



## MarinTrust Standard V2

# Whole fish Fishery Assessment

## *Norway Calanus finmarchicus*

**MarinTrust Programme**

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**Table 1 Application details and summary of the assessment outcome**

Application details and summary of the assessment outcome			
Name(s): Calanus.no			
Country: Norway			
Email address:		Applicant Code	
Certification Body Details			
Name of Certification Body:		Global Trust Certification	
Assessor Name	CB Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-approval
Alex Caveen	Ivan Mateo	4	Re-approval
Assessment Period	To May 2023		
Scope Details			
Management Authority (Country/State)		Ministry of Trade, Industry and Fisheries (Norway)	
Main Species		<i>Calanus finmarchicus</i>	
Fishery Location		FAO 27 Northeast Atlantic Norway Economic Zone (EEZ)	
Gear Type(s)		Calanus bespoke AS pelagic trawl	
Outcome of Assessment			
Overall Outcome		Approve	
Clauses Failed		None	
CB Peer Review Evaluation		Agree with the assessor's determination.	
Fishery Assessment Peer Review Group Evaluation		Approve see <a href="#">Peer review report</a>	
Recommendation		Approve	

**Table 2. Assessment Determination**

Assessment Determination
<p><i>Calanus finmarchicus</i> is a large planktonic copepod (Zooplankton) whose chief diet includes diatoms, dinoflagellates, and other micro planktonic organisms. <i>C. finmarchicus</i> is a key component in the food web of the North Atlantic, providing sustenance for a variety of marine organisms including fish, shrimp, and whales.</p> <p><i>C. finmarchicus</i> is most commonly found in the Norwegian and North Seas as well as throughout the colder waters of the North Atlantic; off Canada; in the Gulf of Maine and in the Western and Northern Svalbard.</p> <p><i>C. finmarchicus</i> has a one-year life cycle and is an enormous marine biological resource. Annual acoustic surveys suggest an annual production range estimated to be 190 - 290 million tons in the Norwegian Sea (Melle et al. 2004, Skjoldal et al. 2004, Hjøllø et al. 2012). With a standing stock biomass of close to 30 million tons WW (Hansen et al 2021). Due to economic interest in the ester oil found in <i>C. finmarchicus</i>, there has been an ongoing trial fishery of <i>C. finmarchicus</i> for almost 2 decades in the Norwegian Sea, targeting copepods at stages IV–VI. The given quota has been 1000–5000 t wet weight (WW) per year. Recently, a management plan was implemented, increasing the total allowable catch to 254 000 t WW. Of these, 3000 t can be caught in waters shallower than 1000 m off the Norwegian coast. The division of the quota, with a more restricted fishery close to shore, aims to limit unwanted bycatch of fish eggs and larvae.</p> <p>Fishing effort is limited by the physical construction of the fishing gear, by freezing facility, seasonal vertical migration of <i>C. finmarchicus</i> and the vessel’s cargo capacity. No analytical stock assessments are undertaken specifically for <i>C. finmarchicus</i>. However, acoustic survey activities cover a substantial part of the Nordic Seas at different seasons. Regular data collection from transects, located at the inflow and outflow regions of ocean basins serve as indicators of the biological and physical state of the basins. Data on <i>C. finmarchicus</i> is collected during these surveys.</p> <p>The fishery is unlikely to interact with ETP species. Capture of <i>C. finmarchicus</i> is undertaken by towing a bespoke trawl at low speed, and likely to be highly targeted. The main bycatch species will be larval fish and eggs (see Category C assessments).</p> <p>A study undertaken by the Institute in 2017 looked at bycatch levels in the fishery. Bycatch consisted of eggs from 13 fish species/groups; and larvae and juveniles from 15 species groups. Eggs of cod, haddock and tusk accounted for 75% of all eggs retained; herring and cod larvae and fry were the most common larval bycatch. Given the likely catches of larval cod (<i>Gadus morhua</i>), haddock (<i>Melanogrammus aeglefinus</i>), tusk (<i>Brosme brosme</i>) and herring (<i>Clupea harengus</i>), these four species were added as Category C species.</p> <p>A recent ecosystem simulation of 10 vessels (that allowed under existing regulations) found that the allocated quota (254,000t) for <i>C. finmarchicus</i> was not caught. No ecosystem effects were found, neither on the <i>C. finmarchicus</i> biomass nor on the Norwegian spring spawning herring biomass. This finding indicates that the proposed quota of <i>C. finmarchicus</i> supports a sustainable fishery (Hansen et al 2021).</p> <p><i>C. finmarchicus</i> is not listed in the current CITES appendices of endangered species and is not listed in the current IUCN Redlist of threatened species. <i>C. finmarchicus</i> is approved for use under the current MarinTrust Whole fish Standard v 2.0 to produce fish meal and fish oil.</p>
Fishery Assessment Peer Review Comments
<p>The assessor correctly classified the Calanus stock as category A in conformity with the Species categorisation requirements. The fishery is managed by the Norway management system. There is a monitoring, surveillance and control system in place. There is a harvest strategy in place to ensure that stocks are fished at sustainable levels. Data are collected and stocks are assessed.</p> <p>The stock Calanus stock in Norwegian waters is viable and biologically in good or average condition There is a mechanism in place by which total fishing mortality of the stock is restricted.</p> <p>The assessor correctly classified Atlantic cod, haddock, cusk and herring stocks as category C in conformity with the Species categorisation requirements</p>

