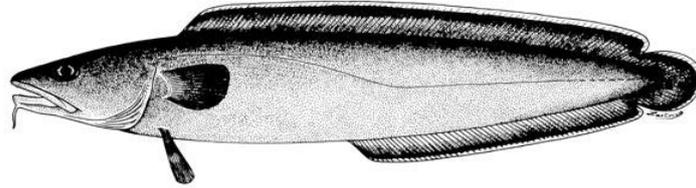
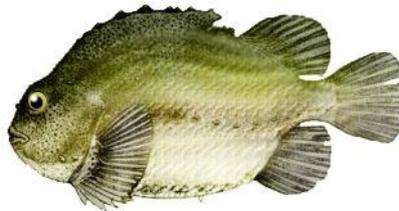


## MSC SUSTAINABLE FISHERIES CERTIFICATION

### NFA Norwegian Ling & Tusk fishery



### NFA Norwegian Lumpfish fishery



Public CommentDraft Report

June 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 17<sup>th</sup> August 2016 and was concluded (to be determined at a later date).
- » 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 Target 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 <sup>th</sup> -19 <sup>th</sup> August 2016, with follow up information gathering via client, Fisheries Directorate
Target eligibility date	1 <sup>st</sup> March 2017 (granted by VR from MSC)
Actual eligibility date	TBC at later date

## 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	83.0	80.0
Principle 2	Longline	N/A	88.3				
	Gillnet		88.3				
	Traps and pots	N/A	88.0				
Principle 3	Longline Gillnet Traps and pots	95.6					

## 1.4 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:

Condition number	Species	Condition	Performance Indicator	Relevant UoAs	Related to previously raised condition? (Y/N/NA)
1	Lumpfish	<b>Missing Well defined</b> HCRs that <b>ensure</b> that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock <b>fluctuating around</b> 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 <b>highly likely</b> to not <b>hinder recovery</b> of ETP species	2.3.1b	UoA-12	NA
4	Lumpfish	a) There is a <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be <b>highly likely to achieve</b> 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 <b>strategy</b> to manage impacts on ETP species	2.3.3b	UoA-12	NA
6	Lumpfish	d) There is <b>some quantitative evidence</b> 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	2.4.2d	UoA-12	NA

Condition number	Species	Condition	Performance Indicator	Relevant UoAs	Related to previously raised condition? (Y/N/NA)
7	Ling - Tusk	a) <b>Missing Well defined</b> HCRs that <b>ensure</b> that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock <b>fluctuating around</b> 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
8	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
9	Ling - Tusk	b) Information is adequate to measure trends and support a <b>strategy</b> to manage impacts on ETP species (Ling and Tusk)	2.3.3b	UoA-1 – UoA-11	NA

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

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

##### UoA 2 Norwegian North East Arctic Tusk – Gillnet

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

##### UoA 3 Norwegian North East Arctic Tusk - Longline

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

##### UoA 4 Norwegian Tusk (North East Atlantic) - Gillnet

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

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

UoA 5 Norwegian North East Arctic Tusk - Longline

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

UoA 6 Norwegian Tusk (North East Atlantic) - Gillnet

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

UoA 7 – Small scale traps and pots fishery for Tusk

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

UoA 8 Norwegian North East Arctic Ling - Longline

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

<b>Management:</b>	Norwegian authorities
<b>Other Eligible Fishers:</b>	N/A

#### UoA 9 Norwegian North East Arctic Ling - Gillnet

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

#### UoA 10 Norwegian Ling (Others) - Longline

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

#### UoA 11 Norwegian Ling (Others) - Gillnet

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

#### UoA 12– Norwegian EEZ Lumpfish

<b>Species:</b>	Lumpfish ( <i>Cyclopterus lumpus</i> )
<b>Stock:</b>	Lumpfish in ICES I and II (majority in IIa2)
<b>Geographical range of fishing operations</b>	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
<b>Harvest method:</b>	Small coastal vessels with gill-nets and entangle nets; Fishing Season April - July
<b>Client Group:</b>	Norges Fiskarlag

<b>Management:</b>	Norwegian fisheries management. There is not a HCR for a stock, but regional ecosystem management plans exist. There are no private jurisdiction codes
<b>Other Eligible Fishers:</b>	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 (if determined to be certified) are the same as the Units of Assessment listed in Section 3.1.1, as it covers all fishing operators targeting tusk, ling and lumpfish in the ICES Divisions I, II, IV and VI, Figure 1) using gillnet and longliner as harvesting methods and operating under Norwegian management. It is within scope of the MSC standard.

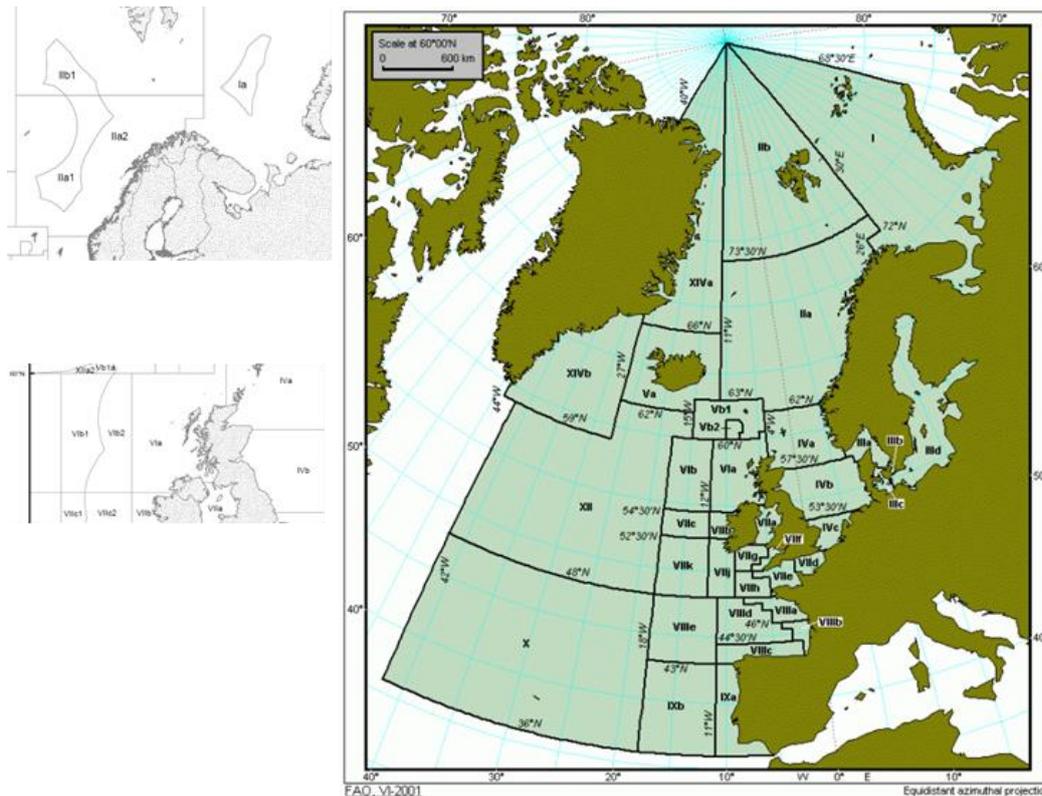


Figure 1 ICES areas in the ICES convention area (Northeast Atlantic Ocean). The small maps in the left panels show subdivisions IIa.2, VIb1 and VIb2. (Source: <http://www.ices.dk>)

The CAB confirmed the following specifically:-

- 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
<b>Tusk</b>	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 (Smuthullet)	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
	Fiskevernsonen rundt Svalbard	Line	45	102	120
		Trawl	2	1	4
		<b>Total</b>	<b>11406</b>	<b>13741</b>	<b>14802</b>
		<b>UoC catch</b>	<b>10289</b>	<b>12065</b>	<b>13341</b>
	<b>UoC %</b>	<b>90.21%</b>	<b>87.80%</b>	<b>90.13%</b>	
<b>Ling</b>	Norwegian economic zone	Not	0	0	0
		Gillnets	4793	4375	4262
		Jiggings	46	27	35
		Line	5195	4487	4786

Species	Fishing zone	2014	2015	2016
		tons	tons	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
	<b>Total</b>	<b>16887</b>	<b>17596</b>	<b>18107</b>
	<b>UoC catch</b>	<b>15807</b>	<b>15725</b>	<b>16519</b>
	<b>UoC %</b>	<b>93.61%</b>	<b>89.37%</b>	<b>91.23%</b>

**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 Malangssgrunnen	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 limited<sup>1</sup>. 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	2015	2016
			tons	tons	tons
Lumpfish	Norwegian economic zone	Gillnets	93	352	443
		Line	0	1	0
		Trawl	0	0	8
		Other	0	2	2
		<b>Total (=UoC)</b>	<b>94</b>	<b>354</b>	<b>453</b>

**Table 5 Boat TAC and Catch Data - Lumpfish**

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

**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%

<sup>1</sup> 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)<sup>2</sup> 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.

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<sup>2</sup> 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.

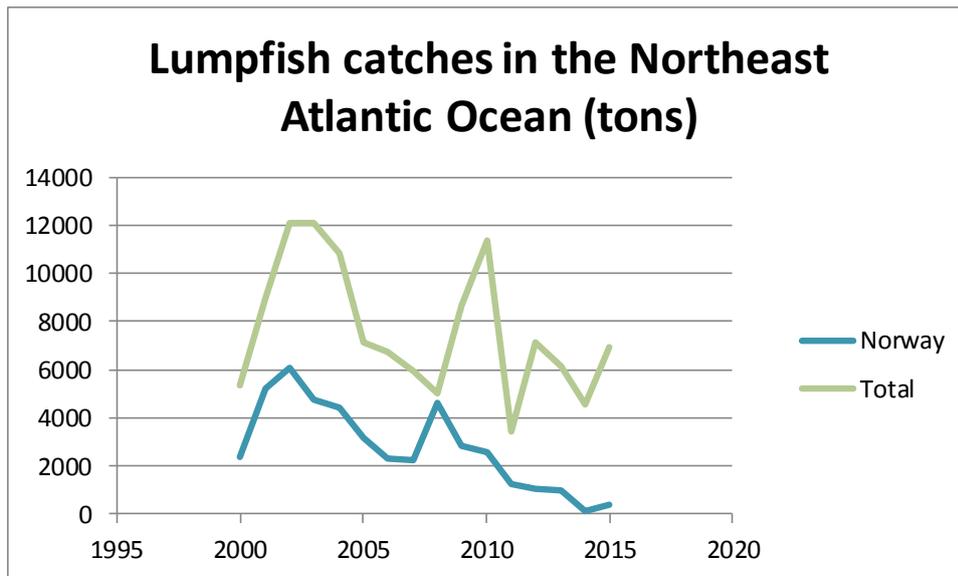


Figure 2 Lumpfish catches 2000-2014 (total 2000-2013) from the Northeast Atlantic (FAO 27) in total and for Norway. Source FAO

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, IIIa, IVa	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.

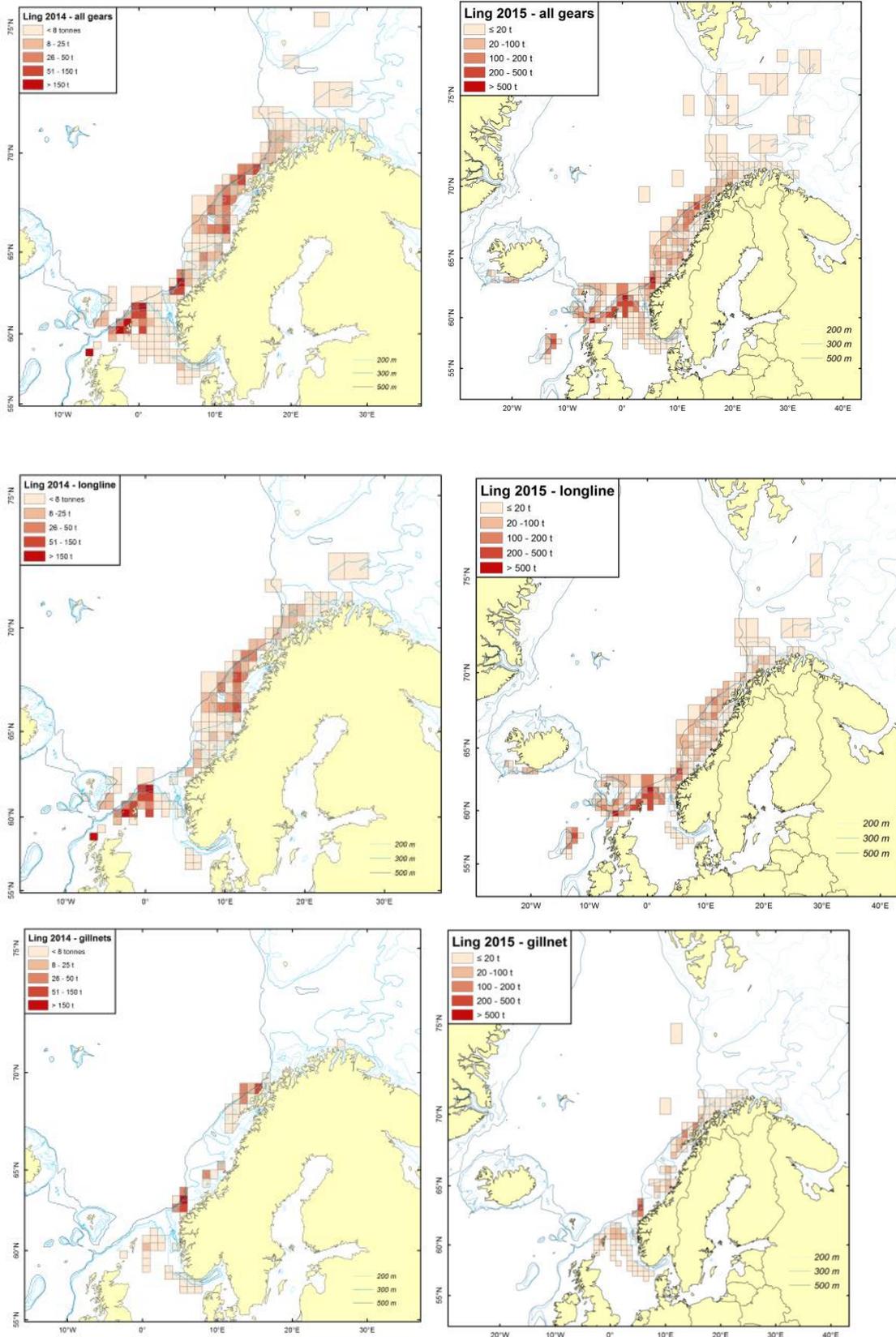
### 3.2.3 Location of the fishery

#### 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.

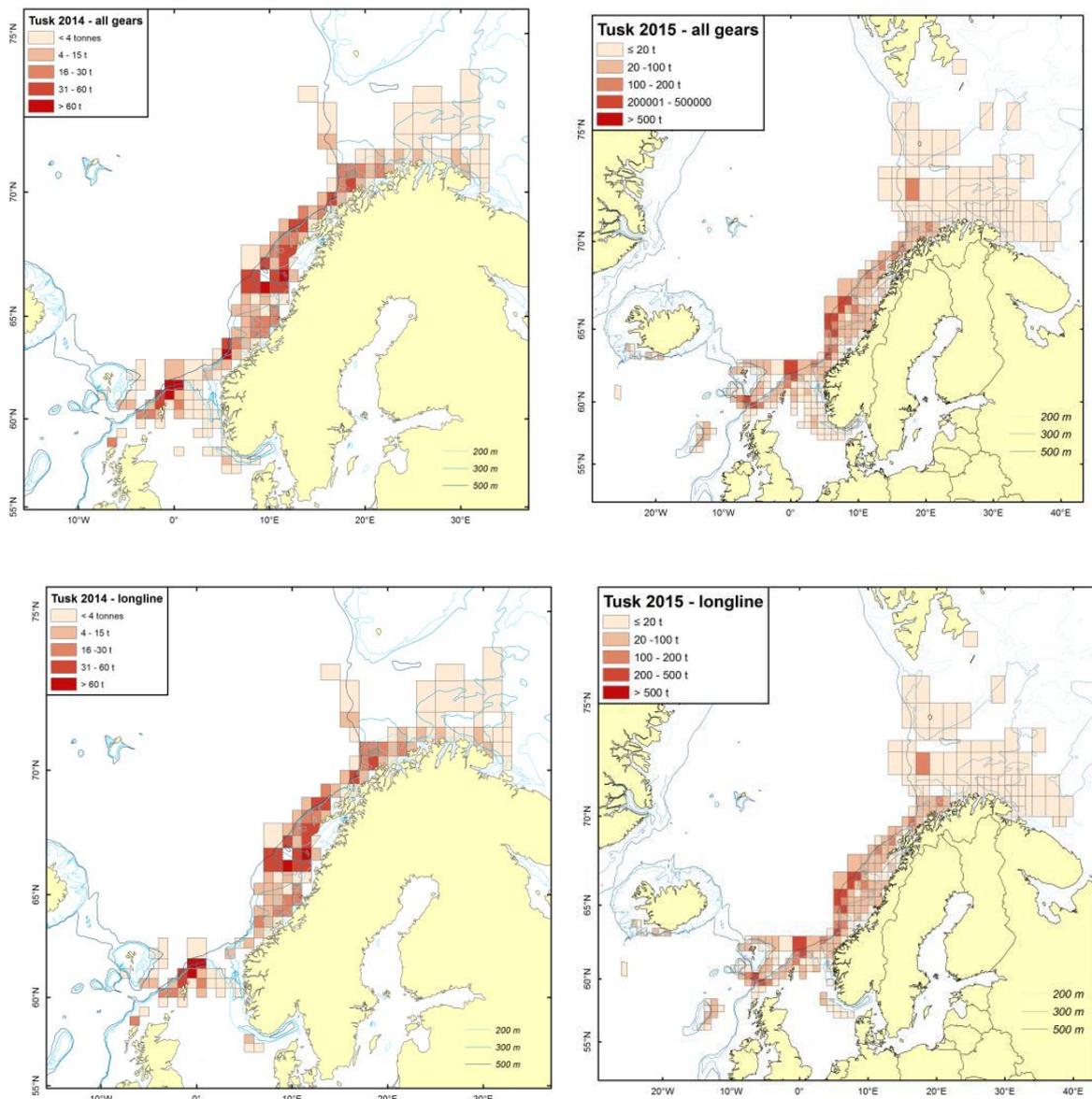


**Figure 3** Distribution of the total catch of ling, the catches using longlines and gillnets for the Norwegian longline fishery in 2014 and 2015. (Source: From Figure 8 in Helle and Pennington, 2015. The development of the Norwegian longline fleet's fishery for ling and tusk during the period 2000-2014.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

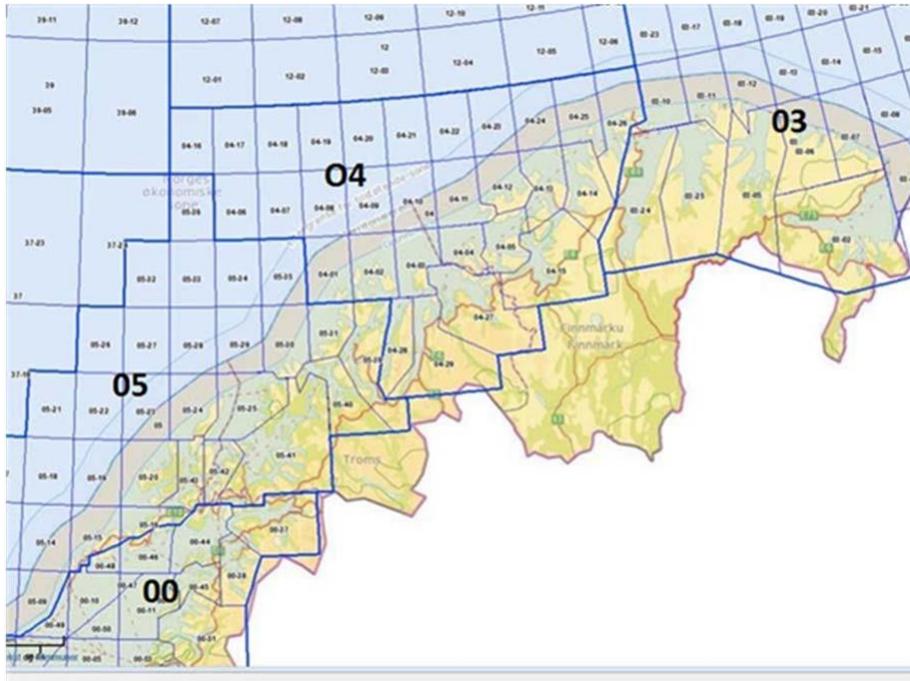


Figure 5 Statistical areas for lumpfish statistics. (Source: Norges Råfiskelag)

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	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)<sup>3</sup>. The end product is the roe that is processed to caviar.

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<sup>3</sup> 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 .

Longline<sup>4</sup>: 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, per.som.)

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

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<sup>4</sup> 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.

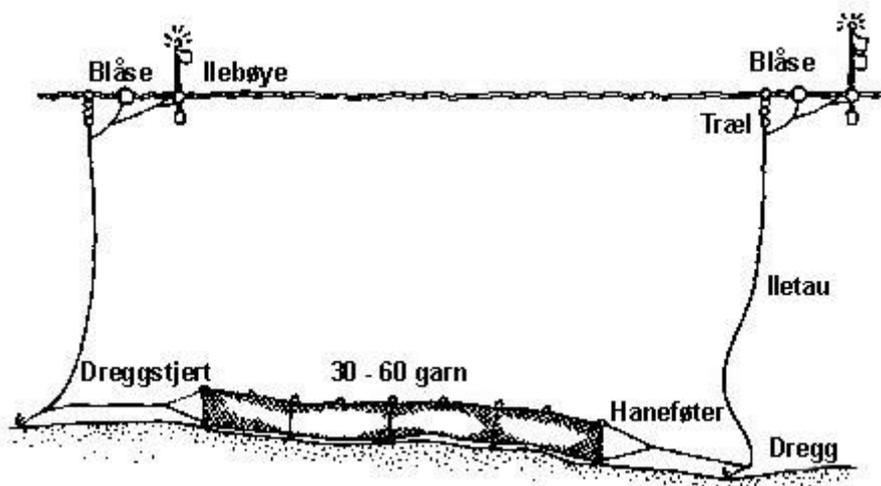


Figure 6 Basic diagram for bottom set gill nets for ling, tusk and lumpfish (Source: <http://www.kulfisk.no/bunnomfiskeri1.htm>, from Client)

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.

### 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.

## 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 burbots), is not among the 'default' Key LTL species, tusk shows low resilience to exploitation; trophic level is 3.9<sup>5</sup>. Tusk is not a low trophic level (LTL) species;

Ling (*Molva molva*), Family Lotidae (Hakes and burbots), is not among the 'default' Key LTL species, ling shows low resilience to exploitation; trophic level is 4.4<sup>6</sup>. 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 3.9<sup>7</sup>. 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](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,

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

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

<sup>7</sup> <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.

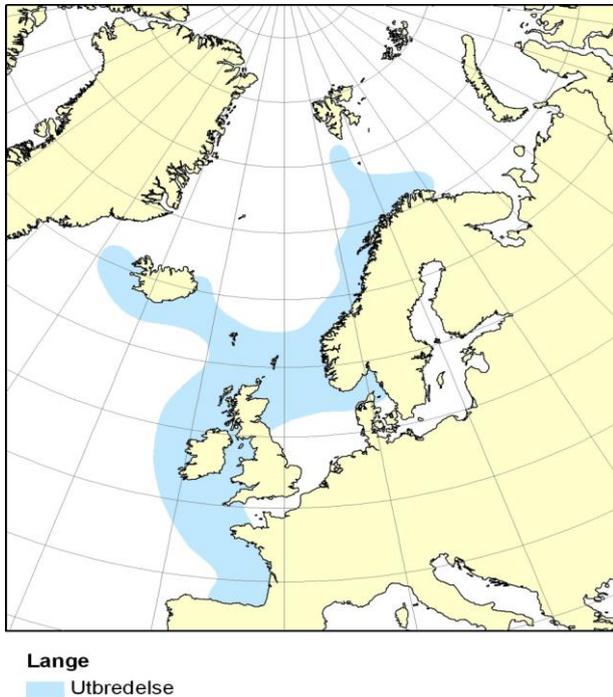


Figure 8 Distribution of ling (*Molva molva*) in the Northeast Atlantic Ocean (Source: Fisheries Directory, site visit)

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.

## Global Capture Production for species (tonnes)

Source: FAO FishStat

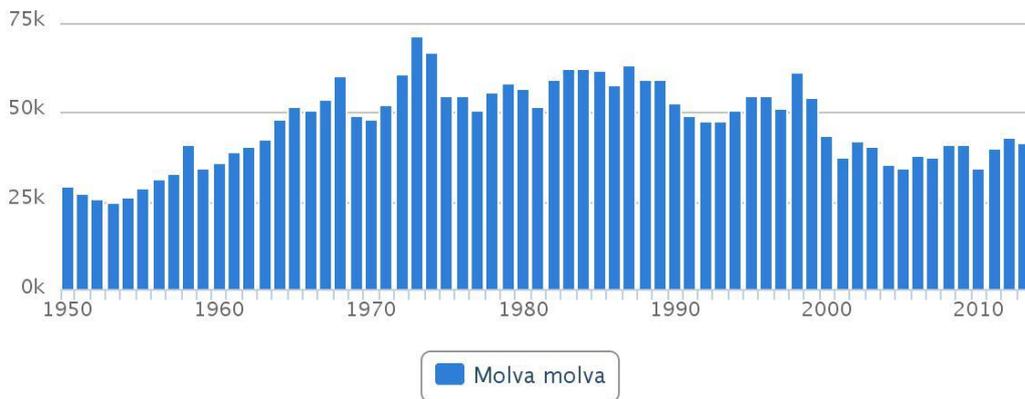


Figure 9 Ling Catch Statistics 1950-2013 global total. (Source: FAO FishStat)

### 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](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)

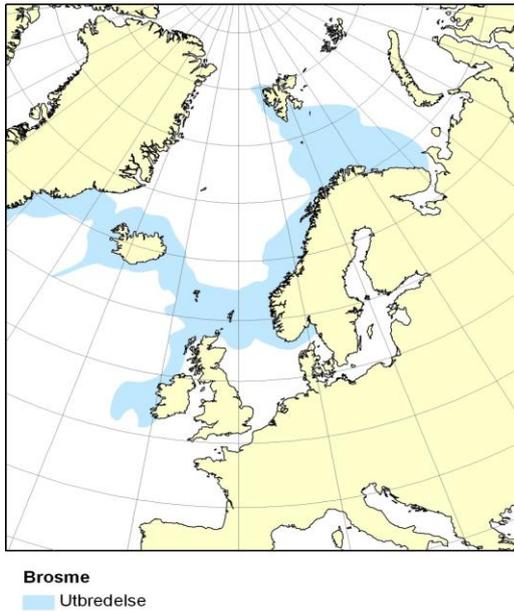


Figure 11 Distribution of Tusk (*Brosme brosme*) in the Northeast Atlantic Ocean. (Source: Fisheries Directory, site visit)

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.

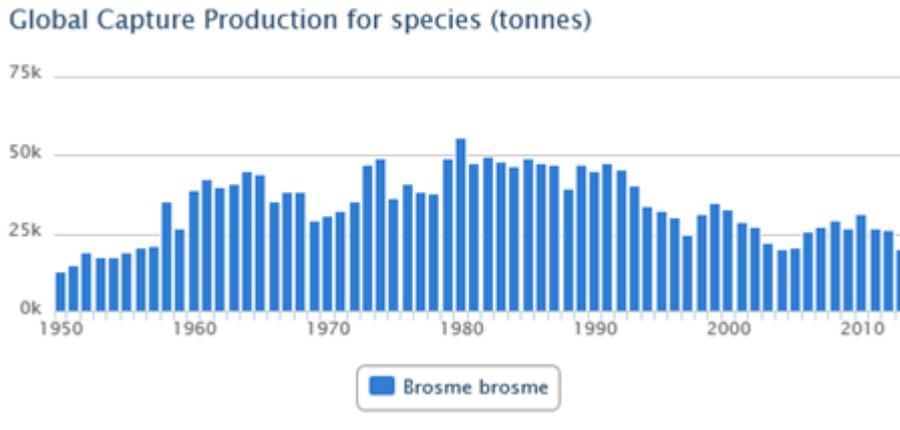


Figure 12 Global annual tusk catches in 1950-2013 from FAO statistics. (Source: FAO <http://www.fao.org/fishery/species/2220/en> accessed 23 December 2015)

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 six 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 ICES. 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 six 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)**

Stock	Method	Indicator for MSY exploitation rate	Value of proxy	Status	Proxy for MSY Btrigger;	Value of proxy	Status
Ling (Other areas)	SPiCT <sup>8</sup>	F <sub>MSY</sub>	0.24 (1988–2014)	Desirable	0.5 × BMSY	48 000 t (1988–2014)	Desirable
Tusk (NEA)	SPiCT	F <sub>MSY</sub>	0.51 (1989–2014)	Desirable	0.5 × BMSY	8 500 t (1989–2014)	Desirable
Tusk Vib	LBI <sup>9</sup>	Expected mean length of catch above Lc when F = M	53 cm (2013)	Desirable	No proxy identified	N.A.	Unknown

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

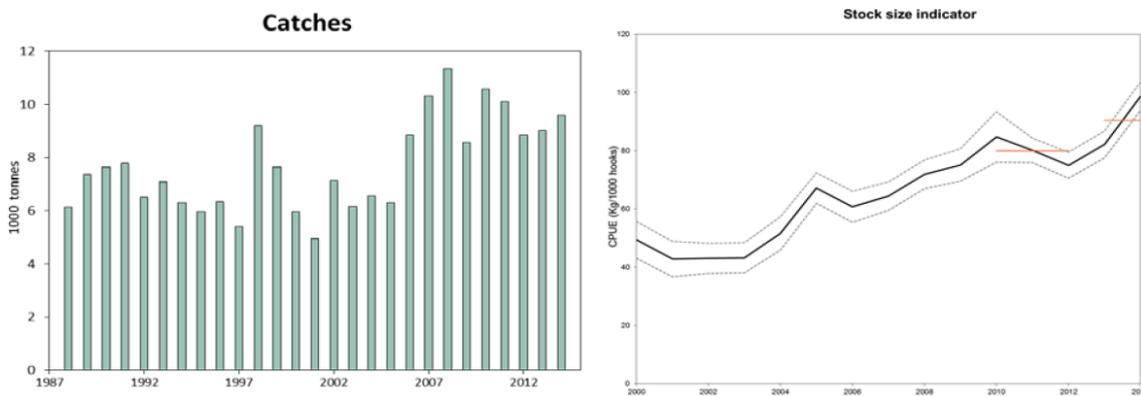


Figure 13 Ling in Subareas I and II. Left: Landings by ICES area (in thousand tonnes). Right: Estimates of cpue (kg per 1000 hooks) based on official logbooks from the Norwegian longline fishery in Division IIa. The red horizontal line shows the reference level (around 2012) and the level on which the advice is based (around 2015). Source: ICES (2015) Figure 9.3.23.1

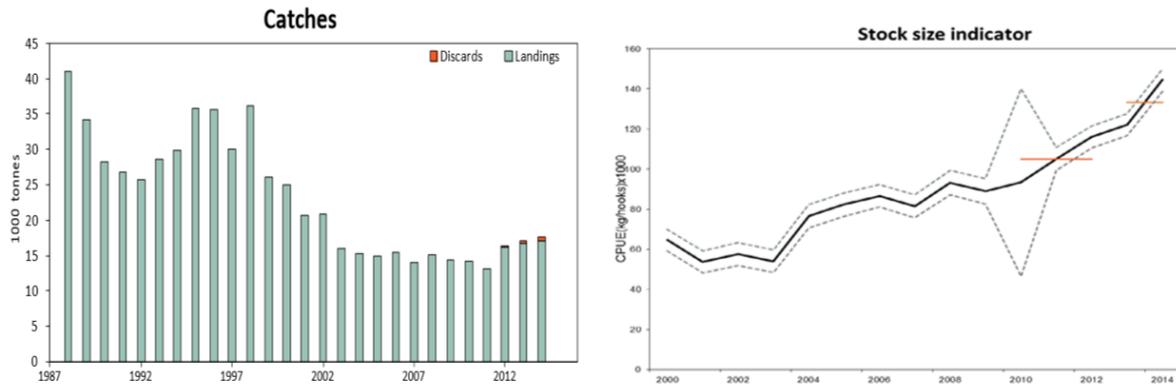
The assessment is based on cpue (kg per 1000 hooks) based on official logbooks from the Norwegian longline fishery in Division IIa. The precautionary buffer was applied in 2013. Discarding is

<sup>8</sup> 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<sub>MSY</sub> and MSY Btrigger proxies takes the process error into account

<sup>9</sup> LBI: Length-based indicator ‘Desirable’ corresponds to: “(Observed mean length of catch above Lc) / (Expected mean length of catch above Lc when F=M)” > 1. The LBI method is based on the “Expected mean length of catch above Length at first catch (Lc) when F = M.

considered negligible. For further detail see ICES (2015f) and ICES (2016s) WGDEEP reports and Helle et al (2015).

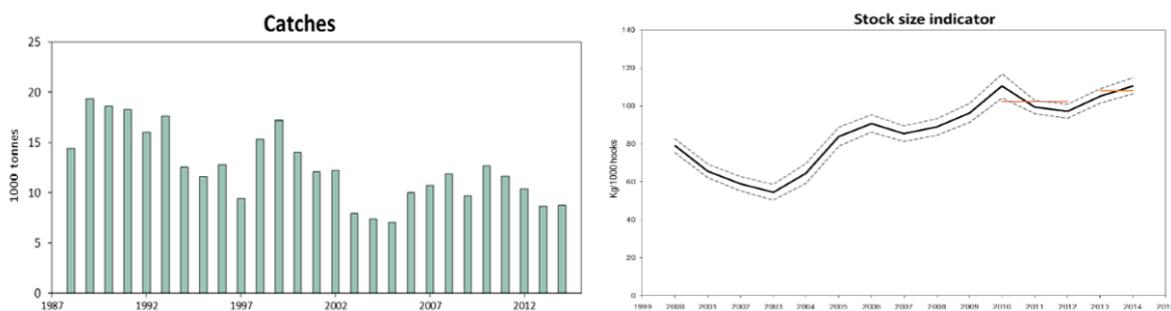
### Ling in Subareas VI-IX, XII, and XIV, and in Divisions IIIa and IVa (other areas)



**Figure 14** Ling in other areas. Standardized cpue from the Norwegian longline fleet targeting ling for all areas combined ( $[\text{kg hook}^{-1}] \times 1000$ ). 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

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).

