.3, and have been quoted in a summary sentence (Fangel et al 2015)</p>

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			report or the rationales that I can find on these closed areas next to breeding colonies – colonies of what species? when closed? how long for? on what basis? by who?	The client has been asked to provide such information to be inserted in the report.
2.3.3	<p>Sla. It might be true that quantitative information is sufficient to estimate the impact on the various relevant bird populations, but no evidence of this is provided in the report. Where are the estimates of total bycatch by the fishery? Where are the figures for total population size and trends for each relevant species? Lacking that, I'd say that only SG60 is met. Even using the Fangel report, I would ask the team to question whether SG80 should be met, based on the comment about sample sizes being small and bycatch highly variable (this can only be judged if you have read the report in question).</p> <p>S1b. CABs are not supposed to tell clients how conditions should be met, just so ASI don't give you a hard time.</p> <p>Condition: See comments on 2.3.1 condition.</p>	<p>The text has been updated the total take is 2-3,000 birds annually with black gillmots as the major concern. Takes have because of the reduced effort decreased in recent years, the study is 2009-2010 when the lumpfish fishery peaked (2008). NINA has since 2008 conducted sea bird studies with special emphasis on the effects of coastal line and gillnet fishing. The level (birds per net) is confirmed at more recent studies</p> <p>Point taken; the team considers the Condition 5 to be general</p> <p>See answer to 2.3.1</p>	OK, if the team is happy ...	

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2.4.1	<p>Sl a. You are really citing Figure 27 as providing relevant habitat information? It is a map of the entire North Sea, Norwegian Sea and Barents Sea – while this fishery operates in limited inshore areas, as I understand it. I agree with the argument for SG80 based on the operation of the gear and the general nature of the grounds, but SG100 requires 'evidence' which is not provided. MSC is starting to require analysis in the form of a (semi)quantitative assessment of the footprint of the fishery in relation to each habitat type – this could be a good place to start for this fishery, considering the footprint is likely to be small (i.e. footprint of each net x number of net sets x area of lumpfish spawning habitat).</p> <p>Sl b. Is Lophelia really the only relevant VME? Could there not be others e.g. (by comparison with Scotland) flame shell reefs, Modiolus reefs, seapens, Arctica islandica beds etc etc?? I am not familiar with inshore marine habitats in Norway; the point is that there is no discussion of anything other than Lophelia and no evidence is provided as to habitats in the lumpfish areas specifically.</p> <p>A good place to start would probably be to consider the types of habitat in which female lumpfish like to spawn??</p>	<p>Point taken. Text amended. The coastal zone is skerries (rocky) and sandy, Figure 27 expanded with a more detailed map based on EMOD data</p> <p>The adult Lumpfish inhabit rocky bottom and many of examples mentioned are not relevant in this context. The legislation is wider than Lophelia mounds and include in principle the list mentioned not least sponges and sea pens. However, the concerns have focused on Lophelia sp.</p>	<p>I guess you mean Figure 28? It doesn't have a legend. Does it include VMEs or just general broad-scale habitats?</p> <p>Right – that's precisely my point, if only Lophelia is mapped and protected, what about impacts on other VME taxa? They</p>	<p>The Legend of Figure 28 was there in the initial PR document, but was separated from the actual figure because of paragraph line breaks. That has now been corrected. These maps, Fig 28 and 28a provide a broad sweep overview of the benthic substrates. Figure 31 provides more specific habitat details.</p> <p>Sl a) deals with commonly encountered habitats. The evidence is given in the form of a study by Clark et al 2015 which showed that static gears do not have a significant impact. However, in the light of citing probability, Table SA9 in the MSC CR, then SG100 is not met, as the team was not provided with the relevant information: footprint of each net x</p>

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		The expanded Figure 27 is in response to the proposal by the reviewer.	might be more severe, no, since there is no protection? They need to be considered systematically. Figure 28? Does it include VMEs? You can't tell because there is no legend.	number of net sets x area of lumpfish spawning habitat. The SI a) was rescored I have to point out here that the maps provided in section 5.5 are not specific to the lumpfish fishery, but also the ling and tusk fishery. One of the confusing aspects of this report – so many UoAs over a wide area of NE Atlantic. Section 5.5.2 deals with VMEs including distribution maps where possible (Figs 33-37) Legend was there, but not fixed to the Figure ('keep with next') The text in the evaluation for 2.4.1b has been amended to include other

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				VMEs, where appropriate.
2.4.2	<p>Sla. MSC provide a definition of a strategy in Table SA8 as below. I'm not sure that the last element (adapting fishing practices in the light of identification of impacts) is met. I am also concerned that you are using a general wide-ranging habitat mapping exercise (MAREANO) to apply to a context where it doesn't really apply; i.e. localised inshore fishing areas?</p> <p>A "strategy" represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts</p> <p>Slb. We need more evidence as to the habitats in the specific lumpfish areas in order to judge.</p> <p>Sld. State which if any MSC UoAs are overlapping in relation to impacts on habitats in this area. Probably none but at SG80 it has to be addressed.</p>	<p>Fishing practise is modified locally including small closed areas where appropriate.</p> <p>The source for the maps are EMODNET data, the Mareano programme is as indicated focusec on the offshore areas.</p> <p>The definition of a strategy is that it is strategic which is not much use. OED defines the strategy as "A plan of action designed to achieve a long-term or overall aim". The plan of action includes measures implemented in the fishery to avoid habitat damage (long term goal)</p> <p>Figure 27 expanded</p> <p>Justification amended</p>	<p>Fine but the rationale only mentions Mareano.</p> <p>I think that's a little unfair; MSC's point is that a partial strategy may be something done for some other reason that incidently benefits the component in question (e.g. a closed area for juvenile fish that also protects habitats), whereas a strategy should be specifically to manage the component in question and should allow for review and modification according to whether it is working or not. Does this fishery have</p>	<p>The scoring has been changed in order to accommodate the definition of strategy in the context of this lumpfish fishery.</p> <p>Additional text has been added in b) and d)</p>

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			that in relation to protection of VMEs? See above re Figure 28 – I'm not sure it helps.	
2.4.3	As noted above, I don't really buy the fact that MAREANO mapping over a really wide area is sufficient to evaluate habitat impacts for this fishery in specific inshore areas. We need information about what the habitats are in those areas specifically (i.e. what habitats do female lumpfish like?). For vulnerable habitats, only Lophelia is mentioned in the rationales, whereas (and I am extrapolating here from Scottish sealochs) it seems possible that in fjords, many other interesting habitats could occur. Slb. SG80 requires that 'there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear' – which doesn't seem to be met? or at least is not justified by the rationale.	Figure 27 (EMODNET) has been expandedJustification modified, Figure 5 demonstrate that there is very detailed geographical information available for the fishery	See above	The score has been changed in a) in order to accommodate lack of detailed habitat maps in fjors and nearshore (all habitats) The justification has been expanded in b).
2.5.1				
2.5.2	If there is an ecosystem plan could this not be 'a strategy that consists of a plan'? – i.e. SG100 met. If you think that	The general plan for the Barents Sea is non binding. The team	OK	

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	the measures listed justify the definition of 'strategy' given above.	does not feel that SG 100 is met.		
2.5.3				
LING AND TUSK				
1.1.1	For Vlb tusk, Table 11 is referenced in relation to stock status but Table 11 says that stock status relative to the ref point is 'unknown'? Conversely the rationale for the other stocks could also note the reference points (?) in Table 11; it makes reference to 0.5*BMSY, suggesting that there is a BMSY, somewhere somehow. Anyway, I don't disagree with the scoring for these stocks but it's a bit confusing.	The comment is given in the specific ICES content (Blim, Bpa etc) and not in a more wider content of all possible proxies, the ICES language is slightly confusing.		
1.1.2				
1.2.1	Sla. I'm not sure that the harvest strategy is 'designed' – even the objectives are pretty ad hoc. For Vlb tusk, part of the stock is in international waters; that needs a mention. Slb. I don't disagree with the scoring but the rationale is a bit confusing – it's not asking about whether it is designed here; it is asking about whether there is evidence that it is	The strategy is designed to achieve sustainable fishery as confirmed by Norwegian authorities at the site visit	Well, they would say that, wouldn't they?	

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	achieving its objectives (which there is).			
1.2.2	(something has gone a bit wrong with the table, here and below) See comments on 1.2.2 condition for lumpfish which also apply here.		Table still messed up.	
1.2.3				
1.2.4	<p>Sla. One of the stocks is category 5. You could mention that it is appropriate based on the evidence that exploitation levels are very light; this seems like a key point to me. The further away you are from the danger zone, the wider you can allow your confidence intervals to be.</p> <p>S1b. I don't necessarily disagree with the scoring (the information provided on reference points is a little bit confusing) but the reference points in Table 10 are not 'generic'; they are specific to the fishery in question. Furthermore, MSC explicitly allows for 'empirical approaches' in defining ref. points (see Table 3).</p> <p>For the condition, same comment on consultation; it's hard to see how the client can do this by themselves.</p>	<p>Justification Text updated Tusk Bib discussed separately.</p> <p>The reference points are of course specific at the stock level but generic in as much as they include the full stock, they are not generic at the species level.</p>	<p>? I don't really understand this response but the scoring is precautionary I guess.</p>	

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		The same answer with reference to the surveillance audits	I don't agree with this interpretation – see above.	
2.1.1 longline	<p>Sl a. The wording of the rationale contradicts the Ys as to whether SG100 is met. See also my comments on 2.1.1 for lumpfish – since SG100 also refers to 'main' spp and there are none, it should be met as I understand it.</p> <p>Sl b. According to Table 15, several stocks of cod and redfish are depleted; I very much doubt that this fishery plays any part in that but more information is needed in the rationale to justify the scoring for these stocks (the second part of SG100 needs to be met).</p>	<p>Justification amended</p> <p>The catch in these ling-tusk fisheries is minimal relative to the total catch of the coastan cod, and redfish. Justification expanded. Figure 24 has been inserted to explain this point</p>		
2.1.1 gillnet	Same comment as above for Sl b	See answer above		
2.1.2 longline gillnet	(Sl e a cross-ref has come adrift)	Reference corrected		
2.1.3 ll gn	<p>See comment under 2.3.1 lumpfish re interpretation; missing Y next to SG100a.</p> <p>Sl b: All spp are not minor; also that the minor meet 2.1.1b</p>	Corrected, PI 2.1.1b has been updated		

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	100 requires further justification in my opinion.			
2.2.1 ll gn	SG100a also refers to main spp. See my comments under lumpfish in relation to fish and birds which are red-listed; some of these need to be considered here (see also below).	The species are considered under 2.3.1	If the requirements are met, then fine. Fulmars (and other birds) should be main secondary species so need considering under Sla. and bait??	Explanation as to why seabirds are dealt with under ETP was provided in main report. Bait has been added under Primary minor (herring, mackerel)
2.2.2 ll gn	Sld. The question is whether any of the secondary spp are sharks, which they are (skates and rays, spurdog, porbeagle). Currently these are categorised as ETP based on the Norwegian red list but this is not a valid interpretation of MSC's requirements, I don't think (see details in comments at the end). They therefore probably need to be considered under secondary.	based on national legislation "Artsdatabanken"..	Birds? bait?	Bait as above Birds under ETP
2.2.3 ll gn	Same comment – 100a should be met.		Birds?? bait??	As above
2.3.1 ll gn	See comment under secondary above. What about the skates and rays? Their catch is not known	Justification is updated to account for skates	I don't see any discussion of the stock status or trends of	Elasmobranchs have been discussed in Section 2.4.2.

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	<p>since not identified to species. They are ignored in the rationale.</p> <p>In relation to birds, I do not agree that SG80 is met based on the arguments given; I'm not sure it even justifies SG60. For example, while the fishing depth of the gear is deeper than diving birds, most bird bycatch comes on setting and hauling (for longlines). If vessels have to record bird bycatch, how come we don't have any actual figures? except for an out-of-date figure of 10-12,000 birds (is this gillnets or longlines or both?). It would be better to separate out the two gears in the rationale, which in any case needs to provide better data on the impact by species of the fishery, relative to the population size and trends in those species, for SG80 to be met.</p>	<p>and rays Figure 24 provides further details on the amounts involved.</p> <p>The 10-12,000 bird estimate is updated 2012-2015 and the level is confirmedT this estimates refers to the coastal fishery (both longline and gillnets) while the dominating part of the tusk and ling fisheries are offshore at depths 200- 500 m.</p> <p>The report has been updated with population size estimates.</p>	<p><i>A. radiata</i>; you don't provide any evidence in the rationale that SG60b is met, let alone 80.</p> <p>So this figure of 10-12,000 birds is not relevant to this fishery? In which case what is the bycatch figure for this fishery? The rationale still does not justify a score of 80 or even 60 in my view.</p> <p>Here's what I could find in the report (p71): The most typical species belong to the auk and gull families: Brünnich's guillemot (<i>Uria lomvia</i>), 1 750 000 breeding pairs (BP), that prey on polar cod; common guillemots (<i>Uria aalge</i>), 140 000 BP; little auk (<i>Alle alle</i>), 1.3 million BP; black-legged</p>	<p>Rationale has been expanded for clarification.</p> <p>The rationale has been clarified; following additional feedback from stakeholders the score has been changed. A condition has been raised to improve data to species level and independent verification.</p>

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			<p>kittiwake (<i>Rissa tridactyla</i>) 850 000 BP; northern fulmar (<i>Fulmarus glacialis</i>), 100 000–1 000 000 BP; Atlantic puffin (<i>Fratercula arctica</i>), 1 225 000 BP. Northern fulmars, cormorants (<i>Phalacrocorax</i> spp.), black guillemots and razorbills are the birds most often drowned in fishing gear in Norway.</p> <p>In other words, with the exception of fulmars, the population size estimates are given for different bird species that the species that are likely to end up as bycatch.</p>	
2.3.2 Il gn	<p>Sla 'records should be available' – so where are they? Evaluate whether the measures meet MSC's definition of a 'strategy' (see comments under lumpfish) In Sla you say there is a strategy, but in Sld you say there isn't. What about the 'skates and rays' (species undetermined)? Sle. I'd like to know more about how this is done in relation</p>	There is no record of bird by-catch but based on the general knowlegde of other fisheries this require	Ah – so you mean 'records ought to be available' – my mistake. Still no mention of the rays.	Following additional information from stakeholder, a condition was raised on this PI

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	to birds; how are impacts quantified in relation to populations for each species; how is it decided whether a given level of bycatch is acceptable or not?	further documentation, hence the condition	No response by the CAB to this point. If records of bird bycatch are not available, how can they review measures to reduce it?	
2.3.3	<p>Sla 'In this fishery, Ling and tusk, longline and gillnet, no seabird records were available, although it is a statutory requirement for vessels over 15m to record such interactions' in addition skates are not identified to species, apparently. This doesn't seem compatible with a score of 80.</p> <p>Condition: Same comment as for lumpfish 2.3.1. But I thought that reporting all ETP bycatch was already a requirement for most of these vessels? Does this really qualify as a 'coastal fishery'?</p>	<p>the scoring must be based on the available information not suspicions that the non-reports are a result of non-compliance. There is a condition to request such more documentation.</p> <p>Skates and ray are few the dominating species is Thorny (starry) skate (Amblyraja radiata), text inserted in section 5.4.2. The fishery has a coastal component as well as a</p>	<p>So when data are missing you assume that it is because there is no interaction, rather than there is a lack of reporting? That doesn't sound like a critical and precautionary evaluation of the fishery to me, particularly since underreporting of bird and mammal bycatch is a well-documented phenomenon.</p> <p>You should deal with each ETP species (or category) systematically in each rationale. Otherwise issues</p>	<p>The condition asks for independently verifiable recording, as well as recording bycatch to species level, which should include seabirds, as well as any other ETP (it should automatically appear in the e-log</p> <p>The issues identified in the condition apply to all ETPs, identification and independent verification.</p>

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		dominating offshore component.	get missed.	
2.4.1	Slb. Only Lophelia is considered in the rationale, whereas the habitats section of the report has quite a comprehensive discussion of various kinds of VME.	Considerations of VME are based on the FAO criteria. The scope of the MAREANO program and consequently management of the areas is a general mapping of the habitats	Plenty of habitats other than Lophelia meet FAO criteria for VMEs in this area; all possibilities need considering systematically, as above.	The rationale has been clarified and expanded.
2.4.2	Scoring for SG100a needs to consider the cumulative impact of all fisheries in the area on habitats; in this case there are plenty. Slc. How can there be 'quantitative evidence' that Norway plans to do something (close more areas) in the future? And if it's going to be done in the future, how can it be achieving its objective now? Also, OSPAR has no ability to close areas itself – it is the role of national jurisdictions (e.g. UK) or in the case of international waters in Vlb, NEAFC. Sld Scoring at SG80 needs to deal with the second part of SG80 ('protection afforded to VMEs by other MSC	The trawl fisheries in the areas ICES I+ II are MSC certified and the impact by the line and gillnet are minimal. Text has been updated. The strategy as expressed to the assessment team by competent authorities is to continue collection of information through	It may have been updated, but it still doesn't mention any other MSC UoAs. OK if you say so	The rationale has been clarified.