There is no evidence that the fishery impacts significantly habitats, ETP species and the ecosystem. Therefore, all stocks should be awarded continued approval for the production of fishmeal and fish oil under the IFFO-RS v 2.2 standard.

**Notes for On-site Auditor**

Discuss with applicant raw material intake, and how they ensure that this is *Calanus finmarchicus* and not eggs and larvae of other fish species.

Also check how regularly Calanus AS regularly have inspectors from the Fisheries Monitoring Centre (FMC) onboard during harvesting, and whether the applicant can provide a contact at the FMC for future reference.

Ask to see other relevant fisheries certifications (e.g. Friends of the Sea)

## Table 3 General Results

General Clause	Outcome (Pass/Fail)
M1 - Management Framework	PASS
M2 - Surveillance, Control and Enforcement	PASS
F1 - Impacts on ETP Species	PASS
F2 - Impacts on Habitats	PASS
F3 - Ecosystem Impacts	PASS

## Table 4 Species- Specific Results

List all Category A and B species. List approximate total percentage (%) of landings which are Category C and D species; these do not need to be individually named here

Category	Species	% landings	Outcome (Pass/Fail)
Category A			
Category B	<i>Calanus finmarchicus</i>	97.3	PASS
Category C	<i>Gadus morhua, Melanogrammus aeglefinus, Brosme brosme, Clupea harengus</i>	<3 %	
Category D	none		

## Table 5 Species Categorisation Table

Common name	Latin name	Stock	IUCN Redlist Category <sup>1</sup>	% of landings	Management	Category
Calanus	<i>Calanus finmarchicus</i> sp	Norway EEZ	Not listed	97.3%	Norway Ministry of Trade, Industry and Fisheries	B
<b>Species categorisation rationale</b>						
<p>Following peer-review of the reapproval it was deemed that the information required to assess <i>Calanus finmarchicus</i> as a Cat A species was insufficient. There is a management plan for <i>C. finmarchicus</i> in Norwegian waters although no stock assessment is carried out, and there are no reference points for management.</p> <p>It has therefore been reassessed as a Cat B species.</p>						

<sup>1</sup> <https://www.iucnredlist.org/>

## MANAGEMENT

The two clauses in this section (M1, M2) relate to the general management regime applied to the fishery under assessment. The clauses should be completed by providing sufficient evidence to justify awarding each of the requirements a pass or fail rating. A fishery must meet all the minimum requirements in every clause before it can be recommended for approval.

M1	Management Framework – Minimum Requirements	
M1.1	There is an organisation responsible for managing the fishery.	Yes
M1.2	There is an organisation responsible for collecting data and assessing the fishery.	Yes
M1.3	Fishery management organisations are publicly committed to sustainability.	Yes
M1.4	Fishery management organisations are legally empowered to take management actions.	Yes
M1.5	There is a consultation process through which fishery stakeholders are engaged in decision-making.	Yes
M1.6	The decision-making process is transparent, with processes and results publicly available.	Yes
<b>Clause outcome:</b>		<b>PASS</b>

### M1.1 There is an organisation responsible for managing the fishery.

The management of fisheries in Norway falls under the jurisdiction of the Ministry of Trade, Industry and Fisheries (Department of Fisheries and Aquaculture). A Directorate of Fisheries and Aquaculture acts as the Ministry's advisory and executive body. Both Ministry and Directorate develop and apply fishery laws and regulations through an ongoing interactive process referred to as the Regulatory Chain (Figure 1), in place since the 1970's.