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

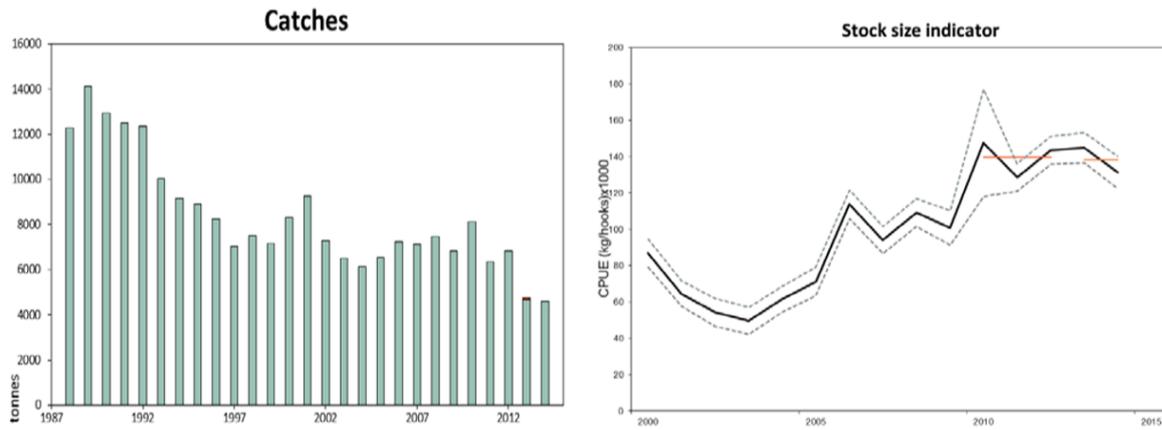


Figure 16 Tusk in Subareas IV and VII–IX, and in Divisions IIIa, Vb, VIa, and XIIb. Left: catches in tonnes. Right: Cpu index (kg per 1000 hooks) from Norwegian longliners for tusk in Divisions IVa, Vb, and VIa, based on official logbooks. The red horizontal lines indicate the average biomass index of the respective year range used to calculate the advice. Source ICES 2015 advice Figure 9.3.49.1

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).

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

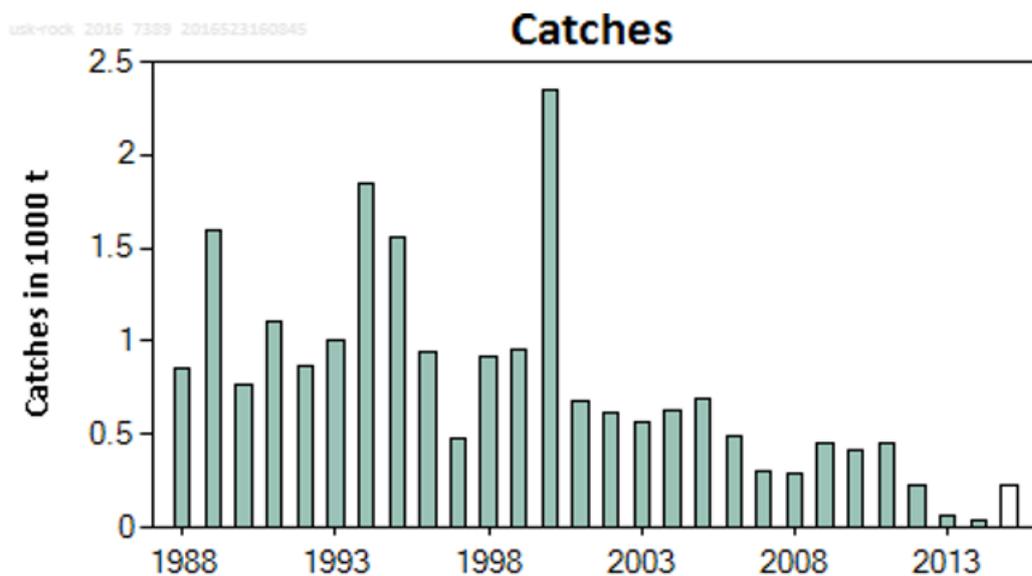


Figure 17 Tusk in Division 6.b. Catches in thousand tonnes, 2015 values are preliminary. Source ICES advice 2016 Figure 9.3.45.1

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.

**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 <sub>lim</sub>	MSY	Advisory Category	Cap applied for 2016 advice	
Ling	ICES I+II	Norwegian longline reference fleet cpue covering the main areas of the stock	N/A	N/A	3 <sup>*)</sup>	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 <sup>*)</sup>	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 <sup>*)</sup>	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 <sup>**)</sup>	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 <sub>MSY</sub> proxy estimate (ICES, 2016a) and effort has decreased since. ICES (2016b).

Species	Assessment unit (Stock)	Basis for the advice			ICES HCR		Stock status
		Assessment basis	B <sub>lim</sub>	MSY	Advisory Category	Cap applied for 2016 advice	
	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).	Based on ICES advice for 2016-2017 ICES (2015b-e) and ICES (2016b)  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 if 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 include 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)<sup>10</sup>. They also concluded that gene flow was rather limited among the detected groups.

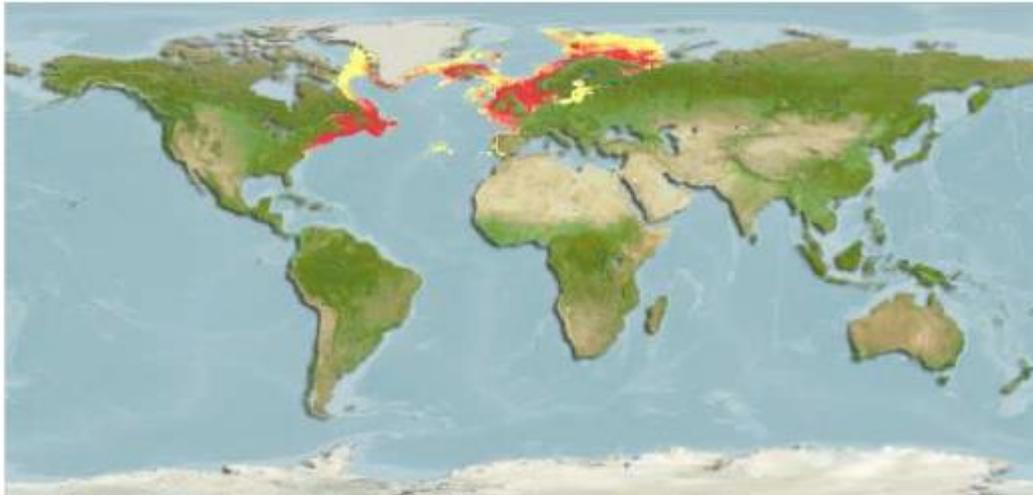


Figure 18 Global distribution of lumpfish (*Cyclopterus lumpus*). (Source: Fishbase)

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 Fishery<sup>11</sup> and Greenland lumpfish fishery<sup>12</sup>. Pampoulie et al. (2014) show that lumpfish in the North Atlantic is genetically structured on a large geographic scale and Eriksen et al (2014)<sup>13</sup> 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)<sup>14</sup>. Kennedy et al (2015)<sup>15</sup> 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.

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<sup>10</sup> Pampoulie, C., Skirnisdottir, S., Olafsdottir, G., Helyar, S. J., Thorsteinsson, V., Jónsson, S. T., Fréchet, A., Durif, C. M. F., Sherman, S., Lampart-Kałużniacka, 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

<sup>11</sup> Icelandic Gillnet Lumpfish Fishery – Public Certification Report, <https://fisheries.msc.org/en/fisheries/icelandic-gillnet-lumpfish/@@assessments>

<sup>12</sup> Greenland lumpfish fishery Public Certification Report <https://fisheries.msc.org/en/fisheries/greenland-lumpfish/@@assessments>

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 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'<sup>16</sup> 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.

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<sup>16</sup> Defined as the lumpfish that spawns along the Norwegian coast

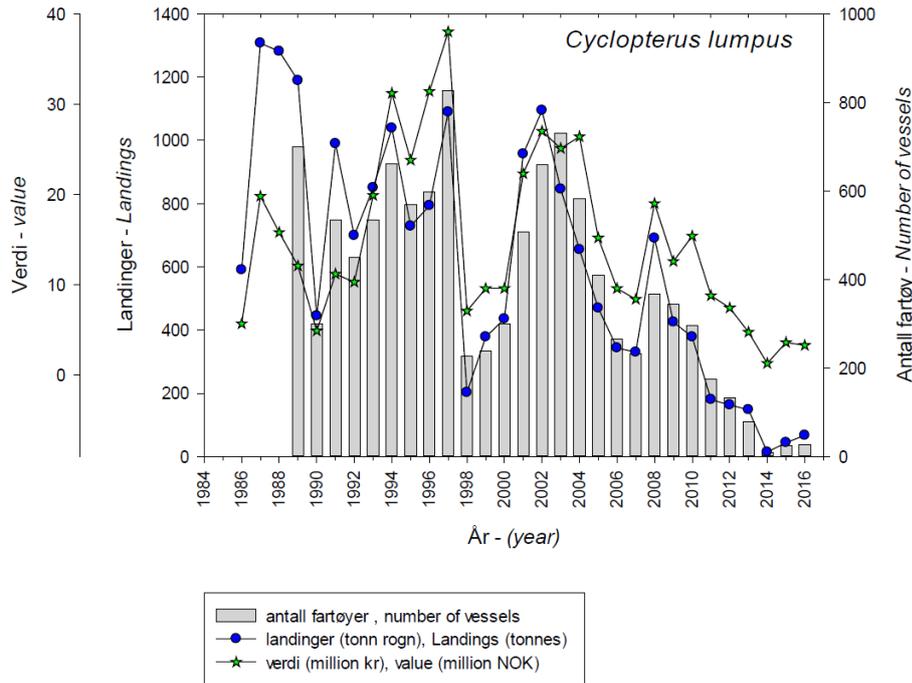


Figure 19 Lumpfish in Norwegian fleet. From Durif (2016)

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 be defined but general indications are that the MSY and PRI reference points would correspond exploitation rates in the range 10-30%, Hedeholm et al (2014) The current estimate of the harvest rate<sup>17</sup> is around 1%, Durif (2016).

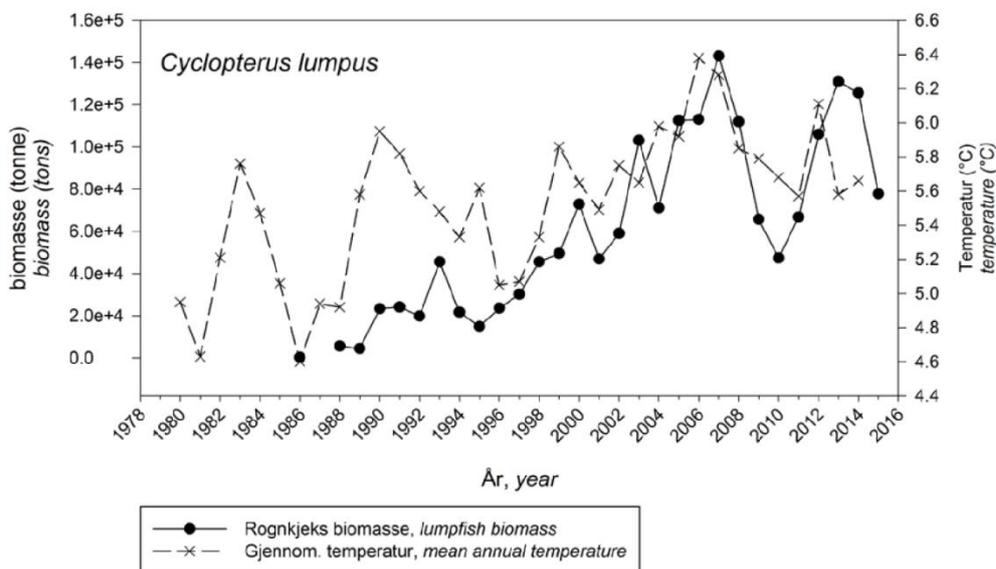


Figure 20 Biomass of lumpfish caught in the Norwegian 0-group survey together with mean temperatures recorded at the Fugleøya and Bjørnøya section at 50-200 m depth. From Durif (2016) Figure 3

<sup>17</sup> 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

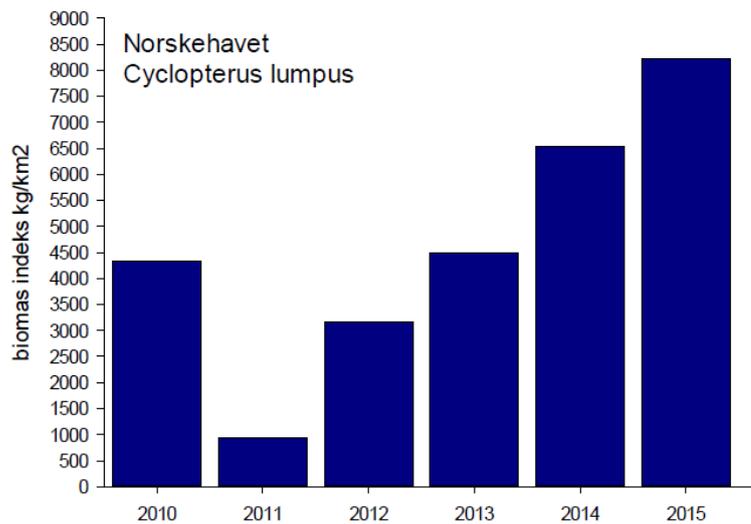


Figure 21 International Ecosystem Survey, IESSNS, (Norwegian data) Lumpfish biomass estimates (swept area). Source Durif (2016) Figure 6

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-regiones as defined by ICES

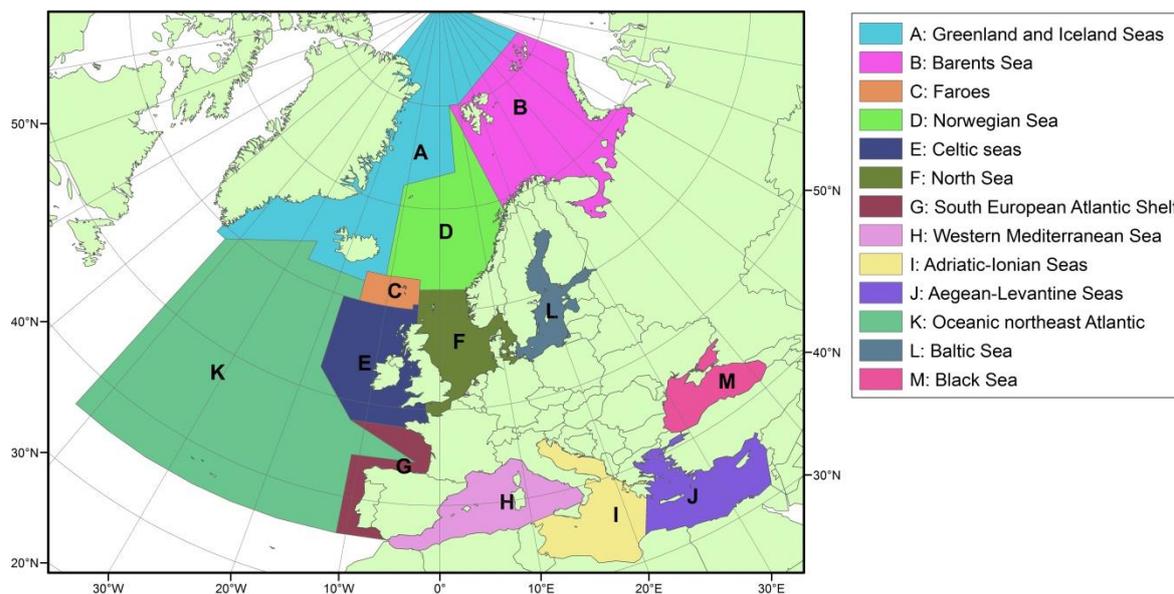


Figure 22 Eco-regions as delineated by ICES (NB The eco-regions are based on biogeographic and oceanographic features and existing political, social, economic and management divisions). (Source: [ices.dk/SiteCollectionImages/advice/Ecoregions\\_incl\\_legend\\_WEB](http://ices.dk/SiteCollectionImages/advice/Ecoregions_incl_legend_WEB))

### 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)<sup>18</sup>). 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)<sup>19</sup>.

<sup>18</sup> [http://www.imr.no/filarkiv/havets\\_ressurser\\_og\\_miljo\\_2009/2.1\\_introduksjon-okosystem\\_Norskehavet.pdf/nb-no](http://www.imr.no/filarkiv/havets_ressurser_og_miljo_2009/2.1_introduksjon-okosystem_Norskehavet.pdf/nb-no)

<sup>19</sup> [http://www.imr.no/filarkiv/havets\\_ressurser\\_og\\_miljo\\_2009/2.2\\_abiotiske\\_faktorer.pdf/nb-no](http://www.imr.no/filarkiv/havets_ressurser_og_miljo_2009/2.2_abiotiske_faktorer.pdf/nb-no)

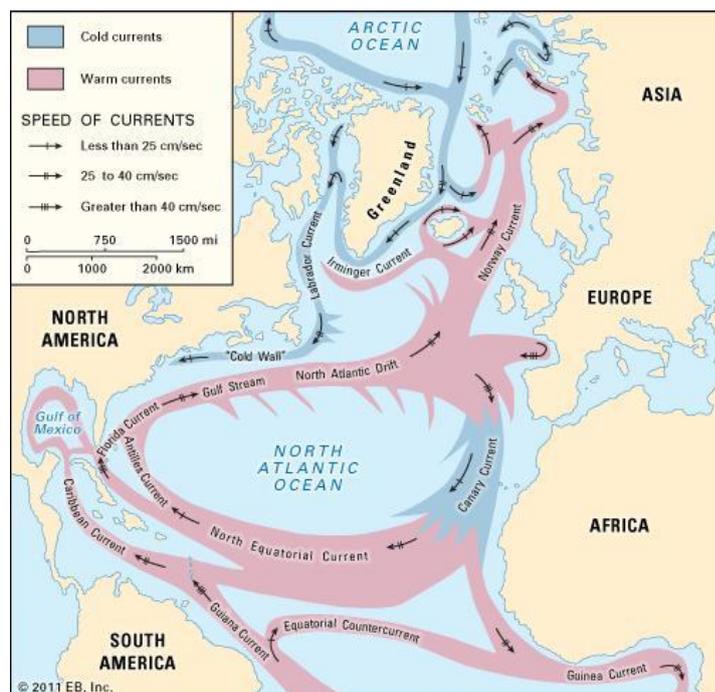


Figure 23 Distribution of cold and warm ocean currents in the assessment area (Source: [www.britannica.com/place/Norway-Current](http://www.britannica.com/place/Norway-Current))

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 deepsea 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 springspawning fish stocks if the fish larvae experience a reduction in their favoured food supply, i.e. larvae of *C. finmarchicus* (Rey, 2009).<sup>20</sup>

## 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

<sup>20</sup>[www.imr.no/filarkiv/havets\\_ressurser\\_og\\_miljo\\_2009/2.3\\_primaer\\_sekundaerproduksjon.pdf/nb-no](http://www.imr.no/filarkiv/havets_ressurser_og_miljo_2009/2.3_primaer_sekundaerproduksjon.pdf/nb-no)

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.

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)<sup>21</sup>.

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)<sup>22</sup>, 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/](http://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)<sup>23</sup>, 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;

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<sup>21</sup> <http://barentsportal.com>

<sup>22</sup> AFWG Report 2014, Section 01 Ecosystem considerations

<sup>23</sup> 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.

- » 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).<sup>24</sup>
- » 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;

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<sup>24</sup>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

- » 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)<sup>25</sup>:

- 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
- 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.

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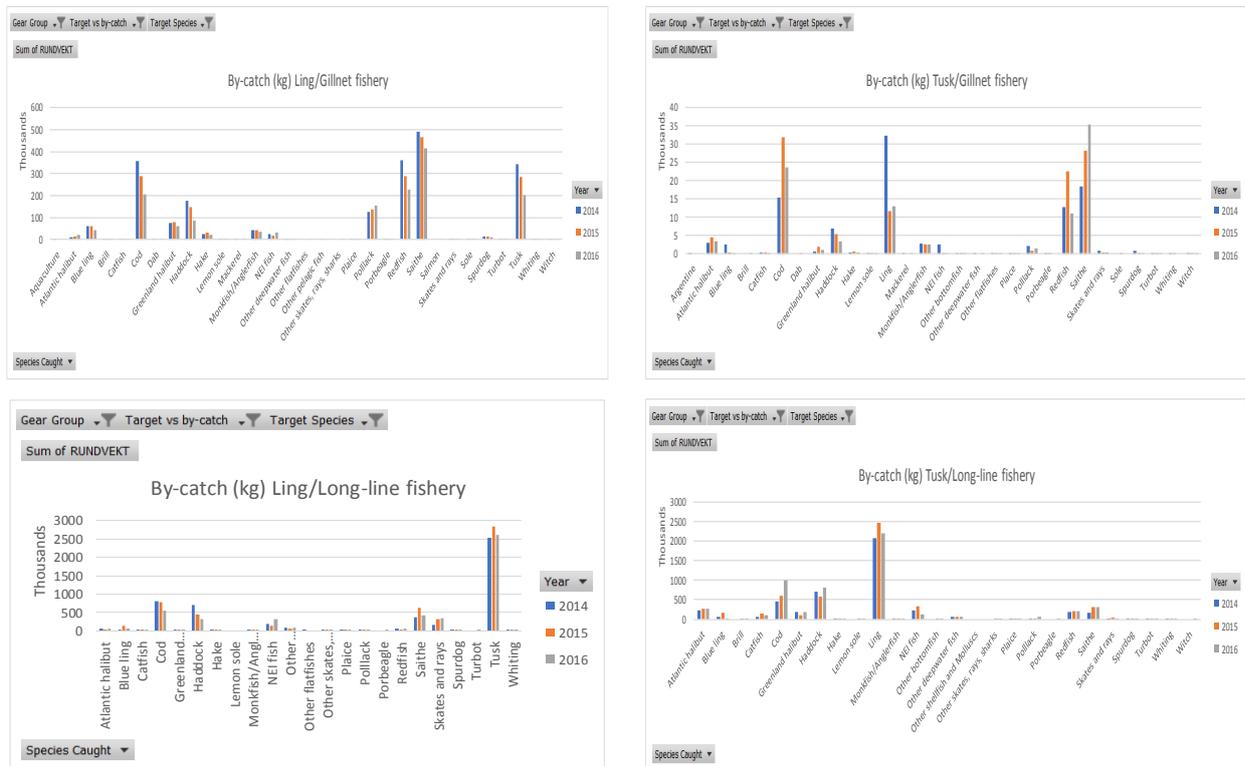
<sup>25</sup> ICES. 2014. First Interim Report of the Working Group on Integrated Assessments of the Barents Sea (WGIBAR), 24-28 March 2014, Kirkenes, Norway. ICES CM 2014/SSGRSP:04. 68 pp.

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). 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, those 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



**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

Species	Gillnet	Long-line	Primary Secondary	Main/ Minor
Saithe	6.77	2.49	Primary	Main
Redfish	4.29	0.88	Primary <sup>26</sup>	Minor
Atlantic halibut	0.25	1.09	Secondary	Minor
Skates and rays	0.02	1.07	ETP <sup>27</sup>	
Greenland halibut	1.01	0.61	Primary	Minor
Blue ling	0.77	0.59	ETP	
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	
Whiting <sup>28</sup>	0.02	0.02	Primary	Minor
Porbeagle	0.02	0.00	ETP	
Not Elsewhere Identified fish	0.36	1.52		

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	Target	
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	ETP	
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

<sup>26</sup> *Sebastes norvegicus* is on the Norway Red List.

<sup>27</sup> *D. batis* is on the Norway Red List, but recording was not to species level.

<sup>28</sup> 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)

Species	2014	2015	2016	Total	%	Primary/ Secondary	Main/ Minor
Catfishes <sup>29</sup>	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 <sup>30</sup>	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
Dab	1	0	0	1	0.00	Secondary	Minor
Grand Total	80288	82873	71421	234583	100.00		

Table 15 reviews the availability of ICES advice for these Primary ‘main’ species. 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%.

<sup>29</sup> Catfish here is probably Atlantic Wolffish, *Anarhichas lupus*.

<sup>30</sup> No species defined

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

Species	Assessment Unit ICES Area	B <sub>lim</sub>	MSY	Advisory Category	Stock status	ICES Advice Year/ section
<b>‘main’<sup>31</sup></b>						
Saithe <i>Pollachius virens</i>	I + II	Yes	Yes	Analytical Assessment	Harvested sustainably Full reproductive capacity	June 2016/ 3.3.9 (ICES, 2016b) <sup>32</sup>
	IV + VI	Yes	Yes	Analytical Assessment	Fished around F <sub>MSY</sub> . Full reproductive capacity; SSB <sub>MGT</sub> within the range	Nov 2016/ 6.3.38 (ICES, 2016c) <sup>33</sup>
<b>‘minor’</b>						
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 <sub>MSY</sub> ; Full reproductive capacity	June 2016/ 3.3.2 (ICES, 2016e) <sup>34</sup>
	IIIa+IV+VIIId	Yes	Yes	Analytical assessment	Fished above F Reference points, Stock above B <sub>trigger</sub> , 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) <sup>35</sup>
	VIb	N/A	N/A	Catch trends	Stock may be depleted	June 2015/ 5.3.8 (ICES, 20105c)
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 <sub>MSY</sub> ; stock size below MSY B <sub>Trigger</sub>	Nov 2016/ 6.3.16 (ICES, 2016h)
	VIb	Yes	Yes	Analytical assessment	Fished at F <sub>MSY</sub> ; full reproductive capacity	June 2016/ 5.3.28 (ICES, 2016i) <sup>36</sup>
Golden redfish <sup>37</sup> <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) <sup>38</sup>
	V, VI, XII, XIV	Yes	Yes	Analytical assessment	Harvested sustainably; full	June 2016/

<sup>31</sup> ‘main’ in the ling and tusk fishery only – not in the lumpfish fishery

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

<sup>33</sup> [http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/sai-3a46\\_reopen.pdf](http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/sai-3a46_reopen.pdf)

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

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

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

<sup>37</sup> Note: the catch composition data does not distinguish between the different redfish species

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

					reproductive capacity.	2.3.14 (ICES, 2016k) <sup>39</sup>
<b>Deep water redfish</b> <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) <sup>40</sup>
<b>Greenland halibut</b> <i>Reinhardtius hippoglossoides</i>	I + II	Yes	N/A	Analytical assessment	Full reproductive capacity	Sept 2015/ 3.3.7 (ICES, 2014c) <sup>41</sup>
	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)
<b>European hake</b> <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 <sup>42</sup>
<b>Whiting</b> <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)
<b>Plaice</b> <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)
<b>Sole</b> <i>Solea solea</i>	Subdivision IIIa	Yes	Yes	Analytical assessment	The stock is harvested sustainably; SSB is below MSY $B_{trigger}$ 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)
<b>Norway lobster</b> <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) <sup>43</sup>
	IVa	N/A	N/A	UWTV survey incomplete	There is no management plan for this fishery in this	Nov 2016/ 6.3.25 (ICES 2016) <sup>44</sup>

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

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

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

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

<sup>43</sup> 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](http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/Introduction_to_advice_2016.pdf)

<sup>44</sup> 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](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)

					area; reference points are undefined	
<b>King Crab</b> <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 <sup>45</sup>
<b>Starry ray</b>	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

<sup>45</sup> 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
<b>Total</b>	<b>1,046,092</b>	<b>1,045,982</b>	<b>93,394</b>	<b>397,385</b>	<b>448,922</b>	<b>100.00</b>		

**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>

Redfish	Uer	<i>Sebastes mentella / S. norvegicus</i>
Saithe	Sei	<i>/ S. viviparus</i>
		<i>Pollachius virens</i>
		<i>Amblyraja radiata / Raja batis</i>
Skate Wings	Skatevinger	(?)not identified
Spotted Wolffish	Flekksteinbit	<i>Anarhichas minor</i>
Turbot	Piggvar	<i>Psetta maxima</i>
Tusk	Brosme	<i>Brosme brosme</i>
Witch Flounder	Smørflyndre	<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 is mackerel from Norway and squid from Taiwan, both purchased, rather than self-caught. Mackerel is a Primary species. The exact amount of bait used was not available, but will be less than 5% of the total longline catch, and hence a Secondary minor species. Mackerel is an MSC certified species.

### 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 <sup>1)</sup>	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		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

<sup>1)</sup> 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*

#### **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.

### **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. 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). Norway has imposed a temporary ban on the commercial fishing of porbeagle, spurdog and basking shark, though landed bycatch may enter trade. In Norway, porbeagle landings have not been remunerated, since 2013, thus discouraging recreational fishery. 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., 2015), 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 sea birds 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

logbook<sup>46</sup> 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 <sup>47</sup>	
Black guillemot	<i>Rissa tridactyla</i>
Black-legged kittiwake	<i>Cephus grylle</i>
Common eider	<i>Somateria mollissima</i>
Common guillemot	<i>Uria aalge</i>
Cormorants	<i>Phalacrocorax spp</i>
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 (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 2015), 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).

<sup>46</sup> Furthermore, electronic logbooks are also required on vessels <15m fishing in international waters, and vessels >12m fishing in EU waters (Client, pers.com)

<sup>47</sup> The study does not distinguish between the different gears.

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 (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.

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 population<sup>48</sup>. Table 20 lists those species relevant for this assessment.

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

Species	Common name	Status
<i>Uria aalge</i>	Common guillemot	CR - VU <sup>49</sup>
<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 by-catch 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 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

<sup>48</sup> <http://www.biodiversity.no/Pages/135386>

<sup>49</sup> 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);

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 lance, 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 is in NEA is presented in Figure 25.

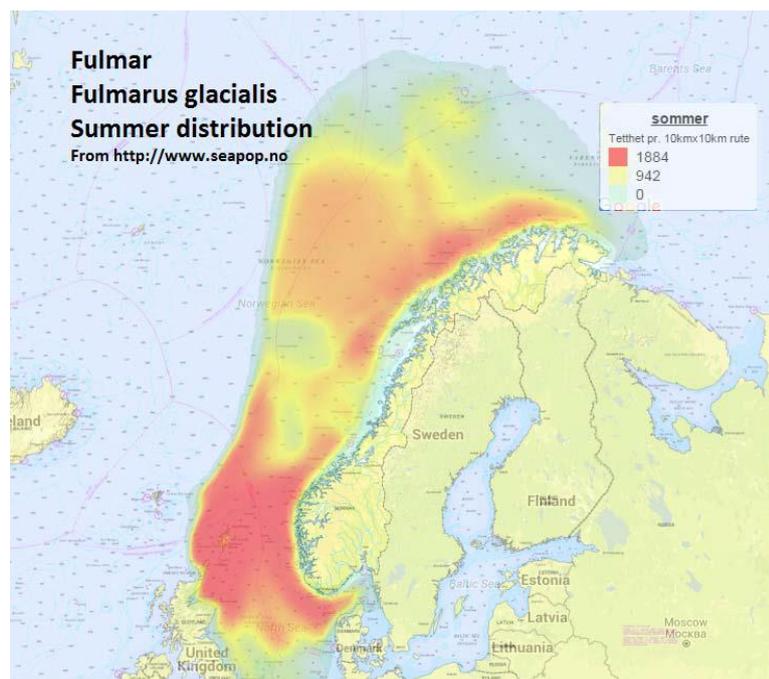


Figure 25 Summer distribution of Northern Fulmar (*Fulmarus glacialis*) in Open Sea; Norwegian EEZ. (From <http://www.seapop.no> downloaded 23 January 2016)

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 years<sup>50</sup>.

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

<sup>50</sup> <http://data.artsdatabanken.no/Pages/186759>

### **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 lampretæformis* and *Leptoclonus 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).

#### **5.4.3.2 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*

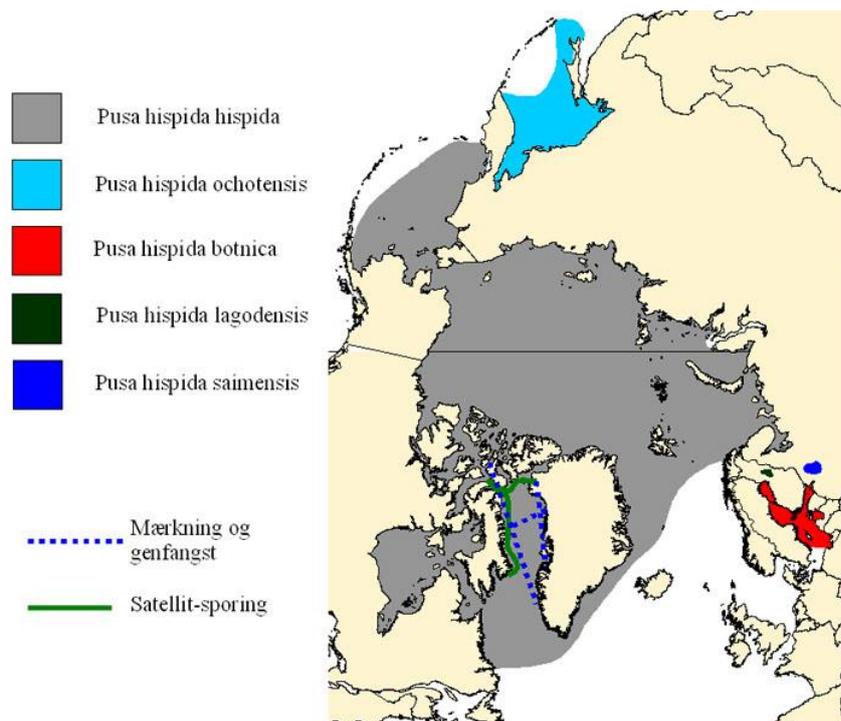


Figure 27 Ringed Seal (*Pusa hispida*) distribution

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.

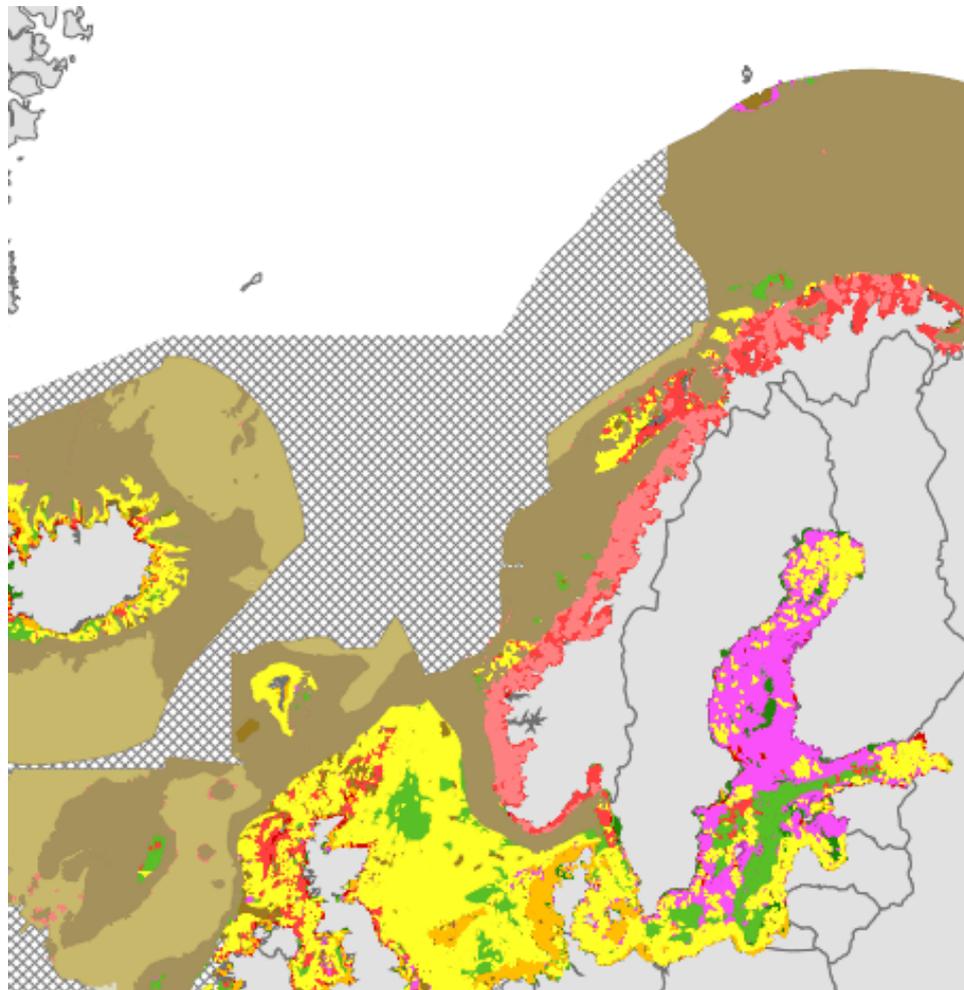
## 5.5 Habitats

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).