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
	UoAs/non- MSC fisheries, where relevant') bearing in mind that there are a lot of other fisheries in this area.	<p>further surveys and information from the fishing fleet and introduce appropriate regulations (e.g. closed areas) as documentaion is forthcoming.</p> <p>The regulations are general aplying to all fisheries operating in the areas. Text has been updated</p>		
2.4.3				
2.5.1				
2.5.2	See comment under lumpfish – 100a could be met??	<p>see answer for lumpfish</p> <p>The general plan for the Barents Sea is non binding. The team does not feel that SG 100 is met.</p>		

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
2.5.3				
TRAPS				
2.1.1	Slb. Same comment as for longline re cod, redfish. By the way, Table 15 is wrong in relation to IVa nephrops (see comment below) Sld. The question is whether any of the primary spp are sharks.			The evaluation table has been clarified, and primary species evaluated to element level. No Sld in 2.1.1 ; in 2.1.2d sentence iinserted re sharks/ primary
2.1.2	Sla. 100 met. Slb. See comment under 2.1.1.			Sla is NR, see : MSC interpretations 24.02.2017, ID 2845: 'If the fishery has no main species, scoring issue (a) is not applicable. In scoring issue (b) each species will score either 80 or 100 depending on whether the SG100 is met or not. Sme additional clarification provided.

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
2.1.3	Sla. 100 met.			There are no main primary species, Sla is NR
2.2.1	See comments above regarding ETP vs main secondary spp.; also interpretation of SG100a. What about trap bait? 5.3.3 only considers longline bait.	See comment for 2.2.1 Line/Gillnet	Trap bait is still not mentioned anywhere in the report that I can see.	Bait has been included in 2.1.1 as they are primary species - minor
2.2.2	(but may need to add new spp)		Bait?	See above
2.2.3	ditto		Bait?	See above
2.3.1	Usually for trap fisheries, the main ETP concern is entanglement by marine mammals, depending mainly on whether the traps have vertical lines to the surface; there is no consideration of that.	There is no report of such entanglements, justification text has been updated		A recommendation has been raised to report interactions with marine mammals
2.3.2	Consider marine mammals, also given the lack of data whether MSC's definition of a 'strategy' is met.	MSC definition of a 'strategy' is circular so it is always met. The Norwegian management is extensive in its considerations of the marine mammals and there is a clear strategy for assuring the		Some additional clarification has been added.

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
		sustainability of the populations.		
2.3.3	<p>According to the rationale for Sla, there are no data specific to this fishery on non-fish bycatch. Given that it is small, it might be reasonable to infer low impacts as per SG60, but I don't see how 'some quantitative data' is adequate to assess the UoA-related mortality'.</p> <p>(Are you sure that the reference to 'refs in 2.4.1' is correct? It seems odd, but I could be wrong.)</p> <p>Condition: Same comment as lumpfish 2.3.3.</p>	<p>There are detailed data presented in Table 16. These data include all takes including ETP species.</p> <p>Thank you for pointing this out, corrected, should be 2.3.1</p> <p>See answer on Lumpfish</p>	<p>Do you mean Table 14? Table 16 is for lumpfish. Table 14 is the catch composition of the trap fishery – would we expect non-fish species to be included? ETP fish species are included but that's not what I'm asking about.</p>	<p>Table 14. A condition was raised to address information gaps on non-fish ETPs</p>
2.4.1	<p>See comment for lumpfish re identification of habitats in inshore areas – if this fishery is operating similarly inshore. Also for VMEs only Lophelia is considered in the rationale for Sib.</p>	<p>More detailed map presented,</p>	<p>See comment above on new Figure 28</p>	<p>The evaluation has been clarified and scores amended</p>
2.4.2	<p>See lumpfish if applicable</p>	<p>see answer on lumpfish</p>		<p>The evaluation has been clarified and scores</p>

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
				amended
2.4.3	See lumpfish if applicable	see answer on lumpfish		The evaluation has been clarified and scores amended
2.5.1				
2.5.2	See above	The general plan for the Barents Sea is non binding. The team does not feel that SG 100 is met.		
2.5.3				
3.1.1	Sl.a. I believe that the harmonised approach for scoring this issue for demersal stocks, in relation to EU-Norway cooperation, is that cooperation is effective but not binding – i.e. SG80 is met but not SG100. For example, in relation to pelagic stocks you can see that Coastal States agreements have broken down and cannot be enforced. The rationale also needs to mention the Faroes and the question of international waters in VIb (NEAFC). Sl.b. How about international disputes?	Information on NEAFC and the EU management system, as well as international dispute resolution, has been added to the report		

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
3.1.2	How about roles and responsibilities at international level? e.g. NEAFC? other coastal states?	Information on NEAFC and the EU management system has been added to the report		
3.1.3	Not all the fishery is taking place in Norwegian waters; how about in EU/UK/Danish waters? International waters?	The Norwegian fisheries are under Norwegian authority, but is following EU fishing rules as part of the TAC transfer. Information on NEAFC and EU has been added to the report		
3.2.1	Need to consider non-Norwegian fishery-specific objectives for parts of the fishery or stocks not in Norwegian waters.	Unlike 3.1., which deals with the wider management context of the fishery, 3.2. is about the fishery-specific management system	Fishery-specific objectives can be non-Norwegian, e.g. in relation to Principle 1 (stock reference points).	
3.2.2	Decision-making processes at international level (for shared stocks, non-Norwegian waters)?	Unlike 3.1., which deals with the wider		

Performance Indicator	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response	Reviewer response	Team Final comment
		management context of the fishery, 3.2. is about the fishery-specific management system. Neither ling, tusk or lumpfish are defined as shared stocks in the EU–Norway regime		
3.2.3	The discard ban has been relied on quite a lot in scoring parts of Principle 2, but how is this enforced in areas of the fishery outside Norwegian jurisdiction?	It is too early to assess the recently introduced discard ban in EU waters. This will be addressed at surveillance audits, which is in line with the stance taken in other ongoing North Sea assessments.		
3.2.4				

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

- Comments on the report (some overlap with the comments above because I did this first):
with comments on the response – I’ve not included the comments on typos etc.
- Section 3.1.1 of report - summary of UoAs (2nd para below tables with definition of UoAs, last para of p16) is not correct (out of date?); there are 10 UoAs and 1-8 can’t be scored together for P1 because they include two different spp.
Corrected
- Table 6 – the %ages are a bit misleading if they are supposed to imply the % of the total ‘TAC’ (roe quota) taken, since it doesn’t account for vessels which partly use their quota – but I guess if there is no limit on entry for small vessels then there is no ceiling. In which case, I don’t think the %age is particularly meaningful – it might be better to delete it?
Much better
- Table 10 – I think you should make clear that these are not reference points in the usual sense i.e. fixed, but rather sliding averages of CPUE; the reference points don’t tell you anything about the absolute status of the stock – only the relative direction of change. It might be a little misleading to call them reference points?
OK, I guess you don’t agree.
- para below Table 10 – EU landings obligation does not apply to ling and tusk as yet, as far as I know; full implementation due in 2019.
I guess you feel that this precision is not important; maybe not.
- Table 11 doesn’t tell us what is the stock status in relation to these reference points as far as I can see – it only tells us what are the estimates of the reference point values?? So the legend is wrong?
OK, I think I see what you mean now; I misunderstood what ‘desirable’ means in this context.
- Figure 18 – Those FishBase maps give probability of presence not distribution per se.
Not corrected.
Clarification added

- Last paragraph p.50 ‘The current estimate of the exploitation rate is around 1%.’ This seems like a pretty crucial point so it would be good to have a bit more detail – i.e. what is the 1% 1% of? e.g. total biomass? mature female biomass? egg production? some other biomass measures? It would also be nice to know a bit more about the survey since that is the main biomass indicator – how is it done, what areas does it cover, what part of the stock is it surveying etc.

Most of these questions have not been answered – see above.

- Last paragraph of 5.3 – I think this interpretation is incorrect. The section of the standard quoted (SA3.5.1-5) applies to primary not secondary species. Relevant is SA3.7.1.2: For species that are defined as ‘out of scope’ (amphibians, reptiles, birds, mammals) that are not classified as ETP, all species impacted by the UoA shall be considered ‘main’ – i.e. regardless of the quantities caught.

Not corrected; the part of the standard quoted still refers to primary, not secondary species.

Incorrect comment – the para refers to SA3.4.1-5 which refers to percentage thresholds, which are the same in both primary and secondary species. – I did not quote SA3.5.1etc there

- Table 13, 16, 18 skates and rays, blue ling, spurdog, porbeagle: SA3.1.5 sets out the criteria under which species should be designated ETP. Red listing is not a criteria except for out-of-scope species (i.e. not for fish) – hence would not be a relevant for these species. Note however GSA3.4.2: *In all cases teams may still designate species as main, even though it falls under the designated weight thresholds of 5% or 2%, as long as a plausible argument is provided as to why the species should warrant that consideration.*

Apparently these species are legally protected in Norway, so their designation is correct.

- Table 15 is wrong about IVa nephrops. There is a TAC set for Subarea IV, but for each individual FU there are UWTV surveys and defined reference points (some more complete than others, but very extensive for the main FUs). I don’t suppose, however, that this fishery has much of an impact on these stocks.

Not corrected

Addressed

- 5.3.3 if a longline fishery is using <5% of bait by weight of catch, it is doing well; it’s usually more than that. Either way, the report needs some justification for the statement that bait ‘will be less than 5% of the total longline catch’ for me to believe it. Also, how about trap bait? This is not mentioned.

Still no figures provided.

Up-to-date data received from client, bait has been addressed now

- Table 20 – Why are black guillemots, cormorants and eider duck not relevant? They are mentioned above.

Not corrected / explained.

When the Norway Red list was checked, which is what that table refers to, these species were not on that list – or at least I could not find them.

- Habitats 5.5.2 The fishery operates in IVa, VIa and VIb i.e. in Scottish waters as well as Norwegian. Aside from a few passing comments about OSPAR and the Marine Strategy Framework Directive, I am missing any discussion of habitat protection in Scottish waters. There are some closed areas in VIb for corals and carbonate mounds, I believe, but the offshore MPAs in VIa and IVa are for the most part not yet managed; for an up-to-date summary of the situation see the Final Report for SFSAG cod (due to be published in the next few days). There is also NEAFC for international waters in VIb.

OK better, even if Scotland is still not really mentioned – but they are working in the EU/OSPAR framework which is discussed, as is NEAFC.

- Section 6 – 6.1 notes the relevant jurisdictions to be Norway, EU and international waters; but the rest of Section 6 discusses only Norway.

Much better

Thank you for the thorough review, twice, and my sincere apologies that this report is not as clear as it could have been. By the time it became obvious that two separate reports would have been best, there was no time left in the budget. The team had to work around the ever changing goal posts of this assessment.

Peer Reviewer 2 Responses to Team Responses

Public Comment Draft Report comments of MSC Peer Reviewer 1

This commentary has been provided at the request of the MSC Peer Review College.

I note the Assessment Team's efforts to respond to many of the points made in the Peer Review, and the edits and changes to scoring that have been made. Nevertheless, there are a number of points that I feel it is appropriate to come back on.

- 1) A note – in the list of UoAs, new UoA 5 in Rockall Vlb is listed as being the Norwegian North East Arctic tusk. UoA 6 Vlb has it correctly listed as NE Atlantic.
- 2) Comment on Summary of the Peer Reviewer Opinion (Peer Reviewer 1).

I commented that the report is not as clearly laid out as it could have been, and the Assessment Team's rebuttal stated that it is complicated because of the UoCs. I note simply that the scoring tables start with the last UoA (12), while the individual scoring PIs have been attributed to target species and gear types, but not to the UoA number, which together do not make life easy for anyone reading the report.

Sincere apologies for the report not being as clearly laid out as preferred. This whole assessment suffered from a Concorde effect, when it became obvious that it would have been far more logical to write two reports there was no time left in the budget. The team did what it could, under the ever changing goal posts of this assessment.

- 3) Comment on Point 1 in the Summary of the Peer Reviewer Opinion (Peer Reviewer 1).

With respect to not using the RBF, I previously noted that for UoA 1 and 2 (Tusk in ICES I-II), UoA 5 and 6 (Ling in ICES I-II, noting this is now UoAs 7 and 8), and UoA 9 (Lumpfish, noting this is now UoA 12) stocks, ICES states in the relevant stock assessment summaries that “No reference points are defined for this stock”, and that “The stock status relative to candidate reference points is unknown.”.

The Assessment Team rebuttal stated that “The ICES advice reflecting stock trend is considered (by ICES) to be precautionary and provide advice in an MSY context. There thus advice that is precautionary (avoiding recruitment impairment) and are given in an MSY context. The advice is based on a reference point (the reference TAC level combined with the reference Cpue level)”.

Based on ICES 2016s, which is a framework for classification of stocks relative to MSY proxies for selected Category 3 and 4 stocks in subareas 5 to 10 ([http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/Special Requests/EU Western Waters MSY Proxies.pdf](http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/Special%20Requests/EU%20Western%20Waters%20MSY%20Proxies.pdf)), I see that this statement could be justified for tusk in Vlb. However, I can't see something similar for ling or tusk in areas I and II, or for lumpfish. As far as I can see, for these other stocks, the statement with respect to MSY is not referenced, and there is no evidence in the stock assessment summaries that this is the case – see the reference point table from the most recent ling ICES subareas I & II stock assessment

(i.e., <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/lin-arct.pdf>), below:

Table 9.3.23.1 Ling in Subareas I and II, State of the stock and fishery, relative to reference points.