Scientific advice takes key positions within the chain, ensuring understanding of fish stocks and broader ecosystem issues are considered. A Stock table, and a table of "Catches of data-poor species" constitute the system in Norway for monitoring management principles. Along with a Fisheries table, both establish a framework for developing an ecosystem-based fisheries management approach by providing a basis and tools for prioritising the needs of new and/or revised management measures. The Stock Table includes information on the status of stocks, exploitation level, management objectives and priorities for action. The Fisheries Table includes information for each fishery on species and size selectivity, discard problems, incidental mortality, effect on bottom habitats, etc. Elements of both tables are graded according to impact or importance and presented with traffic light colours (high (red), medium (yellow) or low (green)) to facilitate overviews.

A Regulatory Council then debate on quota distribution and provide advice for the Ministry. The Ministry decide on final management strategies. The scope of the Regulatory Chain was broadened by provisions of the new Marine Resources Act (2009) to include ecosystem and biodiversity related issues (see also M1.5).

The Department is responsible for matters related to fisheries, the fishing fleet and aquaculture industry. The Department manages, inter alia:

- Quota negotiations with the European Union and others.
- International fisheries agreements including those with the Regional RFMO (NEAFC North East Atlantic Fisheries Commission)
- Prevention and deterrence of IUU fishing.
- Fishing regulations and fishing rights including licensing for Norwegian flagged and Third Country vessels wishing to fish in Norwegian waters. The Directorate of Fisheries and Aquaculture's role is, inter alia:
  - Provide analyses, statistics and advice in support of management decisions.
  - As an executive entity implement political decisions.
  - Process applications and appeals, when necessary.
  - Conduct monitoring and control of the fisheries.
  - Actively cooperate with trade and industry, the research community and other public services.
  - Knowledge sharing with various stakeholders and the public.

The Norwegian Sea (NWS) connects with the Northeast Atlantic Ocean to the southwest, the Icelandic Waters ecoregion and Greenland Sea to the west along the edge to the shallower Iceland Sea between the Faroe Islands, and northwards to Jan Mayen. To the south it borders to the shallower North Sea along the 62°N parallel between Norway and the Faroe Islands, and to the northeast with the shallower Barents Sea.

From 2017-2019 the Norwegian Sea has become markedly fresher due both to an Atlantic Inflow and an increase in influx of Arctic water from the East Icelandic Current. Data on Zooplankton biomass (May time-series from 1995 to the present) was presented in WGINOR's 2019 Report (M 1.2).

A national Management Plan (2016) for *C. finmarchicus* harvesting was developed, and a national hearing process amongst stakeholders completed at that time. The management area proposed is the Norwegian Economic Zone (NEZ) and outside 12nm in the Jan Mayen zone with most of the fishery occurring in an area deeper than 1,000m.

2020 Norwegian authorities announced a total commercial quota of 254,000t annually and issued tenders for 10 area restricted vessel licenses. There has been no decision yet on who will be granted a license; decisions when made are subject to appeal. There will be no vessel-specific quotas awarded. The trial license awarded to Calanus AS allowing this Company to extract 5,000t of copepods annually in coastal waters up to 2022 is unaffected by the licensing of commercial harvesting.

### **M1.2 There is an organisation responsible for collecting data and assessing the fishery.**

The main research body is the Institute of Marine Research (IMR); its main activities are research, advisory work and monitoring. In January 2018 IMR was merged with Norway's NIFES (National Institute of Nutrition and Seafood Research). IMR have an office in Tromsø and research stations in Matre, Austevoll and Flødevigen. IMR also have several laboratories that analyse samples taken through its monitoring and research programmes.

Fisheries advice is provided by the International Council for the Exploration of the Sea (ICES). Environmental issues are managed by Norwegian agencies, through OSPAR and ICES through Working Groups like (WGINOR) the Working Group on Integrated Ecosystem Assessments for the Norwegian Sea.