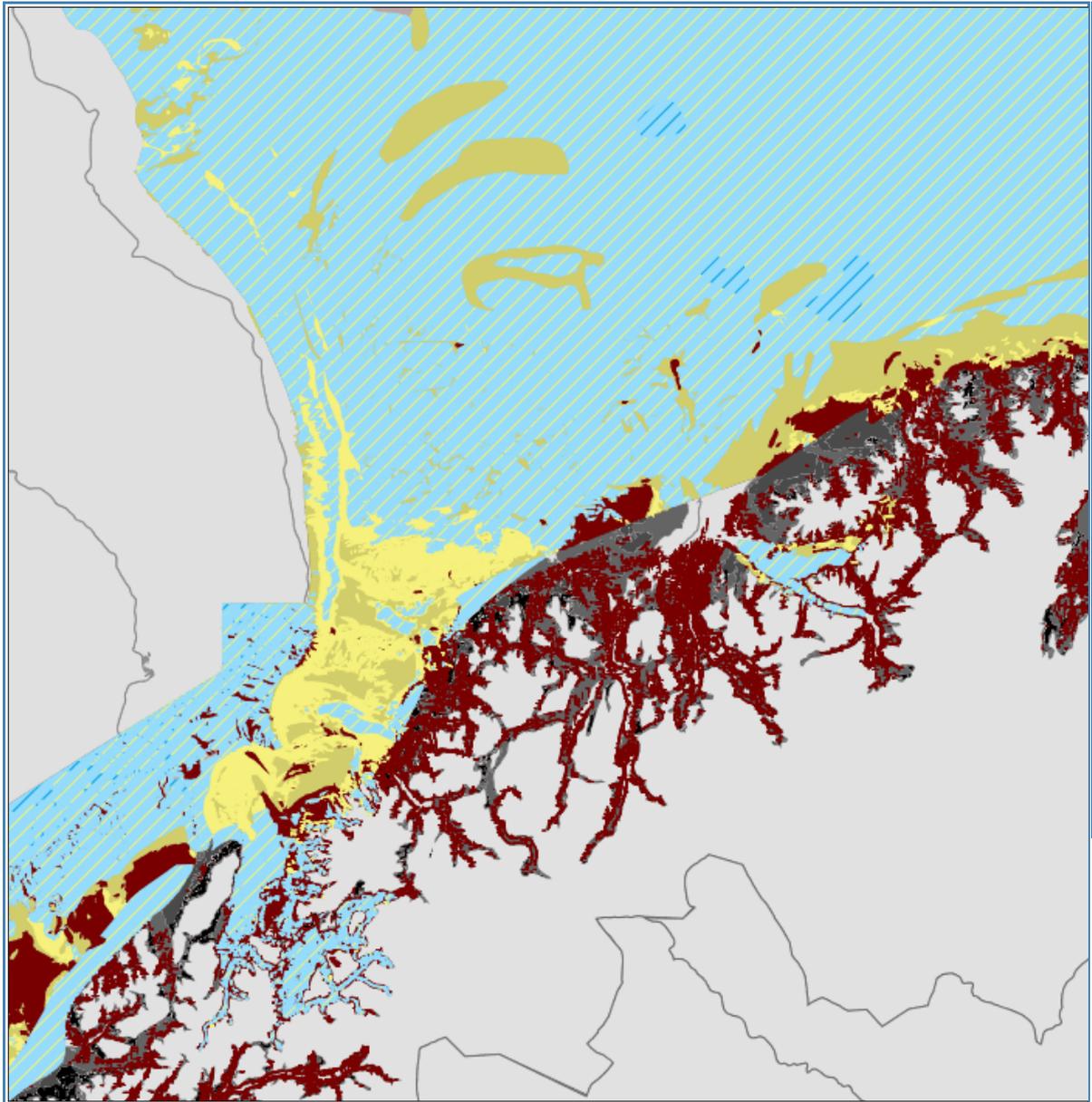
### 5.5.1 Habitat types distribution

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).



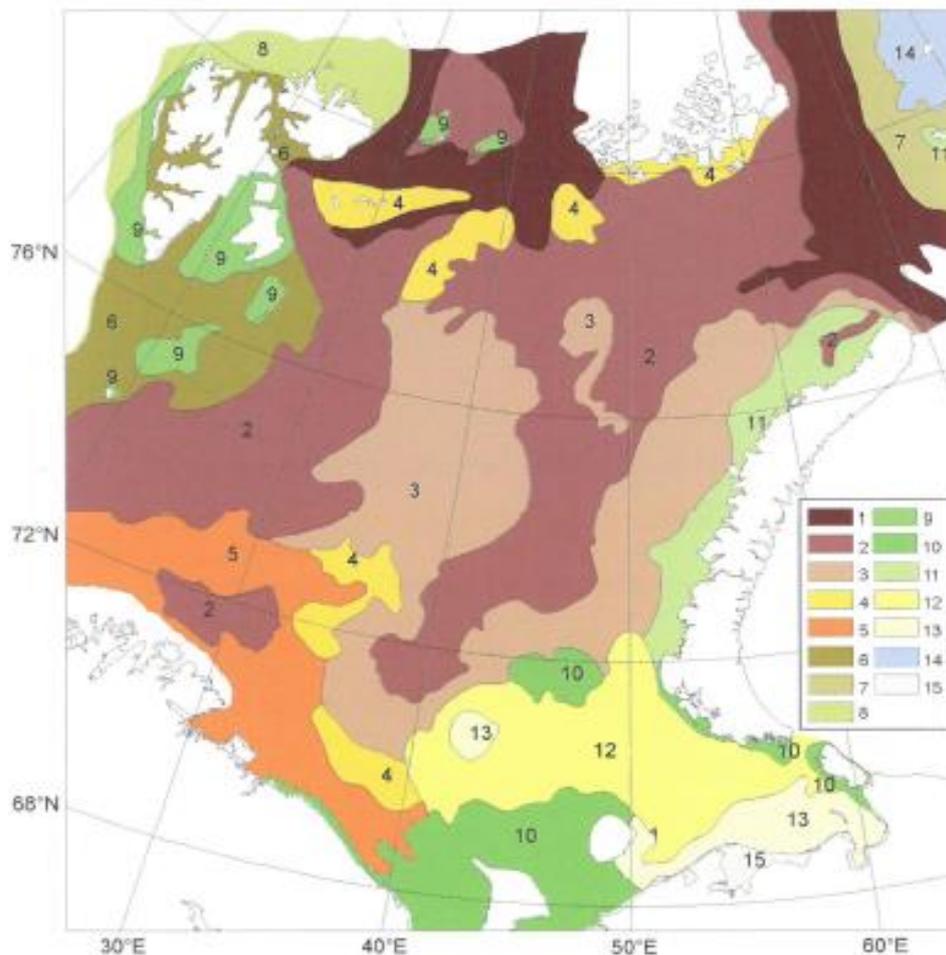
- Shallow sublittoral mud
- Shallow sublittoral sand
- Shallow sublittoral coarse sediment
- Shallow sublittoral mixed sediment
- Shallow sublittoral rock and biogenic reef
- Shelf sublittoral mud
- Shelf sublittoral sand
- Shelf sublittoral coarse sediment
- Shelf sublittoral mixed sediment
- Shelf 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

### Substrates Northern Norway coast



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

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).



**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 ongoing under several national and international programmes<sup>51</sup>. 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

<sup>51</sup> The “Mareano programme” [http://www.mareano.no/\\_data/page/9235/Focus-Oceans\\_Mareano-Mai-2010.pdf](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/](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;

habitat for a variety of species. The richest communities of hard-bottom benthic species are found along 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.

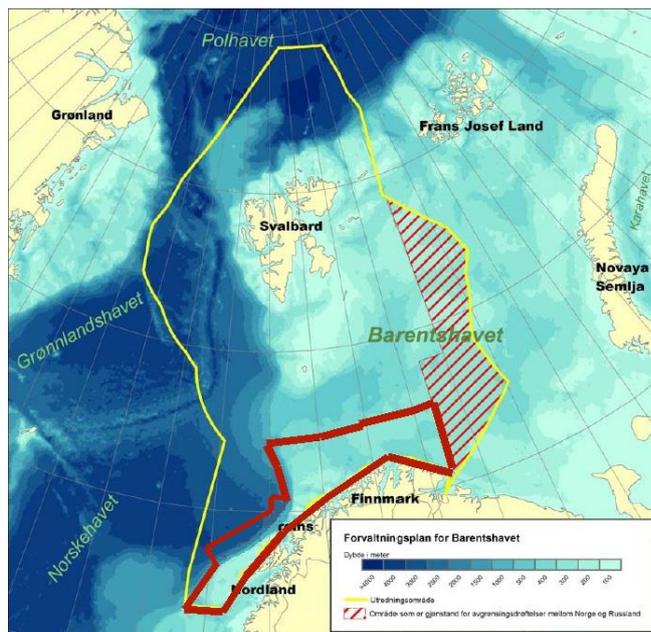


Figure 30 Overview map of the area (140.000 km<sup>2</sup>) that is covered by MAREANO (red line). (Source: MAREANO.no)

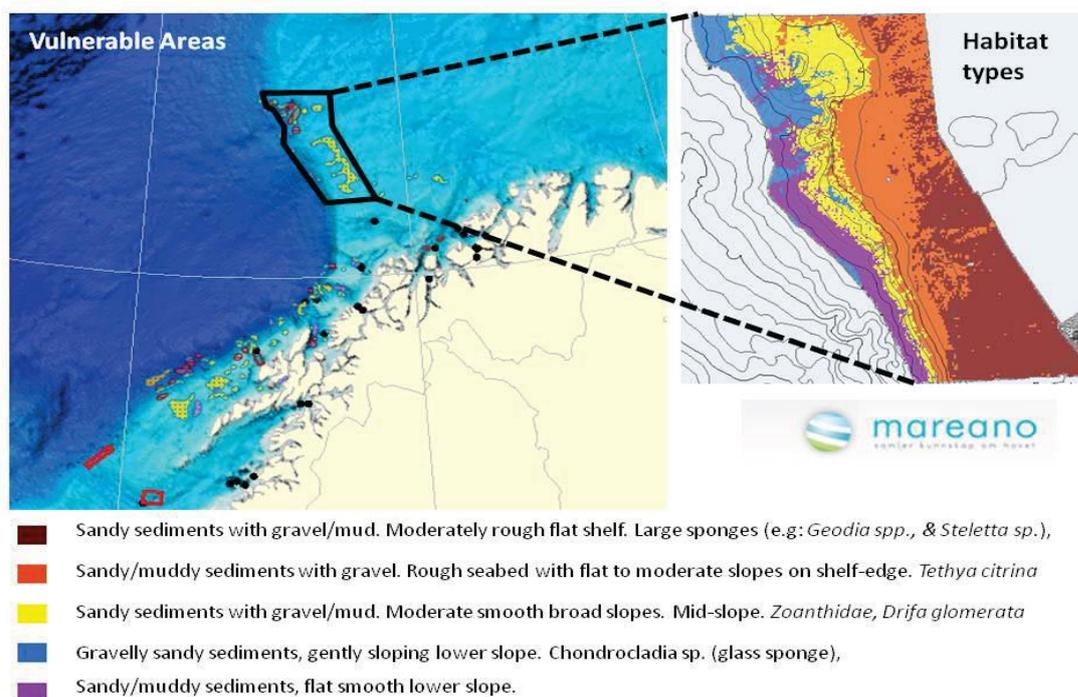
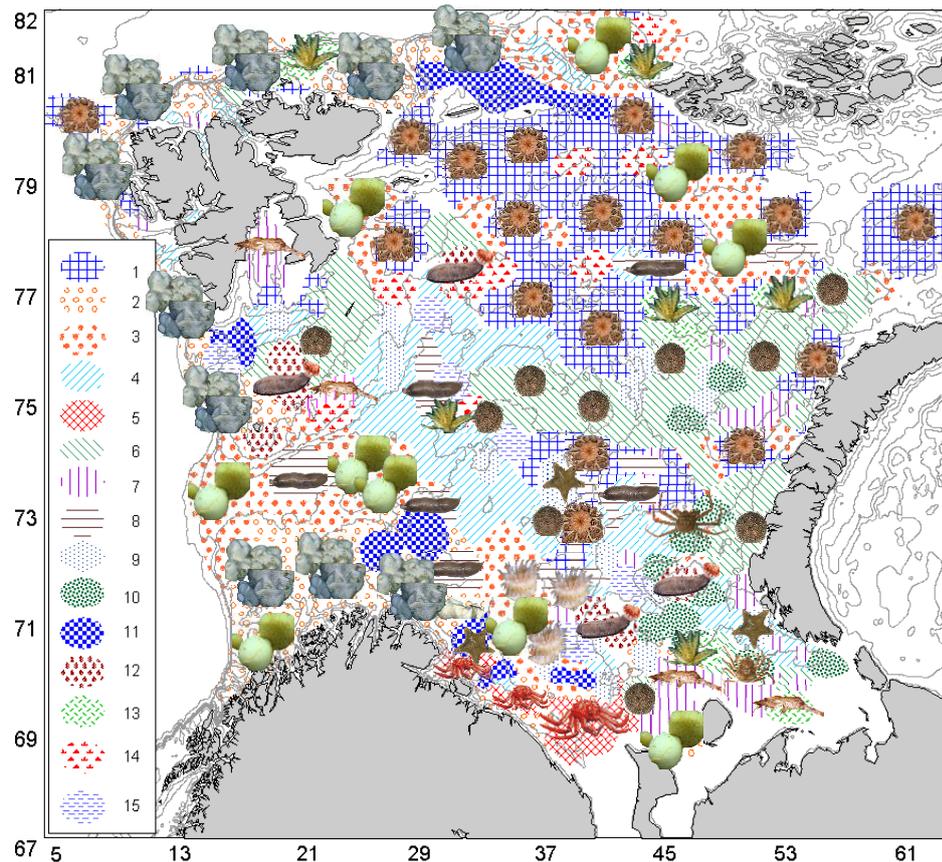


Figure 31 Image extract from MAREANO project showing vulnerable habitat on shelf edge. (Source: adapted from MAREANO)

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 - *Icaisteriaspanopla*

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

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 ICES<sup>52</sup> 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.



<sup>52</sup> 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>

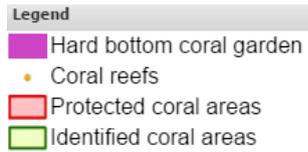


Figure 33 Distribution of *Lophelia* reefs and hard bottom coral garden in SW Barents and Norwegian Seas (Source: Mareano, 2017)

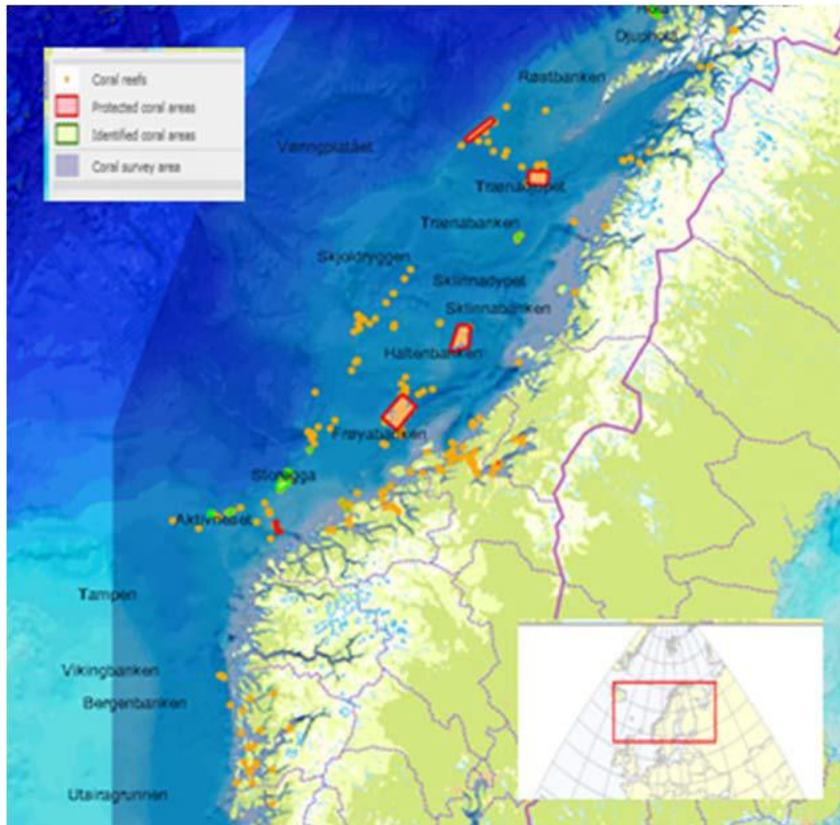


Figure 34 Distribution of coral reefs, mostly but not only *Lophelia pertusa*, on the continental shelf of the Norwegian Sea. All fishing is prohibited within the protected areas (red rectangles) (Mareano, 2017).

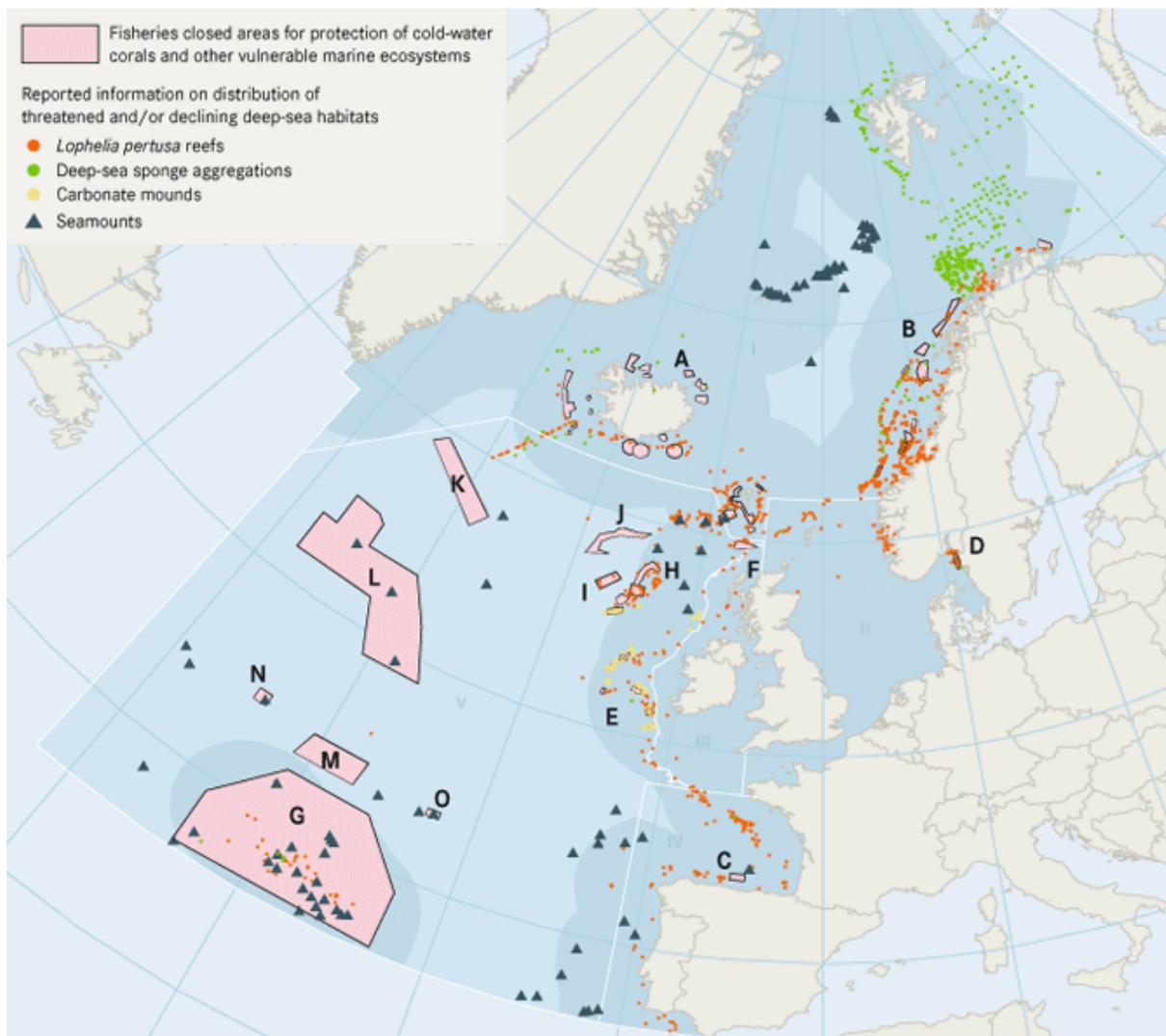


Figure 35 Distribution of *Lophelia pertusa* reefs and deep sea sponge aggregations.(Source: OSPAR, 2010)

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 Finnmark (roughly 70°00’ to 70°30’N; 14°45 to 16°17E). 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).

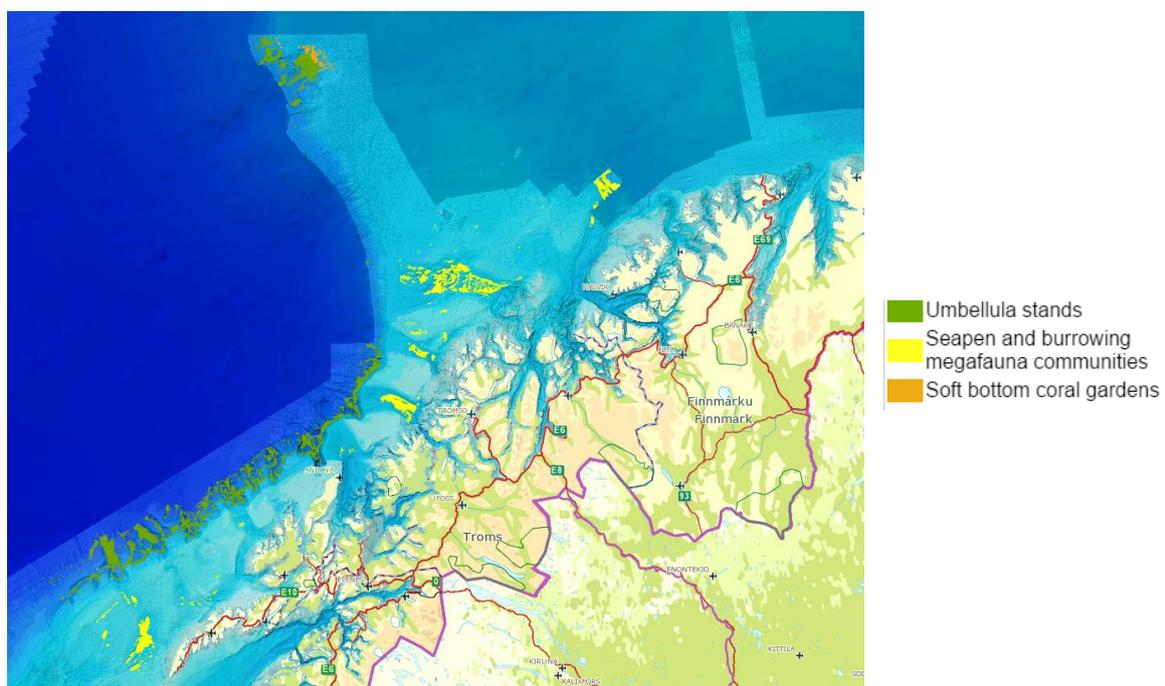
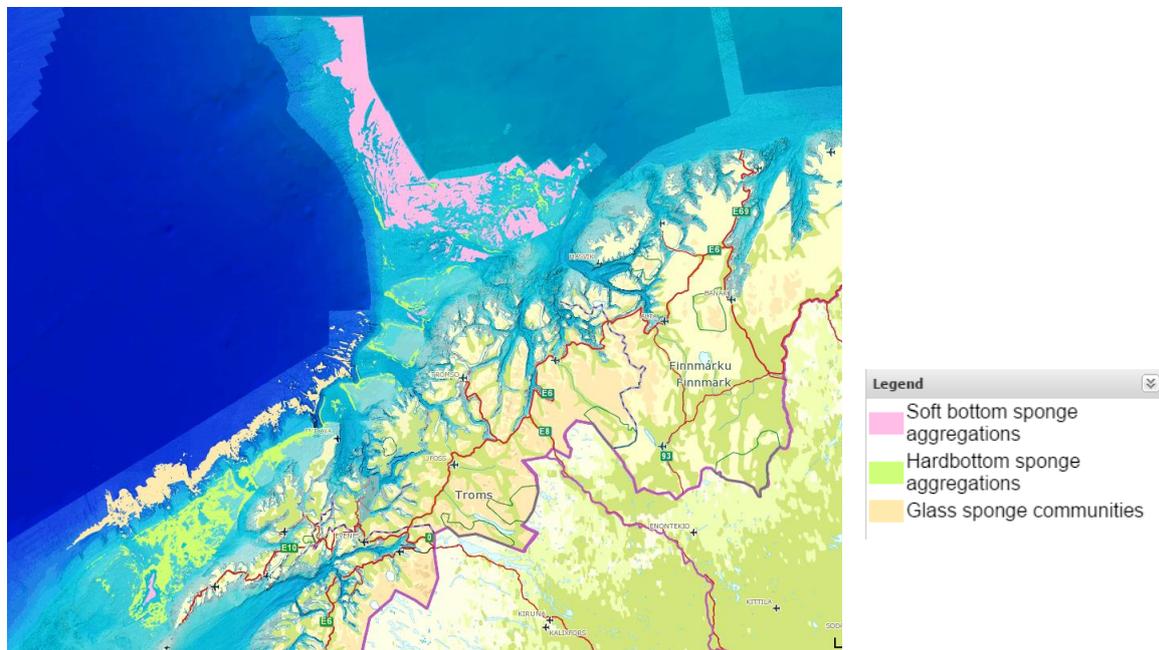


Figure 36 Distribution of seapen and softbottom coral garden in SW Barents and Norwegian Seas (Source:Mareano, 2017)

**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 20<sup>th</sup> 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](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).

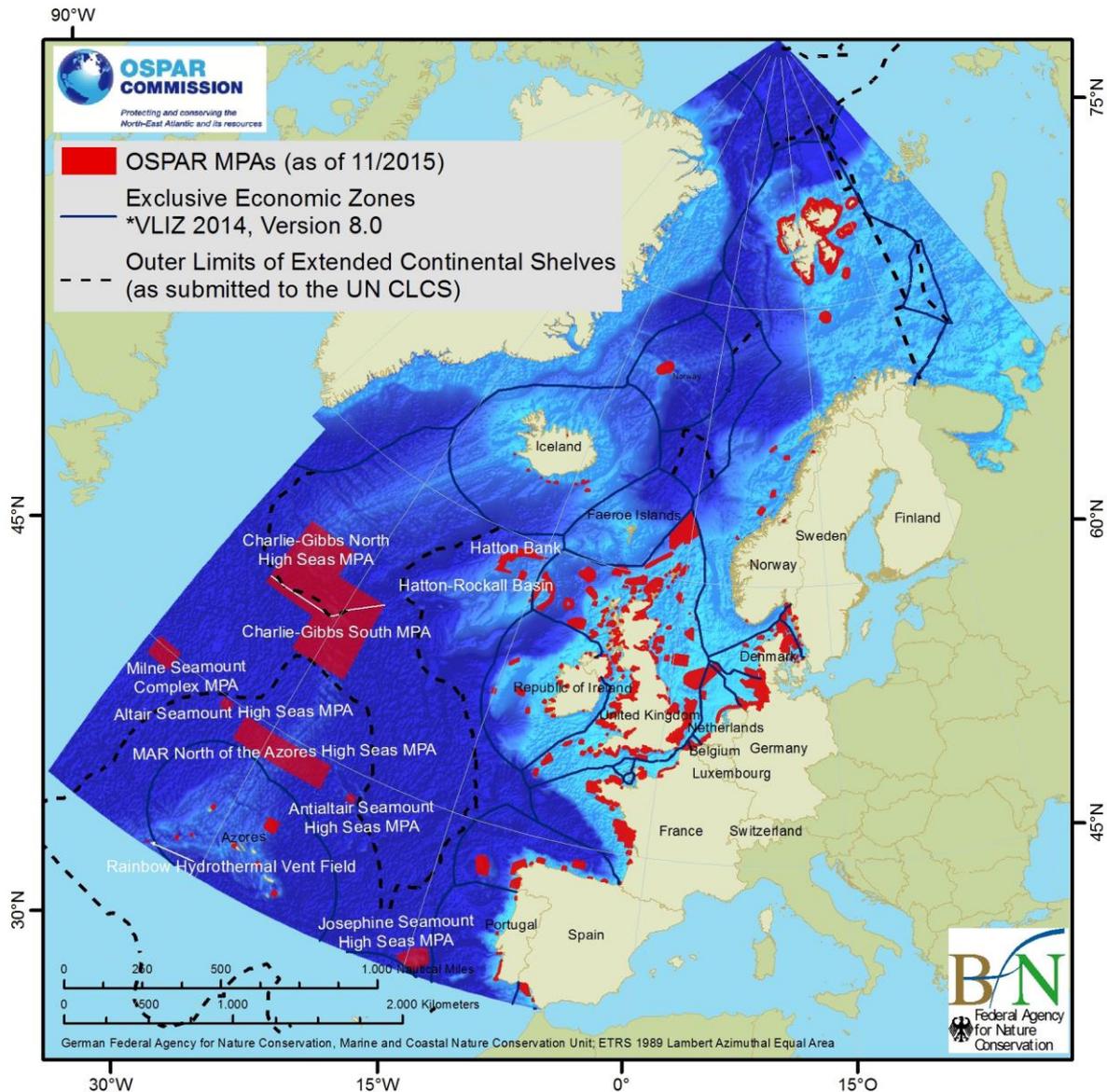


Figure 38 The OSPAR network of MPAs as of 1 October 2015 (Source: OSPAR, 2016)

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 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.

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 long lines are low impact gears compared to demersal trawls.

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.

The commonly encountered bottom type is rocky which is widespread over the area. Both longline and gillnet are low impact gears and the main concern is to ensure that cold water corals beds and gardens 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 similar protected on the basis of the EU Marine Strategy Framework Directive EC (2008).

#### **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 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](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 Knut Torgnes (Norges Sildesalgslag) Tor-Edgar Ripman Willy Godtliebsen Lars Nyvold	Norges Fiskarlag	Basic information about Norges Fiskarlag, history, organizational structure, roles and responsibilities in MSC Fisheries certification process.  Review of fishing operations: Fishing season, fishing areas, gear used (specifications), catches and quotas.  Review of impact on ecosystem: list of bycatch species, loss and recoveries of fishing gears.

Date	Name	Affiliation	Key issues
	Nils Mycklebust (Skipper Autoliner)		Compliance with rules and regulations: control, surveillance and monitoring routines/regulations 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 <sup>53</sup>	Minor	Not data deficient
Atlantic halibut	Secondary	Minor	Not data deficient
Skates and rays	ETP <sup>54</sup>		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 <sup>55</sup>	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

### 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.

<sup>53</sup> *Sebastes norvegicus* is on the Norway Red List.

<sup>54</sup> *D.batis* is on the Norway Red List, but recording was not to species level.

<sup>55</sup> 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)

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 were all individual scoring issues are met at the SG60 level.

Conditions are set where the fishery fails to achieve a score of 80 to 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 **Target Eligibility Date** for this fishery will be the 1st March 2017 (as granted by variation request from the MSC<sup>56</sup>). 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.

### 8.2 Traceability within the Fishery

As described in section 3.5, 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

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<sup>56</sup> See <https://fisheries.msc.org/en/fisheries/nfa-norwegian-ling-tusk-and-nfa-norwegian-lumpfish/@assessments> for copy of request and response.

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.

### **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.

### **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 Fiskesalgsag
- Rogaland Fiskesalgsag
- 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 and conditions

#### A. Scoring

		Lumpfish	Ling I+II	Ling Other areas	Tusk I+II	Tusk NEA	Tusk Vib
Principle 1		87.5	80.0	83.0	80.0	83.0	80.0
Principle 2	Longline	N/A	88.3				
	Gillnet		88.3				
	Traps and pots	N/A	88.0				
Principle 3	Longline	95.6	92.2				
	Gillnet						
	Traps and pots						

#### B. Conditions (see 9.3 for further detail)

		Lumpfish UoA-12	Ling I+II UoA-8, UoA-9	Ling Other areas UoA-10 UoA-11	Tusk I+II UoA-1,- UoA-2, UoA-7	Tusk NEA UoA-3, UoA-4, UoA-7	Tusk Vib UoA-5 UoA-6
Principle 1		1, 2	7, 8	7	7, 8	7	7, 8
Principle 2	Longline	N/A	9	9	9	9	9
	Gillnet	3, 4, 5, 6	9	9	9	9	9
	Traps and pots	N/A	9	9	9	9	9
Principle 3	Longline						
	Gillnet						
	Traps and pots						

## 9.2 Summary of PI Level Scores

### 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	90
		2.1.2 Management strategy	95
		2.1.3 Information/Monitoring	90
	Secondary species	2.2.1 Outcome	80
		2.2.2 Management strategy	95
		2.2.3 Information/Monitoring	90
	ETP species	2.3.1 Outcome	70
		2.3.2 Management strategy	75
		2.3.3 Information strategy	70
	Habitats	2.4.1 Outcome	95
		2.4.2 Management strategy	85
		2.4.3 Information	95
	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	90
		3.2.2 Decision making processes	95
		3.2.3 Compliance & enforcement	100
		3.2.4 Monitoring & management performance evaluation	80

### Tusk and Ling

**Table 24 Tusk and Ling, detailed Principle 1 PI scores for different ICES areas**

Principle	Performance indicator		Score				
			Ling		Tusk		
			I+II	Other areas	I+II	NEA	Vib
One	Stock Status	1.1.1	80	80	80	80	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
		Total		80.0	83.0	80.0	83.0

PI Scores for Ling and Tusk

Principle	Component	Performance Indicator (PI)	Score		
			Gillnet	Longline	Traps and pots
<b>Two</b>	Primary species	2.1.1 Outcome	90	90	90
		2.1.2 Management strategy	100	100	100
		2.1.3 Information/Monitoring	100	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	90	90	90
		2.3.2 Management strategy	85	85	85
		2.3.3 Information strategy	70	70	70
	Habitats	2.4.1 Outcome	100	100	100
		2.4.2 Management strategy	95	95	95
		2.4.3 Information	85	85	85
	Ecosystem	2.5.1 Outcome	80	80	80
		2.5.2 Management	85	85	80
		2.5.3 Information	85	85	85
<b>Three</b>	Governance and policy	3.1.1 Legal &/or customary framework	85		
		3.1.2 Consultation, roles & responsibilities	95		
		3.1.3 Long term objectives	100		
	Fishery specific management system	3.2.1 Fishery specific objectives	90		
		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

Condition number	Species	Condition	Performance Indicator	Relevant UoAs	Related to previously raised condition? (Y/N/NA)
1	Lumpfish	<b>Missing Well defined</b> HCRs that <b>ensure</b> that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock <b>fluctuating around</b> 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 <b>highly likely</b> to not <b>hinder recovery</b> of ETP species	2.3.1b	UoA-12	NA
4	Lumpfish	a) There is a <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be <b>highly likely to achieve</b> 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 <b>strategy</b> to manage impacts on ETP species	2.3.3b	UoA-12	NA
6	Lumpfish	d) There is <b>some quantitative evidence</b> 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	2.4.2d	UoA-12	NA
7	Ling - Tusk	a) <b>Missing Well defined</b> HCRs that <b>ensure</b> that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock <b>fluctuating around</b> 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
8	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
9	Ling - Tusk	b) Information is adequate to measure trends and support a <b>strategy</b> to manage impacts on ETP species (Ling and Tusk)	2.3.3b	UoA-1 – UoA-11	NA

The conditions for Ling and Tusk are on the same principle indicator, spread across the multiple UoAs.