		Fishing pressure			Stock size		
		2012	2013	2014	2012	2013	2014
Maximum Sustainable Yield	F_{MSY}	?	?	?	MSY	?	?
Precautionary approach	F_{pa} F_{lim}	?	?	?	$B_{trigger}$ B_{pa} B_{lim}	?	?
Management Plan	F_{MGT}	-	-	-	SSB _{MGT}	-	-
Qualitative evaluation	-	?	?	?	-	↗	↗
				Undefined			Undefined
				Undefined			Undefined
				Not applicable			Not applicable
				Undefined			increasing

Also, I note that the rationale for Condition 7 (related to ling and tusk in subareas I & II) states: *"The assessment estimates stock status relative to the 2012 situation corrected with a 'precautionary buffer'. ICES accepts this point as appropriate for providing advice to judge that the stock is above PRI but is uncertain about the status vis-à-vis MSY, the MSY level is unknown"*

Essentially, as far as I can tell, even if not using the RBF is justified, further justification is needed to confirm that SG80 is met for PI 1.1.1 SIb. The current justification for SIb is as follows:

"In a historic perspective the catches are at a high level but the stocks have shown no signs of being heavy overexploited, e.g. reduced recruitment. The stocks as expected has increased. This suggests that fishery is around MSY or below."

In fact, this suggests merely that the PRI has not been breached, not that the stocks are currently (i.e., SG80) 'at or fluctuating around a level consistent with MSY'.

Also, I see no justification for the statement that 'The stock as expected has increased'. Leaving aside (to some extent) that (for example, for ling in I & II), it is the CPUE index that has increased over time, not the stock, it seems to be intimated that it is 'expected' that the stock size has increased because catches are at a high level? I will highlight that this scenario is not always borne out in fisheries management, and that often it is because fishermen have become better at targeting the stock?!

4) Comment on Points 1 and 2 in the Summary of the Peer Reviewer Opinion (Peer Reviewer 1).

My peer review commented on the absence of tusk in ICES subarea VIb from any UoA; longline and gillnet UoAs in this area have now been included as new UoAs 5 and 6, respectively. I note that a Variation Request was submitted to the MSC, such that fisheries in this area should be viewed as separate UoAs.

However, I note that the PCDR states: *"Category 5 includes stocks for which there is no stock indicator available only catch data. Rockall Tusk falls into this category."* Table 10 in the report then shows that tusk in ICES VIb has no reference points. Scoring in PI 1.1.1 also notes that there are no reference points and status is unknown relative to reference points.

The Assessment Team's rebuttal of my Point 2 in the Summary of the Peer Reviewer Opinion (regarding the use or otherwise of the RBF) then states *"The stocks (except Tusk in VIb) dealt*

with fall into ICES advisory category 3 (stocks for which there are data on stock trends but no analytical assessment is possible).” Also, “The RBF in the ICES context is rather appropriate for category 4-6 stocks (stocks for which on catch data are available rather than including the category 3 stocks.”

So, my point then becomes, simply, how can tusk in Vlb (a Category 5 stock) be scored without using the RBF – this has not been justified in the report.

5) Comment on Point 3 in the Summary of the Peer Reviewer Opinion (Peer Reviewer 1).

With respect to lumpfish, and In rebuttal of my point 3 in the report Assessment Team states *‘The entire stock is sampled in the survey’*. But, if it is just the ‘Norwegian’ stock that is sampled (as implied by the note that states *“the stock is assumed to be that which spawns along the Norwegian coast”*, then it still doesn’t answer the point that the stock, as defined by Pampoulie et al. 2014, is an Iceland-Norway stock. Essentially, the Assessment Team’s contention on stock structure (and the scoring, therefore) is not supported by the evidence.

6) Comment on Point 6 in the Summary of the Peer Reviewer Opinion (Peer Reviewer 1).

I commented that the report indicates that “compliance warnings are issued to fishermen in 1 in every 5 at-sea inspections – this is considered to reflect ‘good’ compliance, but, frankly, I disagree, and it makes me wonder what the compliance issue is – no information is provided, but is it discarding, perhaps??”, and in rebuttal it is simply stated that *‘Compliance is high in the Norwegian fishery’*.

I continue to disagree that the evidence shows compliance to be high, and I challenge the Assessment Team to present the information on the compliance issues – why is it that 20% of all at-sea boardings result in a compliance warning – it’s an uncomfortably high figure.

7) Comment on PI 2.1.2, LL and GN.

I stated: “The general feeling I get from the text here is that a score of 100 is given because ICES provides advice and the fishery is managed, so it must be 100. However, this is not a convincing argument when, for example, some of the elements are listed in Table 15 as being harvested unsustainably!

No response was provided, but the point still stands.

Clarification has been provided in text

8) Comment on PI 2.1.2, LL and GN.

I stated: Sle is scored 100, and the report notes that “The regulations are considered, and the technical measures reviewed (meeting SG 60), by IMR, Fiskeridirektoratet and stakeholders annually (meeting SG 80 & 100). Where necessary, measures can be introduced at short notice, such as closing an area to fishing when incoming data on catches and bycatches show

irregularities (IMR, Directorate, interview Aug 2016). Thus fishing practice can be changed at short notice by the fisher, by moving the gear to another area.” However, SG100 requires that “alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.” and no evidence is provide to show that the implementation requirement is met. Also, for SG100, ‘alternative measures’ should comprise more than simply moving areas, so more consideration is required, here.

Again, no response was provided, but the point still stands.

Clarification has been provided in text

9) Comment on PI 2.3.2, LL and GN.

I stated: *“The report notes that “Larger fishing vessels (>15m) have to record seabird bycatch (Client interview, Aug 2016) in the elog. This is therefore relevant to the ling and tusk fishery (longliners and gillnetters) and records should be available.” Given that there is very limited (no?!) incentive for fishers to self-report ETP species bycatch, it would be useful to comment on the level of observer coverage – some independently collected data are very useful in confirming the veracity of any fisher-dependent data. GSA3.6.3.1 and Table GSA5 provide relevant guidance. Nevertheless, ‘records should be available’ also implies that the fisher-collected data have not been reviewed by the assessment team”*

In response, the Assessment team stated: *“The Norwegian system is based on data from the reference fleet, not scientific observers. These data are considered to be accurate and show no significant catch of ETP species.”*

However, I would again point to the MSC guidance and table – the guidance states: *“Some methods of recording data that are inherently open to bias, such as logbooks, are also less likely to provide accurate data on non-fish species, and therefore when considering the need for accurate information on interactions with out of scope species CABs should seek higher quality data sources (column A of the table).”*

As I understand it, the reference fleet is clearly Column B, and it is not even clear if you have seen those data to support the scoring for ETP species.

Clarification has been provided and condition asks for independent verification, not just self-recording

10) Comment on PI 2.4.1, LL and GN.

I commented that the score of 100 is not *“supported by information presented in the introduction, which states: “Around 600 coral reefs have been documented and mapped but many more (possibly ten times as many) (Mareano, no date) remain to be documented”. I.e., it is known where some but not all VMEs are, and the rest remain vulnerable to impacts. SG100 is not met.”*

In response, the rebuttal stated: *“The area is surveyed, VMEs are identified and closed to fishing, there are move-on rules implemented and the fishers are obliged – and confirm that*

they stick with this obligatio – to report any encounter with VME indications. The '10 times more' is speculation which whithin the fishing grounds does not seems to bare out."

To score 100 here, and given the context, I would expect the Assessment Team to have been able to confirm with managers that VME reporting occurred, rather than relying on fishermen. Even if the Assessment Team spoke to fishermen who were highly conscientious (noting that, given the MSC context, it seems likely any fishermen spoken to would be forward thinking), the behaviour of the entire fleet cannot be based on a small sample. In order to score 100, there should be other information to support it - presumably there is a database of 'reported possible VME locations'? Has the Assessment team verified this? Nevertheless, given the point below (#11), I have my doubts.

Clarification provided in text

11) Comment on PI 2.4.2, LL and GN.

I stated: *"As noted previously, Sla requires that move-on rules are in place at SG60. As this does not appear to be the case, and noting that there are VMEs present, more are thought very likely to exist, and the gear can impact VMEs, I do not think SG60 is met."*

The rebuttal states: *"There are move-on rules implemented. There are also requirement for reporting such encounters improving the database on the fishing grounds This is clarified in the text"*.

However, a search of the document for 'move-on' identifies just 10 occasions where this term occurs, all but one of which is related to my peer review. A search for 'move on' then identified just one occasion of this term's use. Notably, this incidence, in section 5.5.2.1 (VMEs in the Barents and Norwegian Sea and NE Atlantic relevant to this assessment), states:

"It appears (VMS tracks - Figure 3 and Figure 4) that vessels of the client fleet fish in areas where these habitats are likely to occur. While some coral gardens are protected in Norwegian waters, there is no protection for other habitats and no management structures in place, although in theory the move on rule could be applied to invertebrate by-catch in Norwegian waters, but this has not been implemented to date."

I.e., in polite terms, the rebuttal appears not to be justified, because there does not appear to have been any clarification provided, and the information that does exist states that move-on rules are possible in theory but not implemented. So, again, SG60 is not met.

Clarification as to move on rules was requested and received from client and has been incorporated in the texts.



WWF

COMMENT

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2017

WWF comment on the Public Comment Draft Report (PCDR) for NFA Norwegian Ling & Tusk fishery

Dear Acoura Team,

Thank you for the opportunity to comment on the Public Comment Draft Report (PCDR) for NFA Norwegian Ling & Tusk fishery.

WWF actively engages as a stakeholder in a number of Marine Stewardship Council (MSC) fishery assessments and audits to improve fisheries sustainability.

WWF applauds the efforts of Norwegian fishermen's association for their commitment to meet the MSC standard and we are convinced that the fishery can reach this goal in the future. But we think that the assessment report does not sufficiently covers all issues and that several well justified concerns raised by the two reviewers were not sufficiently addressed yet. We hope that we can help with this letter to further strengthen this assessment and to support the fishery in developing and implementing best practice.

CAB response: Thank you for your comments and information. The reviewers' comments have since been responded to extensively, as well as MSC TO comments, and additional information provided by stakeholders. As a result the report is hopefully internally clearer (alas though not shorter), some of the scoring has changed, and further conditions have been raised in P2.

Principle 1 stock status (all species and gear types)

Most of the stocks are data deficient with unknown stock status. However, based on Indices like CPUE data it seems that stocks are appropriately fished.

Conditions 1,2,6 and 7 seem appropriate and development of reference points and introduction of well-defined HCRs within 5 years would be a great progress. We hope that there will be sufficiently support from the relevant agencies (ICES, the Ministry, IMR and the Directorate of Fisheries).

Principle 2

Due to the variety of gear types, vessel sizes and the different target species this assessment became quite (or maybe too) complex. A Table showing the number of vessels, vessel size categories and gear types would be very helpful. For example I can't find all relevant information of the gillnet und longline fleet for Tusk and Ling in the assessment. Total number of vessels per size class and a map of their fishing effort would be key information for predicting potential ecological impacts and how

good the fleet can be surveyed (e.g. frequency of inspections ,how many percent have VMS/AIS). Catch data alone is not sufficient information to assess the impact of the fleets.

CAB response: The client has been asked to provide the information which has been added to the report and will be maintained on the MSC website.

PI.2.1.1, 2.1.2, 2.1.3 (Ling and Tusk Fishery -Gillnet)

CAB response: Rescored and a new condition added

According to SA 3.4.2 Redfish shall be considered as "main" species. Gillnet catch ratio is 4.29% and therefore well above 2% and both species of redfish (which are inseparable in the catch) should be categorized as "less resilient" . Fishbase attest both species very low resilience and high vulnerability. Also the productivity part of the PSA has a score equivalent to low/medium productivity.

PSA score

Fishery descriptor	Productivity Scores [1-3]								Total Productivity (average)
	Average age at maturity	Average max age	Fecundity	Average max size	Average size at Maturity	Reproductive strategy	Trophic level	Density Dependence	
S.norvegicus; S. mentella	2	3	1	1	1	3	3		2.40

Fig. 1 Table of PI 2.2.1 PSA for *S.norvegicus* and *S.mentella*. Input data from fishbase.

Scores for PI 2.1.1, 2.1.2, 2.1.3 should be adjusted accordingly. ICES advice Golden redfish (*Sebastes norvegicus*) in subareas 1 and 2 (Northeast Arctic) states that stock size is below PRI, Fishing pressure above possible reference points and no signs of recovery. ICES Advice is zero catch.

Please note that in the Norway North East Arctic cod fishery report redfish was classified as ETP species and a condition was raised for longline and gillnet.

PI 2.3.1, 2.3.2, 2.3.3

In regard to ETP species we agree with the reviewers that it is far from clear how the fishery meets SG80 for PI 2.3.1 - for elasmobranchs (Reviewer 2) and seabirds (Reviewer 1 and 2) given the large uncertainties in respect to population status and bycatch quantification.

CAB overall response: This section has been clarified extensively following stakeholder and reviewers' (second round) comments. Pls have been rescored and conditions added. Thank you for the very helpful additional information on elasmobranchs. Conditions have been set.

Elasmobranchs species:

Catch composition information given in Figure 24 and Table 13, chapter 5.4 and scoring justification does not provide sufficient rationale for most of the affected species and more detailed assessments are needed. We welcome that a precautionary approach has been taken and Skates and Rays considered ETP as a whole but the provided rationale why the fishery is highly likely not hindering recovery of (for example) Common skate is not sufficient.

We disagree with one of the core rationales for 2.3.1 that the quantity of ETP-fish bycatch is known, there is a discard ban so all catch is recorded, and the catch is small."

Norwegian vessels are landing 500-1000 tons of skates annually, but generally do not report which species that are caught, how large proportions of the skate catches that are landed, or the species composition of the landed catch. Neither the fishing vessels nor the landing sites are obliged to report skate catch and landings by species, and more than 98% of the landed skates are reported by the generic category "Skates and rays". The rest are landed as either Common skate, Longnosed skate or Thornback ray, but the accuracy of the species identifications is questionable." WGEF (WD2016-07). Gillnet and longline fisheries targeting demersal fish generate the bulk of the chondrichthyan bycatch along the northern coast of Norway (Williams et al. 2008⁸⁸)

Based on interviews of the Norwegian Reference Fleet and landing sites, the expected discards of skates varied extensively between species and are assumed almost 100% for specimens below 50 cm. (ICES WGEF REPORT 2016). The estimation of total skate catches and landings by species relied on some strong assumptions due to limited availability of data. There are no TACs for any of the skates in this ecoregion. ICES WGEF REPORT 2016

There is currently no legal requirement to land skates and rays with their "wings" attached - these animals are partially processed at sea and the head, body and tail

⁸⁸ Williams, Tom, Kristin Helle, and Michaela Aschan. "The distribution of chondrichthyans along the northern coast of Norway." *ICES Journal of Marine Science* 65.7 (2008): 1161-1174.

(known as the banjo) is generally dumped overboard - further complicating the ability to accurately identify the species and manage them effectively.