Ecosystem research surveys are conducted by IMR and international partners. Survey activities cover a substantial part of the Nordic Seas at different seasons. Regular data collection from transects, located at the inflow and outflow regions of ocean basins serve as indicators for the biological and physical state of the basins (Gimsøy, Svinøy, Fugløy).

IMR is an independent knowledge provider and publicises research results both in Norway and internationally. A Scientific Advisory Board has been in place at NIFES since 2011. The Board contributes to ensuring professional quality and development within the scope of the Institute's objectives and limitations.

Biomass and other data collected from regular ecosystem research surveys and transects are collated and added to fishery independent data generated for stock assessment purposes.

A precautionary approach is adopted, only a marginal percentage is allowed for the fishery. The Fisheries Directorate calculated a total Norwegian annual quota (precautionary). Catch limit is an exploitation degree of 10 % of the estimated standing stock would be 10 % of 33 mill t = 3.3 mill t. Trigger level: based on a pre-cautionary approach is the 10 % of 3.3 mill t set at 330 000 t. The total Norwegian quota is suggested to include the NEZ and the Jan Mayen zone in the Norwegian Sea. This area constitutes 50.6% of the total area for the Norwegian Sea, therefore the total quota is defined as 165,000 t (330 000 x 50%).

This Working Group has a three-year work programme (2018-2021) which includes focusing, through modelling, on single vs. multispecies harvest control rules for the development of ecosystem-based advice, and on outstanding issues to facilitate the development of integrated ecosystem assessments (IEA's). Survey data from IMR is also presented to the ICES Working Group of International Pelagic Surveys (WGIPS). The core objectives of this Working Group are to combine and review results of annual pelagic ecosystem surveys to provide indices for stocks of herring, sprat, mackerel, boarfish, and blue whiting in the Northeast Atlantic, Norwegian Sea, North Sea, and Western Baltic; and to coordinate timing, coverage and methodologies for upcoming surveys.

### **M1.3 Fishery management organisations are publicly committed to sustainability.**

The Ministry aids in coordinating efforts of various ministries to ensure a sound, unified, future-oriented industrial and seafood policy. Norway's fishing industry has developed from a 'free fishing' activity to a fully-fledged industry complete with quotas and concessions. A 2009 Report outlined strategies in place to ensure the sustainable harvesting of all marine resources. Sustainable management and harvesting are based on best available understanding and scientific advice from both ICES and IMR. Norway has committed to international agreements on sustainable management for all fish stocks under its management; entailing defined exploitation rates and minimum limit for spawning stocks. Section 1 (purpose) of the Marine Resources Act (MRA, see M1.4) outlines



Norway's commitment to sustainability: The purpose of this Act is to ensure sustainable and economically profitable management of wild living marine resources and genetic material derived from them, and to promote employment and settlement in coastal communities. Section 7 (Principle for management of wild living marine resources and fundamental considerations) of the MRA gives power to the Ministry to evaluate which types of management measures are necessary to ensure sustainable management of wild living marine resources including the use of the precautionary and ecosystem approaches.

**M1.4 Fishery management organisations are legally empowered to take management actions.**

The Marine Resources Act (MRA, entered into force on 06 June 2008) describes a precautionary and sustainable management of marine resources used to adopt scientific recommendations. This law details, among other things, the structure of the management system, the obligation for sustainable, science-based management and ecosystem considerations. The MRA contains technical regulations for commercial and recreational fisheries and applies to all harvesting and other utilisation of wild living marine resources and the genetic material derived from them. Chapter 1 (Introductory provisions) Section 3 provides a comprehensive scope of the MRA: 'all harvesting and other utilisation of wild living marine resources and genetic material derived from them. Wild living marine resources means fish, marine mammals that spend part or all of their life cycle in the sea, plants and other marine organisms that live in the sea or on or under the seabed and that are not privately owned. As part of the zooplankton food web found in the Norwegian and North Seas the management of *C. finmarchicus* harvesting is covered in the MRA.