## 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 programmesobservers?

## 9.5 Determination, Formal Conclusion and Agreement

(REQUIRED FOR FR AND PCR)

1. The report shall include a formal statement as to the certification determination recommendation reached by the Assessment Team about whether or not the fishery should be certified.

*(Reference: FCR 7.16)*

(REQUIRED FOR PCR)

2. The report shall include a formal statement as to the certification action taken by the CAB's official decision-makers in response to the Determination recommendation.

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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
<b>a</b>	Stock status relative to recruitment impairment			
	<b>Guidepost</b>	It is <b>likely</b> that the stock is above the point where recruitment would be impaired (PRI).	It is <b>highly likely</b> that the stock is above the PRI.	There is a <b>high degree of certainty</b> that the stock is above the PRI.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	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 th 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>b</b>	Stock status in relation to achievement of MSY			
	<b>Guidepost</b>		The stock is at or fluctuating around a level consistent with MSY.	There is a <b>high degree of certainty</b> that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	<b>Met?</b>		Y	Y
	<b>Justification</b>	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.		

<b>PI 1.1.1</b>	<b>The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing</b>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100
<b>References</b>	Durif (2016) Hedeholm et al (2014)		
<b>Stock Status relative to Reference Points</b>			
	<b>Type of reference point</b>	<b>Value of reference point</b>	<b>Current stock status relative to reference point</b>
<b>Reference point used in scoring stock relative to PRI (S1a)</b>	Yield/Survey Biomass	10-30%	1%
<b>Reference point used in scoring stock relative to MSY (S1b)</b>	Yield/Survey Biomass	10-30%	1%
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>100</b>
<b>CONDITION NUMBER (if relevant):</b>			

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
<b>a</b>	Harvest strategy design			
	<b>Guidepost</b>	The harvest strategy is <b>expected</b> 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 <b>work together</b> towards achieving stock mancan can be regulated in response to the stock status.,agement objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is <b>designed</b> to achieve stock management objectives reflected in PI 1.1.1 SG80.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<p>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 avialable 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 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).</p> <p>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.</p>		
<b>b</b>	Harvest strategy evaluation			
	<b>Guidepost</b>	The harvest strategy is <b>likely</b> to work based on prior experience or plausible argument.	The harvest strategy may not have been fully <b>tested</b> but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been <b>fully evaluated</b> and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	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		
Harvest strategy monitoring				

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
c	<b>Guided post</b>	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	<b>Met?</b>	Y		
	<b>Justification</b>	<p>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. Because of the vessel size there is little concern about geographical misreporting.</p> <p>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.</p>		
d	Harvest strategy review			
	<b>Guided post</b>			The harvest strategy is periodically reviewed and improved as necessary.
	<b>Met?</b>			Y
	<b>Justification</b>	The harvest strategy is revised annually as part of the general annual review of the Norwegian fisheries. This review is conducted through Fiskeridirektoratet. SG100 is met.		
e	Shark finning			
	<b>Guided post</b>	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree of certainty</b> that shark finning is not taking place.
	<b>Met?</b>	Not relevant	Not relevant	Not relevant
	<b>Justification</b>	Lumpfish is not a shark		
f	<b>Review of alternative measures</b>			
	<b>Guided post</b>	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 <b>regular</b> 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 <b>biennial</b> 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.
	<b>Met?</b>	Not relevant	Not relevant	Not relevant
<b>Justification</b>	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.			
<b>References</b>				
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				95
<b>CONDITION NUMBER (if relevant):</b>				

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
<b>a</b>	HCRs design and application			
	<b>Guidepost</b>	Generally understood HCRs are in place <b>or available</b> that are <b>expected</b> to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	<b>Well defined</b> HCRs are <b>in place</b> that <b>ensure</b> that the exploitation rate is reduced as the PRI is approached, are <b>expected</b> to keep the stock <b>fluctuating around</b> 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 <b>fluctuating at or above</b> a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, <b>most</b> of the time.
	<b>Met?</b>	Y	N	N
	<b>Justification</b>	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.		
<b>b</b>	HCRs robustness to uncertainty			
	<b>Guidepost</b>		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a <b>wide</b> range of uncertainties including the ecological role of the stock, and there is <b>evidence</b> that the HCRs are robust to the main uncertainties.
	<b>Met?</b>		Y	N
	<b>Justification</b>	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.		
<b>c</b>	HCRs evaluation			
	<b>Guidepost</b>	There is <b>some evidence</b> that tools used <b>or available</b> to implement HCRs are appropriate and effective in controlling exploitation.	<b>Available evidence indicates</b> that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	<b>Evidence clearly shows</b> that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	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		

<b>PI 1.2.2</b>	<b>There are well defined and effective harvest control rules (HCRs) in place</b>	
	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	
<b>References</b>	Eriksen et al (2014) Durif (2016) Hedeholm et al (2014)	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>75</b>
<b>CONDITION NUMBER (if relevant):</b>		<b>1</b>

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
<b>a</b>	Range of information			
	<b>Guidepost</b>	<b>Some</b> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	<b>Sufficient</b> relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A <b>comprehensive range</b> 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.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<p>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.</p> <p>This information is sufficient to support the strategy. SG 80 is met.</p> <p>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.</p> <p>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.</p>		
<b>b</b>	Monitoring			
	<b>Guidepost</b>	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 <b>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</b> , and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	<b>All information</b> 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 <b>uncertainties</b> in the information [data] and the robustness of assessment and management to this uncertainty.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<p>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.</p> <p>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.</p> <p>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.</p>		
Comprehensiveness of information				

<b>PI 1.2.3</b>		<b>Relevant information is collected to support the harvest strategy</b>	
<b>c</b>	<b>Guidepost</b>		There is good information on all other fishery removals from the stock.
	<b>Met?</b>		Y
	<b>Justification</b>	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.	
<b>References</b>		Pampouile et al (2014) WGLUMP 2016 and 2017 (Most recent meeting 7-9 February 2017). Report not available Durif (2016) Hedeholm (2016) Eriksen et al (2014)	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>80</b>
<b>CONDITION NUMBER (if relevant):</b>			

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
<b>a</b>	Appropriateness of assessment to stock under consideration			
	<b>Guidepost</b>		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.
	<b>Met?</b>		Y	N
	<b>Justification</b>	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>b</b>	Assessment approach			
	<b>Guidepost</b>	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.	
	<b>Met?</b>	Y	N	
	<b>Justification</b>	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.		
<b>c</b>	Uncertainty in the assessment			
	<b>Guidepost</b>	The assessment <b>identifies major sources</b> 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 <b>probabilistic</b> way.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	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.		
<b>d</b>	Evaluation of assessment			
	<b>Guidepost</b>			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	<b>Met?</b>			N

<b>PI 1.2.4</b>		<b>There is an adequate assessment of the stock status</b>	
	<b>Justification</b>	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.	
<b>e</b>	Peer review of assessment		
	<b>Guided post</b>		The assessment of stock status is subject to peer review.
	<b>Met?</b>		Y
	<b>Justification</b>	The stock assessment is subject to internal (IMR) review) there is no external review presented. SG 100 is not met	
<b>References</b>		Eriksen et al (2014) Durif (2016)	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>75</b>
<b>CONDITION NUMBER (if relevant):</b>			<b>2</b>

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	<b>Main primary species stock status</b>			
	<b>Guidepost</b>	Main primary species are <b>likely</b> to be above the PRI  OR  If the species is below the PRI, the UoA has measures in place that are <b>expected</b> to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are <b>highly likely</b> to be above the PRI  OR  If the species is below the PRI, there is either <b>evidence of recovery</b> or a demonstrably effective strategy in place <b>between all MSC UoAs which categorise this species as main</b> , to ensure that they collectively do not hinder recovery and rebuilding.	There is a <b>high degree of certainty</b> that main primary species are above the PRI <b>and are</b> fluctuating around a level consistent with MSY.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	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. 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 none meet the requirement for SG100, the performance indicator scores 80.  SG80 is met		
b	<b>Minor primary species stock status</b>			
	<b>Guidepost</b>			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
	<b>Met?</b>			N
	<b>Justification</b>	The following species have been identified as Primary 'minor' in the lumpfish fishery:  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 link, and plaice.  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.		

<b>PI 2.1.1</b>	<b>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>	
		<p>Considering the location of this fishery (ICES area I + II), the cod concerned is most likely to be Coastal cod.</p> <p><b>Table 16</b> in Section 5.3 provides detailed information on reference points and stock status for all the Primary ‘main’ species identified from the catch profiles (for both the lumpfish fishery, and the tusk and ling fishery).</p> <p>From this table it can be seen that the following scoring elements do not meet the SG100:</p> <p style="padding-left: 40px;">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.</p> <p>Thus SG100 is not met.</p>
<b>References</b>	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	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>		

**PI 2.1.2 Lumpfish– Primary species management strategy Evaluation Table**

<b>PI 2.1.2</b>	<b>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.</b>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100
<b>a</b>	<b>Management strategy in place</b>		
<b>Guidepost</b>	There are <b>measures</b> 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 <b>partial strategy</b> 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 <b>strategy</b> in place for the UoA for managing main and minor primary species.
<b>Met?</b>	Y	Y	Y
<b>Justification</b>	<p>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.</p> <p>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.</p>		
<b>b</b>	<b>Management strategy evaluation</b>		
<b>Guidepost</b>	The measures are considered <b>likely</b> to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some <b>objective basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	<b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
<b>Met?</b>	Y	Y	Y
<b>Justification</b>	<p>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).</p> <p>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.</p> <p>SG80 is met.</p> <p>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</p>		

<p><b>PI 2.1.2</b></p>	<p><b>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.</b></p>		
	<p>measures (IMR, Directorate interview, Aug 2016), this provides high confidence that the strategy will work.  SG100 is met.</p>		
<p><b>c</b></p>	<p><b>Management strategy implementation</b></p>		
<p><b>Guidepost</b></p>		<p>There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented successfully</b>.</p>	<p>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).</p>
<p><b>Met?</b></p>		<p>Y</p>	<p>N</p>
<p><b>Justification</b></p>	<p>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.</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.</p> <p>SG80 is met as there is some evidence of the strategy being implemented successfully.</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"> <li>a. the lack of biological reference points, and uncertainties about the level of fishing mortality for coastal cod</li> <li>b. The uncertainties relating to identification of the two redfish species</li> </ul> <p>Therefore SG100 is not met.</p>		
<p><b>d</b></p>	<p><b>Shark finning</b></p>		
<p><b>Guidepost</b></p>	<p>It is <b>likely</b> that shark finning is not taking place.</p>	<p>It is <b>highly likely</b> that shark finning is not taking place.</p>	<p>There is a <b>high degree of certainty</b> that shark finning is not taking place.</p>
<p><b>Met?</b></p>	<p>Not relevant</p>	<p>Not relevant</p>	<p>Not relevant</p>
<p><b>Justification</b></p>	<p>Not applicable – none of the primary species are sharks</p>		
<p><b>e</b></p>	<p><b>Review of alternative measures</b></p>		
<p><b>Guidepost</b></p>	<p>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.</p>	<p>There is a <b>regular</b> 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.</p>	<p>There is a <b>biennial</b> 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.</p>
<p><b>Met?</b></p>	<p>Y</p>	<p>Y</p>	<p>Y</p>

<b>PI 2.1.2</b>		<b>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.</b>
	<b>Justification</b>	<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.</p> <p>The regulations are considered, and the technical measures reviewed (SG 60 met), by IMR, Fiskeridirektoratet and stakeholders annually (therefore meeting SG 80 and SG 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).</p> <p>SG100 is met.</p>
	<b>References</b>	<p>IMR and Directorate of Fisheries interviews</p> <p>Refs as under 2.1.1</p>
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>95</b>
<b>CONDITION NUMBER (if relevant):</b>		

**PI 2.1.3 Lumpfish– Primary species information Evaluation Table**

<b>PI 2.1.3</b>		<b>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</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Information adequacy for assessment of impact on main primary species</b>			
	<b>Guidepost</b>	Qualitative information is <b>adequate to estimate</b> the impact of the UoA on the main primary species with respect to status.  OR <b>If RBF is used to score PI 2.1.1 for the UoA:</b> Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is <b>adequate to assess</b> the impact of the UoA on the main primary species with respect to status.  OR <b>If RBF is used to score PI 2.1.1 for the UoA:</b> Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is <b>adequate to assess with a high degree of certainty</b> the impact of the UoA on main primary species with respect to status.
	<b>Met?</b>	Y	Y	
	<b>Justification</b>	Given that there are no ‘main’ Primary species, good qualitative and quantitative data is available on almost all 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.  SG 60 and 80 are both met.		
<b>b</b>	<b>Information adequacy for assessment of impact on minor primary species</b>			
	<b>Guidepost</b>			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	<b>Met?</b>			Y
<b>Justification</b>	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 all meet the requirement for SG100, the performance indicator scores 100 in b)			
<b>c</b>	<b>Information adequacy for management strategy</b>			
	<b>Guidepost</b>	Information is adequate to support <b>measures</b> to manage <b>main</b> primary species.	Information is adequate to support a <b>partial strategy</b> to manage <b>main</b> Primary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> primary species, and evaluate with a <b>high degree of certainty</b> whether the strategy is achieving its objective.
	<b>Met?</b>	Y	Y	N

<b>PI 2.1.3</b>		<b>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</b>
	<b>Justification</b>	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 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.
	<b>References</b>	Catch composition data ICES reports and advice as listed under 2.1.1
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>		

**PI 2.2.1 Lumpfish– Secondary species outcome Evaluation Table**

<b>PI 2.2.1</b>		<b>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.</b>			
<b>Scoring Issue</b>		SG 60	SG 80	SG 100	
<b>a</b>	<b>Main secondary species stock status</b>				
	<b>Guidpost</b>	<p>Main Secondary species are <b>likely</b> to be within biologically based limits.</p> <p>OR</p> <p>If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main secondary species are <b>highly likely</b> to be above biologically based limits</p> <p>OR</p> <p>If below biologically based limits, there is either <b>evidence of recovery</b> or a <b>demonstrably effective partial strategy</b> in place such that the UoA does not hinder recovery and rebuilding.</p> <p>AND</p> <p>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.</p>	<p>There is a <b>high degree of certainty</b> that main secondary species are within biologically based limits.</p>	
	<b>Met?</b>				
	<b>Justification</b>	<p>There are no Secondary ‘main’ fish species recorded in this fisheries (see Table 16)</p> <p>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.</p> <p>All bycatch is landed and recorded, and data of the last 5 years (2012-2016) has been analysed.</p> <p>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 on the Norwegian Red List, and are thus scored under ETP.</p> <p>Observer reports show that diving seabirds can be caught in the gill net, especially as the nets are positioned closer to shore. There is no data on bird bycatch recorded in this fishery.</p> <p>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>			
<b>b</b>	<b>Minor secondary species stock status</b> Seabirds are ‘out of scope species’, and thus considered as Secondary ‘main’.				

<b>PI 2.2.1</b>		<b>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.</b>		
	<b>Guidepost</b>			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
	<b>Met?</b>			N
	<b>Justification</b>	<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 (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                  Pollack<sup>57</sup>: 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<sup>58</sup>. 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>		
	<b>References</b>	Catch composition data Client interviews ICES, 2016r; ICES, 2015e.		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				<b>80</b>
<b>CONDITION NUMBER (if relevant):</b>				-

**PI 2.2.2 Lumpfish– Secondary species management strategy Evaluation Table**

<b>PI 2.2.2</b>		<b>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.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Management strategy in place</b>			
	<b>Guidepost</b>	There are <b>measures</b> 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 <b>partial strategy</b> 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 <b>strategy</b> in place for the UoA for managing main and minor secondary species.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	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>b</b>	<b>Management strategy evaluation</b>			
	<b>Guidepost</b>	The measures are considered <b>likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is <b>some objective basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	<b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	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		
<b>c</b>	<b>Management strategy implementation</b>			
	<b>Guidepost</b>		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented successfully</b> .	There is clear evidence that the partial strategy/strategy is being implemented successfully and is achieving

<b>PI 2.2.2</b>		<b>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.</b>		
				its objective as set out in scoring issue (a).
	<b>Met?</b>		Y	N
	<b>Justification</b>	<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"> <li>- the lack of biological reference points, and uncertainties about the stock and level of fishing mortality for the Secondary ‘minor’ species.</li> <li>- The uncertainties relating to identification of the several of the bycatch species.</li> </ul> <p>SG100 is not met.</p>		
<b>d</b>	<b>Shark finning</b>			
	<b>Guidepost</b>	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree of certainty</b> that shark finning is not taking place.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	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.		
<b>e</b>	<b>Review of alternative measures to minimise mortality of unwanted catch</b>			
	<b>Justification</b>	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of all secondary species, and they are implemented, as appropriate.
	<b>Met?</b>	Y	Y	Y
	<b>Guidepost</b>	<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, seeTable 16.</p>		

<b>PI 2.2.2</b>	<b>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.</b>
	The regulations are considered, and the technical measures reviewed (meeting SG 60), by IMR, Fiskeridirektoratet and stakeholders annually (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 (i.e. if bycatch of a species is high, move to another area).  SG100 is met
<b>References</b>	See 2.1.1 and 2.2.1
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>	
<b>95</b>	
<b>CONDITION NUMBER (if relevant):</b>	

PI 2.2.3 Lumpfish– Secondary species information Evaluation Table

<b>PI 2.2.3</b>		<b>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.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Information adequacy for assessment of impacts on main secondary species</b>			
	<b>Guided post</b>	Qualitative information is <b>adequate to estimate</b> the impact of the UoA on the main secondary species with respect to status.  OR  <b>If RBF is used to score PI 2.2.1 for the UoA:</b>  Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and <b>adequate to assess</b> the impact of the UoA on main secondary species with respect to status.  OR  <b>If RBF is used to score PI 2.2.1 for the UoA:</b>  Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and <b>adequate to assess with a high degree of certainty</b> the impact of the UoA on main secondary species with respect to status.
	<b>Met?</b>	Y	Y	
	<b>Justification</b>	Given that there are no ‘main’ Secondary species, good quantitative data is available on almost all 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 (e.g. for birds), reference fleet, and landings inspections, and landings notes. Synthesis of data, analysis and checks are made by IMR on an on-going basis.  SG 80 is met.  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 all meet the requirement for SG100, the performance indicator scores 100 in b).		
<b>b</b>	<b>Information adequacy for assessment of impacts on minor secondary species</b>			
	<b>Guided post</b>			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	<b>Met?</b>			Y
	<b>Justification</b>	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.  Also, 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		

<b>PI 2.2.3</b>		<b>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.</b>		
		species. Since all species are minor and all meet the requirement for SG100, the performance indicator scores 100 in b)		
<b>c</b>	<b>Information adequacy for management strategy</b>			
	<b>Guidepost</b>	Information is adequate to support <b>measures</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>partial strategy</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> secondary species, and <b>evaluate</b> with a <b>high degree of certainty</b> whether the strategy is <b>achieving its objective</b> .
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	There are no main Secondary species. 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. SG80 is met but not SG100.		
<b>References</b>		Client data – catch composition ICES reports as listed in 2.2.1		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>				

**PI 2.3.1 Lumpfish– ETP species outcome Evaluation Table**

<b>PI 2.3.1</b>	<b>The UoA meets national and international requirements for the protection of ETP species</b>		
	<b>The UoA does not hinder recovery of ETP species</b>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100
	<b>Effects of the UoA on population/stock within national or international limits, where applicable</b>		
<b>Guidpost</b>	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/stock are known and <b>likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, the <b>combined effects of the MSC UoAs</b> on the population/stock are known and <b>highly likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a <b>high degree of certainty</b> that the <b>combined effects of the MSC UoAs</b> are within these limits.
<b>Met?</b>	Not Relevant	Nor Relevant	Nor Relevant
<b>Justification</b>	<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 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)<sup>59</sup>. 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 <i>et al</i> (2013)<sup>60</sup> 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 <i>et al</i> (2015)<sup>61</sup> 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 <i>et al</i> (2015) will serve as the primary source of quantitative and qualitative information.</p>		

<b>PI 2.3.1</b>		<b>The UoA meets national and international requirements for the protection of ETP species</b>		
		<b>The UoA does not hinder recovery of ETP species</b>		
		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, 2016q) <sup>62 63</sup> .		
<b>b</b>	<b>Direct effects</b>			
	<b>Guidepost</b>	Known direct effects of the UoA are likely to not <b>hinder recovery</b> of ETP species.	Known direct effects of the UoA are <b>highly likely</b> to not <b>hinder recovery</b> of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	<b>Met?</b>	Y	N	N
	<b>Justification</b>	<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)<sup>64</sup>. 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>		
<b>c</b>	<b>Indirect effects</b>			
	<b>Guidepost</b>		Indirect effects have been considered and are thought to be <b>highly likely</b> 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.
	<b>Met?</b>		Y	Y
	<b>Justification</b>	<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)<sup>65</sup> 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</p>		

<b>PI 2.3.1</b>	<p><b>The UoA meets national and international requirements for the protection of ETP species</b></p> <p><b>The UoA does not hinder recovery of ETP species</b></p>	
	<p>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>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. There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species, SG 100 is met.</p>	
<b>References</b>	<p>a. <a href="https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/Bycatch_of_small_cetaceans_and_other_marine_animals.pdf">https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/Bycatch_of_small_cetaceans_and_other_marine_animals.pdf</a></p> <p>b. <a href="http://barentsportal.com/barentsportal_v2.5/index.php/en/">http://barentsportal.com/barentsportal_v2.5/index.php/en/</a>                  Client interview                  Catch profile data</p> <p>c. 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</p>	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>70</b>
<b>CONDITION NUMBER (if relevant):</b>		<b>3</b>

**PI 2.3.2 Lumpfish– ETP species management strategy Evaluation Table**

<b>PI 2.3.2</b>	<b>The UoA has in place precautionary management strategies designed to:</b>			
	<ul style="list-style-type: none"> <li>• meet national and international requirements;</li> <li>• ensure the UoA does not hinder recovery of ETP species.</li> </ul> <p><b>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</b></p>			
<b>Scoring Issue</b>	SG 60	SG 80	SG 100	
<b>a</b>	Management strategy in place (national and international requirements)			
	<b>Guidepost</b>	There are <b>measures</b> in place that minimise the UoA-related mortality of ETP species, and are expected to be <b>highly likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be <b>highly likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>comprehensive strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to <b>achieve above</b> national and international requirements for the protection of ETP species.
	<b>Met?</b>	Y	N	N
<b>Justification</b>	<p>Several seabird species (see Red List) and marine mammals are protected, including those mammals that are hunted (subject to national legislation<sup>66</sup>), 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)<sup>67</sup> 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<sup>68</sup>.</p> <p>Larger fishing vessels (&gt;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 bycatch in the 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. SG60 is met.</p> <p>These measures do not amount to a strategy. No such strategy was indicated at during the assessment. SG80 is not met</p>			
<b>b</b>	Management strategy in place (alternative)			
	<b>Guidepost</b>	There are <b>measures</b> in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a <b>strategy</b> in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a <b>comprehensive strategy</b> in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species

<sup>66</sup> Sealing Act (1951); Saltwater Fishing Act (1983); Participation Act (1999); Marine Resources Act (2008);

<sup>67</sup> 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>

<sup>68</sup> <http://www.xn--miljodirektoratet-oxb.no/english/>

PI 2.3.2	<p><b>The UoA has in place precautionary management strategies designed to:</b></p> <ul style="list-style-type: none"> <li>• meet national and international requirements;</li> <li>• ensure the UoA does not hinder recovery of ETP species.</li> </ul> <p><b>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</b></p>			
	<b>Met?</b>	Not scored	Not scored	Not scored
	<b>Justification</b>	SI a) is scored instead		
c	Management strategy evaluation			
	<b>Guidpost</b>	The measures are <b>considered likely</b> to work, based on <b>plausible argument</b> (e.g., general experience, theory or comparison with similar fisheries/species).	There is an <b>objective basis for confidence</b> that the measures/strategy will work, based on <b>information</b> 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 <b>quantitative analysis</b> supports <b>high confidence</b> that the strategy will work.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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 (meeting SG 60). The measures in place give an objective basis for confidence. Research/observer coverage allows the collection of relevant information (Fangel et al 2015)<sup>69</sup>.</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)<sup>70</sup></p> <p>SG80 is met</p>		
d	Management strategy implementation			
	<b>Guidpost</b>		There is some <b>evidence</b> that the measures/strategy is being implemented successfully.	There is <b>clear evidence</b> that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	<b>Met?</b>		Y	N
	<b>Justification</b>	<p>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.</p> <p>There does not appear to be a strategy/ comprehensive strategy, hence SG100 is not met.</p>		
	Review of alternative measures to minimize mortality of ETP species			

<b>PI 2.3.2</b>		<p><b>The UoA has in place precautionary management strategies designed to:</b></p> <ul style="list-style-type: none"> <li>• meet national and international requirements;</li> <li>• ensure the UoA does not hinder recovery of ETP species.</li> </ul> <p><b>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</b></p>		
<b>e</b>	<b>Guidepost</b>	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a <b>regular</b> 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 <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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 of ETP species is small, see Table 8</p> <p>The regulations are considered, and the technical measures reviewed (meeting SG 60), by IMR, Fiskeridirektoratet and stakeholders annually (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). This also to any non-target species caught, including ETP species.</p> <p>SG100 is met</p>		
<b>References</b>		<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. <a href="http://www.fiskeridir.no/english/fisheries/regulations/acts/the-marine-resources-act">http://www.fiskeridir.no/english/fisheries/regulations/acts/the-marine-resources-act</a>  <a href="http://en.wikipedia.org/wiki/Norwegian_Directorate_for_Nature_Management">http://en.wikipedia.org/wiki/Norwegian_Directorate_for_Nature_Management</a>            Sealing Act (1951); Saltwater Fishing Act (1983); Participation Act (1999); Marine Resources Act (2008); Fangel, K., Aas, Ø., Bærum, K. M., Anker-Nilssen, T. &amp; Christensen- Dalsgaard, S. 2015. Utilsiktet bifangst av sjøfugl i norske kystfiskerier med garn og line. - NINA Temahefte 64. 20 s.</p>		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				<b>75</b>
<b>CONDITION NUMBER (if relevant):</b>				<b>4</b>

**PI 2.3.3 Lumpfish– ETP species information Evaluation Table**

<b>PI 2.3.3</b>		<b>Relevant information is collected to support the management of UoA impacts on ETP species, including:</b>		
		<ul style="list-style-type: none"> <li>• <b>Information for the development of the management strategy;</b></li> <li>• <b>Information to assess the effectiveness of the management strategy; and</b></li> <li>• <b>Information to determine the outcome status of ETP species.</b></li> </ul>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Information adequacy for assessment of impacts</b>			
	<b>Guidepost</b>	<p>Qualitative information is <b>adequate to estimate</b> 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 <b>adequate to estimate productivity and susceptibility</b> attributes for ETP species.</p>	<p>Some quantitative information is <b>adequate to assess</b> 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 <b>magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status</b> of ETP species.</p>
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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)<sup>71</sup>, and estimates of potential mortalities resulting from seabird–fishing-gear interactions are available (BirdLife, 2012)<sup>72</sup>.</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</p>		

<p><b>PI 2.3.3</b></p>	<p><b>Relevant information is collected to support the management of UoA impacts on ETP species, including:</b></p> <ul style="list-style-type: none"> <li>• <b>Information for the development of the management strategy;</b></li> <li>• <b>Information to assess the effectiveness of the management strategy; and</b></li> <li>• <b>Information to determine the outcome status of ETP species.</b></li> </ul>		
	<p>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. 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>		
<p><b>b</b></p>	<p>Information adequacy for management strategy</p>		
<p><b>Guidpost</b></p>	<p>Information is adequate to support <b>measures</b> to manage the impacts on ETP species.</p>	<p>Information is adequate to measure trends and support a <b>strategy</b> to manage impacts on ETP species.</p>	<p>Information is adequate to support a <b>comprehensive strategy</b> to manage impacts, minimize mortality and injury of ETP species, and evaluate with a <b>high degree of certainty</b> whether a strategy is achieving its objectives.</p>
<p><b>Met?</b></p>	<p>Y</p>	<p>N</p>	<p>N</p>
<p><b>Justification</b></p>	<p>Whilst information is adequate it is not sufficient to measure trends. 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>		
<p><b>References</b></p>	<p>Fangel, K., Aas, Ø., Bærum, K. M., Anker-Nilssen, T. &amp; 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. <a href="http://www.birdlife.org/eu/pdfs/20120703_GillnetSeabirdBycatchWorkshopREPORT.pdf">http://www.birdlife.org/eu/pdfs/20120703_GillnetSeabirdBycatchWorkshopREPORT.pdf</a></p>		
<p><b>OVERALL PERFORMANCE INDICATOR SCORE:</b></p>			<p><b>70</b></p>
<p><b>CONDITION NUMBER (if relevant):</b></p>			<p><b>5</b></p>

PI 2.4.1 Lumpfish– Habitats outcome Evaluation Table

<b>PI 2.4.1</b>		<b>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.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Commonly encountered habitat status</b>			
	<b>Guidepost</b>	The UoA is <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> 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.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<p>The nature and distribution of benthic habitats and their interaction with the client lumpfish fishery vessels has been described in detail in section 3.4.5. 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 (see also Figure 28)</p> <p>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).</p> <p>The gear as deployed (see Section 3.2.6), 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)</p> <p>Considering the gear used, the UoA is highly unlikely to reduce the structure and function of the rocky benthos. SG80 is met.</p> <p>The study by Clark et al 2015 showed that static gears, such as bottom set gill nets do not have a significant impact on the benthos. SG 100 is met.</p>		
<b>b</b>	<b>VME habitat status</b>			
	<b>Guidepost</b>	The UoA is <b>unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> 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.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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.</p>		

<p><b>PI 2.4.1</b></p>	<p><b>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.</b></p>		
		<p>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>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>	
<p><b>c</b></p>	<p><b>Minor habitat status</b></p>		
<p><b>Guided post</b></p>			<p>There is <b>evidence</b> 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.</p>
<p><b>Met?</b></p>			<p>Y</p>
<p><b>Justification</b></p>	<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>		
<p><b>References</b></p>	<p><a href="http://mareano.no/en/about_mareano">http://mareano.no/en/about_mareano</a>                  Clark et al 2015                  Client interview Aug 2016</p>		
<p><b>OVERALL PERFORMANCE INDICATOR SCORE:</b></p>			<p><b>95</b></p>
<p><b>CONDITION NUMBER (if relevant):</b></p>			

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	<b>Management strategy in place</b>			
	<b>Guidepost</b>	There are <b>measures</b> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a <b>partial strategy</b> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a <b>strategy</b> in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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 void snagging of the nets and thus cause damage and delays. 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. SG80 is met.</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. SG100 is met</p>		
b	<b>Management strategy evaluation</b>			
	<b>Guidepost</b>	The measures are <b>considered likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some <b>objective basis for confidence</b> that the measures/partial strategy will work, based on <b>information directly about the UoA and/or habitats</b> involved.	<b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on <b>information directly about the UoA and/or habitats</b> involved.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<p>These measures are required by OSPAR to protect sensitive marine habitats; the measures are observed and closed areas rigorously enforced. 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. SG80 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. This work has not identified any habitat concerns with respect to the lumpfish fishery, as the gill nets used are considered</p>		

<b>PI 2.4.2</b>	<b>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>		
	fairly light footprint on the underlying habitat, and the gears are deployed for a limited season annually. SG100 is met.		
<b>c</b>	<b>Management strategy implementation</b>		
<b>Guidpost</b>		There is <b>some quantitative evidence</b> that the measures/partial strategy is being implemented successfully.	There is <b>clear quantitative evidence</b> that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
<b>Met?</b>		Y	N
<b>Justification</b>	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. SG80 is met. Clear quantitative evidence was not available, such as vessel positions and /or operational plans. SG100 is not met.		
<b>d</b>	<b>Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs</b>		
<b>Guidpost</b>	There is <b>qualitative evidence</b> that the UoA complies with its management requirements to protect VMEs.	There is <b>some quantitative evidence</b> 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 <b>clear quantitative evidence</b> 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.
<b>Met?</b>	Y	Y	N
<b>Justification</b>	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). SG60 is met.  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.  The lumpfish fishery takes place at specific sites (spawning sites for lumpfish) and there is no significant overlap at the time of the fishery with other fisheries. SG80 is met.  Clear evidence, in the form of vessel specific operational plans for example, were not available to the assessment team. A Recommendation (1) was raised. SG100 not met.		
<b>References</b>	WGECO, 2012. Report of the Working Group on Ecosystem Effects of Fishing Activities (WGECO) ICES CM 2012/ACOM:26 <a href="http://www.ices.dk/reports/ACOM/2012/WGECO/wgeco_2012.pdf">http://www.ices.dk/reports/ACOM/2012/WGECO/wgeco_2012.pdf</a> <a href="http://www.mareano.no/english/news/seabed_to_be_mapped">http://www.mareano.no/english/news/seabed_to_be_mapped</a> <a href="http://www.mareano.no/kart/viewer.php?language=en&amp;bbox=592707.1,7846700.0,802279.9,7952140.0&amp;KARTBILDE_ID=115">http://www.mareano.no/kart/viewer.php?language=en&amp;bbox=592707.1,7846700.0,802279.9,7952140.0&amp;KARTBILDE_ID=115</a> <a href="http://www.mareano.no/english/topics/coral_reefs">http://www.mareano.no/english/topics/coral_reefs</a>		

<b>PI 2.4.2</b>	<b>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>
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>	<b>85</b>
<b>CONDITION NUMBER (if relevant):</b>	

**PI 2.4.3 Lumpfish– Habitats information Evaluation Table**

<b>PI 2.4.3</b>		<b>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.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Information quality</b>			
	<b>Guidepost</b>	<p>The types and distribution of the main habitats are <b>broadly understood</b>.</p> <p>OR</p> <p><b>If CSA is used to score PI 2.4.1 for the UoA:</b></p> <p>Qualitative information is adequate to estimate the types and distribution of the main habitats.</p>	<p>The nature, distribution and <b>vulnerability</b> 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><b>If CSA is used to score PI 2.4.1 for the UoA:</b></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>
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<p>Background Section 5.5 provides much detail on current habitat information in the Barents Sea and the Norwegian Sea, conveying SG 60 is met.</p> <p>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 – SG 80 is met.</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 the scientific observer schemes ntypically for secondary species, which in turn is 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>SG100 is met.</p>		
<b>b</b>	<b>Information adequacy for assessment of impacts</b>			
	<b>Guidepost</b>	<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><b>If CSA is used to score PI 2.4.1 for the UoA:</b></p> <p>Qualitative information is adequate to estimate the</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>OR</p> <p><b>If CSA is used to score PI 2.4.1 for the UoA:</b></p>	<p>The physical impacts of the gear on all habitats have been quantified fully.</p>

<b>PI 2.4.3</b>		<b>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.</b>	
		consequence and spatial attributes of the main habitats.	Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.
<b>Met?</b>	Y	Y	N
<b>Justification</b>	<p>The lumpfish fishery is almost entirely done by gillnets operating the near coastal zone, lumpfish spawning grounds. 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), meeting SG 60. Clark et al (2015) reviewed the impact of gears on deep benthic organisms. Overall gillnets and longlines are low impact gears, due to their narrow footprint.</p> <p>Some areas where fishing by trawling has had an effect on the seabed and seabed habitats in the past; closed areas have been established to protect habitats and communities in selected areas. 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.</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>		
<b>c</b>	<b>Monitoring</b>		
<b>Guidpost</b>		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in habitat distributions over time are measured.
<b>Met?</b>		Y	N
<b>Justification</b>	<p>The distribution and intensity of fishing activity is monitored through 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>		
<b>References</b>	<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” (<a href="http://www.mareano.no/english/index.html">http://www.mareano.no/english/index.html</a>);</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>		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>95</b>
<b>CONDITION NUMBER (if relevant):</b>			