At the 2010 WG, a working document was presented on the composition of Norwegian elasmobranch catches, which suggested significant numbers of spurdog were discarded. ICES WGEF REPORT 2016

In 2007 Norway banned all direct fisheries for porbeagle but bycatch could be landed up to 2011. Since that year, live specimens must be released, whereas dead specimens can be landed, but this was not mandatory. Since the zero TAC / prohibited listing was introduced, reported landings are not representative of catch. There are no estimates of recent catches, as only limited data from discard observer trips are available for porbeagle (and it is unclear as to whether these data would be sufficiently representative to provide robust estimates of dead removals) (ICES WGEF REPORT 2016)

In the case of the Common skate (*D. batis*-complex): The two species reported as *Dipturus batis* have largely been extirpated from shelf waters. The misidentification of this species, particularly through confusion with other 'longnosed' *Dipturus* species, is likely to hamper data collection and management efforts. recent genetic research indicates that the species reported as *Dipturus batis* is actually comprised of two large threatened species of *Dipturus* (provisionally *D. cf. flossada* and *D. cf. intermedia*), and that recorded landings of *D. batis* also include Norwegian skate *D. nidarosiensis*, particularly from deepwater fisheries. The implications of these observations are that members of the '*D. batis*' species complex are even more depleted than formerly understood. Since the species reported as *D. batis* take 11 and 20 years to reach maturity, it will likely take decades to see a significant or detectable improvement in status if mortality is minimized. By-catch mortality in fisheries is the key threat to this large-bodied species, which is vulnerable to fisheries long before it is old enough to reproduce (Ospar 2010). Bycatch of this species is highly likely in the UoA due to their fishing overlap (depth, hard rock substrata etc.) and catches of the species are reported for the reference fleet. In conclusion we do not believe that available data is sufficient to show that the UoA is highly unlikely not to hinder recovery and an additional condition should be raised. Information now collected from the fishery under condition should be examined to quantify the extent of interactions. Where interactions are found to be unacceptable the fleet should implement appropriate actions to minimize interactions or eliminate mortalities of these affected elasmobranch species.

Since it is mandatory to report catches of *D. batis* it would be helpful to know how many individuals were reported in the recent years by a) the UoA and b) the reference fleet.

Seabirds:

Severe impact on seabirds seem unlikely based on the low takes that are documented for gillnet and longline fisheries. However, we agree with both

reviewers (and the audit team) that documentation of accidental bird bycatch must be strongly improved. In general, missing reports of ETP species (Rays, Seabirds, VMEs) might be a problem in this fishery that is not sufficiently analysed in this report (see comments 3.2.3).

PI 2.3.2 (longline and gillnet)

Justification for elasmobranchs is missing when it comes to their strategy. As written above the discard ban does not ensure that all fish bycatch is recorded and in case of *D. batis* there is no objective basis for confidence that the measures/strategy will work if there is any (besides the measure that some species are prohibited to target). We also do not believe that there is some evidence that the measures/strategy is being implemented successfully when bycatch reports are missing.

PI 2.3.3 (longline and gillnet)

We think that the condition should be improved. It should specifically include elasmobranchs bycatch to highlight the need for better identification and recording. We also agree with the reviewers that the Introduction of a MSC-Logbook does not necessarily solve the problem because it is already mandatory for some species to report bycatches and that this does not seem to happen (e.g. seabird bycatch). Therefore it is necessary to compare the MSC logbooks with the bycatch numbers of the Reference fleet during the annual surveillance audits.

PI 2.4.1 (longline and gillnet)

CAB comment: Thank you for the additional information, it has been incorporated in the evaluation and used as further evidence to rescore the habitat PIs. A condition has been raised.

We agree with the assessment team that longline and gillnets have a much smaller potential impact on VMEs (e.g. coral reefs and coral gardens) than bottom trawl fisheries. However, there is scientific evidence that gillnets and longlines can have a significant impact on VMEs⁸⁹⁹⁰ and damages by these types of fishing gear are well documented in Norwegian waters (e.g. Fossa 2002⁹¹).

Fossa concluded in 2010⁹² that *"We have reasons to believe that extensive use of gillnets in gorgonian forests can have a significant bycatch of gorgonians and hence significant impact. Although these fishing techniques obviously cause breakage and disturbance of corals, it is often assumed that the extent of damage is*

⁸⁹ Baer, Anton, Alicia Donaldson, and Joachim Carolsfeld. Impacts of longline and gillnet fisheries on aquatic biodiversity and vulnerable marine ecosystems. Fisheries and Oceans Canada, 2010.

⁹⁰ Fossaa, Jan Helge, and Hein Rune Skjoldal. Conservation of cold-water coral reefs in Norway. Oxford University Press, New York(USA), 2010.

⁹¹ Fossaa, Jan Helge, P. B. Mortensen, and Dag M. Furevik. "The deep-water coral *Lophelia pertusa* in Norwegian waters: distribution and fishery impacts." *Hydrobiologia* 471.1 (2002): 1-12.

⁹² Fossaa, Jan Helge, and Hein Rune Skjoldal. Conservation of cold-water coral reefs in Norway. Oxford University Press, New York(USA), 2010.

less compared to the effect of bottom trawling. However, a study of gorgonian corals on a Canadian longline fishing ground showed that this fishing practice had a clear impact on corals. Because these organisms are long-lived, the effect of a relatively low disturbance frequency may accumulate over time (Mortensen and Buhl-Mortensen 2004). Thus, persistent high use of longline and gillnet in coral areas can cause severe damage over time. Consistent international advice from ICES is now to ban all bottom-set gear where corals could be affected.....The Norwegian authorities have so far been reluctant to impose restrictions on the use of passive gears in coral areas, which are often targeted by longline and gillnet fisheries.

Fossa 2002 estimated that that between 30 and 50% of the reef areas on Norway are already damaged or impacted and Clark concluded that there is in general no evidence of “Recovery” of stony corals. This is likely to be very slow-decadal time scales, possibly 100s years, if it can occur at all⁹³. In order to comply with MSC requirements (e.g. SA3.13.4) the fisheries should minimize any impact on deep water corals but this is not the case yet (see 2.4.2).

In conclusion a score of 100 for longline and gillnet is highly unjustified.

PI 2.4.2 (longline and gillnet)

In summary, the assessment team concluded that there is strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats based on 1) mapping program 2) voluntarily avoidance by fisherman 3) closed areas apply to all fisheries operating in the areas 4) VMS provides real time data

We strongly disagree with most of these findings.

- 1) We agree that the mapping program is excellent and that MAREANO is doing a great job. However, the mapping program should be scored in PI 3.4.3 (habitat information) and not necessarily in the management PI.
- 2) We don't see any evidence that would support the comment that VMEs are avoided by the fishers. There is no AIS / VMS analysis or a written code of conduct. In contrary, Lophelia reefs are considered good fishing places for gillnet and longline, and there are considerable fishing activities in coral areas (Fossa 2010).
- 3) In almost all closed areas only active towed gear is forbidden while longlining and gillnetting is still allowed. To our knowledge only the Selligrunnen Reef is closed for all type of fishing. Citing Fossa (2010) again: *The Norwegian authorities have so far been reluctant to impose restrictions on the use of passive gears in coral areas,*

⁹³ <https://www.ices.dk/news-and-events/symposia/Effects/Documents/Presentations%20Thursday/08%20Malcom%20Clark%20-%20The%20impacts%20of%20deep-sea%20fisheries%20their%20effects%20on%20the%20megabenthos%20and%20lessons%20for%20sustainability.pdf>

which are often targeted by longline and gillnet fisheries. For the VME type “coral garden” (e.g. gorgonians) and sponges there are no closed areas for any fishery.

- 4) In our understanding, most vessels of the UoC are medium to small size vessels and therefore don't have VMS. As we mentioned already in our comment, number of vessels of each size class and number of Vessels equipped with VMS and/or AIS would be key information.

MSC requirements ask at the SG 80 level (SA3.14.2.2) for Implementation by the UoA of precautionary measures to avoid encounters with VMEs, such as a) gear specific move on rules or b) local closures.

There are no scientifically based, gear- and habitat-specific move on rules implemented in Norway, only a generic one with thresholds that are too high to be relevant for gillnets or longlines. See also proposed NEAFC threshold levels for longline fishing⁹⁴.

There are no local closures to protect the VME type Coral gardens and sponges. There is also only 1 (or only very few compared to known 600 reefs) closed area for UoA to protect the VME type Coral reef. Therefore the fishery does not reach the 80 level in PI 2.4.2

PI 3.2.3

We strongly agree with reviewer 1 and 2 that the PCDR indicates noncompliance of the UoA with the management system and we would like to see a better investigation and rational by the assessment team. The report notes that “Larger fishing vessels (>15m) have to record seabird bycatch (Client interview, Aug 2016) in the elog. This is therefore relevant to the ling and tusk fishery (longliners and gillnetters) and records should be available.” But there are no such records available, although the reference fleet catches seabirds. Therefore we do not understand the answer from the assessment team that there is no indication of an issue of noncompliance with the regulations. Also we can't follow the argumentation “No catch = no record” because it is stated in the PCDR that the electronic logbook used by all vessels >15m requires any interactions with seabirds (including ‘zero’ results).

We are concerned that the assessment team does not provide any data regarding the reported number of ETP and VME species (e.g. D. Batis, Corals, etc.) that were caught by the UoA and for which reporting is mandatory. Are there such reports? The number of these reports/incidents is key information to assess the impact of the fleet. Also important would be an analysis how the reported ETP/VME catches from

⁹⁴https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2013/Special%20requests/NEAFC_threshold_levels_%20for_%20longline_%20fishing.pdf

the reference fleet correspond to the catches from the wider fishing fleet (see Reviewer comment)

The argument that the discard ban in Norway would prevent any discard of ETP species is invalid from our point of view. There are a lot of exemptions from the discard ban and also enough proof that discards are regularly conducted (see PI our 2.3 comments).

CAB response: The team has used official data from the Directorate of Fisheries for the calculation of bycatch. The fact that seabird bycatch depends on self-reporting has been addressed in conditions under P2, which require independent verification of by-catch, including seabirds and other ETPs. Regarding VMEs, a new condition has been set under P2.

General comment regarding the lumpsucker fishery:

Although we understand that this issue is outside the MSC requirements and that the assessment team members are the wrong persons to address, we would like to use the opportunity to express a concern and hope that it reaches the fishery and the MSC.

We do not think that the public opinion will understand why the practice of catching pregnant females, taking the roe out and then discarding the rest of the fish at sea should be claimed as sustainable. We therefore strongly recommend that the fishery should investigate utilization of the female carcasses.

We look forward to your feedback and to understand how you will address these issues.

Thank you for your consideration and reply.

Sincerely,



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Program Officer Seafood Certifications
WWF Deutschland
Internationales WWF-Zentrum für Meeresschutz
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Appendix 3.2 MSC Technical Oversight to Final Report

Main ID	Sub ID	Page Reference	Grade	Requirement Version	Oversight Description	PI	CAB Comment
22395	27302	290 onwards	Major	FCR-7.11.1.2 v2.0	Conditions have been drafted in a prescriptive way that does not follow the narrative or metric form of the PISGs. All conditions should also specify the affected UoA in appendix 1.2.	22395	<p>It is unclear to which conditions this comment refers and why this was not raised at PCDR stage. The conditions were written so that they are meaningful and drive changes towards sustainability rather than merely reproducing an SG. The conditions are not prescriptive, the text is broad brush. The SG is referred to at the top of the Condition table.</p> <p>The conditions have now been modified inline with the examples given in the MSC guidance on condition setting with detail moved to the rationale though this seems somewhat semantic. If the expectation is simply to reword the PISGs, perhaps the MSC could provide draft wording in the interests of efficiency.</p> <p>UoAs affected by conditions are listed in the table in Section 1.4. In addition, UoAs have been listed in the Condition header. If the UoA is required elsewhere in the condition table, perhaps the table can be revised for future reports.</p>

22395	27303		Minor	FCR-7.15.4.3 v2.0	Changes that were made to scoring and rationales in response to MSC technical oversight are not clear or explicit.	22395	The expectation cannot be that the scoring tables refer to earlier iterations of scoring and why changes were made. Changes were noted in the CAB comment section above (see earlier MSC TOs) and explanations were provided where appropriate; there is no point in copying the exact changes made into this column – it would make for convoluted text and even more unwieldy tables. In addition, such double copying is time consuming and unreadable.
22395	27304	112-114	Major	FCR-7.10.4 v2.0	The MSC has reviewed the Principal level scores in table 23 (p112) and they do not match the performance indicator scores in table 24 (p113-114) according to the MSC Fishery Assessment Scoring Worksheet v2.0. Principal level scores should be reported to the nearest one decimal place.	22395	Thank you. Reviewed and edited where relevant. Principle level scores were already reported to the nearest one decimal place and this has not been changed.
22395	27305	44 and 51	Minor	FCR-7.15.6 v2.0	It is unclear if the changes to the score for performance indicator 1.1.1 between PCDR and final report were made using information available at the time of publication of the PCDR. Additionally, the updated rationale includes reference to MSY based reference points for some stocks without explaining if the previously described reference points remain valid (e.g. Table 10 page 44) nor if they have been adopted to form ICES advice (e.g. Table 12 page 51).	22395	The PCDR was published on the 19 th of June and the information used to address the score was published on the 7 th of June. The changes highlighted were made in response to MSC technical oversight finding 27164. The justification has been amended accordingly. Furthermore, upon review an error was noticed in the scoring of NEA Tusk. PI 1.1.1a is scored (N) and PI 1.1.1.b (Y) i.e. total score is 90 while the scoring summary table read 100. This has been

							corrected in the appendix, in the summary, section 9.2 Table 24 and Table 23, i.e. both on the individual score as well as in the principal level score (which is now 84.2 rather than 89.2).
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Appendix 4 Surveillance Frequency

Table 4.1 : Surveillance level rationale

Year	Surveillance activity	Number of auditors	Rationale
1-4	On-site audit	2 – Initial certification	There are 13 conditions affecting two Principles. Conditions are expected to extend to Year 4. On-site audits will allow the team to be able to fully evaluate circumstances more appropriately

Table 4.2: Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
1-4	October 2018	October 2018	To coincide with anniversary date of certificate

Table 4.3: Fishery Surveillance Program

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 6	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit	On-site surveillance audit & re-certification site visit

Appendix 5 Objections Process

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

N/A

(Reference: FCR 7.19.1)

Appendix 6 Variations

Variation Request

Marine Stewardship Council - Variation Request

Date submitted to MSC	10 th February 2017
Name of CAB	Acoura Marine
Fishery Name/CoC Certificate Number	NFA Norwegian Ling & Tusk and NFA Norwegian Lumpfish
Lead Auditor/Programme Manager	Gudrun Gaudian/Billy Hynes
Scheme requirement(s) for which variation requested	7.3.4 If the period from full assessment announcement to the receipt of the Public Comment Draft Report by the MSC exceeds 9 months the CAB shall... 7.6.1 The CAB shall nominate a date from which product from a certified fishery is eligible to be sold as MSC certified or bear the MSC ecolabel (the eligibility date). This shall be either: 7.6.1.2 The publication date of the first Public Comment Draft Report...
Is this variation sought in order to fulfil IPI requirements (FCR 7.4.14)?	No

1. Proposed variation	
To publish the PCDR by the 31 st May 2017 rather than the 14 th April as per 2.0 assessment timelines. The eligibility date will be the 1 st March 2017, rather than the date of the PCDR publication.	
2. Rationale/Justification	
<p>PCDR Date This is a complex fishery of 9 UoAs operating in Norwegian, Faroese and EU waters. The version 2.0 assessment process makes this a very time consuming exercise. This has been compounded by personal circumstances on the assessment team which stalled the assessment for a period of 2 months. We didn't take the drastic step of changing a team member mid-way through the process in the hope of a prompt resolution. We do not want to adversely impact the client's assessment for reasons out of their control.</p> <p>Eligibility Date While the fishing season for the NFA Norwegian Ling & Tusk and NFA Norwegian Lumpfish fisheries generally begins in April, this year the season will be starting in March for operational reasons as it sometimes does (see notification report). The fishing season is short and focussed. Having the whole season covered by the potential certification will greatly reduce the risk of chain of custody mixing. Having the eligibility date in the middle of a hectic season and telling the fishermen to keep fish separated by date is a potential complication to an already complex system. There are also commercial implications to the client in a later eligibility date being applied.</p>	
3. Implications for assessment (required for fisheries assessment variations only)	
The delay will impact the timeline of the assessment but not the outcome.	
4. Have the stakeholders of this fishery assessment been informed of this request? (required for fisheries assessment variations only)	No, they will be informed if this variation is accepted.