Chapter 1 Section 7 notes that the application of the Ecosystem Approach to Fisheries Management (EAFM) is now mandatory in Norway. This Section gives the Ministry the power to: 'evaluate which types of management measures are necessary to ensure sustainable management of wild living marine resources' This includes looking at effective control of harvesting methods and the way gear is used consider the need to reduce possible negative impacts on living marine resources. Chapter 3 (Catch quantities and quotas) Section 11 empowers the Ministry to prescribe: 'maximum permitted quantities (national quotas) of wild living marine resources that may be harvested, expressed in terms of weight, volume, number of individuals, the number of days harvesting is permitted, or in other terms.

Chapters 6 (Arrangements for control and enforcement) & Chapter 7 (Control and enforcement) of the MRA specifies arrangements for facilitating vessel inspections, use of logbooks to record catches and powers of the Directorate of Fisheries Inspectors to issue orders to stop a vessel, haul in gear, seal gear and obtain documents, relevant information and objects if they suspect infringements of the fisheries legislation have occurred.

Chapter 8 (Measures against illegal, unreported and unregulated fishing) outlines measures in place to deter illegal, unreported and unregulated (IUU) fishing. Chapter 11 (Coercive fines and infringement fines) empowers the Ministry to impose coercive and infringement fines to ensure compliance with provisions made in or under the Act. Norway ratified the UN Agreement on Straddling and Migrating Fish Stocks and the UN Convention on the Law Of the Sea in 1996

**M1.5 There is a consultation process through which fishery stakeholders are engaged in decision-making.**

Representatives of the fishing industry and governmental authorities cooperate in the formulation of the Regulatory Chain (Figure 1). Scientific research and advice take key positions within the chain, ensuring understanding of the stock and broader ecosystem are considered. The involvement of stakeholders in management decisions is achieved through Advisory Meetings for Fisheries Regulations representing fishermen's associations, fishing industries, trade unions, the Sami Parliament, local authorities, environmental organisations and other stakeholders. Both ICES (when available) and IMR advice are factored heavily into management decisions, and in turn direction and specifics of future research are guided by experiences within the fishery throughout the year.

### The Regulatory Chain

Events that constitute Norwegian fisheries management



**Figure 1.** Regulatory chain of Norwegian fishery management. Source: Directorate of Fisheries Norway

#### M1.6 The decision-making process is transparent, with processes and results publicly available.

Norway has a bilateral fisheries agreement with the European Union (joint management of shared stocks), trilateral arrangements with Iceland and the Faroe Islands and neighbouring agreements with other coastal states in the region. All meetings and key decisions are published online. The Directorate’s Communications office has overall responsibility for all external and internal information, including continuous development of strategic communication. Other main areas of responsibility are the maintenance and development of the Directorate’s Internet and intranet pages, presentation of information material for public and tourists visiting Norway and providing advice of a professional nature within the organisation. The Communication Office is also on the editorial board of the English-language website [www.fisheries.no](http://www.fisheries.no) through which authorities provide information about Norwegian fisheries regulations and aquaculture management.

#### References

- Ministry of Trade Industry and Fisheries-Norway <https://www.regjeringen.no/en/id4/> (accessed 22.04.22)
- Directorate of Fisheries: Norwegian-Fisheries-Management <https://www.fiskeridir.no/English/Fisheries/Norwegian-Fisheries-Management> (accessed 22.04.22)
- FAO Fisheries and Aquaculture Country Profile: <http://www.fao.org/fishery/facp/NOR/en>
- Regulatory Chain of Norwegian Fisheries Management: pp <https://www.regjeringen.no/globalassets/upload/fkd/brosjyrer-og-veiledninger/folder.pdf>
- Department for Fisheries and Aquaculture (2009): Act relating to the management of wild living marine resources (Marine Resources Act) 17pp <https://www.regjeringen.no/globalassets/upload/fkd/vedlegg/diverse/2010/marineresourcesact.pdf>
- ICES Ecosystem Overviews Norwegian Sea Ecoregion (22pp) May 2021. [https://ices-library.figshare.com/articles/report/Norwegian\\_Sea\\_ecoregion\\_Ecosystem\\_overview/18638273](https://ices-library.figshare.com/articles/report/Norwegian_Sea_ecoregion_Ecosystem_overview/18638273)

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Ministry of Climate and the Environment (2017) White Paper Report to Parliament: Update of the integrated management plan for the Norwegian Sea; Meld. St. 35 (2016–2017) <https://www.regjeringen.no/en/dokumenter/meld.-st.-35-20162017/id2547988/sec5?q=calanus#KAP5-5>