**PI 2.5.1 Lumpfish – Ecosystem outcome Evaluation Table**

<b>PI 2.5.1</b>		<b>The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Ecosystem status</b>			
	<b>Guided post</b>	The UoA is <b>unlikely</b> 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 <b>highly unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is <b>evidence</b> 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.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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. 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. SG80 is met. As there is not explicit evidence to support this, SG 100 is not met.</p>		
<b>References</b>		<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><a href="http://www.Fishbase.org">http://www.Fishbase.org</a></p> <p>ICES, 2016 Ecosystem Overview Barents Sea</p>		

<b>PI 2.5.1</b>	<b>The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.</b>	
	ICES, 2016 Ecosystem Overview Norwegian Sea ICES 2016 Ecosystem Overview North Sea	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>80</b>
<b>CONDITION NUMBER (if relevant):</b>		

PI 2.5.2–Lumpfish Ecosystem management strategy Evaluation Table

<b>PI 2.5.2</b>		<b>There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Management strategy in place</b>			
	<b>Guidepost</b>	There are <b>measures</b> in place, if necessary which take into account the <b>potential impacts</b> of the fishery on key elements of the ecosystem.	There is a <b>partial strategy</b> in place, if necessary, which takes into account <b>available information and is expected to restrain impacts</b> of the UoA on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	There is a <b>strategy</b> that consists of a <b>plan</b> , in place which contains measures to <b>address all main impacts of the UoA</b> on the ecosystem, and at least some of these measures are in place.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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; meeting SG 60.</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"> <li>Measures described in P1 to ensure that the fishery does not pose a risk to lumpfish</li> <li>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</li> <li>Closed areas to protect the young of a variety of other species.</li> <li>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.</li> </ul> <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>		
<b>b</b>	<b>Management strategy evaluation</b>			
	<b>Guidepost</b>	The <b>measures</b> are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ ecosystems).	There is <b>some objective basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved	<b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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</p>		

<b>PI 2.5.2</b>		<b>There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function.</b>	
		<p>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.</p> <p>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.</p>	
<b>c</b>	<b>Management strategy implementation</b>		
	<b>Guidepost</b>		<p>There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented successfully</b>.</p>
			<p>There is <b>clear evidence</b> that the partial strategy/strategy is being <b>implemented successfully and is achieving its objective as set out in scoring issue (a)</b>.</p>
	<b>Met?</b>	Y	N
<b>Justification</b>	<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.</p> <p>Evidence relating to successful implementation at the fleet level includes:</p> <ul style="list-style-type: none"> <li>• Catch records</li> <li>• Vessel inspections</li> <li>• Observer programme (typically for secondary species)</li> <li>• Review and analysis of fishing activity, species caught and habitats affected - by IMR and the inspectorates.</li> </ul> <p>SG 80 is met.</p> <p>The is no VMS data relating to the spatial intensity of fishing effort, and thus compliance with closed area restrictions, SG100 is not met</p>		
<b>References</b>	As in PI2.5.1		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>80</b>
<b>CONDITION NUMBER (if relevant):</b>			

PI 2.5.3 Lumpfish– Ecosystem information Evaluation Table

<b>PI 2.5.3</b>		<b>There is adequate knowledge of the impacts of the UoA on the ecosystem.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Information quality</b>			
	<b>Guidepost</b>	Information is adequate to <b>identify</b> the key elements of the ecosystem.	Information is adequate to <b>broadly understand</b> the key elements of the ecosystem.	
	<b>Met?</b>	Y	Y	
	<b>Justification</b>	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>b</b>	<b>Investigation of UoA impacts</b>			
	<b>Guidepost</b>	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but <b>have not been investigated</b> in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and <b>some have been investigated in detail.</b>	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and <b>have been investigated in detail.</b>
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	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.		
<b>c</b>	<b>Understanding of component functions</b>			
	<b>Guidepost</b>		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are <b>known</b> .	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 <b>understood</b> .
	<b>Met?</b>		Y	N
	<b>Justification</b>	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.		
<b>Information relevance</b>				

<b>PI 2.5.3</b>		<b>There is adequate knowledge of the impacts of the UoA on the ecosystem.</b>	
<b>d</b>	<b>Guidepost</b>	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 <b>and elements</b> to allow the main consequences for the ecosystem to be inferred.
	<b>Met?</b>	Y	N
	<b>Justification</b>	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.	
<b>e</b>	<b>Monitoring</b>		
	<b>Guidepost</b>	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.
	<b>Met?</b>	Y	Y
	<b>Justification</b>	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.	
<b>References</b>		<p>NORWECOM.E2E; <a href="http://www.imr.no/temasider/modeller/norwecom.e2e/norwecom.e2e/en">http://www.imr.no/temasider/modeller/norwecom.e2e/norwecom.e2e/en</a></p> <p>MFCA, 2012. Integrated Management Plans available at: <a href="http://www.fisheries.no/resource_management/Area_management/Integrated_management_plans/">http://www.fisheries.no/resource_management/Area_management/Integrated_management_plans/</a></p> <p>Olsen, E., Gjøsæter, H., Røttingen, I., Dommasnes, A., Fossum, P. &amp; 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. <a href="http://www.klif.no/english/english/Areas-of-activity/Integrated-managementplan-for-the-North-Sea-and-Skagerrak/">http://www.klif.no/english/english/Areas-of-activity/Integrated-managementplan-for-the-North-Sea-and-Skagerrak/</a></p> <p>Bjørge, Q. 2008. New research programme focusing on coastal and fjord ecosystems. Marine News 3–2008. <a href="http://www.imr.no/epigraph/filarkiv/hi_news_3_eng_web.pdf/nb-no">http://www.imr.no/epigraph/filarkiv/hi_news_3_eng_web.pdf/nb-no</a></p> <p>Hjøllo, S.S., 2007. EcoFish WP2 workandWind, NAO and ecosystem-selected articles. IMR, Bergen. <a href="http://ecofish.imr.no/_data/page/6432/work_and_Wind_NAO_and_ecosystemselected_articles080307.pdf">http://ecofish.imr.no/_data/page/6432/work_and_Wind_NAO_and_ecosystemselected_articles080307.pdf</a></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)</p>	

<b>PI 2.5.3</b>	<b>There is adequate knowledge of the impacts of the UoA on the ecosystem.</b>	
	<p>ICES CM 2012/ACOM:26 <a href="http://www.ices.dk/reports/ACOM/2012/WGECO/wgeco_2012.pdf">http://www.ices.dk/reports/ACOM/2012/WGECO/wgeco_2012.pdf</a>  <a href="http://www.mareano.no/english/news/seabed_to_be_mapped">http://www.mareano.no/english/news/seabed_to_be_mapped</a>                      Husebø, Å., Nøttestad, L., Fosså, J.H., Furevik, D.M. &amp; Jørgensen, S.B. (2002). Distribution and abundance of fish in deep-sea coral habitats. <i>Hydrobiologia</i> 471: 91–99.                      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.                      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.                      Freese, J.L. 2001. Trawl-induced damage to sponges observed from a research submersible. <i>Marine Fisheries Review</i> 63: 7–13.</p>	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>85</b>
<b>CONDITION NUMBER (if relevant):</b>		

## Ling – 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			
	<b>Guidepost</b>	It is <b>likely</b> that the stock is above the point where recruitment would be impaired (PRI).	It is <b>highly likely</b> that the stock is above the PRI.	There is a <b>high degree of certainty</b> that the stock is above the PRI.
	<b>Ling I+II</b>	Y	Y	N
	<b>Ling (other areas)</b>	Y	Y	N
	<b>Tusk I+II</b>	Y	Y	N

<b>PI 1.1.1</b>		<b>The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
	<b>Tusk (NEA)</b>	Y	Y	N
	<b>Tusk (VIb)</b>	Y	Y	N
	<b>Justification</b>	<p>Ling I+II, Ling (Other areas), Tusk I+II, Tusk (NEA)</p> <p>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. No explicit PRI has been defined for any of these stocks beyond the reference point embedded in the ICES category 3 advisory rule. This point is taken as a PRI reference point. This is available for these four ling and tusk stocks. The stock trend for all four stocks are similar, the stocks are increasing..</p> <p>Stock size has been increasing for all four stocks 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 and this approach is more uncertain than if R/V data had been available and hence there is not a high degree of certainty that the stock is above PRI. SG 100 is not met.</p> <p><b>Tusk in VIb</b></p> <p>There is no stock indicator available for this stock. ICES (2016e) found that the exploitation was within MSY levels based on an evaluation in 2013, Table 11. 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 met. Because of the paucity of data, related to the very low effort, SG 100 is not met.</p>		
<b>b</b>	<b>Stock status in relation to achievement of MSY</b>			
	<b>Guided post</b>		The stock is at or fluctuating around a level consistent with MSY.	There is a <b>high degree of certainty</b> that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	<b>Ling I+II</b>		Y	N
	<b>Ling (other areas)</b>		Y	N
	<b>Tusk I+II</b>		Y	N
	<b>Tusk (NEA)</b>		Y	N
	<b>Tusk (VIb)</b>		Y	N

<b>PI 1.1.1</b>		<b>The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>Justification</b>	<p>Ling (Other areas), Tusk (NEA)</p> <p>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. 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 I+II, Tusk I+II</p> <p>MSY levels are not estimated for these two stocks. The effort on these stocks has decrease in recent periods. The fishery has either decreased or remained stable in response to this reduced effort. 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. SG 80 is met.</p> <p>As noted for PI 1.1.1a above the assessment is uncertain. Hence the is no high degree of certainty that the stocks are around MSY. SG 100 is not met.</p> <p>Tusk VIb</p> <p>There is no MSY indicator for this stock. 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>			
<b>References</b>	<p>ICES 2016 a-c, ICES 2016e, ICES 2015a-e</p> <p>Helle and Pennington (2010)</p> <p>Helle, Pennington, Hareide and Fossen (2015)</p>			
<b>Stock Status relative to Reference Points</b>				
<b>OVERALL PERFORMANCE INDICATOR SCORE: Ling I+II</b>				<b>80</b>
<b>OVERALL PERFORMANCE INDICATOR SCORE: Ling (Other areas)</b>				<b>80</b>
<b>OVERALL PERFORMANCE INDICATOR SCORE:Tusk I+II</b>				<b>80</b>
<b>OVERALL PERFORMANCE INDICATOR SCORE: Tusk (NEA)</b>				<b>80</b>
<b>OVERALL PERFORMANCE INDICATOR SCORE: Tusk VIb</b>				<b>80</b>
<b>CONDITION NUMBER (if relevant):</b>				<b>N/A</b>

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

<b>PI 1.2.1</b>	Harvest strategy design			
<b>a</b>	<b>Scoring Issue</b>	There is a robust and precautionary harvest strategy in place		
		SG 60	SG 80	SG 100
	<b>Guidepost</b>	The harvest strategy is <b>expected</b> 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 <b>work together</b> 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 <b>designed</b> to achieve stock management objectives reflected in PI 1.1.1 SG80.
	<b>All five stocks</b>	Y	Y	Y
	<b>Justification</b>	<p>The harvest strategy for these six 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 VIb 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>		
<b>b</b>				
	<b>Harvest strategy evaluation</b>			
	<b>Guidepost</b>	The harvest strategy is <b>likely</b> to work based on prior experience or plausible argument.	The harvest strategy may not have been fully <b>tested</b> but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been <b>fully evaluated</b> and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	<b>All five stocks</b>	Y	Y	N
	<b>Justification</b>	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.		

<b>c</b>	Harvest strategy monitoring			
	<b>Guidepost</b>	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	<b>All five stocks</b>	Y		
	<b>Justification</b>	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.		
<b>d</b>	Harvest strategy review			
	<b>Guidepost</b>			The harvest strategy is periodically reviewed and improved as necessary.
	<b>All five stocks</b>			Y
	<b>Justification</b>	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.		
<b>e</b>	Shark finning			
	<b>Guidepost</b>	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree of certainty</b> that shark finning is not taking place.
	<b>All five stocks</b>	Not relevant	Not relevant	Not relevant
	<b>Justification</b>	The fishery is targeting Ling and tusk which are fish not sharks.		
<b>f</b>	<b>Review of alternative measures</b>			
	<b>Guidepost</b>	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 <b>regular</b> 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 <b>biennial</b> 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.
	<b>All five stocks</b>	Y	Y	N

	<b>Justification</b>	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.
<b>References</b>	ICES (2015a-e), ICES (2016a-c)	
OVERALL PERFORMANCE INDICATOR SCORE:		90
CONDITION NUMBER (if relevant):		N/A

PI 1.2.2 – Ling – Tusk Harvest control rules and tools

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guidepost	Generally understood HCRs are in place or available that are expected to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	Well defined HCRs are in place that ensure that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock fluctuating around a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock fluctuating at or above a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, most of the time.
	Norwegian HCR Ling I+II Tusk I+II	Y	N	N
	EU HCR Ling (Other areas) Tusk (NEA) Tusk VIb	Y	N	N
	Justification	<p>Norwegian stocks (Ling I+II, Tusk I+II)</p> <p>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.</p> <p>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.</p> <p><b>EU Stocks Ling (Other areas), Tusk (NEA), Tusk VIb</b></p> <p>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.</p>		
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

<b>PI 1.2.2</b>		<b>There are well defined and effective harvest control rules (HCRs) in place</b>		
				the ecological role of the stock, and there is <b>evidence</b> that the HCRs are robust to the main uncertainties.
	<b>All six stocks</b>		Y	N
	<b>Justification</b>	<p>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.</p> <p>However, the HCR is focusing on the stock development only without considering the wider ecological role and SG100 is not met.</p>		
<b>c</b>	<b>HCRs evaluation</b>			
	<b>Guidepost</b>	There is <b>some evidence</b> that tools used <b>or available</b> to implement HCRs are appropriate and effective in controlling exploitation.	<b>Available evidence indicates</b> that the tools in use are appropriate and effective in achieving the exploitation levels required under the HCRs.	<b>Evidence clearly shows</b> that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<p>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.</p> <p>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.</p>		
	<b>References</b>	ICES 2016a-c, ICES 2015a-e		
			<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>	<b>75</b>
			<b>CONDITION NUMBER (if relevant):</b>	<b>6</b>

PI 1.2.3 – Ling – Tusk Information and monitoring

<b>PI 1.2.3</b>		<b>Relevant information is collected to support the harvest strategy</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>A</b>	Range of information			
	<b>Guidepost</b>	<b>Some</b> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	<b>Sufficient</b> relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A <b>comprehensive range</b> 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.
	<b>All six stocks</b>	Y	Y	N
	<b>Justification</b>	<p>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.</p> <p>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.</p>		
<b>B</b>	Monitoring			
	<b>Guidepost</b>	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 <b>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</b> , and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	<b>All information</b> 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 <b>uncertainties</b> in the information [data] and the robustness of assessment and management to this uncertainty.
	<b>All five stocks</b>	Y	Y	N
	<b>Justification</b>	<p>The removals are well monitored for all participating fleets (meeting SG 60). There is a fishery-based stock indicator available except for the Tusk VIb. For the Ling Vb there are also survey data available. The coverage is adequate for the current – somewhat rudimentary - HCR. SG 80 is met.</p> <p>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.</p>		

<b>PI 1.2.3</b>			<b>Relevant information is collected to support the harvest strategy</b>	
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>C</b>	Comprehensiveness of information			
	<b>Guidepost</b>		There is good information on all other fishery removals from the stock.	
	<b>Met?</b>		Y	
	<b>Justification</b>	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.		
<b>References</b>	ICES 2016a-c, ICES 2015 a-e			
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				<b>80</b>
<b>CONDITION NUMBER (if relevant):</b>				<b>N/A</b>

**PI 1.2.4 – Ling – Tusk Assessment of stock status**

<b>PI 1.2.4</b>		<b>There is an adequate assessment of the stock status</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	Appropriateness of assessment to stock under consideration			
	<b>Guidepost</b>		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.
	<b>Ling I+II, Tusk I+II, Ling (Other areas), Tusk (NEA)</b>		Y	N
	<b>Tusk VIb</b>			
	<b>Justification</b>	<p><b>Ling I+II, Tusk I+II, Ling (Other areas), Tusk (NEA)</b></p> <p>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., The assessment is appropriate for the HCR (ICES category 3) SG 80 is met.</p> <p>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.</p> <p><b>Tusk VIb</b></p> <p>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, This demonstrates that the status can be estimated and the JHCR applied, SG 80. As for the other stocks mentioned above the assessment is not 'best practise' and SG 100 is not met</p>		
<b>b</b>	Assessment approach			
	<b>Guidepost</b>	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.	
	<b>Ling I+II</b>	Y	N	
	<b>Tusk I+II</b>			
	<b>Ling (Other areas)</b>	Y	Y	
	<b>Tusk (NEA)</b>			
<b>Tusk VIb</b>	Y	N		
<b>Justification</b>	<p><b>Ling I+II, Tusk I+II</b></p> <p>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</p>			

<b>PI 1.2.4</b>		<b>There is an adequate assessment of the stock status</b>	
		<p>productivity is in equilibrium. The reference points are presented in Table 10. SG 80 is not met.</p> <p><b>Ling (Other areas), Tusk (NEA)</b></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><b>Tusk VIb</b></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>	
<b>c</b>	Uncertainty in the assessment		
<b>Guidepost</b>	The assessment <b>identifies major sources</b> 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 <b>probabilistic</b> way.
<b>All five stocks</b>	Y	Y	N
<b>Justification</b>	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. The assessment is not probabilistic and SG100 is not met		
<b>d</b>	Evaluation of assessment		
<b>Guidepost</b>			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
<b>Five stocks</b>			Y
<b>Justification</b>	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.		
<b>e</b>	Peer review of assessment		
<b>Guidepost</b>		The assessment of stock status is subject to peer review.	The assessment has been <b>internally and externally</b> peer reviewed.
<b>Ling and Tusk</b>		Y	Y
<b>Justification</b>	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		

<b>PI 1.2.4</b>	<b>There is an adequate assessment of the stock status</b>	
<b>References</b>	ICES 2010. ICES (2015a-e) ICES (2016a-c)	
<b>OVERALL PERFORMANCE INDICATOR SCORE: Ling I+II, Tusk I+II</b>		<b>75</b>
<b>OVERALL PERFORMANCE INDICATOR SCORE: Ling (Other areas), Tusk (NEA), Tusk VIb</b>		<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>		<b>7</b>

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
	<b>Guidepost</b>	Main primary species are <b>likely</b> to be above the PRI  OR  If the species is below the PRI, the UoA has measures in place that are <b>expected</b> to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are <b>highly likely</b> to be above the PRI  OR  If the species is below the PRI, there is either <b>evidence of recovery</b> or a demonstrably effective strategy in place <b>between all MSC UoAs which categorise this species as main</b> , to ensure that they collectively do not hinder recovery and rebuilding.	There is a <b>high degree of certainty</b> that main primary species are above the PRI <b>and are</b> fluctuating around a level consistent with MSY.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	Lling 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.  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 none meet the requirement for SG100, the performance indicator scores SG 80.  The status of the ling and tusk are described under PI 1 and as scored in PI 1.1.1 there is not a high degree of certainty that these are above PRI and fluctuating around a MSY level. SG 100 is not met		
	<b>Guidepost</b>			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
	<b>Met?</b>			Y

<b>PI 2.1.1</b>		<b>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>
	<b>Justification</b>	<p>The following species have been identified as Primary 'minor' in the ling &amp; tusk longline fishery:                  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 3.4.3 provides detailed information on reference points and stock status for all the Primary species identified from the catch profiles (for both the lumpfish fishery, and the tusk and ling fishery; all part of this assessment).</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 by catch is small compared to the total fishery.</p> <p>From this Table it can be seen that all the scoring elements meet the SG100:                  Thus SG100 is met.</p>
	<b>References</b>	<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</p>
<b>Overall Performance Indicator Score</b>		<b>90</b>
<b>Condition</b>		N/A

**PI 2.1.1 Gillnet Evaluation Table – Primary species outcome**

<b>PI 2.1.1</b>		<b>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>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	Main primary species stock status			
	<b>Guidepost</b>	<p>Main primary species are <b>likely</b> 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 <b>expected</b> to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main primary species are <b>highly likely</b> to be above the PRI</p> <p>OR</p> <p>If the species is below the PRI, there is either <b>evidence of recovery</b> or a demonstrably effective strategy in place <b>between all MSC UoAs which categorise this species as main</b>, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a <b>high degree of certainty</b> that main primary species are above the PRI <b>and are</b> fluctuating around a level consistent with MSY.</p>
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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 the ling and tusk are described under PI 1 and as scored in PI 1.1.1 there is not a high degree of certainty that these are above PRI and fluctuating around a MSY level. SG 100 is not met for the ling scoring element, nor is it met for the tusk scoring element</p> <p>There is only one other ‘main’ Primary species in the gillnet Ling and Tusk fishery, Saithe, 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>As not all the main primary species scoring elements meet the SG100, the overall score is SG80.</p>		
<b>b</b>	Minor primary species stock status			
	<b>Guidepost</b>			<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>
	<b>Met?</b>			Y

<b>PI 2.1.1</b>		<b>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>	
	<b>Justification</b>	<p>The following species have been identified as Primary 'minor' in the ling &amp; tusk gillnet fishery:</p> <p>Cod, 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 provides detailed information on reference points and stock status for all the Primary 'main' species identified from the catch profiles (for both the lumpfish fishery, and the tusk and ling fishery; all part of this assessment).</p> <p>From this table it can be seen that all the scoring elements meet the SG100:</p> <p>Thus SG100 is met.</p>	
	<b>References</b>	<p><a href="http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/had-rock.pdf">http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/had-rock.pdf</a>                      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</p>	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>			

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

<b>PI 2.1.2</b>	<b>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.</b>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100
<b>a</b>	Management strategy in place		
<b>Guidepost</b>	There are <b>measures</b> 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 <b>partial strategy</b> 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 <b>strategy</b> in place for the UoA for managing main and minor primary species.
<b>Met?</b>	Y	Y	Y
<b>Justification</b>	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>b</b>	Management strategy evaluation		
<b>Guidepost</b>	The measures are considered <b>likely</b> to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some <b>objective basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	<b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
<b>Met?</b>	Y	Y	Y
<b>Justification</b>	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.		
<b>c</b>	Management strategy implementation		
<b>Guidepost</b>		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented successfully</b> .	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).
<b>Met?</b>		Y	Y

<b>PI 2.1.2</b>		<b>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.</b>		
	<b>Justification</b>	<p>Given the low proportion of bycatch in this longline 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>		
<b>d</b>	Shark finning			
	<b>Guidepost</b>	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree of certainty</b> that shark finning is not taking place.
	<b>Met?</b>	Not relevant	Not relevant	Not relevant
	<b>Justification</b>	Not relevant. Ling and Tusk are not sharks.		
<b>e</b>	Review of alternative measures			
	<b>Guidepost</b>	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 <b>regular</b> 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 <b>biennial</b> 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.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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>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). 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>SG100 is met</p>		

<b>PI 2.1.2</b>	<b>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.</b>	
<b>References</b>	As in 2.1.1	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>100</b>
<b>CONDITION NUMBER (if relevant):</b>		

PI 2.1.3 Long Line 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
<b>a</b>	Information adequacy for assessment of impact on main primary species			
	<b>Guidepost</b>	Qualitative information is <b>adequate to estimate</b> 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 <b>adequate to assess</b> 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 <b>adequate to assess with a high degree of certainty</b> the impact of the UoA on main primary species with respect to status.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	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>b</b>	Information adequacy for assessment of impact on minor primary species			
	<b>Guidepost</b>			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	<b>Met?</b>			Y
<b>Justification</b>	Because there are no 'main' species Scoring Issue a) is not used. Each element (minor species) is assessed against Scoring Issue b) Since all species are minor and all meet the requirement for SG100, the performance indicator scores 100. There is quantitative information (detailed catch statistics), and there are an indication of the status of the species, see Table 15			
<b>c</b>	Information adequacy for management strategy			
	<b>Guidepost</b>	Information is adequate to support <b>measures</b> to manage <b>main</b> primary species.	Information is adequate to support a <b>partial strategy</b> to manage <b>main</b> Primary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> primary species, and evaluate with a <b>high degree of certainty</b> whether the strategy is achieving its objective.

<b>PI 2.1.3</b>		<b>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</b>		
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	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 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		
<b>References</b>		See 2.1.1		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				<b>100</b>
<b>CONDITION NUMBER (if relevant):</b>				

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

<b>PI 2.2.1</b>		<b>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.</b>			
<b>Scoring Issue</b>		SG 60	SG 80	SG 100	
<b>a</b>	<b>Main secondary species stock status</b>				
	<b>Guidpost</b>	<p>Main Secondary species are <b>likely</b> to be within biologically based limits.</p> <p>OR</p> <p>If below biologically based limits, there are measures in place expected to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main secondary species are <b>highly likely</b> to be above biologically based limits</p> <p>OR</p> <p>If below biologically based limits, there is either <b>evidence of recovery</b> or a <b>demonstrably effective partial strategy</b> in place such that the UoA does not hinder recovery and rebuilding.</p> <p>AND</p> <p>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.</p>	<p>There is a <b>high degree of certainty</b> that main secondary species are within biologically based limits.</p>	
	<b>Met?</b>	Y	Y		
<b>Justification</b>	<p>There are no Secondary ‘main’ fish species recorded in this fisheries (see Table 13).</p> <p>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.</p> <p>All bycatch is landed and recorded, and data of the last 5 years (2012-2016) has been analysed.</p> <p><b>The longline tusk and ling fisheries occur offshore and the ETP birds species are not affected. The major bird species seen in these areas are is fulmars.</b></p> <p>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> <p>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.</p>				

<b>PI 2.2.1</b>	<b>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.</b>		
<b>b</b>	<b>Minor secondary species stock status</b>		
	<b>Guidpost</b>		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
	<b>Met?</b>		N
<b>Justification</b>	<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                  Monkfish/ Anglerfish: inadequate information</p> <p>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>		
<b>References</b>	Catch composition data Client interviews <a href="http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/pol-nsea.pdf">http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/pol-nsea.pdf</a> <a href="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/tur-nsea.pdf</a>		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>80</b>
<b>CONDITION NUMBER (if relevant):</b>			

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

<b>PI 2.2.2</b>	<b>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.</b>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100
<b>a</b>	<b>Management strategy in place</b>		
<b>Guidepost</b>	There are <b>measures</b> 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 <b>partial strategy</b> 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 <b>strategy</b> in place for the UoA for managing main and minor secondary species.
<b>Met?</b>	Y	Y	Y
<b>Justification</b>	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>b</b>	<b>Management strategy evaluation</b>		
<b>Guidepost</b>	The measures are considered <b>likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is <b>some objective basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	<b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
<b>Met?</b>	Y	Y	N
<b>Justification</b>	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		
<b>c</b>	<b>Management strategy implementation</b>		
<b>Guidepost</b>		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented successfully</b> .	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).
<b>Met?</b>		Y	N

<b>PI 2.2.2</b>		<b>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.</b>		
	<b>Justification</b>	<p>Given the low proportion of bycatch, the partial strategy seems to be working in practice for the client fleet.</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.</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"> <li>- the lack of biological reference points, and uncertainties about the stock and level of fishing mortality for the Secondary 'minor' species.</li> <li>- The uncertainties relating to identification of the several of the bycatch species.</li> </ul> <p>SG100 is not met.</p>		
<b>d</b>	<b>Shark finning</b>			
	<b>Guidepost</b>	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree of certainty</b> that shark finning is not taking place.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	Only spurdog occurs 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.		
<b>e</b>	<b>Review of alternative measures to minimise mortality of unwanted catch</b>			
	<b>Justification</b>	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of all secondary species, and they are implemented, as appropriate.
	<b>Met?</b>	Y	Y	Y
	<b>Guidepost</b>	<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 <b>Table 13</b></p> <p>The regulations are considered, and the technical measures reviewed (SG 60 met), by IMR, Fiskeridirektoratet and stakeholders annually (SG80 and 100 met). 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>SG100 is met</p>		

<b>PI 2.2.2</b>	<b>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.</b>	
<b>References</b>	As in 2.2.1	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>		

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

<b>PI 2.2.3</b>	<b>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.</b>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100
<b>a</b>	<b>Information adequacy for assessment of impacts on main secondary species</b>		
<b>Guidpost</b>	<p>Qualitative information is <b>adequate to estimate</b> the impact of the UoA on the main secondary species with respect to status.</p> <p>OR</p> <p><b>If RBF is used to score PI 2.2.1 for the UoA:</b></p> <p>Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.</p>	<p>Some quantitative information is available and <b>adequate to assess</b> the impact of the UoA on main secondary species with respect to status.</p> <p>OR</p> <p><b>If RBF is used to score PI 2.2.1 for the UoA:</b></p> <p>Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.</p>	<p>Quantitative information is available and <b>adequate to assess with a high degree of certainty</b> the impact of the UoA on main secondary species with respect to status.</p>
<b>Met?</b>	Y	Y	
<b>Justification</b>	<p>Given that there are no 'main' Secondary species, good quantitative data is available on almost all 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 80 is met.</p> <p>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 all meet the requirement for SG100, the performance indicator scores 100 in b).</p>		
<b>b</b>	<b>Information adequacy for assessment of impacts on minor secondary species</b>		
<b>Guidpost</b>			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
<b>Met?</b>			Y
<b>Justification</b>	<p>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.</p> <p>Also, 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</p>		

<b>PI 2.2.3</b>		<b>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.</b>		
		species. Since all species are minor and all meet the requirement for SG100, the performance indicator scores 100 in b)		
<b>c</b>	Information adequacy for management strategy			
	<b>Guidpost</b>	Information is adequate to support <b>measures</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>partial strategy</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> secondary species, and <b>evaluate</b> with a <b>high degree of certainty</b> whether the strategy is <b>achieving its objective</b> .
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	There are no main Secondary species. 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. SG80 is met but not SG100.		
<b>References</b>	See 2.2.1			
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>				

PI 2.3.1 Long Line Gillnet Evaluation Table – ETP species outcome

<b>PI 2.3.1</b>		<b>The UoA meets national and international requirements for the protection of ETP species</b>		
		<b>The UoA does not hinder recovery of ETP species</b>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100	
<b>a</b>	Effects of the UoA on population/stock within national or international limits, where applicable			
<b>Guidpost</b>	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/stock are known and <b>likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, the <b>combined effects of the MSC UoAs</b> on the population/stock are known and <b>highly likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a <b>high degree of certainty</b> that the <b>combined effects of the MSC UoAs</b> are within these limits.	
<b>Met?</b>	Not relevant	Not relevant	Not relevant	
<b>Justification</b>	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>b</b>	Direct effects			
<b>Guidpost</b>	Known direct effects of the UoA are likely to not <b>hinder recovery</b> of ETP species.	Known direct effects of the UoA are <b>highly likely</b> to not <b>hinder recovery</b> of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.	
<b>Met?</b>	Y	Y	N	
<b>Justification</b>	<p>The catch composition information – Figure 24 and Table 13 for the ling and tusk fishery for both longline and gill net fishery shows the following ETP species bycaught: Spurdog, Blue ling and Porbeagle.</p> <p>The quantity of ETP-fish bycatch is known, there is a discard ban so all catch is recorded, and the catch is small.</p> <p>Vessels over 15m have to record bird bycatch on the e-log. (IMR, interview Aug 2016).</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 for 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 <i>et al</i> (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>			

<b>PI 2.3.1</b>		<b>The UoA meets national and international requirements for the protection of ETP species</b>	
		<b>The UoA does not hinder recovery of ETP species</b>	
		<p>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 small by-catch.</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 highly likely that the UoAs do not hinder the recovery of ETPs.                  SG80 is met</p> <p>Although there is no record of any by-catch, 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                  SG100 is not met</p>	
<b>c</b>	Indirect effects		
	<b>Guided post</b>	Indirect effects have been considered and are thought to be <b>highly likely</b> 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.
	<b>Met?</b>	Y	Y
	<b>Justification</b>	<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 (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>Fishing occurs further offshore, outwith the feeding range of most seabird species. There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species,                  SG 100 is met.</p>	

<b>PI 2.3.1</b>	<b>The UoA meets national and international requirements for the protection of ETP species</b> <b>The UoA does not hinder recovery of ETP species</b>	
<b>References</b>	<p> <a href="https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/Bycatch_of_sm_all_cetaceans_and_other_marine_animals.pdf">https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/Bycatch_of_sm_all_cetaceans_and_other_marine_animals.pdf</a>  <a href="http://barentsportal.com/barentsportal_v2.5/index.php/en/">http://barentsportal.com/barentsportal_v2.5/index.php/en/</a>                      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. &amp; 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.  <a href="http://www.nina.no/archive/nina/PppBasePdf/rapport/2011/719.pdf">http://www.nina.no/archive/nina/PppBasePdf/rapport/2011/719.pdf</a>  <a href="http://www.fao.org/3/a-bh048e.pdf">http://www.fao.org/3/a-bh048e.pdf</a>  <a href="http://barentsportal.com/barentsportal_v2.5/index.php/en/">http://barentsportal.com/barentsportal_v2.5/index.php/en/</a> </p>	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>		

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

<b>PI 2.3.2</b>	<b>The UoA has in place precautionary management strategies designed to:</b>			
	<ul style="list-style-type: none"> <li>• meet national and international requirements;</li> <li>• ensure the UoA does not hinder recovery of ETP species.</li> </ul> <p><b>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</b></p>			
<b>Scoring Issue</b>	SG 60	SG 80	SG 100	
<b>a</b>	Management strategy in place (national and international requirements)			
	<b>Guidepost</b>	There are <b>measures</b> in place that minimise the UoA-related mortality of ETP species, and are expected to be <b>highly likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be <b>highly likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>comprehensive strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to <b>achieve above</b> national and international requirements for the protection of ETP species.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<p>Several seabird species (see Red List) and marine mammals are protected, including those mammals that are hunted (subject to national legislation<sup>73</sup>), 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)<sup>74</sup> 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<sup>75</sup>. 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)</p> <p>Larger fishing vessels (&gt;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. SG80 is met.</p> <p>The strategy does not achieve outcomes above national and international requirements. SG100 is not met.</p>		
	Management strategy in place (alternative)			

<sup>73</sup> Sealing Act (1951); Saltwater Fishing Act (1983); Participation Act (1999); Marine Resources Act (2008);

<sup>74</sup> 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>

<sup>75</sup> <http://www.xn--miljodirektoratet-oxb.no/english/>

<b>PI 2.3.2</b>		<p><b>The UoA has in place precautionary management strategies designed to:</b></p> <ul style="list-style-type: none"> <li>• meet national and international requirements;</li> <li>• ensure the UoA does not hinder recovery of ETP species.</li> </ul> <p><b>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</b></p>		
<b>b</b>	<b>Guidepost</b>	There are <b>measures</b> in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a <b>strategy</b> in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a <b>comprehensive strategy</b> in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species
	<b>Met?</b>	Not relevant	Not relevant	Not relevant
	<b>Justification</b>	NR		
<b>c</b>	Management strategy evaluation			
	<b>Guidepost</b>	The measures are <b>considered likely</b> to work, based on <b>plausible argument</b> (e.g., general experience, theory or comparison with similar fisheries/species).	There is an <b>objective basis for confidence</b> that the measures/strategy will work, based on <b>information</b> 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 <b>quantitative analysis</b> supports <b>high confidence</b> that the strategy will work.
	<b>Met?</b>	Y	Y	N
<b>Justification</b>	<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>			
<b>d</b>	Management strategy implementation			
	<b>Guidepost</b>		There is some <b>evidence</b> that the measures/strategy is being implemented successfully.	There is <b>clear evidence</b> that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	<b>Met?</b>		Y	N
<b>Justification</b>	<p>The deployment of birdscarers and streamers as well as the use of lasers is considered good practice on longliners now and implemented throughout the fishery. The recording of ETP fish species is standard as part of the catch composition data, feeding into fisheries assessment analyses. SG80 is met.</p> <p>There does not appear to be a strategy/ comprehensive strategy, hence SG100 is not met.</p>			