Document: MSC Variation Request Form v2.0	Page 1
Date of issue: 8 October 2014	© Marine Stewardship Council, 2014

Variation Response 1



Marine Stewardship Council

Billy Hynes
Acoura Marine
6 Redheughs Rigg
Edinburgh
United Kingdom
EH12 9DQ

Sent by email

Date: 24/02/2017

Subject: Request for variation to the MSC Certification Requirement v2.0 FCR-7.3.4 for NFA Norwegian Ling & Tusk and NFA Norwegian Lumpfish

Dear Billy Hynes,

I write with reference to your submission on 10/02/2017 of a request for variation to the MSC Certification Requirement (CR) to allow:

To publish the PCDR by the 31st May 2017 rather than the 14th April as per 2.0 assessment timelines.

As you are aware, the CR procedures relating to v2.0 FCR-7.3.4 state:

If the period from full assessment announcement to the receipt of the Public Comment Draft Report by the MSC exceeds 9 months the CAB shall:

Within 5 days of the 9 month deadline, provide the MSC with a statement for posting on the MSC website requesting, for a period of 30 days, stakeholder submission of any new information relating to the fishery that the team should consider in the assessment of the fishery.

Directly notify stakeholders participating in the fishery assessment of the opportunity to submit new information relating to the fishery that the team should consider in the assessment of the fishery.

Following the 30 day period within which stakeholders have the opportunity to submit new information

a. Review any new information provided.

b. Review the outcomes of any scoring of the fishery previously undertaken against the most recent version of the MSC Certification Requirements.

c. Assess new information following all steps from scoring the fishery (7.10) to peer review (7.14) against the most recent version of the MSC Fisheries Certification Requirements.

d. The team may limit the scope of this assessment to the re-scoring of those PIs for which there is new information and for which the requirements have changed in the most recent version of the MSC Certification Requirements

These are integral to ensuring all MSC accredited Conformity Assessment Bodies operate in a consistent and transparent manner. The MSC intends that these requirements be met across all fisheries and CoC certificate holders, except in exceptional, well-justified circumstances, as part of the MSC programme.

MSC notes the factors presented supporting your request, including:

- Personal circumstances on the assessment team stalled the assessment for 2 months.
- The delay will not impact the outcome of the assessment.

Given the rationale provided, the MSC is willing to grant a variation to the CR in this case subject to the following conditions:

- Evidence of progress can be provided.

Variation Response 2



Marine Stewardship Council

Billy Hynes
Acoura Marine
6 Redheughs Rigg
Edinburgh
United Kingdom
EH12 9DQ

Sent by email

Date: 24/02/2017

Subject: Request for variation to the MSC Certification Requirement v2.0 FCR-7.6.1 for NFA Norwegian Ling & Tusk and NFA Norwegian Lumpfish

Dear Billy Hynes,

I write with reference to your submission on 10/02/2017 of a request for variation to the MSC Certification Requirement (CR) to allow:

The eligibility date will be the 1st March 2017, rather than the date of the PCDR publication.

As you are aware, the CR procedures relating to v2.0 FCR-7.6.1 state:

7.6.1 The CAB shall nominate a date from which product from a certified fishery is eligible to be sold as MSC certified or bear the MSC ecolabel (the eligibility date). This shall be either: ■

7.6.1.1 The date of the certification of the fishery; or

7.6.1.2 The publication date of the first Public Comment Draft Report

These are integral to ensuring all MSC accredited Conformity Assessment Bodies operate in a consistent and transparent manner. The MSC intends that these requirements be met across all fisheries and CoC certificate holders, except in exceptional, well-justified circumstances, as part of the MSC programme.

MSC notes the factors presented supporting your request, including:

- Fishing season starts in March 2017 and is of short and focused nature.
- Having the whole season covered by the potential certification will greatly reduce the risk of chain of custody mixing.

Given the rationale provided, the MSC is willing to grant a variation to the CR in this case subject to the following conditions:

- The eligibility date is set up to 3 months in advance of PCDR publish date.

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

Marine Stewardship Council
cc: Accreditation Services International



Appendix 7 Client Action Plan

Vår dato
08.09.2017

Vår referanse

Vår saksbehandler
Tor Bjørklund Larsen/

Deres referanse

Client Action Plan for meeting the certification conditions: Full assessment: Norway NFA Ling, Tusk and Lumpfish fisheries.

The Norwegian Fisherman's Association (NFA) submits this action plan for meeting the conditions for the full assessment of the Norwegian ling, tusk and lumpfish fisheries. NFA agrees to make a good faith effort to meet the intent of the conditions set forth by the conformity assessment body Acoura Marine in their draft report of August 2017. This report determines that, with a total of thirteen conditions, the fisheries are sustainable and well-managed in accordance with the MSC principles and criteria for sustainable fisheries.

The Norwegian Seafood Industry has set up a permanent formal advisory committee working with environmental and eco-labelling issues, reporting to the boards of NFA, the fisherman's sales organizations, the Norwegian Seafood Export Council and the Norwegian Seafood Federation. The Norwegian Ministry of Trade, Industry and Fisheries is a permanent observer to the group. This ensures that all certification decisions, including this action plan, are supported and accepted among all the parties involved directly or indirectly in the fisheries.

In the following sections we will address each of the conditions individually in the table format laid out by the CAB.



Condition 1 Lumpfish PI 1.2.2a Missing well-defined HCR (UoA 12)

Performance indicator	PI 1.2.2 There are well defined and effective harvest control rules (HCRs) in place (Score: 75)
Condition	The client should encourage the development and implementation of a HCR. This HCR should include a proxy for MSY fishing and a PRI reference point and that ensure that the exploitation rate is reduced as PRI is approached, Studies that demonstrate that the effort levels laid down in the harvest control rule is expected to keep the stock fluctuating around a target level consistent with (or above) MSY will be helpful.
Milestones	<p>1st Audit The Client should demonstrate that steps have been taken that might eventually lead to the development and implementation of a well-defined HCR. No revision (75)</p> <p>2nd Audit The Client should present a proposal for a HCR and demonstrate that this proposal is being discussed at appropriate level. No revision (75)</p> <p>3rd Audit. The Client should demonstrate that a HCR has been adopted and is being implemented. No revision (75).</p> <p>4th Audit. The Client should demonstrate that a HCR has been implemented. PI 1.2.2 is rescored and SG 80 is met</p>
NFA action plan	<p>In conjunction with condition 2:</p> <p>Action 1.1 NFA will engage with the IMR and Ministry of Trade, Industry and Fisheries ("the Ministry") to evaluate the current status and potential progress towards implementing a HCR with appropriate reference points.</p> <p>Action 1.2 In year 2 NFA will evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.</p> <p>Action 1.3 In year 3 NFA will support and assist an implementation process by the management authorities as appropriate. Reference points should be adopted by this stage.</p>



	<p>Action 1.4</p> <p>If, successful the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.</p>
Consultation on condition	<p>Relevant parties of cooperation are the Ministry, IMR and potentially Directorate of Fisheries. As all scoring under principle 3 for these fisheries confirms, these three parties have close cooperation with NFA, as well as the larger Norwegian seafood industry. Through both formal and informal channels during the year, NFA provides input on management priorities, research projects and other issues. Although successful outcomes cannot be <u>guaranteed</u>, NFA input has heavy emphasis, and there is vast empirical evidence of this. This standing practice in Norwegian management gives the largest degree of credibility to the action plan possible. Also, the absence of HCRs and reference points was thoroughly discussed at site visits and pre-assessments, and all parties were well aware in advance that this condition would be placed on the fishery.</p>

Condition 2 Lumpfish PI 1.2.4b Missing explicitly defined reference point (UoA-12)

Performance indicator	<p>1.2.4 There is an adequate assessment of the stock status (score: 75)</p>
Condition	<p>The Client shall in cooperation with relevant institutions develop appropriate reference points and seek adoption of these reference points at the appropriate research level.</p>
Milestones	<p>Year 1: The Client shall present evidence that he has approached relevant institutions and urged them to promote research that may lead to the definition and adoption of reference points (75)</p> <p>Year 2: The Client shall present evidence that the process on agreeing appropriate reference points is progressing at the relevant level and involving the competent authorities. If possible the Client shall present a proposal for reference points. (75)</p> <p>Year 3: The Client shall present proposal and evidence that this proposal is discussed at the appropriate level. (75)</p> <p>Year 4: The Client shall present the outcome of the process. The PI 1.2.4b to be rescored and should meet SG 80.</p>
NFA action plan	<p>Action 2.1</p> <p>NFA will engage with the IMR and the Ministry to evaluate the current status and potential progress towards implementing a HCR with appropriate reference points.</p>



	<p>Action 2.2 In year 2 NFA will evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.</p> <p>Action 2.3 In year 3 NFA will support and assist an implementation process by the management authorities as appropriate. Reference points should be adopted by this stage.</p> <p>Action 2.4 If, successful the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.</p>
Consultation on condition	See condition 1

Condition 3 Lumpfish PI 2.3.1b Missing Bird by-catch data (UoA 12)

Performance indicator	<p>PI 2.3.1 The UoA meets national and international requirements for the protection of ETP species; The UoA does not hinder recovery of ETP species</p> <p>b) Known direct effects of the UoA are highly likely to not hinder recovery of ETP species (Lumpfish)</p>
Condition	The client shall introduce a system of recording ecological information on all the vessels participating in this fishery, such as recording seabird interactions. A 'no interaction' per trip has to be recorded too. Self-reporting is not sufficient, there is need for independent verification of this self-reported bycatch data through observers, reference vessels or cameras.
Milestones	<p>1st Audit: Demonstrate that steps have been taken to introduce such a recording system across the lumpfish fleet, for both self-reporting and independent verification. No revision of score - 70</p> <p>2nd Audit: Demonstrate that a system is being implemented which records seabird interactions across the fleet, including independent verification. No revision - 70</p> <p>3rd Audit: Demonstrate that seabird interactions are being recorded by the lumpfish fishery, including independent verification. No Revision – 70</p> <p>4th Audit: Demonstrate that seabird interactions continue to be recorded and that these records are being compiled and analysed. SG80 is reached.</p>
NFA action plan	Action 3.1



	<p>NFA will propose to the Directorate of Fisheries that non-fish bycatch becomes a part of the coastal logbook “app”, and that measures are taken to also include it in the manual logbooks temporarily. The Directorate is in the process of gradually introducing the “app” reporting system to all coastal vessels, but they are approaching the vessel groups year-by-year, presumably to ensure a smoother technical transition. NFA needs to work such improvements in to the Directorate’s software development cycle.</p> <p>Action 3.2 In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed. NFA will aim to have the reporting system under the official data collection performed by the Directorate of Fisheries and mandated by law. As a result, it would be subject to the same scrutiny and independent verification as other catch data collected by the Directorate.</p> <p>Action 3.3 Data will be analyzed at 4th audits, and any trends will be shown in conjunction with data from NINA studies.</p>
Consultation on condition	See condition 1

Condition 4 Lumpfish PI 2.3.2 Strategy to minimise seabird by-catch (UoA 12)

Performance indicator	<p>PI 2.3.2 The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • meet national and international requirements; • ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</p> <p>a) There is a strategy in place for managing the UoA’s impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species (Lumpfish)</p>
Condition	<p>Design and implement a strategy to minimise seabird bycatch, including the development of technical mitigation to reduce seabird bycatch in gillnets. The existing lack of technical mitigation (as exists for e.g. longlines) increases reliance on spatial or temporal closures to reduce bycatch - building in mitigation testing would support other international efforts to develop mitigation measures which</p>



	will reduce the reliance on closures (and the resulting economic impacts).
Milestones	<p>1st Audit: The client has to show that a strategy has been designed and will be implemented, and alternative measures considered. No revision – 65</p> <p>2nd Audit: The client has to provide evidence that the strategy is being implemented and is actively followed by the fishers, and alternative measures reviewed. No revision – 65</p> <p>3rd Audit: The client has to provide continued evidence that the strategy is being implemented successfully, alternative measures reviewed, and is now part of the management of the fishery, as a matter of course. No revision – 65</p> <p>4th Audit: The client has to provide continued evidence that the strategy is being implemented, as well as reviewed. SG80 is met</p>
NFA action plan	<p>Action 4.1 NFA will have meetings with the IMR, Directorate of Fisheries, and – if necessary- other research bodies to explore potential seabird bycatch mitigation strategies. Technical mitigation measures will be explored, together with spatial and temporal limitations.</p> <p>Action 4.2 In year 2 a strategy will be drafted and proposed by the NFA to the Directorate of Fisheries.</p> <p>Action 4.3 In year 3-4 this strategy should be implemented and a part of the management of the fishery, allowing for a rescoring above 80 level.</p>
Consultation on condition	See condition 1.