Announcement 2020 Calanus quota: PRESS RELEASE: Norway opens for commercial harvesting of zooplankton - Calanus Institute of Marine Research (IMR) <http://www.imr.no/en> (accessed 08.04.20)

ICES Homepage: <http://www.ices.dk/Pages/default.aspx>

OSPAR Homepage: <https://www.ospar.org/>

Norwegian Ministry of Fisheries and Coastal Affairs (2009) Strategy for an Environmentally Sustainable Norwegian Aquaculture Industry 38pp <https://www.regjeringen.no/globalassets/upload/fkd/vedlegg/diverse/2009/strategy-for-an-sustainableaquaculture.pdf>

Fisheries Directorate Communications Unit: <https://www.fiskeridir.no/English/About-the-directorate/About-the-departments/The-communication-Unit>

DG MARE Fisheries agreements: [https://ec.europa.eu/fisheries/cfp/international/agreements\\_en](https://ec.europa.eu/fisheries/cfp/international/agreements_en)

### Links

<b>MarinTrust Standard clause</b>	1.3.1.1, 1.3.1.2
<b>FAO CCRF</b>	7.2, 7.3.1, 7.4.4, 12.3
<b>GSSI</b>	D.1.01, D.4.01, D2.01, D1.07, D1.04,

<b>M2 Surveillance, Control and Enforcement - Minimum Requirements</b>		
<b>M2.1</b>	There is an organisation responsible for monitoring compliance with fishery laws and regulations.	Yes
<b>M2.2</b>	There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken.	Yes
<b>M2.3</b>	There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing.	Yes
<b>M2.4</b>	Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS.	Yes
<b>Clause outcome:</b>		<b>PASS</b>

**M2.1 There is an organisation responsible for monitoring compliance with fishery laws and regulations.**

Enforcement is split into three branches:

The Directorate of Fisheries (Control Section): monitors and controls the entire value chain through quayside controls, sales inspections, post landing audits and inspections at sea. Quota control and compliance to regulations are the focus areas. Controls are conducted within Norwegian Economical Zone (NEZ) and the Fisheries Zones surrounding Svalbard and Jan Mayen A Fisheries Monitoring Centre (FMC) ensures 24/7 monitoring of fishing activities. Inspectors may board vessels at any time when at sea.

The Coast Guard (Ministry of Defence) conducts control of both Norwegian and foreign flagged vessels, performing more than 1,800 vessel inspections annually. Main areas of control are for resource, quota, and customs violations and to verify adherence to technical fishery regulations.

Sales organisations (e.g. Norges Sildesalgslag, a pelagic sales organization) is a legal intermediary for settlement between buyer and seller for all first-hand landings. These organisations also perform landing controls, comply statistics and cooperate closely with the Directorate. The Directorate performs annual strategic risk analyses which gives guidance for future focus areas and enforcement tactics. Catches of *C. finmarchicus* sp are reported daily to the Directorate from the harvesting vessel (one vessel harvesting in 2019). Total landings are additionally reported at port through a Landing Certificate. Fishing inside baselines is prohibited. Fishing inside 12 nm (Jan Mayen-zone, Figure 1) is also prohibited. The Directorate may also require

that inspectors/observers are put on board vessels. Vessels must comply to the requirements of a standardized biological sampling system devised by the Directorate in association with the client company Calanus AS.

**M2.2 There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken.**

Norway has a landing obligation and to avoid discarding, small quota overshoots are landed. The value of the catch is then administratively withdrawn from the vessel and counts against the TAC. If more serious quota infractions occur, the Directorate can administer fines, withdraw quota or submit a police report, which will hand the issue over to the criminal system. Fishing license and a license to purchase fish may also be withdrawn as can the value of the catch. Chapter 11 (Coercive and infringement fines) of the MRA empowers the Ministry to impose fines to ensure compliance with provisions made in or under the Act. A coercive fine is a continuous fine that becomes effective from a specified deadline for complying with an order. The Ministry may in special cases reduce or waive a coercive fine that has accrued. The Ministry may order any person that wilfully or through negligence contravenes provisions made in or under this Act to pay an infringement fine.