<p><b>PI 2.3.2</b></p>	<p><b>The UoA has in place precautionary management strategies designed to:</b></p> <ul style="list-style-type: none"> <li>• meet national and international requirements;</li> <li>• ensure the UoA does not hinder recovery of ETP species.</li> </ul> <p><b>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</b></p>			
<p><b>e</b></p>	<p>Review of alternative measures to minimize mortality of ETP species</p>			
	<p><b>Guidepost</b></p>	<p>There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.</p>	<p>There is a <b>regular</b> 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>	<p>There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.</p>
	<p><b>Met?</b></p>	<p>Y</p>	<p>Y</p>	<p>Y</p>
	<p><b>Justification</b></p>	<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>The regulations are considered, and the technical measures reviewed (meeting SG 60), by IMR, Fiskeridirektoratet and stakeholders annually (meeting SG 80 &amp; 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). This also applies to any non-target species caught, including ETP species.</p> <p>SG100 is met.</p>		
<p><b>References</b></p>	<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.  <a href="http://www.fiskeridir.no/english/fisheries/regulations/acts/the-marine-resources-act">http://www.fiskeridir.no/english/fisheries/regulations/acts/the-marine-resources-act</a>  <a href="http://en.wikipedia.org/wiki/Norwegian_Directorate_for_Nature_Management">http://en.wikipedia.org/wiki/Norwegian_Directorate_for_Nature_Management</a>            Sealing Act (1951); Saltwater Fishing Act (1983); Participation Act (1999); Marine Resources Act (2008);            Fangel, K., Aas, Ø., Bærum, K. M., Anker-Nilssen, T. &amp; Christensen- Dalsgaard, S. 2015. Utilisitet bifangst av sjøfugl i norske kystfiskerier med garn og line. - NINA Temahefte 64. 20 s.</p>			
<p><b>OVERALL PERFORMANCE INDICATOR SCORE:</b></p>			<p><b>85</b></p>	
<p><b>CONDITION NUMBER (if relevant):</b></p>				

PI 2.3.3 Long Line Gillnet Evaluation Table – ETP species information

<b>PI 2.3.3</b>		<b>Relevant information is collected to support the management of UoA impacts on ETP species, including:</b>		
		<ul style="list-style-type: none"> <li>• <b>Information for the development of the management strategy;</b></li> <li>• <b>Information to assess the effectiveness of the management strategy; and</b></li> <li>• <b>Information to determine the outcome status of ETP species.</b></li> </ul>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Information adequacy for assessment of impacts</b>			
	<b>Guidepost</b>	<p>Qualitative information is <b>adequate to estimate</b> 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 <b>adequate to estimate productivity and susceptibility</b> attributes for ETP species.</p>	<p>Some quantitative information is <b>adequate to assess</b> 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 <b>magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status</b> of ETP species.</p>
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<p>The PINRO / IMR Reports (Jakobsen &amp; 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, (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 – 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. SG100 is not met.</p>		

<p><b>PI 2.3.3</b></p>	<p><b>Relevant information is collected to support the management of UoA impacts on ETP species, including:</b></p> <ul style="list-style-type: none"> <li>• <b>Information for the development of the management strategy;</b></li> <li>• <b>Information to assess the effectiveness of the management strategy; and</b></li> <li>• <b>Information to determine the outcome status of ETP species.</b></li> </ul>			
<p><b>b</b></p>	<p>Information adequacy for management strategy</p>			
	<p><b>Guidpost</b></p>	<p>Information is adequate to support <b>measures</b> to manage the impacts on ETP species.</p>	<p>Information is adequate to measure trends and support a <b>strategy</b> to manage impacts on ETP species.</p>	<p>Information is adequate to support a <b>comprehensive strategy</b> to manage impacts, minimize mortality and injury of ETP species, and evaluate with a <b>high degree of certainty</b> whether a strategy is achieving its objectives.</p>
	<p><b>Met?</b></p>	<p>Y</p>	<p>N</p>	<p>N</p>
<p><b>Justification</b></p>	<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>			
<p><b>References</b></p>	<p>See also refs. in PI2.3.1</p> <p><a href="http://www.barentsportal.com/barentsportal/index.php/en/joint-norwegian-russian-environmental-status-reports">http://www.barentsportal.com/barentsportal/index.php/en/joint-norwegian-russian-environmental-status-reports</a></p>			
<p><b>OVERALL PERFORMANCE INDICATOR SCORE:</b></p>			<p><b>70</b></p>	
<p><b>CONDITION NUMBER (if relevant):</b></p>			<p><b>8</b></p>	

**PI 2.4.1 Long Line Gillnet Evaluation Table – Habitats outcome**

<b>PI 2.4.1</b>		<b>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.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	Commonly encountered habitat status			
	<b>Guidpost</b>	The UoA is <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> 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.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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>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>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.</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. SG80 is met.</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 Long lines are low impact gears compared to demersal trawls.</p> <p>This study provides some evidence it can be inferred that the UoA (bottom set longline and set gill net) 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>The trawl fisheries which also occur in these areas are the dominating impact by fisheries on the bottom. Many of these are MSC certified, e.g. Cod fisheries in the Barents Sea and Norwegian Sea.</p> <p>SG100 is met.</p>		

<p><b>PI 2.4.1</b></p>	<p><b>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.</b></p>		
<p><b>b</b></p>	<p>VME habitat status</p>		
<p><b>Guidepost</b></p>	<p>The UoA is <b>unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.</p>	<p>The UoA is <b>highly unlikely</b> to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.</p>	<p>There is <b>evidence</b> 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.</p>
<p><b>Met?</b></p>	<p>Y</p>	<p>Y</p>	<p>Y</p>
<p><b>Justification</b></p>	<p>The joint Russian- Norway research programme and the Mareano mapping programme have identified the location of different types of VMEs as described in Section 5.5.2 <i>Lophelia</i> reefs have been mapped along the coast of northern Norway and the Barents Sea. These occur especially on the NW continental slope of Norway Figure 34,</p> <p>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>Static gears, such as bottom longlines and set gill nets have a lower impact on the benthos (Clark et al 2015). 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. SG 60 and 80 are met.</p> <p>The position of the vessels is verifiable through VMS, and thus evidence is available, together with the study by Clark et al (2015), to show that the UoA (both longline and gill net) is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm. SG 100 is met.</p>		
<p><b>c</b></p>	<p>Minor habitat status</p>		
<p><b>Guidepost</b></p>			<p>There is <b>evidence</b> 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.</p>
<p><b>Met?</b></p>			<p>Y</p>
<p><b>Justification</b></p>	<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>		
<p><b>References</b></p>	<p>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</p>		

<b>PI 2.4.1</b>	<b>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.</b>	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>100</b>
<b>CONDITION NUMBER (if relevant):</b>		

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

<b>PI 2.4.2</b>	<b>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>			
<b>Scoring Issue</b>	SG 60	SG 80	SG 100	
<b>a</b>	Management strategy in place			
	<b>Guidepost</b>	There are <b>measures</b> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a <b>partial strategy</b> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a <b>strategy</b> in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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). Another large scale mapping programme 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. 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. SG80 is met.</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. SG100 is met.</p>		
<b>b</b>	Management strategy evaluation			
	<b>Guidepost</b>	The measures are <b>considered likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some <b>objective basis for confidence</b> that the measures/partial strategy will work, based on <b>information directly about the UoA and/or habitats</b> involved.	<b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on <b>information directly about the UoA and/or habitats</b> involved.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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. 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</p>		

<b>PI 2.4.2</b>		<b>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>		
		<p>safeguarded. VMS provides real time data on the vessels, verifying their proximity to closed areas. SG80 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. This work has not identified any habitat concerns with respect to the ling and tusk fishery (Both for set gill nets and set longlines), as the gears used are considered a comparatively small footprint on the underlying habitat. SG100 is met.</p>		
<b>c</b>	<b>Management strategy implementation</b>			
	<b>Guided post</b>		There is <b>some quantitative evidence</b> that the measures/partial strategy is being implemented successfully.	There is <b>clear quantitative evidence</b> that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	<b>Met?</b>		Y	Y
	<b>Justification</b>	<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. SG80 is met.</p> <p>Clear quantitative evidence indicates 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) SG100 is met.</p>		
<b>d</b>	<b>Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs</b>			
	<b>Guided post</b>	There is <b>qualitative evidence</b> that the UoA complies with its management requirements to protect VMEs.	There is <b>some quantitative evidence</b> 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 <b>clear quantitative evidence</b> 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.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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). 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. SG80 is met.</p>		

<b>PI 2.4.2</b>	<b>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>
	Clear evidence, in the form of vessel specific operational plans for example, were not available to the assessment team. A Recommendation (1) was raised. SG100 not met.
<b>References</b>	WGECO, 2012. Report of the Working Group on Ecosystem Effects of Fishing Activities (WGECO) ICES CM 2012/ACOM:26 <a href="http://www.ices.dk/reports/ACOM/2012/WGECO/wgeco_2012.pdf">http://www.ices.dk/reports/ACOM/2012/WGECO/wgeco_2012.pdf</a> <a href="http://www.mareano.no/english/news/seabed_to_be_mapped">http://www.mareano.no/english/news/seabed_to_be_mapped</a> <a href="http://www.mareano.no/kart/viewer.php?language=en&amp;bbox=592707.1,7846700.0,802279.9,7952140.0">http://www.mareano.no/kart/viewer.php?language=en&amp;bbox=592707.1,7846700.0,802279.9,7952140.0</a> &KARTBILDE_ID=115 <a href="http://www.mareano.no/english/topics/coral_reefs">http://www.mareano.no/english/topics/coral_reefs</a> [List any references here]
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>	<b>95</b>
<b>Recommendation: on d)</b>	<b>1</b>
<b>CONDITION NUMBER (if relevant):</b>	<b>-</b>

**PI 2.4.3 Long Line Gillnet Evaluation Table – Habitats information**

<b>PI 2.4.3</b>		<b>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.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	Information quality			
	<b>Guidepost</b>	<p>The types and distribution of the main habitats are <b>broadly understood</b>.</p> <p>OR</p> <p>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.</p>	<p>The nature, distribution and <b>vulnerability</b> 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: 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>
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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>SG100 is met.</p>		
<b>b</b>	Information adequacy for assessment of impacts			
	<b>Guidepost</b>	<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><b>If CSA is used to score PI 2.4.1 for the UoA:</b> Qualitative information is adequate to estimate the consequence and spatial</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>OR</p> <p><b>If CSA is used to score PI 2.4.1 for the UoA:</b></p>	<p>The physical impacts of the gear on all habitats have been quantified fully.</p>

<b>PI 2.4.3</b>		<b>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.</b>	
	attributes of the main habitats.	Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
<b>Met?</b>	Y	Y	N
<b>Justification</b>	<p>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.</p> <p>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.</p> <p>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 gears 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.</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>		
<b>c</b>	<b>Monitoring</b>		
<b>Guided post</b>		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in habitat distributions over time are measured.
<b>Met?</b>		Y	N
<b>Justification</b>	<p>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.</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>		
<b>References</b>	<p>See also references listed under P2.4.1 and 2.4.2 and analysis in background section 5.5</p> <p>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” (<a href="http://www.mareano.no/english/index.html">http://www.mareano.no/english/index.html</a>); 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>		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>85</b>
<b>CONDITION NUMBER (if relevant):</b>			

**PI 2.5.1 Long Line Gillnet Evaluation Table – Ecosystem outcome**

<b>PI 2.5.1</b>		<b>The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	Ecosystem status			
	<b>Guidpost</b>	The UoA is <b>unlikely</b> 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 <b>highly unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is <b>evidence</b> 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.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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. 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. SG80 is met As there currently is no quantifiable ecosystem model incorporating the roles of ling and tusk, evidence is circumstantial only, SG100 is not met</p>		
<b>References</b>		<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>		

<b>PI 2.5.1</b>	<b>The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.</b>
	ICES 2016 Ecosystem Overview North Sea
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>	<b>80</b>
<b>CONDITION NUMBER (if relevant):</b>	

PI 2.5.2 Long Line Gillnet Evaluation Table – Ecosystem management strategy

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

	<p><b>Justification</b></p>	<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"> <li>• Measures described in P1 to ensure that the fishery does not pose a risk to ling and tusk stocks.</li> <li>• 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</li> <li>• Closed areas to protect the young of a variety of other species.</li> <li>• 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.</li> </ul> <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</p>
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		<p>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>		
<b>b</b>	<b>Management strategy evaluation</b>			
	<b>Guidepost</b>	<p>The <b>measures</b> are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).</p>	<p>There is <b>some objective basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved</p>	<p><b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved</p>
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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.</p> <p>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 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.</p> <p>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.</p> <p>SG100 is not met.</p>		
<b>c</b>	<b>Management strategy implementation</b>			
	<b>Guidepost</b>		<p>There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented successfully</b>.</p>	<p>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).</p>
	<b>Met?</b>		Y	Y
	<b>Justification</b>	<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.</p> <p>Evidence relating to successful implementation at the fleet level includes:</p> <ul style="list-style-type: none"> <li>• Catch records</li> <li>• Vessel inspections</li> <li>• Observer programme (typically for secondary species)</li> <li>• Review and analysis of fishing activity, species caught and habitats affected - by IMR and the inspectorates.</li> <li>• VMS to relate to spatial intensity of fishing effort</li> </ul> <p>SG 100 is met.</p>		

<p><b>References</b></p>	<p>Integrated Management of the Marine Environment of the Barents Sea and the sea areas off the Lofoten Islands (management plan)  <a href="http://www.regjeringen.no/en/dep/md/Selected-topics/hav--og-vannforvaltning/havforvaltning/integrated-management-of-the-barents-sea.html?id=87148">http://www.regjeringen.no/en/dep/md/Selected-topics/hav--og-vannforvaltning/havforvaltning/integrated-management-of-the-barents-sea.html?id=87148</a>  <a href="http://arcticgovernance.custompublish.com/norway-and-integrated-oceans-management-the-case-of-the-barents-sea.4651095-142902.html">http://arcticgovernance.custompublish.com/norway-and-integrated-oceans-management-the-case-of-the-barents-sea.4651095-142902.html</a>                  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 Policy35(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>
<p><b>OVERALL PERFORMANCE INDICATOR SCORE:</b></p>	<p><b>85</b></p>
<p><b>CONDITION NUMBER (if relevant):</b></p>	<p></p>

PI 2.5.3 Long Line Gillnet Evaluation Table – Ecosystem information

<b>PI 2.5.3</b>		<b>There is adequate knowledge of the impacts of the UoA on the ecosystem.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	Information quality			
	<b>Guidepost</b>	Information is adequate to <b>identify</b> the key elements of the ecosystem.	Information is adequate to <b>broadly understand</b> the key elements of the ecosystem.	
	<b>Met?</b>	Y	Y	
	<b>Justification</b>	<p>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.</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>b</b>	Investigation of UoA impacts			
	<b>Guidepost</b>	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but <b>have not been investigated</b> in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and <b>some have been investigated in detail.</b>	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and <b>have been investigated in detail.</b>
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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 ling and tusk. SG80 is met.</p> <p>However, main interactions have not been investigated in detail for ling and tusk. SG100 is not met.</p>		
<b>c</b>	Understanding of component functions			
	<b>Guidepost</b>		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are <b>known</b> .	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 <b>understood</b> .
	<b>Met?</b>		Y	N
	<b>Justification</b>	<p>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.</p> <p>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.</p>		

<b>PI 2.5.3</b>		<b>There is adequate knowledge of the impacts of the UoA on the ecosystem.</b>	
<b>d</b>	Information relevance		
	<b>Guided post</b>	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 <b>and elements</b> to allow the main consequences for the ecosystem to be inferred.
	<b>Met?</b>	Y	N
	<b>Justification</b>	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.	
<b>e</b>	Monitoring		
	<b>Guided post</b>	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.
	<b>Met?</b>	Y	Y
	<b>Justification</b>	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	
<b>References</b>	As in SI 2.5.1 and 2		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>85</b>
<b>CONDITION NUMBER (if relevant):</b>			

## P2 Tusk Pots and Traps (UoA-7)

### PI 2.1.1 Pots and 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
<b>Guidepost</b>	<p>Main primary species are <b>likely</b> 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 <b>expected</b> to ensure that the UoA does not hinder recovery and rebuilding.</p>	<p>Main primary species are <b>highly likely</b> to be above the PRI</p> <p>OR</p> <p>If the species is below the PRI, there is either <b>evidence of recovery</b> or a demonstrably effective strategy in place <b>between all MSC UoAs which categorise this species as main</b>, to ensure that they collectively do not hinder recovery and rebuilding.</p>	<p>There is a <b>high degree of certainty</b> that main primary species are above the PRI <b>and are</b> fluctuating around a level consistent with MSY.</p>
<b>Met?</b>	Y	Y	Y
<b>Justification</b>	<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. 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 none meet the requirement for SG100, the performance indicator scores 80.</p>		
<b>Guidepost</b>			<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>
<b>Met?</b>			Y
<b>Justification</b>	<p>The following species have been identified as Primary 'minor' in the tusk pots and traps fishery: Cod, 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.</p> <p>Table 15 in Section 3.4.3 provides detailed information on reference points and stock status for all the Primary 'main' species identified from the catch profiles (for both the lumpfish fishery, and the tusk and ling fishery; all part of this assessment).</p> <p>From this table it can be seen that all the scoring elements meet the SG100:</p> <p>Thus SG100 is met.</p>		

<b>PI 2.1.1</b>	<b>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>	
<b>References</b>	<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.  <a href="http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/Introduction_to_advice_2016.pdf">http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/Introduction_to_advice_2016.pdf</a>;                  ICES Nov 2016, Section 6.3.25 Norway lobster (<i>Nephrops norvegicus</i>) 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>	
<b>Overall Performance Indicator Score</b>		<b>100</b>
<b>Condition</b>		N/A

**PI 2.1.2 Pots and traps Tusk Evaluation table – Primary species management strategy**

<b>PI 2.1.2</b>	<b>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.</b>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100
<b>a</b>	Management strategy in place		
<b>Guidepost</b>	There are <b>measures</b> 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 <b>partial strategy</b> 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 <b>strategy</b> in place for the UoA for managing main and minor primary species.
<b>Met?</b>	Y	Y	Y
<b>Justification</b>	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>b</b>	Management strategy evaluation		
<b>Guidepost</b>	The measures are considered <b>likely</b> to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some <b>objective basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	<b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
<b>Met?</b>	Y	Y	Y
<b>Justification</b>	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.		
<b>c</b>	Management strategy implementation		
<b>Guidepost</b>		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented successfully</b> .	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).
<b>Met?</b>		Y	Y

<b>PI 2.1.2</b>		<b>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.</b>		
	<b>Justification</b>	<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>		
<b>d</b>	Shark finning			
	<b>Guidepost</b>	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree of certainty</b> that shark finning is not taking place.
	<b>Met?</b>	Not relevant	Not relevant	Not relevant
	<b>Justification</b>			
<b>e</b>	Review of alternative measures			
	<b>Guidepost</b>	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 <b>regular</b> 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 <b>biennial</b> 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.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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</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). 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>SG100 is met</p>		
<b>References</b>		As in 2.1.1		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				<b>100</b>
<b>CONDITION NUMBER (if relevant):</b>				



**PI 2.1.3 Pots and 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
<b>a</b>	Information adequacy for assessment of impact on main primary species			
	<b>Guidpost</b>	Qualitative information is <b>adequate to estimate</b> 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 <b>adequate to assess</b> 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 <b>adequate to assess with a high degree of certainty</b> the impact of the UoA on main primary species with respect to status.
	<b>Met?</b>	Y	Y	
	<b>Justification</b>	Given that there are no 'main' Primary species, good quantitative data is available on all Primary species, 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.  NB: 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 all meet the requirement for SG100, the performance indicator scores 100.		
<b>b</b>	Information adequacy for assessment of impact on minor primary species			
	<b>Guidpost</b>			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	<b>Met?</b>			Y
<b>Justification</b>	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 all meet the requirement for SG100, the performance indicator scores 100.			
<b>c</b>	Information adequacy for management strategy			
	<b>Guidpost</b>	Information is adequate to support <b>measures</b> to	Information is adequate to support a <b>partial strategy</b> to	Information is adequate to support a <b>strategy</b> to manage <b>all</b> primary species, and evaluate with a <b>high</b>

<b>PI 2.1.3</b>		<b>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</b>		
		manage <b>main</b> primary species.	manage <b>main</b> Primary species.	<b>degree of certainty</b> whether the strategy is achieving its objective.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	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 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		
<b>References</b>		See 2.1.1		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				<b>100</b>
<b>CONDITION NUMBER (if relevant):</b>				

**PI 2.2.1 Pots and Traps Tusk Evaluation Table – Secondary species outcome**

<b>PI 2.2.1</b>		<b>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.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Main secondary species stock status</b>			
	<b>Guidpost</b>	Main Secondary species are <b>likely</b> 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 <b>highly likely</b> to be above biologically based limits  OR  If below biologically based limits, there is either <b>evidence of recovery</b> or a <b>demonstrably effective partial strategy</b> 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 <b>high degree of certainty</b> that main secondary species are within biologically based limits.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<p>There are no Secondary ‘main’ species recorded in this fisheries (see Table 14)</p> <p>The amount of Secondary species bycatch is small, percentages ranging from a few kg of a species to 1.32%) of the total catch.</p> <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>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> <p>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.</p>		
<b>b</b>	<b>Minor secondary species stock status</b>			
	<b>Guidpost</b>			Minor secondary species are highly likely to be above biologically based limits.  OR

<b>PI 2.2.1</b>		<b>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.</b>	
			If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	<b>Met?</b>		N
	<b>Justification</b>	<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                      Lemon sole: inadequate information                      Dab: inadequate information                      Lobster: inadequate information                      Monkfish/ Anglerfish: inadequate information</p> <p>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>	
<b>References</b>	Catch composition data Client interviews <a href="http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/pol-nsea.pdf">http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/pol-nsea.pdf</a> <a href="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/tur-nsea.pdf</a> <a href="http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/dab-nsea.pdf">http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2015/2015/dab-nsea.pdf</a>		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>80</b>
<b>CONDITION NUMBER (if relevant):</b>			

**PI 2.2.2 Pots and traps Tusk Evaluation Table – Secondary species management strategy**

<b>PI 2.2.2</b>	<b>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.</b>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100
<b>a</b>	<b>Management strategy in place</b>		
<b>Guidepost</b>	There are <b>measures</b> 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 <b>partial strategy</b> 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 <b>strategy</b> in place for the UoA for managing main and minor secondary species.
<b>Met?</b>	Y	Y	Y
<b>Justification</b>	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>b</b>	<b>Management strategy evaluation</b>		
<b>Guidepost</b>	The measures are considered <b>likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is <b>some objective basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	<b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
<b>Met?</b>	Y	Y	N
<b>Justification</b>	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		
<b>c</b>	<b>Management strategy implementation</b>		
<b>Guidepost</b>		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented successfully</b> .	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).
<b>Met?</b>		Y	N

<b>PI 2.2.2</b>		<b>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.</b>		
	<b>Justification</b>	<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"> <li>- the lack of biological reference points, and uncertainties about the stock and level of fishing mortality for the Secondary 'minor' species.</li> <li>- The uncertainties relating to identification of the several of the bycatch species.</li> </ul> <p>SG100 is not met.</p>		
<b>d</b>	<b>Shark finning</b>			
	<b>Guided post</b>	It is <b>likely</b> that shark finning is not taking place.	It is <b>highly likely</b> that shark finning is not taking place.	There is a <b>high degree of certainty</b> that shark finning is not taking place.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	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		
<b>e</b>	<b>Review of alternative measures to minimise mortality of unwanted catch</b>			
	<b>Justification</b>	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species.	There is a <b>regular</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of main secondary species and they are implemented as appropriate.	There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of <b>unwanted</b> catch of all secondary species, and they are implemented, as appropriate.
	<b>Met?</b>	Y	Y	Y
	<b>Guided post</b>	<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.</p> <p>The regulations are considered, and the technical measures reviewed (SG 60 met), by IMR, Fiskeridirektoratet and stakeholders annually (SG80 and 100 met). 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>SG100 is met.</p>		
<b>References</b>		As in 2.2.1		

<b>PI 2.2.2</b>	<b>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.</b>	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>		

**PI 2.2.3 Pots and traps Tusk Evaluation Table – Secondary species information**

<b>PI 2.2.3</b>	<b>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.</b>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100
<b>a</b>	<b>Information adequacy for assessment of impacts on main secondary species</b>		
<b>Guidepost</b>	<p>Qualitative information is <b>adequate to estimate</b> the impact of the UoA on the main secondary species with respect to status.</p> <p>OR</p> <p><b>If RBF is used to score PI 2.2.1 for the UoA:</b></p> <p>Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.</p>	<p>Some quantitative information is available and <b>adequate to assess</b> the impact of the UoA on main secondary species with respect to status.</p> <p>OR</p> <p><b>If RBF is used to score PI 2.2.1 for the UoA:</b></p> <p>Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.</p>	<p>Quantitative information is available and <b>adequate to assess with a high degree of certainty</b> the impact of the UoA on main secondary species with respect to status.</p>
<b>Met?</b>	Y	Y	
<b>Justification</b>	<p>There are no 'main' Secondary species., Good quantitative data is available on almost all Secondary species (through the catch profile, over the most recent 3 years, 2014-16), 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.</p> <p>SG 80 is met.</p> <p>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 all meet the requirement for SG100, the performance indicator scores 100 in b).</p>		
<b>b</b>	<b>Information adequacy for assessment of impacts on minor secondary species</b>		
<b>Guidepost</b>			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
<b>Met?</b>			Y
<b>Justification</b>	<p>The fishery is under a discard ban, all catch is recorded, and a catch profile has been available for the last few years (2014-16). Some quantitative information is adequate to estimate the impact of the UoA on minor Secondary species with respect to status.</p> <p>Also, 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 all meet the requirement for SG100, the performance indicator scores 100 in b)</p>		

<b>PI 2.2.3</b>		<b>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.</b>		
<b>c</b>		Information adequacy for management strategy		
<b>Guidepost</b>	Information is adequate to support <b>measures</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>partial strategy</b> to manage <b>main</b> secondary species.	Information is adequate to support a <b>strategy</b> to manage <b>all</b> secondary species, and <b>evaluate</b> with a <b>high degree of certainty</b> whether the strategy is <b>achieving its objective</b> .	
<b>Met?</b>	Y	Y	N	
<b>Justification</b>	<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>			
<b>References</b>	See 2.2.1			
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>				

**PI 2.3.1 Pots and traps Tusk Evaluation Table – ETP species outcome**

<b>PI 2.3.1</b>		<b>The UoA meets national and international requirements for the protection of ETP species</b>		
		<b>The UoA does not hinder recovery of ETP species</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	Effects of the UoA on population/stock within national or international limits, where applicable			
	<b>Guidepost</b>	Where national and/or international requirements set limits for ETP species, the effects of the UoA on the population/stock are known and <b>likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, the <b>combined effects of the MSC UoAs</b> on the population/stock are known and <b>highly likely</b> to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a <b>high degree of certainty</b> that the <b>combined effects of the MSC UoAs</b> are within these limits.
	<b>Met?</b>	Not relevant	Not relevant	Not relevant
	<b>Justification</b>	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>b</b>	Direct effects			
	<b>Guidepost</b>	Known direct effects of the UoA are likely to not <b>hinder recovery</b> of ETP species.	Known direct effects of the UoA are <b>highly likely</b> to not <b>hinder recovery</b> of ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the UoA on ETP species.
	<b>Met?</b>	Y	Y	N

	<b>Justification</b>	<p>The catch composition information – Table 14 for the tusk fishery using pots and traps shows the following ETP species bycaught:                  Spurdog, Blue ling 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.</p> <p>The quantity of ETP-fish bycatch is known, there is a discard ban so all catch is recorded, and the catch is small.</p> <p>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.</p> <p>Considering the location where the tusk pots and traps are deployed (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 (below the feeding range of diving seabirds), it is highly likely that the UoAs do not hinder the recovery of ETPs.</p> <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 reports of such entanglements.                  SG60 and 80 are met</p> <p>As actual catch of Skates and rays was not defined to species level, and the stock status of the ETP 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</p>		
<b>c</b>	<b>Indirect effects</b>			
<b>Guidpost</b>		Indirect effects have been considered and are thought to be <b>highly likely</b> 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.	
<b>Met?</b>		Y	Y	

	<b>Justification</b>	<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 (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>Fishing occurs further offshore, outwith the feeding range of most seabird species. There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species, SG 100 is met.</p>
<b>References</b>	<p><a href="https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/Bycatch_of_small_cetaceans_and_other_marine_animals.pdf">https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/Bycatch_of_small_cetaceans_and_oth er_marine_animals.pdf</a>  <a href="http://barentsportal.com/barentsportal_v2.5/index.php/en/">http://barentsportal.com/barentsportal_v2.5/index.php/en/</a>            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. &amp; 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.  <a href="http://www.nina.no/archive/nina/PppBasePdf/rapport/2011/719.pdf">http://www.nina.no/archive/nina/PppBasePdf/rapport/2011/719.pdf</a>  <a href="http://www.fao.org/3/a-bh048e.pdf">http://www.fao.org/3/a-bh048e.pdf</a>  <a href="http://barentsportal.com/barentsportal_v2.5/index.php/en/">http://barentsportal.com/barentsportal_v2.5/index.php/en/</a></p>	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>		

**PI 2.3.2 Pots and Traps Tusk Evaluation Table – ETP species management strategy**

<b>PI 2.3.2</b>	<p><b>The UoA has in place precautionary management strategies designed to:</b></p> <ul style="list-style-type: none"> <li>• meet national and international requirements;</li> <li>• ensure the UoA does not hinder recovery of ETP species.</li> </ul> <p><b>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</b></p>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100
Management strategy in place (national and international requirements)			

<b>PI 2.3.2</b>		<p><b>The UoA has in place precautionary management strategies designed to:</b></p> <ul style="list-style-type: none"> <li>• <b>meet national and international requirements;</b></li> <li>• <b>ensure the UoA does not hinder recovery of ETP species.</b></li> </ul> <p><b>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</b></p>		
<b>a</b>	<b>Guidepost</b>	There are <b>measures</b> in place that minimise the UoA-related mortality of ETP species, and are expected to be <b>highly likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to be <b>highly likely to achieve</b> national and international requirements for the protection of ETP species.	There is a <b>comprehensive strategy</b> in place for managing the UoA's impact on ETP species, including measures to minimise mortality, which is designed to <b>achieve above</b> national and international requirements for the protection of ETP species.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<p>Several seabird species (see Red List) and marine mammals are protected, including those mammals that are hunted (subject to national legislation<sup>76</sup>), 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)<sup>77</sup> 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<sup>78</sup>. 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).</p> <p>Larger fishing vessels (&gt;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.</p> <p>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.</p> <p>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.</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. SG80 is met.</p> <p>The strategy does not achieve outcomes above national and international requirements. SG100 is not met.</p>		
<b>b</b>	Management strategy in place (alternative)			
	<b>Guidepost</b>	There are <b>measures</b> in place that are expected to ensure	There is a <b>strategy</b> in place that is expected to ensure	There is a <b>comprehensive strategy</b> in place for managing ETP species, to

<sup>76</sup> Sealing Act (1951); Saltwater Fishing Act (1983); Participation Act (1999); Marine Resources Act (2008);

<sup>77</sup> 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>

<sup>78</sup> <http://www.xn--miljodirektoratet-oxb.no/english/>

PI 2.3.2	<p><b>The UoA has in place precautionary management strategies designed to:</b></p> <ul style="list-style-type: none"> <li>• meet national and international requirements;</li> <li>• ensure the UoA does not hinder recovery of ETP species.</li> </ul> <p><b>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</b></p>			
		the UoA does not hinder the recovery of ETP species.	the UoA does not hinder the recovery of ETP species.	ensure the UoA does not hinder the recovery of ETP species
	<b>Met?</b>	Not relevant	Not relevant	Not relevant
<b>Justification</b>	NR			
c	Management strategy evaluation			
	<b>Guidepost</b>	The measures are <b>considered likely</b> to work, based on <b>plausible argument</b> (e.g., general experience, theory or comparison with similar fisheries/species).	There is an <b>objective basis for confidence</b> that the measures/strategy will work, based on <b>information</b> 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 <b>quantitative analysis</b> supports <b>high confidence</b> that the strategy will work.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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 "SEAPOPOP 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			
	<b>Guidepost</b>		There is some <b>evidence</b> that the measures/strategy is being implemented successfully.	There is <b>clear evidence</b> that the strategy/comprehensive strategy is being implemented successfully and is achieving its objective as set out in scoring issue (a) or (b).
	<b>Met?</b>		Y	N
	<b>Justification</b>	<p>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 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.</p> <p>There does not appear to be a strategy/ comprehensive strategy, hence SG100 is not met.</p>		

<p><b>PI 2.3.2</b></p>	<p><b>The UoA has in place precautionary management strategies designed to:</b></p> <ul style="list-style-type: none"> <li>• meet national and international requirements;</li> <li>• ensure the UoA does not hinder recovery of ETP species.</li> </ul> <p><b>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</b></p>			
<p><b>e</b></p>	<p>Review of alternative measures to minimize mortality of ETP species</p>			
	<p><b>Guidepost</b></p>	<p>There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.</p>	<p>There is a <b>regular</b> 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>	<p>There is a <b>biennial</b> review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.</p>
	<p><b>Met?</b></p>	<p>Y</p>	<p>Y</p>	<p>Y</p>
	<p><b>Justification</b></p>	<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 14.</p> <p>The regulations are considered, and the technical measures reviewed (meeting SG 60), by IMR, Fiskeridirektoratet and stakeholders annually (meeting SG 80 &amp; 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). This also applies to any non-target species caught, including ETP species.</p> <p>SG100 is met.</p>		
<p><b>References</b></p>	<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.  <a href="http://www.fiskeridir.no/english/fisheries/regulations/acts/the-marine-resources-act">http://www.fiskeridir.no/english/fisheries/regulations/acts/the-marine-resources-act</a>  <a href="http://en.wikipedia.org/wiki/Norwegian_Directorate_for_Nature_Management">http://en.wikipedia.org/wiki/Norwegian_Directorate_for_Nature_Management</a>                      Sealing Act (1951); Saltwater Fishing Act (1983); Participation Act (1999); Marine Resources Act (2008);                      Fangel, K., Aas, Ø., Bærum, K. M., Anker-Nilssen, T. &amp; Christensen- Dalsgaard, S. 2015. Utilisitet bifangst av sjøfugl i norske kystfiskerier med garn og line. - NINA Temahefte 64. 20 s.</p>			
<p><b>OVERALL PERFORMANCE INDICATOR SCORE:</b></p>			<p><b>85</b></p>	
<p><b>CONDITION NUMBER (if relevant):</b></p>				

**PI 2.3.3 Pots and traps Tusk Evaluation Table – ETP species information**

<b>PI 2.3.3</b>		<b>Relevant information is collected to support the management of UoA impacts on ETP species, including:</b>		
		<ul style="list-style-type: none"> <li>• <b>Information for the development of the management strategy;</b></li> <li>• <b>Information to assess the effectiveness of the management strategy; and</b></li> <li>• <b>Information to determine the outcome status of ETP species.</b></li> </ul>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	Information adequacy for assessment of impacts			
	<b>Guidpost</b>	Qualitative information is <b>adequate to estimate</b> the UoA related mortality on ETP species. OR If RBF is used to score PI 2.3.1 for the UoA: Qualitative information is <b>adequate to estimate productivity and susceptibility</b> attributes for ETP species.	Some quantitative information is <b>adequate to assess</b> 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 <b>magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status</b> of ETP species.
	<b>Met?</b>	Y	Y	N

	<b>Justification</b>	<p>The PINRO / IMR Reports (Jakobsen &amp; 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>b</b>	<b>Information adequacy for management strategy</b>			
<b>Guidpost</b>	Information is adequate to support <b>measures</b> to manage the impacts on ETP species.	Information is adequate to measure trends and support a <b>strategy</b> to manage impacts on ETP species.	Information is adequate to support a <b>comprehensive strategy</b> to manage impacts, minimize mortality and injury of ETP species, and evaluate with a <b>high degree of certainty</b> whether a strategy is achieving its objectives.	
<b>Met?</b>	Y	N	N	

	<b>Justification</b>	<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 bird interactions with the pots and traps gear, there was no information or study/ observation to back this up (no observer reports).</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>
<b>References</b>	<p>See also refs. in PI2.4.1</p> <p><a href="http://www.barentsportal.com/barentsportal/index.php/en/joint-norwegian-russian-environmental-status-reports">http://www.barentsportal.com/barentsportal/index.php/en/joint-norwegian-russian-environmental-status-reports</a></p>	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>70</b>
<b>CONDITION NUMBER (if relevant):</b>		<b>9</b>

**PI 2.4.1 Pots and traps Tusk Evaluation Table – Habitats outcome**

<b>PI 2.4.1</b>		<b>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.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	Commonly encountered habitat status			
	<b>Guidepost</b>	The UoA is <b>unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is <b>highly unlikely</b> to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is <b>evidence</b> 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.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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.</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>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>This study provides some evidence from which it can be inferred that the UoA (pots and traps) 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>SG100 is met.</p>		
<b>b</b>	VME habitat status			
	<b>Guidepost</b>	The UoA is <b>unlikely</b> to reduce structure and function of the VME habitats to a point where	The UoA is <b>highly unlikely</b> to reduce structure and function of the VME habitats to a point where there	There is <b>evidence</b> that the UoA is highly unlikely to reduce structure and function of the VME habitats

<b>PI 2.4.1</b>		<b>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.</b>		
		there would be serious or irreversible harm.	would be serious or irreversible harm.	to a point where there would be serious or irreversible harm.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<p>The joint Russian- Norway research programme and the Mareano mapping programme have identified the location of different types of VMEs as described in Section 5.5.2. <i>Lophelia</i> reefs have been mapped along the coast of northern Norway and the Barents Sea. These occur especially on the NW continental slope of Norway (Figure 34).</p> <p>Reefs of <i>Lophelia petusa</i> are found closer inshore in Norwegian territorial waters and are therefore more likely to be encountered by the pots and traps fishery under assessment. The mapping shows <i>Lophelia</i> reefs scattered along the coast, 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>Static gears, such as pots and traps have a lower impact on the benthos (Clark <i>et al</i> 2015). 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>SG 60 and 80 are met.</p> <p>Although the vessels are too small to carry VMS as a statutory requirement, open AIS<sup>79</sup> is becoming increasingly common in the Norwegian small vessel fleet (Client pers.comm May 2017), thus vessel positions can be identified. Therefore evidence of vessel position is available, together with the study by Clark <i>et al</i> (2015), to show that the UoA (pots and traps) is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.</p> <p>SG 100 is met.</p>		
<b>c</b>	<b>Minor habitat status</b>			
	<b>Guided post</b>			There is <b>evidence</b> 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.
	<b>Met?</b>			Y
	<b>Justification</b>	<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 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. The evidence consists of studies by Clark <i>et al</i> 2015 which show the comparatively low impact of static gears.</p> <p>SG 100 is met.</p>		
	<b>References</b>	<p>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</p>		

<sup>79</sup> AIS – automatic identification system, is an automatic vessel tracking system to avoid collisions, and is increasingly used to find the location of vessels worldwide.