Condition 5 Lumpfish PI 2.3.3b Information to support ETP strategy (UoA 12)

Performance indicator	<p>PI 2.3.3 Relevant information is collected to support the management of UoA impacts on ETP species, including:</p> <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and <p>Information to determine the outcome status of ETP species</p> <p>b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Lumpfish)</p>
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Condition	Design and implement an on-board recording system to measure trends in all seabird bycatch. Self-reporting is not sufficient, there is need for independent verification of this self-reported bycatch data through observers, reference vessels or cameras.
Milestones	<p>1st Audit: Demonstrate that tools are being introduced to fishers to enable them to identify seabirds as well as ETPs to species level. Demonstrate that steps are being taken to introduce a recording system across the lumpfish fleet, which will record encounters with ETPs/ seabirds on a per trip basis. Demonstrate that steps are being taken to independently verify bycatch data on ETPs. No revision – 70</p> <p>2nd Audit: Demonstrate that the ETP/ seabird recording system is being implemented across the lumpfish fishery, and information is noted on a per trip basis, and independently verified. No revision – 70</p> <p>3rd Audit: Demonstrate that the ETP/seabird recording system is being applied across the fishery, and independently verified. No revision – 70</p> <p>4th Audit: Demonstrate that ETP/seabird interaction (including ‘no interaction’) data is being compiled and forms part of an analysis. The SG80 is met</p>
NFA action plan	<p>Action 5.1 NFA will propose to the Directorate of Fisheries that non-fish bycatch becomes a part of the coastal logbook “app”, and that measures are taken to also include it in the manual logbooks temporarily. The Directorate is in the process of gradually introducing the “app” reporting system to all coastal vessels, but they are approaching the vessel groups year-by-year, presumably to ensure a smoother technical transition. NFA needs to work such improvements in to the Directorate’s software development cycle.</p> <p>Action 5.2 In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed. NFA will aim to have the reporting system under the official data collection performed by the Directorate of Fisheries and mandated by law. As a result, it would be subject to the same scrutiny and independent verification as other catch data collected by the Directorate.</p> <p>Action 5.3 Data will be analysed at 4th audits, and any trends will be shown in conjunction with data from the NINA studies.</p>



Consultation on condition	See condition 1
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Condition 6 Ling and Tusk PI 1.2.2a HCR not well defined (UoAs 1-11)

Performance indicator	PI 1.2.2 There are well defined and effective harvest control rules (HCRs) in place (score 75)
Condition	The client should encourage the development and implementation of a HCR that ensures that the exploitation rate is reduced as PRI is approached, Further, the Client should take steps to ensure that an appropriate PRI is defined. Studies that demonstrate that the effort levels laid down in the harvest control rule is expected to keep the stock fluctuating around a target level consistent with (or above) MSY will be helpful
Milestones	1st Audit The Client should demonstrate that steps has been taken that might eventually lead to the development and implementation of a well-defined HCR. No revision (75) 2nd Audit The Client should present a proposal for a HCR and demonstrate that this proposal is being discussed at appropriate level. No revision (75) 3rd Audit. The Client should demonstrate that a HCR has been adopted and is being implemented. No resvision (75) 4th Audit. The Client should demonstrate that a HCR has been implemented. PI 1.2.2 is rescored and SG 80 is met
NFA action plan	Action 6.1 NFA will engage with the IMR and the Ministry to evaluate the current status and potential progress towards implementing a HCR with appropriate reference points (PRI and MSY). Action 6.2 In year 2 NFA evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate. Action 6.3 In year 3 NFA will support and assist an implementation process by the management authorities as appropriate. Reference points should be adopted by this stage. Action 6.4



	If successful, the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.
Consultation on condition	See condition 1

Condition 7 Ling and Tusk PI 1.2.4 (UoAs 1+2)

Performance indicator	1.2.4 There is an adequate assessment of the stock status
Condition	The Client shall in cooperation with relevant institutions develop appropriate reference points and seek adoption of these reference points at the appropriate research level
Milestones	<p>1st Audit The Client shall demonstrate that steps have been taken that might eventually lead to the development and implementation of reference points possibly in a well-defined HCR. The Client shall present evidence that he has approached relevant institutions and urged them to promote research that may lead to the definition and adoption of reference points No revision – (75)</p> <p>2nd Audit The Client shall present evidence that the process on agreeing appropriate reference points is progressing at the relevant level and involving the competent authorities. If possible the Client shall present a proposal for reference points. (75)</p> <p>3rd Audit: The Client shall present proposal and evidence that this proposal is discussed at the appropriate level. (75)</p> <p>4th Audit: The Client shall present the outcome of the process. The PI 1.2.4b to be rescored and should meet SG 80</p> <p>PI 1.2.4 is rescored and SG 80 is met</p>
NFA action plan	<p>Action 7.1 NFA will engage with the IMR and the Ministry to evaluate the current status and potential progress towards implementing a HCR with appropriate reference points (PRI and MSY).</p> <p>Action 7.2 In year 2 NFA evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.</p>



	<p>Action 7.3 In year 3 NFA will support and assist an implementation process by the management authorities as appropriate. Reference points should be adopted by this stage.</p> <p>Action 7.4 If successful, the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.</p>
Consultation on condition	See condition 1

Condition 8 PI 2.3.1 Longline & Gillnet ling and tusk fishery

Performance indicator	<p>PI 2.3.1 The UoA does not hinder recovery of ETP species</p> <p>b) Known direct effects of the UoA are highly likely to not hinder recovery of ETP species (LL GN)</p>
Condition	<p>The client shall introduce a system of recording bycatch information to species level (in particular for skates and rays) on all the vessels participating in this fishery, in order to contribute effectively to ICES WGEF assessments. A 'no interaction' per trip has to be recorded too. Self-reporting is not sufficient, there is need for independent verification of this self-reported bycatch data through observers, reference vessels or cameras.</p>
Milestones	<p>1st Audit: Demonstrate that steps have been taken to introduce such a recording system to species level across the LL and GN ling and tusk fleet, for both self-reporting and independent verification. No revision of score - 70</p> <p>2nd Audit: Demonstrate that a system is being implemented which records seabird, skates and rays, and other ETP interactions across the fleet, including independent verification. No revision - 70</p> <p>3rd Audit: Demonstrate that all ETP interactions (including Seabirds, skates and rays etc) are being recorded by the LL and GN ling and tusk fishery, including independent verification. No Revision – 70</p> <p>4th Audit: Demonstrate that all ETP interactions (including seabirds, skates and rays etc) continue to be recorded and that these records are being compiled and analysed. SG80 is reached.</p>
NFA action plan	Action 8.1



	<p>NFA will propose to the Directorate of Fisheries that non-fish bycatch becomes a part of the coastal logbook “app”, and that measures are taken to also include it in the manual logbooks temporarily. The Directorate is in the process of gradually introducing the “app” reporting system to all coastal vessels, but they are approaching the vessel groups year-by-year, presumably to ensure a smoother technical transition. NFA needs to work such improvements in to the Directorate’s software development cycle.</p> <p>Action 8.2 In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed. NFA will aim to have the reporting system under the official data collection performed by the Directorate of Fisheries and mandated by law. As a result, it would be subject to the same scrutiny and independent verification as other catch data collected by the Directorate.</p> <p>Action 8.3 Data will be analyzed at 4th audit, and any trends will be shown.</p>
Consultation on condition	See condition 1

Condition 9 Ling and Tusk PI 2.3.2 Longline and gillnet ling and tusk

Performance indicator	<p>PI 2.3.2 The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • meet national and international requirements; • ensure the UoA does not hinder recovery of ETP species. <p>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</p> <p>a) There is a strategy in place for managing the UoA’s impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species</p> <p>e) There is a regular review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate</p>
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Condition	The efficacy of current measures are assessed, and implementing well established, scientifically tested and regularly reviewed bycatch mitigation, Independent verification of bycatch species, including elasmobranchs, should be part of the strategy for managing impact on ETP species.
Milestones	<p>1st Audit: The client has to show that a strategy has been designed and will be implemented, and alternative measures considered. No revision – 75</p> <p>2nd Audit: The client has to provide evidence that the strategy is being implemented and is actively followed by the fishers, and alternative measures reviewed. No revision – 75</p> <p>3rd Audit: The client has to provide continued evidence that the strategy is being implemented successfully, alternative measures reviewed, and is now part of the management of the fishery, as a matter of course. No revision – 75</p> <p>4th Audit: The client has to provide continued evidence that the strategy is being implemented, as well as reviewed. SG80 is met</p>
NFA action plan	<p>Action 9.1 NFA will engage with the Directorate of Fisheries to evaluate current practice of bird mitigation devices in the coastal longline fleet. The degree of usage of mitigation devices across the fleet will be evaluated, together with its total effectiveness. Current practice and legislation will be evaluated according to national and international requirements, and it will be assessed whether it may hinder recovery of ETP species. Progress report at SA1 and SA2</p> <p>Action 9.2 If deemed necessary at 9.1, NFA will draft changes to mitigation strategies together with the Directorate of fisheries, and propose its implementation to authorities. Completed by SA2.</p> <p>Action 9.3 Management measures decided at 9.2 shall be implemented at SA3.</p> <p>Action 9.4 The management measures, if implemented, will be evaluated and reported at SA4</p>
Consultation on condition	See condition 1



Condition 10 PI 2.3.3 Longline & Gillnet tusk and ling

Performance indicator	<p>PI 2.3.3 Relevant information is collected to support the management of UoA impacts on ETP species, including:</p> <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and <p>Information to determine the outcome status of ETP species</p> <p>b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Ling and Tusk)</p>
Condition	<p>Design and implement an on-board recording system to measure trends in all ETP bycatch, to species level, including independent verification to be robust. Self-reported data has to be cross-checked with the reference fleet and observers to verify its accuracy. Information collected from the fishery under assessment should be examined to quantify the extent of interactions with all ETP species, including elasmobranchs to species level (not just 'skates and rays'). Where interactions are found to be unacceptable the fleet should implement appropriate actions to minimize interactions or eliminate mortalities of these affected ETP species, including all elasmobranch species.</p>
Milestones	<p>1st Audit: The client has to provide evidence that all the fishers have the ability and tools to identify ETPs, including seabirds, to species level – such as an on-board identification guide. The client has to design abycatch log for the vessels/ fishers, to species level. Independent verification has to be set up. No revision – 70</p> <p>2nd Audit: the client has to provide evidence that the ETP/ species-level bycatch log is being used by the fishers and that incoming data is being analysed, and independently verified. No revision – 70</p> <p>3rd Audit: the client has to provide evidence that the incoming data is being analysed to show trends, and independently verified. No revision – 70</p> <p>4th Audit: The client has to provide evidence that the data is being analysed to show trends. The SG80 is met</p>
NFA action plan	<p>Action 10.1</p> <p>NFA will propose to the Directorate of Fisheries that non-fish bycatch becomes a part of the coastal logbook "app", and that measures are taken to also include it in the manual logbooks temporarily. The Directorate is in the process of gradually introducing the "app" reporting system to all coastal vessels, but they are approaching the vessel groups year-by-year, presumably to</p>



	<p>ensure a smoother technical transition. NFA needs to work such improvements in to the Directorate's software development cycle.</p> <p>Action 10.2 In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed. NFA will aim to have the reporting system under the official data collection performed by the Directorate of Fisheries and mandated by law. As a result, it would be subject to the same scrutiny and independent verification as other catch data collected by the Directorate.</p> <p>Action 10.3 Data will be analyzed at 4th audit, and any trends will be shown.</p>
Consultation on condition	See condition 1

Condition 11 Tusk PI 2.3.3b Pots & Traps Information to reliably measure trends in ETP species (UoA 10)

Performance indicator	<p>PI 2.3.3 Relevant information is collected to support the management of UoA impacts on ETP species, including:</p> <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and <p>Information to determine the outcome status of ETP species</p> <p>b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Tusk – pots and traps)</p>
Condition	Design and implement an on-board recording system to measure trends in all ETP bycatch, including independent verification to be robust. Self-reported data has to be cross-checked with the reference fleet and observers to verify its accuracy
Milestones	<p>1st Audit: The client has to provide evidence that all the fishers have the ability and tools to identify ETPs, including seabirds, to species level – on-board identification guide. The client has to design an ETP log for the vessels/ fishers. Independent verification has to be set up. No revision – 70</p> <p>2nd Audit: the client has to provide evidence that the ETP log is being used by the fishers and that incoming data is being analysed, and independently verified. No revision – 70</p>



	<p>3rd Audit: the client has to provide evidence that the incoming data is being analysed to show trends, and independently verified No revision – 70</p> <p>4th Audit: The client has to provide evidence that the data is being analysed to show trends, and independently verified. The SG80 is met</p>
NFA action plan	<p>Action 11.1 NFA will propose to the Directorate of Fisheries that non-fish bycatch becomes a part of the coastal logbook “app”, and that measures are taken to also include it in the manual logbooks temporarily. The Directorate is in the process of gradually introducing the “app” reporting system to all coastal vessels, but they are approaching the vessel groups year-by-year, presumably to ensure a smoother technical transition. NFA needs to work such improvements in to the Directorate’s software development cycle.</p> <p>Action 11.2 In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed. NFA will aim to have the reporting system under the official data collection performed by the Directorate of Fisheries and mandated by law. As a result, it would be subject to the same scrutiny and independent verification as other catch data collected by the Directorate.</p> <p>Action 11.3 Data will be analyzed at 4th audit, and any trends will be shown.</p>
Consultation on condition	See condition 1

Condition 12 PI 2.1.1 Ling and Tusk GN

Performance indicator	<p>PI 2.1.1 The UoA aims to maintain primary species above the PRI and does not hinder recovery of primary species if they are below the PRI.</p> <p>a) Main primary species are highly likely to be above the PRI; OR If the species is below the PRI, there is either evidence of recovery or a demonstrably effective strategy in place between all MSC UoAs which categorise this species as main, to ensure that they collectively do not hinder recovery and rebuilding.</p>
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Condition	<p>Improve recording of 'redfish' to species bycatch level. Coordinate with other MSC UoAs to design a strategy to reduce <i>S.norvegicus</i> bycatch. Or, provide evidence of recovery of <i>S.norvegicus</i>.</p>
Milestones	<p>1st Audit: Provide evidence that species can be differentiated and are recorded separately into <i>S. norvegicus</i> and <i>S.mentella</i>. No revision – 70</p> <p>2nd Audit: Provide evidence of <i>S.norvegicus</i> bycatch data, and liaising with other MSC UoAs as to design of strategy to collectively not hinder recovery and rebuilding of <i>S.norvegicus</i> and/or evidence of recovery. No revision – 70</p> <p>3rd Audit: Provide evidence of <i>S.norvegicus</i> bycatch data, and liaising with other MSC UoAs as to design of strategy to collectively not hinder recovery and rebuilding of <i>S.norvegicus</i> and/or evidence of recovery. No revision – 70</p> <p>4th Audit: The client has to provide evidence of a strategy that collectively with other MSC UoAs the recovery of <i>S.norvegicus</i> is not hindered; or provide evidence of recovery of the stock. The SG80 is met</p>
NFA action plan	<p>Action 12.1 NFA is a member of the Directorate of Fisheries redfish working group established in 2014. The group's mandate is to review the regulations in the redfish fisheries and suggest appropriate measures to rebuild the redfish stocks. NFA participates in this working group, together with representatives from the Directorate and IMR. The group suggests the following changes in regulations:</p> <ul style="list-style-type: none"> · General reduction to 10 % weekly bycatch levels. · Reduction to 30 % weekly bycatch levels for conventional vessels below 21 meters between august 1st and December 31st. · Exemption for handline fisheries. <p>NFA will follow up the working group's findings, support the proposed regulations, and work towards their implementation.</p> <p>Timeframe: progress reports at each surveillance audit.</p> <p>Action 12.3 NFA will provide data on the distribution of <i>S.Norvegicus</i> and <i>S.Mantella</i> catches, at SA1 and SA2</p>



	<p>Action 12.2</p> <p>NFA and the working group advice that observation and evaluation of the regulatory measures are necessary, and that adjustment will be made if these measures are not proving to be effective.</p> <p>Timeframe: progress reports at each surveillance audit.</p>
Consultation on condition	See condition 1

Condition 13 Longline and Gillnet PI 2.4.2

Performance indicator	<p>PI 2.4.2 There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats.</p> <p>b) There is some objective basis for confidence that the measures/partial strategy will work, based on information directly about the UoA and/or habitats involved</p>
Condition	Work to improve the protection of VMEs to include coral gardens and sponge areas in closed areas. Implement the ICES advice on threshold limits for longliners.
Milestones	<p>1st and 3rd Audit: Provide evidence that discussions with relevant authorities are taking place regarding threshold limits for longliners are being considered. No revision – 75</p> <p>4th Audit: A new threshold limit for demersal longliners is implemented The SG80 is met</p>
NFA action plan	<p>Action 13.1</p> <p>NFA will engage with the Directorate of Fisheries and the IMR to assess current protective measures of VMEs within the UoA and whether current practice may cause serious or irreversible harm to VMEs.</p> <p>Action 13.2</p> <p>Strategies to avoid VMEs will be drafted together with the Ministry of Fisheries, primarily with regard to move-on thresholds. These will be evaluated according to national and international legislation. NFA will lobby for their implementation into official legislation in year 2-3.</p> <p>Action 13.3</p> <p>The protective measures will be in place by SA4, allowing for a rescoring to 80 level or above.</p>
Consultation on condition	See condition 1