<b>PI 2.4.1</b>	<b>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.</b>
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>	<b>100</b>
<b>CONDITION NUMBER (if relevant):</b>	

**PI 2.4.2 Pots and Traps Tusk Evaluation Table – Habitat management strategy**

<b>PI 2.4.2</b>	<b>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>			
<b>Scoring Issue</b>	SG 60	SG 80	SG 100	
<b>a</b>	Management strategy in place			
	<b>Guidepost</b>	There are <b>measures</b> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a <b>partial strategy</b> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a <b>strategy</b> in place for managing the impact of all MSC UoAs/non-MSC fisheries on habitats.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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 programme 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. 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. SG80 is met.</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. SG100 is met.</p>		
<b>b</b>	Management strategy evaluation			
	<b>Guidepost</b>	The measures are <b>considered likely</b> to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some <b>objective basis for confidence</b> that the measures/partial strategy will work, based on <b>information directly about the UoA and/or habitats</b> involved.	<b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on <b>information directly about the UoA and/or habitats</b> involved.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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. 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</p>		

<b>PI 2.4.2</b>		<b>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>		
		<p>safeguarded. VMS provides real time data on the vessels, verifying their proximity to closed areas. SG80 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. 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. SG100 is met.</p>		
<b>c</b>	<b>Management strategy implementation</b>			
	<b>Guidepost</b>		There is <b>some quantitative evidence</b> that the measures/partial strategy is being implemented successfully.	There is <b>clear quantitative evidence</b> that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	<b>Met?</b>		Y	Y
	<b>Justification</b>	<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) SG80 is met.</p> <p>Clear quantitative evidence indicates 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) SG100 is met.</p>		
<b>d</b>	<b>Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs</b>			
	<b>Guidepost</b>	There is <b>qualitative evidence</b> that the UoA complies with its management requirements to protect VMEs.	There is <b>some quantitative evidence</b> 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 <b>clear quantitative evidence</b> 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.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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). SG60 is met.</p> <p>Real time AIS vessel positioning and coast guard monitoring provides some quantitative evidence that the UoA complies. 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. SG100 not met.</p>		
<b>References</b>		<p>WGECO, 2012. Report of the Working Group on Ecosystem Effects of Fishing Activities (WGECO) ICES CM 2012/ACOM:26 <a href="http://www.ices.dk/reports/ACOM/2012/WGECO/wgeco_2012.pdf">http://www.ices.dk/reports/ACOM/2012/WGECO/wgeco_2012.pdf</a></p>		

<b>PI 2.4.2</b>	<b>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>	
	<a href="http://www.mareano.no/english/news/seabed_to_be_mapped">http://www.mareano.no/english/news/seabed_to_be_mapped</a> <a href="http://www.mareano.no/kart/viewer.php?language=en&amp;bbox=592707.1,7846700.0,802279.9,7952140.0">http://www.mareano.no/kart/viewer.php?language=en&amp;bbox=592707.1,7846700.0,802279.9,7952140.0</a> &KARTBILDE_ID=115 <a href="http://www.mareano.no/english/topics/coral_reefs">http://www.mareano.no/english/topics/coral_reefs</a>	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>95</b>
<b>Recommendation: on d)</b>		<b>1</b>
<b>CONDITION NUMBER (if relevant):</b>		<b>-</b>

**PI 2.4.3 Pots and traps Tusk Evaluation Table – Habitats information**

<b>PI 2.4.3</b>		<b>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.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Information quality</b>			
	<b>Guidepost</b>	<p>The types and distribution of the main habitats are <b>broadly understood</b>.</p> <p>OR</p> <p><b>If CSA is used to score PI 2.4.1 for the UoA:</b></p> <p>Qualitative information is adequate to estimate the types and distribution of the main habitats.</p>	<p>The nature, distribution and <b>vulnerability</b> 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><b>If CSA is used to score PI 2.4.1 for the UoA:</b></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>
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<p>Background Section 5.5 provides detail on current habitat information in the Barents Sea and the Norwegian Sea, conveying SG 60 is met.</p> <p>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 – SG 80 is met.</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 the scientific observer scheme, which in turn is 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>SG100 is met.</p>		
<b>b</b>	<b>Information adequacy for assessment of impacts</b>			
	<b>Guidepost</b>	<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><b>If CSA is used to score PI 2.4.1 for the UoA:</b></p> <p>Qualitative information is adequate to estimate the consequence and spatial</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>OR</p> <p><b>If CSA is used to score PI 2.4.1 for the UoA:</b></p>	<p>The physical impacts of the gear on all habitats have been quantified fully.</p>

<b>PI 2.4.3</b>		<b>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.</b>		
		attributes of the main habitats.	Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<p>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 SG 60. 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.</p> <p>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.</p> <p>The physical impact of the gear on all habitat types has not been fully quantified, SG100 is not met.</p>		
<b>c</b>	<b>Monitoring</b>			
	<b>Guided post</b>		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in habitat distributions over time are measured.
	<b>Met?</b>		Y	N
	<b>Justification</b>	<p>The distribution and intensity of fishing activity is monitored through compliance programmes and where possible 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. SG80 is met. Although habitats are monitored, changes in distribution over time are not. SG100 is not met.</p>		
	<b>References</b>	<p>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” (<a href="http://www.mareano.no/english/index.html">http://www.mareano.no/english/index.html</a>); 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;</p>		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				<b>85</b>
<b>CONDITION NUMBER (if relevant):</b>				

**PI 2.5.1 Pots and Traps Tusk Evaluation Table – Ecosystem outcome**

<b>PI 2.5.1</b>		<b>The UoA does not cause serious or irreversible harm to the key elements of ecosystem structure and function.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	Ecosystem status			
	<b>Guidepost</b>	The UoA is <b>unlikely</b> 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 <b>highly unlikely</b> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is <b>evidence</b> 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.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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>		
<b>References</b>	<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>			
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				<b>80</b>

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

**PI 2.5.2 Pots and traps tusk Evaluation Table – Ecosystem management strategy**

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

	<p>ecosystem aspects and influences in formulating future fishery management policy and in 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"><li>• Measures described in P1 to ensure that the fishery does not pose a risk to ling and tusk stocks.</li><li>• 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</li><li>• Closed areas to protect the young of a variety of other species.</li><li>• Closed areas to protect the most valuable/vulnerable benthic habitats in the Norwegian zone, and protocols and gear development initiatives to reduce benthic impacts.</li></ul> <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>b</b>	<b>Management strategy evaluation</b>			
	<b>Guidepost</b>	The <b>measures</b> are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	There is <b>some objective basis for confidence</b> that the measures/partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved	<b>Testing</b> supports <b>high confidence</b> that the partial strategy/strategy will work, based on information directly about the UoA and/or ecosystem involved
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	<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>		
<b>c</b>	<b>Management strategy implementation</b>			
	<b>Guidepost</b>		There is <b>some evidence</b> that the measures/partial strategy is being <b>implemented successfully</b> .	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).
	<b>Met?</b>		Y	N
	<b>Justification</b>	<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"> <li>• Catch records</li> <li>• Vessel inspections</li> <li>• Observer programme (typically for secondary species)</li> <li>• Review and analysis of fishing activity, species caught and habitats affected - by IMR and the inspectorates.</li> <li>• VMS/AIS to relate to spatial intensity of fishing effort</li> </ul> <p>SG 80 is met. 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>		

<p><b>References</b></p>	<p>Integrated Management of the Marine Environment of the Barents Sea and the sea areas off the Lofoten Islands (management plan) <a href="http://www.regjeringen.no/en/dep/md/Selected-topics/hav--og-vannforvaltning/havforvaltning/integrated-management-of-the-barents-sea.html?id=87148">http://www.regjeringen.no/en/dep/md/Selected-topics/hav--og-vannforvaltning/havforvaltning/integrated-management-of-the-barents-sea.html?id=87148</a></p> <p><a href="http://arcticgovernance.custompublish.com/norway-and-integrated-oceans-management-the-case-of-the-barents-sea.4651095-142902.html">http://arcticgovernance.custompublish.com/norway-and-integrated-oceans-management-the-case-of-the-barents-sea.4651095-142902.html</a></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 Policy35(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><a href="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/2016/2016/Greater_North_Sea_Ecoregion-Ecosystem_overview.pdf</a></p> <p><a href="http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/Ecosystem_overview-Norwegian_Sea.pdf">http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/Ecosystem_overview-Norwegian_Sea.pdf</a></p> <p><a href="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">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</a></p>
<p><b>OVERALL PERFORMANCE INDICATOR SCORE:</b></p>	<p><b>80</b></p>
<p><b>CONDITION NUMBER (if relevant):</b></p>	<p></p>

PI 2.5.3 Pots and 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 <b>identify</b> the key elements of the ecosystem.	Information is adequate to <b>broadly understand</b> 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 <b>have not been investigated</b> in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and <b>some have been investigated in detail.</b>	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and <b>have been investigated in detail.</b>
	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 <b>known</b> .	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 <b>understood</b> .
	Met?		Y	N

<b>PI 2.5.3</b>		<b>There is adequate knowledge of the impacts of the UoA on the ecosystem.</b>	
	<b>Justification</b>	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.	
<b>d</b>	Information relevance		
	<b>Guidpost</b>	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 <b>and elements</b> to allow the main consequences for the ecosystem to be inferred.
	<b>Met?</b>	Y	N
	<b>Justification</b>	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.	
<b>e</b>	Monitoring		
	<b>Guidpost</b>	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.
	<b>Met?</b>	Y	Y
	<b>Justification</b>	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	
<b>References</b>	As in SI 2.5.1 and 2 <a href="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/2016/2016/Greater_North_Sea_Ecoregion-Ecosystem_overview.pdf</a> <a href="http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/Ecosystem_overview-Norwegian_Sea.pdf">http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/Ecosystem_overview-Norwegian_Sea.pdf</a>		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>85</b>
<b>CONDITION NUMBER (if relevant):</b>			
<b>Recommendation to assess the occurrence of ghost fishing in this traps and pots fishery.</b>			<b>2</b>

## P3 Management (All UoAs)

### PI 3.1.1 Evaluation Table– Legal and/or customary framework

<p><b>PI 3.1.1</b></p>	<p><b>The management system exists within an appropriate legal and/or customary framework which ensures that it:</b></p> <ul style="list-style-type: none"> <li>• <b>Is capable of delivering sustainability in the UoA(s); and</b></li> <li>• <b>Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood;</b></li> <li>• <b>Incorporates an appropriate dispute resolution framework.</b></li> </ul>		
<p><b>Scoring Issue</b></p>	<p>SG 60</p>	<p>SG 80</p>	<p>SG 100</p>
<p><b>a</b></p>	<p>Compatibility of laws or standards with effective management</p>		
<p><b>Guidpost</b></p>	<p>There is an effective national legal system <b>and a framework for cooperation</b> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2</p>	<p>There is an effective national legal system and <b>organised and effective cooperation</b> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.</p>	<p>There is an effective national legal system and <b>binding procedures governing cooperation with other parties</b> which delivers management outcomes consistent with MSC Principles 1 and 2.</p>
<p><b>Met?</b></p>	<p>Y</p>	<p>Y</p>	<p>Y for lumpfish N for ling and tusk</p>
<p><b>Justification</b></p>	<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</p>		

<p><b>PI 3.1.1</b></p>	<p><b>The management system exists within an appropriate legal and/or customary framework which ensures that it:</b></p> <ul style="list-style-type: none"> <li>• <b>Is capable of delivering sustainability in the UoA(s); and</b></li> <li>• <b>Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood;</b></li> <li>• <b>Incorporates an appropriate dispute resolution framework.</b></li> </ul>		
	<p>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.</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>		
<p><b>b</b></p>	<p>Resolution of disputes</p>		
<p><b>Guidepost</b></p>	<p>The management system incorporates or is subject by law to a <b>mechanism</b> for the resolution of legal disputes arising within the system.</p>	<p>The management system incorporates or is subject by law to a <b>transparent mechanism</b> for the resolution of legal disputes which is <b>considered to be effective</b> in dealing with most issues and that is appropriate to the context of the UoA.</p>	<p>The management system incorporates or is subject by law to a <b>transparent mechanism</b> for the resolution of legal disputes that is appropriate to the context of the fishery and has been <b>tested and proven to be effective</b>.</p>
<p><b>Met?</b></p>	<p>Y</p>	<p>Y</p>	<p>Y for lumpfish N for ling and tusk</p>
<p><b>Justification</b></p>	<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</p>		

<p>PI 3.1.1</p>	<p><b>The management system exists within an appropriate legal and/or customary framework which ensures that it:</b></p> <ul style="list-style-type: none"> <li>• <b>Is capable of delivering sustainability in the UoA(s); and</b></li> <li>• <b>Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood;</b></li> <li>• <b>Incorporates an appropriate dispute resolution framework.</b></li> </ul>		
	<p>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, 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.</p>		
<p><b>c</b></p>	<p>Respect for rights</p>		
<p><b>Guidepost</b></p>	<p>The management system has a mechanism to <b>generally respect</b> 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.</p>	<p>The management system has a mechanism to <b>observe</b> 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.</p>	<p>The management system has a mechanism to <b>formally commit</b> 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.</p>
<p><b>Met?</b></p>	<p>Y</p>	<p>Y</p>	<p>Y</p>
<p><b>Justification</b></p>	<p>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.</p> <p>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.</p>		

<p><b>PI 3.1.1</b></p>	<p><b>The management system exists within an appropriate legal and/or customary framework which ensures that it:</b></p> <ul style="list-style-type: none"> <li>• <b>Is capable of delivering sustainability in the UoA(s); and</b></li> <li>• <b>Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood;</b></li> <li>• <b>Incorporates an appropriate dispute resolution framework.</b></li> </ul>
<p><b>References</b></p>	<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>
<p><b>OVERALL PERFORMANCE INDICATOR SCORE:</b></p>	<p><b>100 for lumpfish</b></p> <p><b>85 for ling</b></p>

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

**PI 3.1.2 Evaluation Table– Consultation, roles and responsibilities**

<b>PI 3.1.2</b>	<b>The management system has effective consultation processes that are open to interested and affected parties.</b>			
	<b>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</b>			
<b>Scoring Issue</b>	SG 60	SG 80	SG 100	
<b>a</b>	Roles and responsibilities			
	<b>Guidpost</b>	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>generally understood</b> .	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>explicitly defined and well understood for key areas</b> of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <b>explicitly defined and well understood for all areas</b> of responsibility and interaction.
	<b>Met?</b>	Y	Y	Y for lumpfish N for ling and tusk
	<b>Justification</b>	<p>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).</p> <p>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 <i>key</i> 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 <i>all</i> areas of responsibility and interaction. SG 100 is not met for ling and tusk.</p>		
<b>b</b>	Consultation processes			
	<b>Guidpost</b>	The management system includes consultation processes that <b>obtain relevant information</b> from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that <b>regularly seek and accept</b> relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that <b>regularly seek and accept</b> relevant information, including local knowledge. The management system demonstrates consideration of the information and <b>explains how it is used or not used</b> .

<b>PI 3.1.2</b>		<b>The management system has effective consultation processes that are open to interested and affected parties.</b>	
		<b>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</b>	
	<b>Met?</b>	Y	Y
	<b>Justification</b>	<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>	
<b>c</b>	Participation		
	<b>Guidpost</b>	The consultation process <b>provides opportunity</b> for all interested and affected parties to be involved.	The consultation process provides <b>opportunity and encouragement</b> for all interested and affected parties to be involved, and <b>facilitates</b> their effective engagement.

<b>PI 3.1.2</b>		<b>The management system has effective consultation processes that are open to interested and affected parties.</b>	
		<b>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</b>	
	<b>Met?</b>		Y
	<b>Justification</b>	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.	
<b>References</b>	<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>		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>100 for lumpfish</b> <b>95 for ling and tusk</b>
<b>CONDITION NUMBER (if relevant):</b>			

PI 3.1.3 Evaluation Table– Long term objectives

<b>PI 3.1.3</b>		<b>The management policy has clear long-term objectives to guide decision-making that are consistent with MSC fisheries standard, and incorporates the precautionary approach.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Objectives</b>			
	<b>Guidepost</b>	Long-term objectives to guide decision-making, consistent with the MSC fisheries standard and the precautionary approach, are <b>implicit</b> within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach are <b>explicit</b> within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC fisheries standard and the precautionary approach, are <b>explicit within and required by</b> management policy.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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>		
<b>References</b>	<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 viltlevende 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.</p>			

<b>PI 3.1.3</b>	<b>The management policy has clear long-term objectives to guide decision-making that are consistent with MSC fisheries standard, and incorporates the precautionary approach.</b>	
	1224/2009 and repealing Council Regulations (EC) No. 2371/2002 and (EC) No. 639/2004 and Council Decision 2004/585/EC.  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).	
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>		<b>100</b>
<b>CONDITION NUMBER (if relevant):</b>		

**PI 3.2.1 Evaluation Table - Fishery-specific objectives**

<b>PI 3.2.1</b>		<b>The fishery-specific management system has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	<b>Objectives</b>			
	<b>Guidepost</b>	<b>Objectives</b> , which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <b>implicit</b> within the fishery-specific management system.	<b>Short and long-term objectives</b> , which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are <b>explicit</b> within the fishery-specific management system.	<b>Well defined and measurable short and long-term objectives</b> , which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery-specific management system.
	<b>Met?</b>	Y	Y	P
	<b>Justification</b>	Well defined and measurable short and long-term objectives consistent with achieving the outcomes of MSC Principles 1 and 2 are explicit in the Norwegian Marine Resources Act and supporting legislation on the Norwegian ling, tusk and lumpfish fishery (meeting SG 80). This includes objectives to maintain fish stocks at sustainable levels and protect other parts of the ecosystem, such as habitats. These objectives are well defined and measurable for P1, but less so for P2 issues. Hence, a partial score is achieved at SG 100.		
<b>References</b>		J-125-2016: Forskrift om utøvelse av fisket i sjøen, 2016 (Regulation on the Execution of Marine Fisheries). Lov om forvaltning av viltlevende marine ressurser (havressurslova), LOV-2008-06-06-37, 2008 (Marine Resources Act).		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>				<b>90</b>
<b>CONDITION NUMBER (if relevant):</b>				

**PI 3.2.2 Evaluation Table – Decision-making processes**

<b>PI 3.2.2</b>	<b>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.</b>		
<b>Scoring Issue</b>	SG 60	SG 80	SG 100
<b>a</b>	Decision-making processes		
<b>Guidepost</b>	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are <b>established</b> decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
<b>Met?</b>	Y	Y	
<b>Justification</b>	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>b</b>	Responsiveness of decision-making processes		
<b>Guidepost</b>	Decision-making processes respond to <b>serious issues</b> 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 <b>serious and other important issues</b> 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 <b>all issues</b> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
<b>Met?</b>	Y	Y	Y
<b>Justification</b>	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.		
	Use of precautionary approach		

<b>PI 3.2.2</b>		<b>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.</b>		
<b>c</b>	<b>Guidepost</b>		Decision-making processes use the precautionary approach and are based on best available information.	
	<b>Met?</b>		Y	
	<b>Justification</b>	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.		
<b>d</b> Accountability and transparency of management system and decision-making process				
<b>d</b>	<b>Guidepost</b>	Some information on the fishery's performance and management action is generally available on request to stakeholders.	<b>Information on the fishery's performance and management action is available on request</b> , 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 <b>provides comprehensive information on the fishery's performance and management actions</b> and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	<b>Met?</b>	Y	Y	N
	<b>Justification</b>	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.		
<b>e</b> Approach to disputes				
<b>e</b>	<b>Guidepost</b>	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.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	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		

<p><b>PI 3.2.2</b></p>	<p><b>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.</b></p>	
	<p>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, 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.</p>	
<p><b>References</b></p>	<p>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.</p> <p>Lov om forvaltning av viltlevande marine ressursar (havressurslova), LOV-2008-06-06-37, 2008 (Marine Resources 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><b>OVERALL PERFORMANCE INDICATOR SCORE:</b></p>		<p><b>95</b></p>
<p><b>CONDITION NUMBER (if relevant):</b></p>		

**PI 3.2.3 Evaluation Table– Compliance and enforcement**

<b>PI 3.2.3</b>		<b>Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.</b>		
<b>Scoring Issue</b>		SG 60	SG 80	SG 100
<b>a</b>	MCS implementation			
	<b>Guidepost</b>	Monitoring, control and surveillance <b>mechanisms</b> exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance <b>system</b> has been implemented in the fishery and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A <b>comprehensive</b> 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.
	<b>Met?</b>	Y	Y	Y
	<b>Justification</b>	<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</p>		

<b>PI 3.2.3</b>	<b>Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.</b>		
	<p>Trade, Industry and Fisheries. 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.</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>b</b>	<b>Sanctions</b>		
<b>Guidpost</b>	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, <b>are consistently applied</b> and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, <b>are consistently applied and demonstrably</b> provide effective deterrence.
<b>Met?</b>	Y	Y	Y
<b>Justification</b>	<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>		
<b>c</b>	<b>Compliance</b>		
<b>Guidpost</b>	Fishers are <b>generally thought</b> 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.	<b>Some evidence exists</b> 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 <b>high degree of confidence</b> that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
<b>Met?</b>	Y	Y	Y
<b>Justification</b>	<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>		

<b>PI 3.2.3</b>		<b>Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with.</b>	
		<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>	
<b>d</b>	Systematic non-compliance		
	<b>Guidpost</b>		There is no evidence of systematic non-compliance.
	<b>Met?</b>		Y
	<b>Justification</b>	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.	
<b>References</b>	<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>		
<b>OVERALL PERFORMANCE INDICATOR SCORE:</b>			<b>100</b>
<b>CONDITION NUMBER (if relevant):</b>			

PI 3.2.4 Evaluation Table – Monitoring and management performance evaluation

PI 3.2.4	<p><b>There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives.</b></p> <p><b>There is effective and timely review of the fishery-specific management system.</b></p>		
Scoring Issue	SG 60	SG 80	SG 100
a	Evaluation coverage		
Guidepost	There are mechanisms in place to evaluate <b>some</b> parts of the fishery-specific management system.	There are mechanisms in place to evaluate <b>key</b> parts of the fishery-specific management system	There are mechanisms in place to evaluate <b>all</b> parts of the fishery-specific management system.
Met?	Y	Y	N
Justification	<p>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.</p> <p>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.</p>		
b	Internal and/or external review		
Guidepost	The fishery-specific management system is subject to <b>occasional internal</b> review.	The fishery-specific management system is subject to <b>regular internal and occasional external</b> review.	The fishery-specific management system is subject to <b>regular internal and external</b> review.
Met?	Y	Y	N
Justification	<p>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,</p>		

<p><b>PI 3.2.4</b></p>	<p><b>There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives.</b></p> <p><b>There is effective and timely review of the fishery-specific management system.</b></p>	
	<p>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 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>	
<p><b>References</b></p>	<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 avtalane 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 parallellrevisjonen 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>	
<p><b>OVERALL PERFORMANCE INDICATOR SCORE:</b></p>		<p><b>80</b></p>
<p><b>CONDITION NUMBER (if relevant):</b></p>		

## Appendix 1.2 Conditions and Recommendations

### Lumpfish

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

<b>Performance Indicator</b>	<b>PI 1.2.2 There are well defined and effective harvest control rules (HCRs) in place</b>
<b>Score: 75</b>	1.2.2 (a) <b>Well defined</b> HCRs are <b>in place</b> that <b>ensure</b> that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock <b>fluctuating around</b> a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.
<b>Rationale</b>	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.
<b>Condition</b>	The client shall 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.
<b>Milestones</b>	1 <sup>st</sup> 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 <sup>nd</sup> 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 <sup>rd</sup> Audit. The Client shall demonstrate that a HCR has been adopted and is being implemented. No resvision (75).  4 <sup>th</sup> Audit. The Client shall demonstrate that a HCR has been implemented. PI 1.2.2 is rescored and SG 80 is met
<b>Client action plan</b>	<b>In conjunction with condition 2:</b> <b>Action 1.1</b> 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.  <b>Action 1.2</b> In year 2 NFA will evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.  <b>Action 1.3</b> 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.  <b>Action 1.4</b> If, successful the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.

<b>Consultation on condition</b>	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 2 Lumpfish PI 1.2.4b Missing explicitly defined reference point (UoA-12)**

<b>Performance Indicator</b>	<b>1.2.4 There is an adequate assessment of the stock status</b>
<b>Score 75</b>	The SG 80 was not met because there is no PRI and MSY reference points or proxies defined for such points.
<b>Rationale</b>	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.
<b>Condition</b>	The Client shall in cooperation with relevant institutions develop appropriate reference points and seek adoption of these reference points at the appropriate research level.
<b>Milestones</b>	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) 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) Year 3: The Client shall present proposal and evidence that this proposal is discussed at the appropriate level. (75) Year 4: The Client shall present the outcome of the process. The PI 1.2.4b to be rescored and should meet SG 80.
<b>Client action plan</b>	<b>Action 2.1</b> 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. <b>Action 2.2</b> In year 2 NFA will evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate. <b>Action 2.3</b> 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. <b>Action 2.4</b> If, successful the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.
<b>Consultation on condition</b>	See condition 1

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

<b>Performance Indicator</b>	<b>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</b> b) Known direct effects of the UoA are highly likely to not hinder recovery of ETP species (Lumpfish)
<b>Score</b>	70
<b>Rationale</b>	It is known from research that seabirds can get caught in the gillnets. There is no direct bird bycatch data from the lumpfish fishery

<b>Condition</b>	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.
<b>Milestones</b>	<p>1<sup>st</sup> Audit: Demonstrate that steps have been taken to introduce such a recording system across the lumpfish fleet. No revision of score - 75</p> <p>2<sup>nd</sup> Audit: Demonstrate that a system is being implemented which records seabird interactions across the fleet, . No revision - 75</p> <p>3<sup>rd</sup> Audit: Demonstrate that seabird interactions are being recorded by the lumpfish fishery. No Revision – 75</p> <p>4<sup>th</sup> Audit: Demonstrate that seabird interactions continue to be recorded and that these records are being compiled and analysed. SG80 is reached.</p>
<b>Client action plan</b>	<p><b>Action 3.1</b> 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><b>Action 3.2</b> In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed, although degree of reporting is expected to improve over years.</p> <p><b>Action 3.3</b> Data will be analyzed at 4<sup>th</sup> audits, and any trends will be shown. However, it seems highly likely that the data series will still be in its infancy at this stage, and that the indirect catch figures we have today through surveys of fishermen will still be superior in year 4. However, this is expected to further improve.</p>
<b>Consultation on condition</b>	See condition 1

**Condition 4 Lumpfish PI 2.3.2 Strategy to minimise seabird by-catch (UoA 12)**

<b>Performance Indicator</b>	<p><b>PI 2.3.2 The UoA has in place precautionary management strategies designed to:</b></p> <ul style="list-style-type: none"> <li>• meet national and international requirements;</li> <li>• ensure the UoA does not hinder recovery of ETP species.</li> </ul> <p><b>Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species.</b></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>
<b>Score</b>	75
<b>Rationale</b>	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. These measures do not amount to a strategy. No such strategy was indicated at during the assessment.
<b>Condition</b>	Design and implement a strategy to minimise seabird bycatch.

<p><b>Milestones</b></p>	<p>1<sup>st</sup> Audit: The client has to show that a strategy has been designed and will be implemented. No revision – 75</p> <p>2<sup>nd</sup> Audit: The client has to provide evidence that the strategy is being implemented and is actively followed by the fishers. No revision – 75</p> <p>3<sup>rd</sup> Audit: The client has to provide continued evidence that the strategy is being implemented successfully, and is now part of the management of the fishery. As a matter of course. No revision – 75</p> <p>4<sup>th</sup> Audit: The client has to provide continued evidence that the strategy is being implemented. SG80 is met</p>
<p><b>Client action plan</b></p>	<p><b>Action 4.1</b>                  NFA will have meetings with the IMR, Directorate of Fisheries, and –if necessary- other research bodies to explore potential seabird bycatch mitigation strategies</p> <p><b>Action 4.2</b>                  In year 2 a strategy will be drafted and proposed by the NFA to the Directorate of Fisheries.</p> <p><b>Action 4.3</b>                  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>
<p><b>Consultation on condition</b></p>	<p>See condition 1</p>

**Condition 5 Lumpfish PI 2.3.3b Information to support ETP strategy (UoA 12)**

<p><b>Performance Indicator</b></p>	<p><b>PI 2.3.3 Relevant information is collected to support the management of UoA impacts on ETP species, including:</b></p> <ul style="list-style-type: none"> <li>• <b>Information for the development of the management strategy;</b></li> <li>• <b>Information to assess the effectiveness of the management strategy; and</b></li> </ul> <p><b>Information to determine the outcome status of ETP species</b></p> <p>b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Lumpfish)</p>
<p><b>Score</b></p>	<p>70</p>
<p><b>Rationale</b></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>
<p><b>Condition</b></p>	<p>Design and implement an on-board recording system to measure trends in all seabird bycatch,</p>
<p><b>Milestones</b></p>	<p>1<sup>st</sup> 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. No revision – 70</p> <p>2<sup>nd</sup> Audit: Demonstrate that the ETP/ seabird recording system is being implemented across the lumpfish fishery, and information is noted on a per trip basis. No revision – 70</p> <p>3<sup>rd</sup> Audit: Demonstrate that the ETP/seabird recording system is being applied across the fishery. No revision – 70</p> <p>4<sup>th</sup> Audit: Demonstrate that ETP/seabird interaction (including ‘no interaction’) data is being compiled and forms part of an analysis. The SG80 is met</p>
<p><b>Client action plan</b></p>	<p><b>Action 5.1</b> 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><b>Action 5.2</b> In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed, although degree of reporting is expected to improve over years.</p> <p><b>Action 5.3</b> Data will be analysed at 4<sup>th</sup> audits, and any trends will be shown. However, it seems highly likely that the data series will still be in its infancy at this stage, and that the indirect catch figures we have today through surveys of fishermen will still be superior in year 4. However, this is expected to further improve.</p>
<p><b>Consultation on condition</b></p>	<p>See condition 1</p>

## Ling and Tusk

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

<b>Performance Indicator</b>	<b>PI 1.2.2 There are well defined and effective harvest control rules (HCRs) in place</b>
<b>Score: 75</b>	1.2.2 (a) <b>Well defined</b> HCRs are <b>in place</b> that <b>ensure</b> that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock <b>fluctuating around</b> a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.
<b>Rationale</b>	PI 1.2.2a 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 based 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 include 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
<b>Condition</b>	The client shall encourage the development and implementation of a HCR that ensures that the exploitation rate is reduced as PRI is approached, Further, the Client shall 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
<b>Milestones</b>	1 <sup>st</sup> 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)  2 <sup>nd</sup> 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 <sup>rd</sup> Audit. The Client shall demonstrate that a HCR has been adopted and is being implemented. No resvision (75)  4 <sup>th</sup> Audit. The Client shall demonstrate that a HCR has been implemented. PI 1.2.2 is rescored and SG 80 is met
<b>Client action plan</b>	<b>In conjunction with condition 8:</b> <b>Action 6.1</b> 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).  <b>Action 6.2</b> In year 2 NFA evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.  <b>Action 6.3</b>

	<p>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><b>Action 6.4</b> If successful, the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.</p>
<b>Consultation on condition</b>	See condition 1

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

<b>Performance Indicator</b>	<b>1.2.4 There is an adequate assessment of the stock status</b>
<b>Score 75</b>	The SG 80 was not met because there is no PRI and MSY reference points or proxies defined for such points.
<b>Rationale</b>	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.
<b>Condition</b>	The Client shall in cooperation with relevant institutions develop appropriate reference points and seek adoption of these reference points at the appropriate research level
<b>Milestones</b>	<p>1<sup>st</sup> 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>2<sup>nd</sup> 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>3<sup>rd</sup> Audit: The Client shall present proposal and evidence that this proposal is discussed at the appropriate level. (75)</p> <p>4<sup>th</sup> 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>
<b>Client action plan</b>	<p><b>In conjunction with condition 7:</b></p> <p><b>Action 7.1</b> 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><b>Action 7.2</b></p>

	<p>In year 2 NFA evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.</p> <p><b>Action 7.3</b> 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><b>Action 7.4</b> If successful, the HCR with reference points will be implemented and NFA will report in year four for a rescoreing at annual audit.</p>
<b>Consultation on condition</b>	See condition 1

**Condition 8 Ling and Tusk PI 2.3.3b Information to reliably measure trends ETP species (UoA 1-8)**

<p><b>Performance Indicator</b></p>	<p><b>PI 2.3.3 Relevant information is collected to support the management of UoA impacts on ETP species, including:</b></p> <ul style="list-style-type: none"> <li>• <b>Information for the development of the management strategy;</b></li> <li>• <b>Information to assess the effectiveness of the management strategy; and</b></li> </ul> <p><b>Information to determine the outcome status of ETP species</b></p> <p>b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Ling and Tusk)</p>
<p><b>Score</b></p>	<p>70</p>
<p><b>Rationale</b></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, mammals 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>
<p><b>Condition</b></p>	<p>Design and implement an on-board recording system to measure trends in all ETP bycatch,</p>
<p><b>Milestones</b></p>	<p>1<sup>st</sup> 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. No revision – 70</p> <p>2<sup>nd</sup> Audit: the client has to provide evidence that the ETP log is being used by the fishers and that incoming data is being analysed. No revision – 70</p> <p>3<sup>rd</sup> Audit: the client has to provide evidence that the incoming data is being analysed to show trends. No revision – 70</p> <p>4<sup>th</sup> Audit: The client has to provide evidence that the data is being analysed to show trends. The SG80 is met</p>
<p><b>Client action plan</b></p>	<p><b>Action 8.1</b> 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><b>Action 8.2</b> In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed, although degree of reporting is expected to improve over years.</p> <p><b>Action 8.3</b> Data will be analyzed at 4<sup>th</sup> audit, and any trends will be shown. However, it seems highly likely that the data series will still be in its infancy at this stage, and that the indirect catch figures we have today through surveys of fishermen will still be superior in year 4. However, this is expected to further improve.</p>
<p><b>Consultation on condition</b></p>	<p>See condition 1</p>

**Condition 9 Tusk PI 2.3.3b Pots and Traps Information to reliably measure trends in ETP species (UoA 10)**

<p><b>Performance Indicator</b></p>	<p><b>PI 2.3.3 Relevant information is collected to support the management of UoA impacts on ETP species, including:</b></p> <ul style="list-style-type: none"> <li>• <b>Information for the development of the management strategy;</b></li> <li>• <b>Information to assess the effectiveness of the management strategy; and</b></li> </ul> <p><b>Information to determine the outcome status of ETP species</b></p> <p>b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Tusk – pots and traps)</p>
<p><b>Score</b></p>	<p>70</p>
<p><b>Rationale</b></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, mammals 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 to species level 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>
<p><b>Condition</b></p>	<p>Design and implement an on-board recording system to measure trends in all ETP bycatch,</p>
<p><b>Milestones</b></p>	<p>1<sup>st</sup> 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. No revision – 70</p> <p>2<sup>nd</sup> Audit: the client has to provide evidence that the ETP log is being used by the fishers and that incoming data is being analysed. No revision – 70</p> <p>3<sup>rd</sup> Audit: the client has to provide evidence that the incoming data is being analysed to show trends. No revision – 70</p> <p>4<sup>th</sup> Audit: The client has to provide evidence that the data is being analysed to show trends. The SG80 is met</p>
<p><b>Client action plan</b></p>	<p><b>Action 9.1</b> 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><b>Action 9.2</b> In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed, although degree of reporting is expected to improve over years.</p> <p><b>Action 9.3</b> Data will be analyzed at 4<sup>th</sup> audit, and any trends will be shown. However, it seems highly likely that the data series will still be in its infancy at this stage, and that the indirect catch figures we have today through surveys of fishermen will still be superior in year 4. However, this is expected to further improve.</p>
<p><b>Consultation on condition</b></p>	<p>See condition 1</p>

## **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.

### **Appendix 1.3 Risk Based Framework (RBF) Outputs**

Not applicable

## Appendix 2 Peer Review Reports

### Peer Reviewer 1

#### Summary of Peer Reviewer Opinion

<b><i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i></b>	<b>No</b>	<b>CAB Response</b> The assessment team does not agree, see detailed comments to the specific objections in the following
<p><u>Justification:</u></p> <p>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.</p> <p>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.</p> <p>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).</p> <p>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?</p> <p>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).</p> <p>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”.</p> <p>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</p>		<p><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></p> <p><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></p> <p><u>UoA-3a (Tusk in VIb longline) and UoA-4a (Tusk in VIb gillnet) inserted; an oversight; apologies</u></p> <p><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></p>

for 2012, in many cases with the application of the 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

The PRI and MSY reference points are integrated and should be clarified hence the Condition.

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.

*certified (April 2017). These two fisheries however exploit 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

*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>evidence that the (landings?) data presented closely 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 “<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>” and “<i>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.</i>”</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) <b>at the SG60 level, “measures”</b> for a UoA that encounters VMEs <b>shall include</b>, 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>2.</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><b>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</b>  <b>[Reference: FCR 7.11.1 and sub-clauses]</b></p>	<p>Yes</p>	<p><b>CAB Response</b></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><b>Do you think the client action plan is sufficient to close the conditions raised?</b>  <b>[Reference FCR 7.11.2-7.11.3 and sub-clauses]</b></p>	<p>Yes, although</p>	<p><b>CAB Response</b></p>
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	<b>letter of support?</b>	
<p><u><i>Justification:</i></u></p> <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.</p>		

**Lumpfish (Principle 1 and Principle 2)**

<b>Performance Indicator</b>	<b>Has all available relevant information been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> 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'.	<b>CAB Response</b>
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.	
1.2.2 Lumpfish	Yes	Yes	Yes	It may be semantics, but the condition text states that "The client should encourage the	The text is formulated to be polite. The condition is changed as requested.

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				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 impemented.' 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...'	
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 'should...', but otherwise it's OK.	
2.1.1 Lumpfish	Yes, mainly	Yes, but I think the score should be higher.	N/A	Sla: As there are no Main primary species, I think the score here is	Sla The 100 score is a slightly perverse scoring but it is based on advice by MSC, the scoring is



Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.  Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
				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.	
2.1.2 Lumpfish	Yes	No	N/A	<p>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 "<b>Testing supports high confidence that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.</b>"</p> <p>-----</p> <p>Sld is scored correctly here: "Not applicable – none of the primary species are sharks". In every other place in the document it is not.</p>	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 the coastal demersal fisheries. The lumpfish fishery is not a major issue.

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>-----                      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 <b>are</b> implemented.</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>
2.1.3 Lumpfish	Yes	No	N/A	<p>S1b 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."  The scoring text then states: "Each element (minor species) is assessed against Scoring Issue</p>	<p>The discard ban is faithfully observed and include sea birds. Information presented to assessment team suggest that compliance is high in 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)	<b>Justification</b> 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
				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)"  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.	
2.2.1 Lumpfish	No	No	N/A	Scoring this PI illustrates my concern that the fishery may not performing as well as it has been scored. The report states:  "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.	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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				<p>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> <p>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.</p>	
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,	The Norwegian fisheries law includes a clear strategy for avoiding by-catch that being marine mammals or sea birds. The fisheries law authorises

<b>Performance Indicator</b>	<b>Has all available relevant information been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> 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'.	<b>CAB Response</b>
				<p>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?).</p> <p>Same comments apply to SId (sharks) and SIe (alternative measures) as for PI 2.1.2 – these need to be scored appropriately.</p>	<p>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.</p> <p>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.</p>
2.2.3 Lumpfish	No	No	N/A	<p>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.</p>	<p>The 'unspecified' is mainly 'Not elsewhere identified' and cover a range of fishes where the catch is only a few specimen annually.</p>

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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.	
2.3.2 Lumpfish	Yes	Yes in general	Yes	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 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.  ----- In this case, the condition appears to be entirely appropriate.	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'

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2.3.3 Lumpfish	Yes	Yes	Yes	Scoring seems appropriate.  ----- The condition appears to be entirely appropriate.	
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	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.	The lumpfish fishery is 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.

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				<p>-----</p> <p>SId                      The small (&lt;13m) vessels in this 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?</p>	<p>According to the information received security concerns including AIS is prominent in the fishery</p>
2.4.3 Lumpfish	Yes	Yes but see note	N/A	<p>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.</p>	Scoring corrected
2.5.1 Lumpfish	Yes, possibly	Yes, possibly	N/A	<p>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?</p>	<p>The fishery is minute in the context of the Barents Sea ecosystem and the outtake is minimal compared to other fisheries in the Barents Sea</p>

<b>Performance Indicator</b>	<b>Has all available relevant information been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> 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'.	<b>CAB Response</b>
				<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 that ensures that the key elements of the ecosystem</i></p>	<p>(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 references to fundamental ICES ecosystem overviews. Justification text has been clarified, references to the report text is inserted.</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)	<b>Justification</b> 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>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) <b>The set of scoring elements</b> (e.g. species or habitats) that have been considered in <b>each outcome PI in Principles 1 and 2</b>").</i></p>	
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

<p>1.1.1 Ling and Tusk</p>	<p>No</p>	<p>No</p>	<p>N/A</p>	<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 Slb is inadequatley 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 calculated (UoAs 3, 4, 7, 8, 10) are also somewhat inadequate. For Slb, 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</i></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 (<math>\exp(1.645 \cdot 0.2)</math>) that a MSY proxy (<math>MSY = Bpa</math>) would be around <math>1.4 \cdot MSY</math> 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>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 “...<i>a robust and precautionary harvest strategy in place</i>”. 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 onely 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 detemine that discarding is negligible – because fishermen mark zero discards on their logsheets, or through some other method?</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</p>	<p>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 examles 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>The fishery operates under the Norwegian discard ban which is assessed to being met with high compliance.</p>
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				<p>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 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	<p>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...'.</p>	<p>Change has been introduced</p>
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</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>

				that 20% of the 1500 at-sea inspections resulted in a warning (for what?) do not provide high confidence.	
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>Sla 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> <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>	Text is clarified

				The condition appears in general to be appropriate, although, again, 'shall' is better than 'should'.	
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 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</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>This means that Tusk and ling are assessed twice which cannot be the intention.</p>

				<p>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>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	<p>Same comment as for PI 2.1.1 Longline.</p>	<p>See answer above</p>
2.1.2 LL and GN	Yes	Possibly Yes	N/A	<p>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> <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:                  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 &amp; 100). Where necessary, measures <b>can be</b> 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 <b>can be</b> changed</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>

				<p>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 <b>are</b> 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>	
2.1.3 LL and GN	Yes	ProbablyYes		Notwithstanding the concern about the accuracy/reliability of the catch data and what the enforcement warnings are issued for, this is OK.	The catch data are believed to be of high 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</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>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 Sld (sharks) and Sle (alternative measures) as for PI 2.1.2 – these need to be scored appropriately.</p>	Text changed
2.2.3 LL and GN	Yes	No	N/A	<p>Noting again that Table 13 indicates that there are ‘Other 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>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.</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>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 gilnet fishery and the Greenland halibut gillnet fishery as being of particular concern (Fngel 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>Essentially, it is far from clear how the fishery meets SG80 - Known direct effects of the UoA are <b>highly likely</b> to not <b>hinder recovery</b> of ETP species. As such, although there is a condition 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, <a href="http://www.nwstraitsfoundation.org/project/derelict-fishing-gear-removal/">http://www.nwstraitsfoundation.org/project/derelict-fishing-gear-removal/</a> 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 <a href="https://academic.oup.com/icesims/article/66/2/323/595693/Lost-and-abandoned-nets-in-deep-water-gillnet">https://academic.oup.com/icesims/article/66/2/323/595693/Lost-and-abandoned-nets-in-deep-water-gillnet</a> 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 (&gt;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 <b>should be</b> 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 scoring tone of 2.3.1/2.3.2 and more negative scoring tone of 2.3.3.</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 acutely 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 the regulations but the assessment team has no indication that this is the case.</p>
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				----- Sle is scored 100. Similar to what is noted elsewhere, SG100 requires that “alternative measures to minimise UoA-related mortality ETP species, and they <b>are</b> 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.	It is difficult to introduce alternative measures to minimise catch when this catch is not documented.
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 avaiable 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, 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.	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>	<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.</p>
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	<p>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.</p>	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</p>	See answer on long lines

				<p>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>Sld:                  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>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 S1c 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 &amp; 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 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.</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>
2.2.1	No	No	N/A	<p>Table 14 indicates that, amongst other non-species specific</p>	<p>See comment for long line Gillnet</p>

Pots and traps				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.	
2.2.2 Pots and traps	No	No	N/A	<p>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?).</p> <p>Same comments apply to Sld (sharks) and Sle (alternative measures) as for PI 2.1.2 – these need to be scored appropriately.</p>	<p>See answer to Long line/Gillnet</p> <p>Text has been corected</p>
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 Slb - 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 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.	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 Slb 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, 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.	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 Pots and traps	Yes	Yes	N/A	Nothing to add.	
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	Slc	As follows from the rationales in the

				In order to score SG100, here (“The consultation process provides <b>opportunity and encouragement</b> for all interested and affected parties to be involved, and <b>facilitates</b> 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.	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                      “<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                      “<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>‘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).</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, Slc requires “There is a <b>high degree of confidence</b> that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.” and this simply does not seem to be met.</p> <p>-----</p> <p>Sld          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 Slc 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>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 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</p>
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					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.
3.2.4	Yes	Yes	N/A	Nothing further	

**Peer Reviewer 2**

Peer Reviewer Information				
Contact Name	<i>First</i>	Jo	<i>Last</i>	Gascoigne

Fishery Assessment Details	
Fishery	Norwegian ling, tusk and lumpfish fishery
Peer Review College contact details	<a href="mailto:jo.gascoigne@cantab.net">jo.gascoigne@cantab.net</a>
Peer Review Due Date	May 27 2017

## Summary of Peer Reviewer Opinion

<b><i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i></b>	<b>Yes/No Not always</b>	<b>CAB Response</b>
<p><u>Justification:</u>                      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).</p>		<p><u>The assessment team has tried to clarify the text where appropriate</u></p>

<b><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></b>	<b>Yes/No Not always</b>	<b>CAB Response</b>
<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><u>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</u></p>

If included:

<b><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></b>	<b>Yes/No</b>	<b>CAB Response</b>
<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><u>The MSC system should react through the surveillance audits</u></p>

## 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>Sl.a. 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>Sl.b. 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</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>

<b>Performance Indicator</b>	<b>Has all available relevant information been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> 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'.	<b>CAB Response</b>
				<p>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 size or status – they are going up but how</p>	<p>The estimated harvest rate is minimal</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
				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.	
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>Slā. 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. The by-catch of males is recorded in Table 16 and is 0.03% &lt; 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	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. Slb. I guess this 'reference point' relates to the %ages	The survey is documented in cruise reports by IMR and in descriptions of the survey see IMR home page <a href="http://www.imr.no">http://www.imr.no</a> The two surveys are an 0-group survey see Figure 20 and the IESSNS survey see

<b>Performance Indicator</b>	<b>Has all available relevant information been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> 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'.	<b>CAB Response</b>
				<p>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>Condition: Milestones don't</p>	<p>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
				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 Slb – 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	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
				<p>seabirds should be dealt with here too? but I haven't checked each one.</p> <p>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.</p>	<p>Thank you for the proposal, the result is that in all cases the catch in the lumpfish fishery is insignificant</p>
2.2.2	N	Y		<p>Same comment as above; i.e. spurdog and some of the birds should maybe be 'main'?</p>	<p>The text has been clarified. The classification is based on national legislation 'Artsdatabanken'</p>
2.2.3	N	N		<p>Ditto.</p>	<p>The text has been clarified. The classification is based on national legislation 'Artsdatabanken'</p>
2.3.1	N	N	N	<p>Slb. The rationale is quite</p>	<p>The report text has been</p>

<b>Performance Indicator</b>	<b>Has all available relevant information been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> 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'.	<b>CAB Response</b>
				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? 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.	updated to include estimates 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.  The justification text has been updated.  Not with the low takes that are documented.  Error corrected

<b>Performance Indicator</b>	<b>Has all available relevant information been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> 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'.	<b>CAB Response</b>
				<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</p>	<p>The assessment team has inserted this proposal into a recommendation</p> <p>The surveillance audit procedures take care of these concerns</p>

<b>Performance Indicator</b>	<b>Has all available relevant information been used to score this Indicator? (Yes/No)</b>	<b>Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)</b>	<b>Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)</b>	<b>Justification</b> 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'.	<b>CAB Response</b>
				about what will be done to improve 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 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 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	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)

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)	<b>Justification</b> 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
				or group by group.  S1c – 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.  S1d. None of this 'evidence' is provided in the report. The section on bird bycatch mitigation (5.4.2.1) only deals with longlines.  Condition: The condition is	and follow-up studies 2012-2015 provide confidence in the estimates.  Text has been updated  MSC guidelines are not promoting integration however the assessment team agrees.

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
				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.	
2.3.3	Y	N	N	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	The text has been updated the total take is 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

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)	<b>Justification</b> 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
				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).  Slb. CABs are not supposed to tell clients how conditions should be met, just so ASI don't give you a hard time.  Condition: See comments on 2.3.1 condition.	confirmed at more recent studies  Point taken; the team considers the Condition 5 to be general  See answer to 2.3.1
2.4.1	N	N		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	Point taken. Text amended. The coastal zone is skerries (rocky) and sandy, Figure 27 expanded with a more detailed map based on EMOD data

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)	<b>Justification</b> 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'.	<b>CAB Response</b>
				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).  Slb. 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	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.

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)	<b>Justification</b> 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'.	<b>CAB Response</b>
				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.  A good place to start would probably be to consider the types of habitat in which female lumpfish like to spawn??	The expanded Figure 27 is in response to the proposal by the reviewer.
2.4.2	Y	N		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	Fishing practise is modified locally including small closed areas where appropriate.  The source for the maps are EMODNET data, the Mareano prgramme is as indicated focusec on the offshore areas.

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)	<b>Justification</b> 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>apply to a context where it doesn't really apply; i.e. localised inshore fishing areas?</p> <p>A "<b>strategy</b>" 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>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>

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
				Std. 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.	
2.4.3	N	N		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	Figure 27 (EMODNET) has been expanded  Justification moified, Figure 5 demonstrate that there is very detailed geographical information available for 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)	<b>Justification</b> 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
				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.	fishery.
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)

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>	<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.</p>
1.1.2					
1.2.1	Y	N		<p>SIa. 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>SIb. 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>	<p>The strategy is designed to to achieve sustainable fishery as confirmed by Norwegian authorities at the site visit.</p>

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>Sl.a. 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>Sl.b. 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>The 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 Slb	See answer above
2.1.2 longline gillnet	Y	Y		(Sle a cross-ref has come adrift)	Reference corrected
2.1.3 ll gn	Y	Y		<p>See comment under 2.3.1 lumpfish re interpretation; missing Y next to SG100a.</p> <p>Slb: All spp are not minor; also that the minor meet 2.1.1b 100 requires further justification in my opinion.</p>	Corrected, PI 2.1.1b has been updated
2.2.1 ll 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 ll gn	N	N		<p>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.</p>	<p>The classification is based on national legislation “Artsdatabanken”..</p>
2.2.3 ll gn	Y	Y		<p>Same comment – 100a should be met.</p>	
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 Il 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 SId 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' 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 avaiable 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 dominating offshore component.</p>
2.4.1	N	N		<p>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.</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 VIb, 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		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.	
2.1.2	Y	N		Sla. 100 met. Slb. See comment under 2.1.1.	
2.1.3	Y	N		Sla. 100 met.	
2.2.1	N	N		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
2.2.2	Y	Y		(but may need to add new spp)	
2.2.3	Y	Y		ditto	
2.3.1	N	N		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
2.3.2	N	Y		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 sustainability of the populations.

2.3.3	Y	N	N	<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>
2.4.1	N	N		<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>
2.4.2	N	N		<p>See lumpfish if applicable</p>	<p>See answer on lumpfish</p>
2.4.3	N	N		<p>See lumpfish if applicable</p>	<p>See answer on lumpfish</p>
2.5.1	Y	Y			
2.5.2	Y	N		<p>See above</p>	
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).                  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	<b>Justification:</b> 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'.	<b>CAB Response:</b>
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><b><i>Does the report clearly evaluate any additional impacts that might arise from enhancement activities?</i></b></p> <p>Note: Justification to support your answers is only required where answers given are 'No'.</p>	<p><b>Yes/No</b></p>	<p><b>CAB Response:</b></p>
<p><u>Justification:</u></p>		

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**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 (2<sup>nd</sup> 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 3<sup>rd</sup> line typo 'regulations'; last sentence has an extra 'that'
- 3.1.3.2 LOA not oal normally

- 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?
- 3.2.2 2<sup>nd</sup> para 2<sup>nd</sup> sentence grammatically incorrect, ditto 3.2.5.2 2<sup>nd</sup> para second-last sentence.
- p40 1<sup>st</sup> para (2 paras above Table 10) – extra ‘ICES’ in the first sentence? Regarding the 2<sup>nd</sup> 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.

## Appendix 3 Stakeholder submissions

1. The report shall include:
  - a. All written submissions made by stakeholders during consultation opportunities listed in FCR 7.15.4.1.
  - b. All written and a detailed summary of verbal submissions received during site visits regarding issues of concern material to the outcome of the assessment (*Reference FCR 7.15.4.2*)
  - c. Explicit responses from the team to stakeholder submissions included in line with above requirements (*Reference: FCR 7.15.4.3*)

(REQUIRED FOR FR AND PCR)

2. The report shall include all written submissions made by stakeholders about the public comment draft report in full, together with the explicit responses of the team to points raised in comments on the public comment draft report that identify:
  - a. Specifically what (if any) changes to scoring, rationales, or conditions have been made.
  - b. A substantiated justification for not making changes where stakeholders suggest changes but the team makes no change.

*(Reference: FCR 7.15.5-7.15.6)*

## Appendix 4 Surveillance Frequency

1. The report shall include a rationale for any reduction from the default surveillance level following FCR 7.23.4 in Table 4.1.
2. The report shall include a rationale for any deviations from carrying out the surveillance audit before or after the anniversary date of certification in Table 4.2
3. The report shall include a completed fishery surveillance program in Table 4.3.

**Table 4.1 : Surveillance level rationale**

Year	Surveillance activity	Number of auditors	Rationale
<i>e.g.3</i>	<i>e.g. On-site audit</i>	<i>e.g. 1 auditor on-site with remote support from 1 auditor</i>	<i>e.g. From client action plan it can be deduced that information needed to verify progress towards conditions 1.2.1, 2.2.3 and 3.2.3 can be provided remotely in year 3. Considering that milestones indicate that most conditions will be closed out in year 3, the CAB proposes to have an on-site audit with 1 auditor on-site with remote support – this is to ensure that all information is collected and because the information can be provided remotely.</i>

**Table 4.2: Timing of surveillance audit**

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
<i>e.g. 1</i>	<i>e.g. May 2014</i>	<i>e.g. July 2014</i>	<i>e.g. Scientific advice to be released in June 2014, proposal to postpone audit to include findings of scientific advice</i>

**Table 4.3: Fishery Surveillance Program**

Surveillance Level	Year 1	Year 2	Year 3	Year 4
<i>e.g. Level 5</i>	<i>e.g. On-site surveillance audit</i>	<i>e.g. On-site surveillance audit</i>	<i>e.g. On-site surveillance audit</i>	<i>e.g. On-site surveillance audit &amp; re-certification site visit</i>

## Appendix 5 Objections Process

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

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

*(Reference: FCR 7.19.1)*

## Appendix 6 Variations

### Variation Request

#### Marine Stewardship Council - Variation Request

<b>Date submitted to MSC</b>	10 <sup>th</sup> February 2017
<b>Name of CAB</b>	Acoura Marine
<b>Fishery Name/CoC Certificate Number</b>	NFA Norwegian Ling & Tusk and NFA Norwegian Lumpfish
<b>Lead Auditor/Programme Manager</b>	Gudrun Gaudian/Billy Hynes
<b>Scheme requirement(s) for which variation requested</b>	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...
<b>Is this variation sought in order to fulfil IPI requirements (FCR 7.4.14)?</b>	No

<b>1. Proposed variation</b>	
To publish the PCDR by the 31 <sup>st</sup> May 2017 rather than the 14 <sup>th</sup> April as per 2.0 assessment timelines. The eligibility date will be the 1 <sup>st</sup> March 2017, rather than the date of the PCDR publication.	
<b>2. Rationale/Justification</b>	
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.	
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.	
<b>3. Implications for assessment (required for fisheries assessment variations only)</b>	
The delay will impact the timeline of the assessment but not the outcome.	
<b>4. Have the stakeholders of this fishery assessment been informed of this request? (required for fisheries assessment variations only)</b>	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.

i. 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

### Acoura Marine

*Vår dato*  
15.05.2017

*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 client review draft report in May 2017. This report determines that, with a total of nine 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**

<b>Performance indicator</b>	PI 1.2.2 There are well defined and effective harvest control rules (HCRs) in place (Score: 75)
<b>Condition</b>	The client shall 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.
<b>Milestones</b>	<p>1<sup>st</sup> 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>2<sup>nd</sup> 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>3<sup>rd</sup> Audit. The Client should demonstrate that a HCR has been adopted and is being implemented. No revision (75).</p> <p>4<sup>th</sup> Audit. The Client should demonstrate that a HCR has been implemented. PI 1.2.2 is rescored and SG 80 is met</p>
<b>NFA action plan</b>	<p><b>In conjunction with condition 2:</b></p> <p><b>Action 1.1</b> 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><b>Action 1.2</b> In year 2 NFA will evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.</p> <p><b>Action 1.3</b> 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><b>Action 1.4</b> If, successful the HCR with reference points will be implemented and NFA will report in year four for a rescored at annual audit.</p>
<b>Consultation on condition</b>	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 2 – 1.2.4 lumpfish**

<b>Performance indicator</b>	1.2.4 There is an adequate assessment of the stock status (score: 75)
<b>Condition</b>	The Client shall as part of the development of the HCR include the development of appropriate reference points. (PRI and MSY).
<b>Milestones</b>	<p>1<sup>st</sup> Audit The Client should demonstrate that steps have been taken that might eventually lead to the development and implementation of reference points possibly in a well-defined HCR. No revision (75)</p> <p>2<sup>nd</sup> Audit The Client should present a proposal for reference points and demonstrate that this proposal is being discussed at appropriate level. No revision (75)</p> <p>3<sup>rd</sup> Audit. The Client should demonstrate that the reference points have been adopted. PI 1.2.4 is rescored and SG 80 is met</p>
<b>NFA action plan</b>	<p><b>Action 2.1</b> 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><b>Action 2.2</b> In year 2 NFA will evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.</p> <p><b>Action 2.3</b> 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><b>Action 2.4</b> If, successful the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.</p>
<b>Consultation on condition</b>	See condition 1



**Condition 3 Lumpfish**

<b>Performance indicator</b>	<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>
<b>Condition</b>	<p>The client should institute an MSC-log on all the vessels participating in this fishery, recording seabird interactions. A 'no interaction' per trip has to be recorded too.</p>
<b>Milestones</b>	<p>1<sup>st</sup> Audit: The client should demonstrate that steps have been taken to introduce such a recording system across the lumpfish fleet. No revision of score - 75</p> <p>2<sup>nd</sup> Audit: The client should demonstrate that a system is in place which records seabird interactions across the fleet, and data is coming in. No revision - 75</p> <p>3<sup>rd</sup> Audit: The client should provide seabird recordings and initial analysis of 2 seasons' records. No Revision – 75</p> <p>4<sup>th</sup> Audit: The client should demonstrate that the recording and analysis system for seabird interactions is working well. SG80 is reached.</p>
<b>NFA action plan</b>	<p><b>Action 3.1</b> 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><b>Action 3.2</b> In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed, although degree of reporting is expected to improve over years.</p> <p><b>Action 3.3</b> Data will be analyzed at 4<sup>th</sup> audits, and any trends will be shown. However, it seems highly likely that the data series will still be in its infancy at this stage, and that the indirect catch figures we have today through surveys of fishermen will still be superior in year 4. However, this is expected to further improve.</p>
<b>Consultation on condition</b>	<p>As earlier conditions.</p>



**Condition 4 - lumpfish**

<p><b>Performance indicator</b></p>	<p>PI 2.3.2 The UoA has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> <li>• meet national and international requirements;</li> <li>• ensure the UoA does not hinder recovery of ETP species.</li> </ul> <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><b>Condition</b></p>	<p>Design and implement a strategy to minimise seabird bycatch.</p>
<p><b>Milestones</b></p>	<p>1<sup>st</sup> Audit: The client has to show that a strategy has been designed and is being implemented. No revision – 75</p> <p>2<sup>nd</sup> Audit: The client has to provide evidence that the strategy is being implemented and is actively followed by the fishers. No revision – 75</p> <p>3<sup>rd</sup> Audit: The client has to provide continued evidence that the strategy is being implemented successfully, and is now part of the management of the gishery. As a matter of course. No revision – 75</p> <p>4<sup>th</sup> Audit: The client has to provide continued evidence that the strategy is being implemented. SG80 is met</p>
<p><b>NFA action plan</b></p>	<p><b>Action 4.1</b> NFA will have meetings with the IMR, Directorate of Fisheries, and –if necessary- other research bodies to explore potential seabird bycatch mitigation strategies</p> <p><b>Action 4.2</b> In year 2 a strategy will be drafted and proposed by the NFA to the Directorate of Fisheries.</p> <p><b>Action 4.3</b></p>



	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.
<b>Consultation on condition</b>	As previous conditions.

#### Condition 5 Lumpfish

<b>Performance indicator</b>	<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"> <li>• Information for the development of the management strategy;</li> <li>• Information to assess the effectiveness of the management strategy; and</li> </ul> <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>
<b>Condition</b>	Design and implement an on-board recording system to measure trends in all seabird bycatch,
<b>Milestones</b>	<p>1<sup>st</sup> Audit: The client has to provide evidence that all the fishers have the ability and tools to identify seabirds to species level – on-board identification guide. The client has to design an ETP log for the vessels/ fishers. No revision – 70</p> <p>2<sup>nd</sup> Audit: the client has to provide evidence that the ETP log is being used by the fishers and that incoming data is being analysed. No revision – 70</p> <p>3<sup>rd</sup> Audit: the client has to provide evidence that the incoming data is being analysed to show trends. No revision – 70</p> <p>4<sup>th</sup> Audit: The client has to provide evidence that the data is being analysed to show trends. The SG80 is met</p>
<b>NFA action plan</b>	<p><b>Action 5.1</b> 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><b>Action 5.2</b> In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed, although degree of reporting is expected to improve over years.</p> <p><b>Action 5.3</b> Data will be analysed at 4<sup>th</sup> audits, and any trends will be shown. However, it seems highly likely that the data series will still be in its infancy at this stage, and that the indirect catch figures we have today through surveys of fishermen will still be superior in year 4. However, this is expected to further improve.</p>
<b>Consultation on condition</b>	As earlier conditions.



**Condition 6: Ling and Tusk**

<b>Performance indicator</b>	PI 1.2.2 There are well defined and effective harvest control rules (HCRs) in place (score 75)
<b>Condition</b>	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
<b>Milestones</b>	<p>1<sup>st</sup> 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)</p> <p>2<sup>nd</sup> 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>3<sup>rd</sup> Audit. The Client should demonstrate that a HCR has been adopted and is being implemented. No resvision (75)</p> <p>4<sup>th</sup> Audit. The Client should demonstrate that a HCR has been implemented. PI 1.2.2 is rescored and SG 80 is met</p>
<b>NFA action plan</b>	<p><b>In conjunction with condition 8:</b></p> <p><b>Action 6.1</b> 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><b>Action 6.2</b> In year 2 NFA evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.</p> <p><b>Action 6.3</b> 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><b>Action 6.4</b> If successful, the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.</p>



<b>Consultation on condition</b>	See earlier conditions
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**Condition 7: ling and tusk**

<b>Performance indicator</b>	<b>1.2.4 There is an adequate assessment of the stock status</b>
<b>Condition</b>	The Client should as part of the development of the HCR include the development of appropriate reference points. (PRI and MSY).
<b>Milestones</b>	<p>1<sup>st</sup> Audit The Client should demonstrate that steps has been taken that might eventually lead to the development and implementation of reference points possibly in a well-defined HCR. No revision - 75</p> <p>2<sup>nd</sup> Audit The Client should present a proposal for reference points and demonstrate that this proposal is being discussed at appropriate level. No revision - 75</p> <p>3<sup>rd</sup> Audit. The Client should demonstrate that the reference points have been adopted. PI 1.2.4 is rescored and SG 80 is met</p>
<b>NFA action plan</b>	<p><b>In conjunction with condition 7:</b></p> <p><b>Action 7.1</b> 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><b>Action 7.2</b> In year 2 NFA evaluate potential options for an HCR/reference points and urge authorities to implement them if appropriate.</p> <p><b>Action 7.3</b> 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><b>Action 7.4</b> If successful, the HCR with reference points will be implemented and NFA will report in year four for a rescoring at annual audit.</p>
<b>Consultation on condition</b>	See previous conditions

**Condition 8 – ling and tusk**

<b>Performance indicator</b>	<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"> <li>Information for the development of the management strategy;</li> </ul>
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	<ul style="list-style-type: none"> <li>Information to assess the effectiveness of the management strategy; and information to determine the outcome status of ETP species</li> </ul> <p>b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Ling and Tusk)</p> <p>(score: 70)</p>
<b>Condition</b>	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. 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.
<b>Milestones</b>	
<b>NFA action plan</b>	<p><b>Action 8.1</b> 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><b>Action 8.2</b> In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed, although degree of reporting is expected to improve over years.</p> <p><b>Action 8.3</b> Data will be analyzed at 4<sup>th</sup> audit, and any trends will be shown. However, it seems highly likely that the data series will still be in its infancy at this stage, and that the indirect catch figures we have today through surveys of fishermen will still be superior in year 4. However, this is expected to further improve.</p>
<b>Consultation on condition</b>	See earlier conditions

Condition 9 – Pots and traps tusk

<b>Performance indicator</b>	<p><b>PI 2.3.3 Relevant information is collected to support the management of UoA impacts on ETP species, including:</b></p> <ul style="list-style-type: none"> <li>Information for the development of the management strategy;</li> <li>Information to assess the effectiveness of the management strategy; and</li> </ul> <p><b>Information to determine the outcome status of ETP species</b></p> <p>b) Information is adequate to measure trends and support a strategy to manage impacts on ETP species (Tusk – pots and traps)</p>
<b>Condition</b>	Design and implement an on-board recording system to measure trends in all ETP bycatch,



<b>Milestones</b>	<p>1<sup>st</sup> 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. No revision – 70</p> <p>2<sup>nd</sup> Audit: the client has to provide evidence that the ETP log is being used by the fishers and that incoming data is being analysed. No revision – 70</p> <p>3<sup>rd</sup> Audit: the client has to provide evidence that the incoming data is being analysed to show trends. No revision – 70</p> <p>4<sup>th</sup> Audit: The client has to provide evidence that the data is being analysed to show trends. The SG80 is met</p>
<b>NFA action plan</b>	<p><b>Action 9.1</b> 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><b>Action 9.2</b> In year 2-3 this reporting system is expected to be implemented. Incoming data will be analyzed, although degree of reporting is expected to improve over years.</p> <p><b>Action 9.3</b> Data will be analyzed at 4<sup>th</sup> audit, and any trends will be shown. However, it seems highly likely that the data series will still be in its infancy at this stage, and that the indirect catch figures we have today through surveys of fishermen will still be superior in year 4. However, this is expected to further improve.</p>
<b>Consultation on condition</b>	See earlier conditions

NORGES FISKARLAG

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