NORGES FISKARLAG

Jan Birger Jørgensen

Appendix 8 Vessel List

Vessel registration number	Vessel name
A0005AS	Trygg
A0006V	Soningen
A0010F	Constance
AA0001A	Ålen
AA0003G	Bluepearl
AA0004R	DEPPA
AA0006G	Kjetil
AA0006R	Tiril
AA0007A	Farmann
AA0008R	SJØVÆRINGEN
AA0009G	Valø
AA0010G	Bibs II
AA0018L	Vibeke
AA0018R	Odin
AA0028L	Tøtta
AA0029R	Nils Erik
AA0034A	Omega
AA0040L	Randi II
AA0055G	Astor
AA0056G	ATO
AA0057A	Lise
AA0062A	Anfield
AA0063A	Jalito
AA0065G	MIDNATTSOL
AA0066L	Hedvig
AA0085L	Dennis
F0005L	GERD-ELI
F0006L	ARNE-O
F0010N	LINNEA
F0010SV	KLAR-SELIN
F0014VS	RAMONA
F0018N	HÅREK
F0020N	TOR EINAR
F0029H	HAVØRNA
F0029L	SKJERM
F0030L	EINAR-ANDRE
F0032L	KOMET
F0032P	CARMENCITA
F0035TN	HANNAH

Vessel registration number	Vessel name
F0044VS	HANS ROBERT
F0046SV	LUSKIN
F0046TN	TERNA
F0050BD	M-SOLHAUG
F0055TN	BREI
F0055VS	VARANGERBUEN
F0058N	BELLA MARI
F0068SV	HAVBRIS
F0071L	GEIR
F0071N	KLØVNESJENTA
F0084TN	VIKA
F0090A	YLVA MARIE
F0103L	VEGAR
F0106TN	ÅSTA
F0110TN	VASSANA
F0118HV	SØYLABUEN
F0170L	KAY-ERLEND
F0186H	EIDVÅGFISK
F0201L	ANN ELIN
F0202BD	DELFIN
F0243L	KANES
F0257L	KAMILLA
F0365L	SENIORITA
F9000TN	FRITIDSBÅT
H0001A	Vikingfjord
H0001B	Vikøy
H0001E	Trixi
H0002B	RØKSUND
H0002E	Odin
H0002O	ELIAS
H0002ØN	Osund
H0002T	Austbris
H0003F	Liafjord
H0004AM	Rusken
H0004FS	L.O.B
H0005F	Libas
H0005FJ	STORDING
H0005L	Fløssvik
H0005O	Peragutt
H0006AM	Lill Beth
H0006BN	Ruth
H0006K	Silver Boy
H0007BN	Flyfisk

Vessel registration number	Vessel name	Vessel registration number	Vessel name
H0008A	Karina	H0038K	Bunesen
H0008B	Agøy	H0038MF	Lasse
H0008ØN	ALVØY	H0039AV	Apollo III
H0009FJ	Siglevik	H0043AV	ZANDER
H0009FS	Britt Evelyn	H0043KM	Ramona
H0010B	FYRHOLM	H0045B	Andrine
H0010L	Sandvik	H0048FS	Øyavåg
H0011F	Tressnes	H0049AV	Aktiv 2
H0011FJ	Siglodden	H0049ØN	AUSTVÅG
H0011KM	Fjordbas	H0053AV	Skarten
H0012AM	Heilo	H0054AV	Lukko
H0012FJ	Solmai	H0054F	Sjøgutt
H0014K	Tor	H0055AV	Hanne
H0014S	Krossfjordfisk	H0055FE	Sørøy
H0015AM	Fisk	H0055L	Hosøybuen
H0015AV	KREMMERVIK	H0057B	Sveinar
H0015FJ	Lobster	H0058MF	Solvik
H0017AV	Njågutt	H0060AV	Monsegutt
H0017B	KLIPTON	H0061B	Bølgen
H0018S	Eirik	H0062BN	PIRHOLM
H0019AV	Ruth	H0062S	BOGASKJÆR
H0019B	VIKAFJORD	H0066BN	Sissel Alise
H0020F	Falken	H0066S	Strilagutt
H0020FS	Borganes	H0067B	Sjøfalk
H0020K	Nordlys	H0069S	Krossfjord
H0020S	Amalie	H0070AV	Aarfisk
H0021B	Mostring	H0071S	Bogagutt
H0021R	Bragd	H0076AV	Njågutt
H0021S	BOGASUND	H0082B	HARENGUS
H0022AM	Hegmar	H0082S	TEINESKJÆR
H0022ML	Victoria	H0083O	Vestrevåg
H0025AV	Njåfisk	H0085B	Bergblom
H0025BN	HAVMANN	H0087B	Elianne
H0025FS	Tempo	H0095AM	Havleik
H0028B	Øystrand	H0096B	Vestskjer
H0028FJ	Soløybas	H0096K	Fritid
H0028MF	Maya	H0096S	Turid
H0028O	Viktor	H0098O	Fjordglans
H0032MF	Vågen	H0108A	Gullskjær Jr.
H0033R	Måken	H0110AV	Hallvard
H0035K	Bonito	H0112B	Terna
H0036ØN	Luna	H0120B	Tor
H0038AM	Almor	H0121B	Havørn I

Vessel registration number	Vessel name	Vessel registration number	Vessel name
H0122B	Bukkøy	M0003F	HELLSKJÆR
H0124AV	Ida	M0003M	MARIE STEEN
H0131AV	TOR MAGNUS	M0003RA	SKÅLVIK
H0140AV	Østanger	M0003S	FRANTS
H0140K	Hopholm	M0003VD	Kamaro
H0142B	Katrine	M0003VN	HAUGEN
H0144AV	Hugin	M0003VS	ØYBAS
H0145AV	Munin	M0004F	SIMEN
H0157AV	Navøy	M0004NL	ARNSI
H0170B	Laila	M0004VA	BØLGEN
H0222AV	Jojo	M0004VN	Havbåra
H0226B	Line	M0005AK	SIGGEN
H0229B	Bærøyfisk	M0005F	Ragnhild
H0266B	Havheld	M0005H	GEIGO
H0569B	Mostein	M0005HD	VINGHOLM
HM0555	KINGFISHER	M0005VD	HAVBLÅ
IAX0012	IAX012	M0005VN	Ragnhild Emilie
IAX0017	Viksund	M0005VS	RAGNHILD
KAH0593	-	M0007A	KNAPPEN
KBD0310	Lina	M0007AK	STRANDING
KBF0654	Skuda	M0007F	HAVØRN
KBF0894	Brosmeskjær	M0007HØ	FREDØY
LAB0553	-	M0007U	BRAVO
LG8397	Frøy	M0008S	HENKABUEN
M0001EE	LIANES	M0008SK	FJORDFISK
M0001N	RAYMITA	M0008SØ	HØVDINGEN
M0001RA	CHEVY	M0008VD	HARALD JR.
M0001S	FLORA	M0009AK	TORNADO
M0001SJ	MORILD	M0009F	JUNO
M0001SK	FJORDFISK	M0009HØ	REMØYBUEN
M0001VA	BØLGEN	M0009SA	AASHEIM
M0001VN	MATS	M0010A	KNAPPEN
M0002EE	TEISTKLUB	M0010F	NYSTAD
M0002F	ATLAS	M0010ØG	STORSEISUND
M0002H	CRAZY DIAMOND	M0010RA	CHEVY
M0002HD	KLETT	M0010SA	FISKENES
M0002M	RANDI SOFIE	M0010SK	NY-MARO
M0002RA	SILJE	M0011F	ELNESFISK
M0002S	HAUGSTAD	M0011G	SYLVIA
M0002SK	FANT	M0011HØ	IDA
M0002ST	HARALD JR.	M0011RA	FJORDING
M0002VN	PACC	M0011SA	NYSKJER
M0003AV	HAVBRIS	M0011U	AMIGO

Vessel registration number	Vessel name	Vessel registration number	Vessel name
M0011VN	DELFIN	M0021U	BRANDUNGEN
M0012F	HAVGUTT	M0022F	MYRBØ JUNIOR
M0012H	GEIR II	M0022HD	UNN
M0012HØ	LEANE	M0022VN	HAVBÅRA
M0012S	ELDORADO	M0022VS	KVALVIK
M0013AV	MATHILDE	M0023F	JANBU
M0013U	STRAUMSUND	M0023HØ	HAVDUR
M0014A	SAFIR	M0024HØ	VENTURA
M0014HØ	VOLDSUNDFISK	M0025AV	NYBROTT
M0014S	DELFIN	M0025F	MALIN
M0014SA	RUSKEN	M0025HØ	LEINEFISK
M0014SJ	STRATOS	M0025K	GRIPAR
M0014U	HUSLA	M0025SA	B-VÅG
M0015F	MORILD	M0026HØ	APOLLO
M0015HD	FALKVINGE	M0026MD	MIDSUNDJENTA
M0015HØ	TONO	M0026VN	HAVPRINS
M0015NL	SIWA	M0027A	KVAMSØY
M0015U	VÅGEBRIS	M0027F	NJÅRD
M0016F	RINGO	M0027MD	EMMA
M0016H	HILDRING	M0028A	HEMINGWAY
M0016HØ	ARGO	M0028HØ	GRØNHOLM
M0016MD	JUMA	M0028S	P.O. SENIOR
M0016SA	SVENJA	M0029F	PERO II
M0017AV	GÅRDEN SENIOR	M0029U	HADARØY
M0017HØ	ARGO	M0030H	ODIN
M0018F	SØRHAV	M0030HØ	AKONO
M0018GS	LANGSKJÆR	M0030S	AGATHE
M0018S	TEX	M0030SA	BØLGEN
M0019AV	LUMPFISH	M0030SØ	HAAVÆRBUEN
M0019G	LORAN	M0030VN	SMÅLINER
M0019HØ	BUAGUTT	M0031A	PLUTO
M0019M	VÅGAR	M0032EE	FRIDA
M0020EE	TRAMSEGG	M0032G	AASE
M0020F	KÅRBØBAS	M0032HØ	GENTIC
M0020G	GISKESUND	M0033H	NAPP
M0020H	PEDER	M0033MD	HUSAR
M0020HD	BRODD	M0033S	BRUSØY
M0020U	FLØMANN	M0034F	VÅGØY
M0020VD	BJØRN MARTIN	M0034G	BRIS
M0020VS	MARIANN	M0034HØ	VENTURA
M0021AV	MØRE	M0035HØ	RUBI
M0021F	SKARNER	M0036F	VIKAVÆRING
M0021SA	TOR	M0037HØ	NOTØYGUTT

Vessel registration number	Vessel name	Vessel registration number	Vessel name
M0037S	BRUSØY	M0069MD	MARIE
M0038HØ	BØFJORD	M0071A	SKARSTEIN
M0038VN	SMÅSKJER	M0071G	NESBAKK
M0039G	ORBIT	M0071HØ	FROMAR
M0040AK	BRØDRENE SOLEM	M0071SA	GETO
M0041HØ	PERLON	M0071SØ	STRANDAR
M0043A	MARI	M0072G	NESBAKK
M0043SA	NYSKJER	M0073G	ANNIKEN
M0044AK	RAGNHILD KRISTINE	M0074SØ	STRANDAR
M0044G	SØKERN	M0075AK	JANTO
M0045G	SOLLEN	M0075G	LINDA
M0045HØ	ODIN	M0076G	VEIDAR 1
M0046HØ	LILJO	M0078F	GULVÅG
M0046K	ASPHOLM	M0078G	NYTERTEN
M0046M	ASPHOLM	M0078HØ	VESTFISK
M0047F	SOLØY	M0080A	HAUGE JUNIOR
M0048A	SAFIR	M0080VN	FERDINAN
M0049HØ	ØYTIND	M0081A	SJØGUTT
M0050HØ	HAVSTEIN	M0081AV	GULLFISK
M0050SA	HAUGEFISK	M0083M	RASK
M0050VD	HAVBLÅ I	M0084HØ	BØTIND
M0050VN	MARULK	M0088F	ØYBUEN
M0052HØ	RELIN	M0088HØ	VOLDSUND
M0052S	LILLANN	M0088SØ	VONAR
M0053F	BUABAS	M0089G	FORSØK
M0053G	ARTHUR	M0090F	NYMØRE
M0053SA	SOFFE	M0091U	SINA
M0055G	FAUSKEN	M0092MD	MIFJORD
M0055SA	STRANDBAKKEN	M0093AK	RESABUEN
M0056S	MYRA	M0096G	FRØY
M0057AK	HAVBRIS	M0096SA	URKEVIK
M0057HØ	SIGNAL	M0097U	FJORDFISK
M0058SA	BJØRNAR	M0098SA	PER
M0058VN	HAUGEN JUNIOR	M0100HØ	NOTØYGUTT
M0059G	GUNN ANITA	M0100SA	HAUGEFISK
M0059HØ	KRÅKØYSUND	M0101G	ORBIT
M0059SA	BJØRNAR	M0101H	ORBIT
M0060F	NORDLYS	M0102G	KEIKO
M0061F	BUAGUTT	M0104HØ	ØSTGUTT
M0066F	SPRINT	M0106H	KORALEN
M0067HØ	RAV	M0109F	TAYLOR
M0068F	OLEMANN	M0110SM	NY-VIKING
M0069A	BUØY	M0111HØ	TOPAS

Vessel registration number	Vessel name	Vessel registration number	Vessel name
M0114H	HORISONT	M0290HØ	MASKOT
M0114HØ	MARIELLE	M0295HØ	SANDY
M0115HD	NJÅRD	M0313HØ	HAVØY
M0115HØ	SIWA	M0328G	SVALEN
M0119HØ	NOTØYBUEN	M0345A	STOREGG
M0120A	ANITA	M0396HØ	BØFJORD
M0123H	GEIR	M0400AK	O. SOLEM
M0124H	SEIR	M0494HØ	SANDER
M0124HØ	HÅSKJÆR	M0555HØ	LEINEBRIS
M0126SM	SOLO	M0566HØ	VESLEPER
M0127G	VALDERØY	N0003V	SOLVÆR
M0128G	NYVOLL SENIOR	N0005A	PRØVEN
M0130A	FALKEN	N0008AH	SVINØY
M0130AV	HUSBY SENIOR	N0011A	TONJE
M0134F	MARILENA MI	N0012SO	NATTSEILEREN
M0138HØ	KNAUSEN	N0013F	NESHEIM
M0150AE	HANS R	N0015Ø	VERONICA
M0150H	NAUSTVIK	N0016A	TOBIAS
M0161AV	O.HUSBY	N0016SO	IDUN
M0168HØ	ARCTANDRIA	N0016V	SULØY
M0174AV	PAUL SENIOR	N0035A	MILIAN
M0178HØ	GRØNHOLM	N0038SO	ARIEL
M0179F	TRYM	N0040BØ	EVA SOFIE
M0181HØ	IREN	N0045MS	KEN STIAN
M0182HØ	BØNES	N0050A	ORION
M0187F	KRISTINA	N0050MS	ROWENTA
M0188SØ	VONAR	N0051VA	KNUT GYNTER
M0192SØ	KATO	N0060A	JANNE
M0200H	BELLA	N0062A	RENATE
M0200HØ	RANITA	N0066VV	SKRETIND
M0202F	RANDI JUNIOR	N0068A	BRAKEN
M0208A	DELFIN	N0068Ø	EVA MARITA
M0210HØ	HAVLEIK	N0070VV	BALLSTADVÆRING
M0214HØ	MULØYBUEN	N0084V	LANGBÅEN
M0218HØ	NORBRIS	N0085A	LUDVIK
M0219G	AMANDA	N0085VV	ARNT EGIL
M0232HØ	FLUMA	N0087B	SJØGUTT
M0249F	VITO	N0088BØ	KNÆRTEN
M0267F	ANNA MARIA	N0096VV	MORTSUNDVÆRINGEN
M0269HØ	DELFIN	N0098B	EROS
M0270F	BUAODDEN	N0103VV	TØTTA
M0278SA	SJØSTJERNEN	N0112A	ARIBLÅ
M0286HØ	VITO	N0113A	MARGRETHE I

Vessel registration number	Vessel name	Vessel registration number	Vessel name
N0119VR	STAR VIKING	R0008V	Laksen
N0137VV	TOMINE	R0012S	HAVBRIS
N0151B	LENE K	R0016HA	VESTRI
N0152A	HEIDRUN	R0021H	VIGDIS
N0156BØ	LUNDUNGEN	R0040H	RADAR
N0165MS	SANDVÆR	R0047K	Kvartnes
N0202VV	LOFOTVÆRING	R0055K	HOPVÅG
N0207V	AUSTNESFJORD	R0063K	ANNA CHRISTINE
N0231MS	DROTT	R0069K	VEIDING
N0232A	LINNEA	R0071H	ØYMON
N0233VV	LASSE	R0072K	REPSØY
N0257BØ	SIGURDSON	RAS0606	-
N0272MS	FRØYBANKEN	RAT0289	Løye
N0286A	RAYMOND	RBQ0058	-
N0295V	NORDLYS	RBW0670	-
N0298VV	LINGEY	RCH0920	-
N0304V	VOLLEN	RCI0746	-
N0311V	EGILSON	RCI0819	-
N0333VV	VAREID	RCJ0192	-
N0335A	MALIN	RCK0458	-
N0356VV	IJA	RCK0658	-
N0404A	TOM ROGER	RCK0717	-
N0415V	STJERNTIND	RCL0602	-
N0438V	FISKHOLMEN	SAB0482	-
N0475VV	STORFJORDVÆRING	SAG0706	-
N9000A	FRITIDSBÅT	SAH0179	-
NT0001N	SOLBAS	SAL0475	-
NT0001VL	MARIELL	SAL0931	-
NT0016F	ARINA	SAM0063	-
NT0107F	AUKEN	SAM0105	-
NT0346V	BRATTSKJÆR	SAM0505	-
Ø0007M	Kuling	SAM0582	-
Ø0008F	Teddy	SAM0857	-
Ø0009R	Busen	SAN0018	-
Ø0010R	ÅREFJORDBAS	SAN0025	Skjerviking
Ø0012RD	Krogstad	SF0001B	LINDHOLM
Ø0017R	Øragutt	SF0001F	NEMO
Ø0018F	Koggen	SF0001S	Frøyanes
Ø0128H	Ann Sofie	SF0001SU	SULEHAV
R0001KP	Gunny	SF0002F	J.R. MARITA
R0003SK	Dani	SF0002S	Bergholm
R0005SO	ROTTFISK	SF0002SD	BUKKEN
R0005ST	FALKVINGE	SF0006A	SJØVÆR

Vessel registration number	Vessel name	Vessel registration number	Vessel name
SF0006S	BRIMØY	SF0040SU	Sulingen
SF0007F	SKJONGHOLM	SF0041S	Skjold
SF0007SU	Øygutt	SF0042B	Svanen
SF0008G	HENKABUEN	SF0046B	Sjøbrem
SF0008V	Ida Marie	SF0047F	Tom-Robert
SF0009B	ATLANTIC	SF0048F	HETLEVIKING
SF0009F	Hedda	SF0050B	Vestvær
SF0009V	ATLANTIC	SF0050S	Seljefisk
SF0011V	Tin	SF0052B	Smøysund
SF0014S	FRØYANES SENIOR	SF0054V	Atina
SF0016A	Sjøblomst	SF0055F	Lennart
SF0016B	Igland	SF0055S	Stattegg
SF0017V	Hendanes	SF0056F	Orion
SF0018B	Førde	SF0060B	Fiskaren
SF0018V	Terje Viken	SF0060F	Breivik Junior
SF0019B	LINEBAS	SF0062S	STÅLHOLM
SF0019F	Janica	SF0069SU	BARSTEIN
SF0019S	Liko	SF0070SU	Tårnsker
SF0019SU	Skarøy	SF0071F	TAIFUN
SF0020B	Veststeinen	SF0072B	Verning
SF0020S	ARGO JUNIOR	SF0075F	Veibas
SF0020SU	Solglytt	SF0078B	Øyvind
SF0020V	Carisma Viking	SF0083V	Caro
SF0021B	Keltic	SF0084F	VESTERVÅG
SF0021S	Keltic	SF0085B	HAVSTJERNA
SF0022F	LINDSJØ	SF0087F	BREIVIK JUNIOR
SF0022G	Olemann	SF0088B	Grotle
SF0022V	Veststeinen	SF0088V	Havbåra
SF0023H	Real	SF0090S	FJELLMØY
SF0024B	Raya	SF0096B	Anna
SF0025F	Fanøyvåg	SF0099G	Jomar
SF0026F	Ole Erik	SF0100SU	Sulebas
SF0027F	Merkur	SF0100V	Småsund
SF0027HØ	Høyang Bjønn	SF0101A	Tet
SF0028F	FANØYVÅG	SF0104V	Kamaro
SF0030B	STORMHAV	SF0112V	HAVFLUD
SF0031SU	Salarfisk	SF0114V	Vestpynt
SF0032V	Furen	SF0127S	Harald Junior
SF0034F	Vilde	SF0127V	Ringbas
SF0035F	Forsøk	SF0130A	Stavfjord
SF0036G	Ali	SF0131A	Tore
SF0037B	ANNJO	SF0133A	ORIANA
SF0038SU	Sollys	SF0133B	Vikingfjor

Vessel registration number	Vessel name	Vessel registration number	Vessel name
SF0137A	Eva Karin	T0024LK	MICHELLE
SF0142V	Anne Katrin	T0025K	SJØLILL
SF0152S	Myklen	T0026N	ØYÅD
SF0156V	Beate	T0028K	VÅRHEIM
SF0161F	Dagur	T0028N	KARL OSKAR
SF0161S	Siwo	T0030BG	STØA
SF0170V	Vestgutt	T0031LK	HUSØY
SF0174V	Brodd	T0032LK	JM SENIOR
SF0175B	Igland	T0032TK	BAKKEN
SF0181SU	Neptun	T0035LK	ERATO
SF0205SU	Sulegutt	T0037K	SARAH
SF0206A	TONE HEIDI	T0038K	KRISTINE
SF0209B	Skom	T0040BG	MAGNARSON
SF0210V	Vester Junior	T0040KN	NYLAND
SF0213S	ODIN	T0041LK	JOHAN MARTIN
SF0218V	Dragon	T0041S	IDUNSON
SF0220B	Nigardsøy	T0042LK	KVITHOLMEN
SF0220V	Vito	T0043LK	GULLFESKEN
SF0227V	Nyken	T0049K	EIRIK
SF0263S	KNUT-ARNE	T0049LK	FRANK
SF0267V	Victoria May	T0051T	FURBÅEN
SF0270B	Shanty	T0053LK	ELIN
SF0285V	Saturn	T0055LK	HUSØY
ST0011F	HOLMEN	T0060T	ØYVÆRING
ST0023F	VESTASKJÆR	T0062LK	JENSEGUTT
ST0024H	EINVIKBUEIN	T0063LK	PIA
T0001B	RANDI HELENE	T0068T	SKAGA
T0002K	ARCTIC OCEAN	T0069S	APOLLO
T0003LK	Vestfisk	T0074K	KAIA
T0003N	REISAVÆRINGEN	T0075LK	LEX GRANDE
T0007K	BIRGITTE	T0079S	THINA IRENE
T0007S	HAVGLIMT 3	T0081LK	FJORDFANGST
T0007T	SAGA K	T0082K	AKULA
T0009LK	LEIVEN	T0086K	LABAN
T0010BG	LILLE-BØRGE	T0086T	MARION HELEN
T0010K	KAROLINE	T0090TK	TOR HELGE
T0012K	EILIAH	T0091K	VALAJENTA
T0014K	MARIANNE	T0091LK	MORFAR
T0015K	SOFUS	T0094KN	RENATO III
T0016LK	NILS EIVIND	T0094LK	MARIANNE
T0017LK	MEIBEL	T0095T	FALKEN
T0021KD	TINGANES	T0098TK	KARIN
T0021LK	TRAPANI	T0101LK	SKJEGGESTEIN

Vessel registration number	Vessel name	Vessel registration number	Vessel name
T0103LK	BRIMØY SENIOR	T0404LK	BREITIND
T0103S	JELI	T0411S	ENES
T0105S	BRIS	T0420LK	TOR-MORTEN
T0105T	LENA TERESE	T0447LK	VÆRING
T0105TK	TRYGG	T0462S	JILL-BENITA
T0106K	ROGNKJEKSA	T0493K	BILLY
T0107LK	RENNEBUEN	T0500K	SJØULK
T0110K	SKOGARØY	T0507K	ÅLEN
T0118S	ISBÅEN	T0531T	LØVENG
T0128LK	VARNES	T0538S	ØRNVIK
T0130K	RIO	T0591K	GILL
T0130LK	HAVFLORA	T0608S	ULØYBUEN
T0138LK	EMMA-SOFIE	T0658T	KVALØY
T0143K	ALANGEN	T0718T	SØYLABUEN
T0149LK	SMÅVÆR	T0999T	SALTBÅEN
T0150LK	HUSØY	TK0001K	PANDAEN
T0152T	VÅGAR	TK0004BL	orkan
T0155T	KVALØYGUTT	TK0006BL	Siva
T0161K	STORNES	TK0010BL	Røstagutt
T0169LK	ELISE KRISTIN	TK0012BL	Bris
T0171T	SVÅHOLM	TK0017BL	SVANEN 2
T0177K	VEST-TIND	TK0023BL	Orion
T0178K	TUNFISK	TK0025P	Barracuda
T0183K	ALF-ANDRE	TK0028BL	Leo
T0189T	NESHOLMEN	TK0035BL	Skarven
T0200LK	VELNES	TK0042K	Skomring
T0200T	GIGGEN	TK0063BL	Vindrosa
T0205T	JORUNN B	V0003HS	Obelix
T0206T	AXEL B.	V0007HS	Havduen
T0210T	TERNA III	V0026L	VESLEPER
T0211S	STANGNES	V0045S	Løven
T0215T	LEIF ROALD	VA0001F	HELGØYSUND
T0230T	SOLBU	VA0001M	ANTILDE
T0231LK	PÅL-STIAN	VA0002K	GRØNNVIK
T0253K	FRANKLIN	VA0003M	SIKO
T0258S	FAVORITT	VA0004M	VALLØY
T0282K	VERONICA	VA0004S	Udvaar
T0294S	NORDFISK	VA0007F	HALLVARD
T0297LK	HEIDI KRISTIN	VA0007LS	Marie Emilie
T0315S	JADE	VA0008LS	SJØSPRØYT
T0381S	KIMMEN	VA0009FS	Stella
T0382K	LOBO	VA0009M	Rona
T0399K	LENA	VA0009S	Neptun

Vessel registration number	Vessel name	Vessel registration number	Vessel name
VA0010FS	RØDLAND	VA0082K	Havørn
VA0010LS	NESEGUTTEN	VA0083F	Ramona
VA0011F	FJORDBUEN	VA0085S	Sørland
VA0011K	Pitbull	VA0086LS	Astrid Emilie
VA0011LS	BELL-ROCK	VA0086M	Inger
VA0011M	Marcus	VA0087K	Frieda
VA0012K	Sjarke	VA0087LS	NESEJENTA
VA0015K	Streif	VA0088S	Tobias
VA0015LS	Romero	VA0090K	Richi
VA0015M	RISØY	VA0097FS	Eldorado
VA0015S	Hellevig	VA0098K	OLAGUTT
VA0016F	HIDRA	VA0116F	Elfi
VA0016M	HENRIK	VA0116K	MALENA
VA0017K	Inger	VA0134M	SKOGSØYJENTA
VA0017LS	GLUECIFER	VA0138K	MARIUS
VA0018K	Randøyjenta	VA0148M	Strandbuen
VA0018LS	GLIMT	VA0196K	Horisont III
VA0019K	Elias	VA0198FS	Jølle
VA0020F	HAVSUND	VA0215K	SIRIUS
VA0020M	Skogsøy	VA0217K	Lysema
VA0021F	Eggland	VA0256K	Toya
VA0021FS	Egeland	VA0311F	Tarzan
VA0021K	Lomvien	WAU0273	Øyvær
VA0023K	VIK	ZZ0709ZZ	-
VA0024F	Varnes	ZZ0904ZZ	-
VA0025K	MARIE	ZZ0906ZZ	-
VA0030K	Skippy	ZZ0914ZZ	-
VA0033LS	Lillejenta	ZZ1001ZZ	-
VA0033S	Knerten	ZZ1002ZZ	-
VA0036K	Certina	ZZ1004ZZ	-
VA0037S	Marlin	ZZ1018ZZ	ZZ-1018-ZZ
VA0040K	Aase	ZZ1029ZZ	-
VA0041M	LOVISE	ZZ1111ZZ	-
VA0044M	Rosenvoll	ZZ1201ZZ	-
VA0049M	Munaas	ZZ1260ZZ	--
VA0051S	Sleipner	ZZ1263ZZ	-
VA0066F	Flubas	ZZ1438ZZ	--
VA0071M	BRATT HOLM	ZZ1439ZZ	Skulebas
VA0076K	TRYGG		
VA0076LS	STORVIG		
VA0077M	KVEITA		
VA0078K	Pålita		
VA0081LS	Storvig		

Appendix 9 List of the companies that are part of the client group and are holding stock of ling, tusk and/or lumpfish

Stokfisk AS
Gjøssund
6040 Vigra

Benjamin Jensen AS
Flakstadveien 35

Norwegian Seafood Company AS
Brunholmgt 1c
6001 Ålesund

SANDEFISK AS
Korsneset, 6089 SANDSHAMN

FINEFISH AS
Rådhusgata 22, 6090 FOSNAVÅG

PER STAVE AS
Stave, 6750 STADLANDET

Ståle Nilsen Seafood AS
Storgata 23, 8430 Myre

Møre Codfish Comp AS
Keiser Wilhelms gate 60, 6003 Ålesund

Unicod AS
Strandtorget 3 -2 etasje, 9008 Tromsø

Nils Sperre AS
Ellingsøy, 6057 Ellingsøy

O. Skarsbø AS
Harøysundvegen 99, 6430 Bud

Torsvågbruket
Torsvåg, 9136 Vannareid

Brødrene Karlsen AS
Husøy, 9389 Husøy I Senja

Polar Seafood Berlevåg AS
Samvirkegata 12, 9980 Berlevåg

Hovsund AS
Hovsund, 8314 Gimsøysand

Nergård Sørøya AS
Strandgata 40, 9593 Breivikbotn

Nord Senja Fisk AS
Botnhamnveien 787, 9373 Botnhamn

Hansen Aksel AS
Senjahopen, 9386 Senjahopen

Fishy Exports Kaspersen
9136 Vannareid

Nergård Senja AS
Gryllefjord, 9380 Gryllefjord

Karlsøybruket AS
9135 Vannvåg

Gimsøy Pelagisk AS

J.M. Nilsen Fisk AS
8489 Nordmela