Chapter 12 of the MRA (Criminal Liability) notes that any person that wilfully or through negligence contravenes provisions laid down in specific Sections of the Act are liable to fines or to a term of imprisonment not exceeding one year, unless more severe penal provisions apply. With respect to *C. finmarchicus* harvesting, the trial license to the client Calanus AS is provided by the Ministry, any violations of the license would be addressed by the Ministry. Appeals can be made to the Ministry and “Ombudsman” appointed by the Norwegian Parliament to safeguard the rights of individual citizens. The only commercial stakeholder in the fishery (Calanus AS) has never been sanctioned by Directorate inspectors. Calanus AS regularly have inspectors from the Fisheries Monitoring Centre (FMC) onboard during harvesting.

**M2.3 There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing.**

Norway adopted a Blacklist of vessels engaged in IUU activities in Northeast Atlantic waters in 1994 and banned such vessels from fishing in Norwegian waters. The concept of a blacklist was later adopted by several Regional Fisheries Management Organizations (RFMO’s). Among the list are included vessels that have taken part in fishing outside quota arrangements in international waters for a stock subject to regulations in waters under Norwegian fisheries jurisdiction. The Norwegian Blacklist was updated on 20.02.2020. No vessels have been added to the list since 2016. The current IUU list is updated on the Directorate’s website and is divided into 3 sections:

IUU-list 1: All vessels are covered by measures including prohibition of landing, transshipment, delivery of supplies, delivery of services and access to port. Vessels on this list are not granted the right to fly the flag of Norway nor a license to operate in the Norwegian EEZ.

IUU-list 2: Measures for vessels on this list include prohibition of landing, transshipment, delivery of supplies and delivery of services. These vessels can be granted access to port but will be inspected upon arrival.

IUU-list 3: This list identifies vessels involved in cases where a decision to lay down prohibitions is about to be made. The current list (updated 21.03.2018) is populated by reference to actions undertaken by RFMO’s worldwide to combat IUU fishing (NEAFC, IOTC etc).

The Directorate’s website (Control and Enforcement) does not have any record of vessel detentions or arrests for IUU fishing in 2019-20 to date.

**M2.4 Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS.**

Chapter 7 (Control and enforcement) Section 47 (Placing inspectors and observers on board vessels) of the MRA obliges vessel owners, when requested, to provide board and lodging at the vessel's expense and use of communication equipment without charge. The Ministry may also adopt regulations relating to;

- The duties of an observer.
- Which vessel groups and how many vessels are to carry an inspector or observer on board.

- How these vessels are to be selected.

The Directorate (Control Section) monitors and controls the entire value chain through quayside controls, sales inspections, post landing audits and inspections at sea. Quota control and compliance to regulations are the focus areas. VMS transmitters on Norwegian vessels must be approved by the Directorate and installed only by those authorized. Norwegian flagged vessels involved in fishing operations of overall length 15m and above are required to comply with position reporting. This also includes vessels of 12m (Norway and EU) when operating in the Skagerrak area. Foreign vessels of overall length 24m or more (15m or more in the case of EU vessels) are subject to mandatory position reporting when operating in Norwegian waters outside Skagerrak. By January 2014 approximately 575 Norwegian vessels were subject to position reporting. Norway is currently a signatory to agreements on electronic exchange of catch and activity reports from most of the waters where Norwegian fishing vessels operate. In 2013 a bilateral agreement on electronic exchange of catch and activity data was made between Norway and Iceland. Norway has also reached an agreement with Russia (October 2012). However, the date for entry into force is not yet decided (March 2015 update). All data is stored by the Directorate and only accessible to authorized personnel who are subject to a duty of confidentiality.

**References**

Norway Fisheries Directorate: Control and Enforcement <https://www.fiskeridir.no/English/Fisheries/Control-and-enforcement>

Norway Fisheries Directorate: Utøvelsesforskriften (Real-time fisheries management law): <http://www.fiskeridir.no/Yrkesfiske/Regelverk-og-reguleringer/J-meldinger/Gjeldende-J-meldinger/J-125-2016>

Norway Fisheries Directorate IUU List: <https://www.fiskeridir.no/English/Fisheries/IUU-list>

Norway Fisheries Directorate Black list pdf 17pp: <https://www.fiskeridir.no/English/Fisheries/Norwegian-Black-List>

Norway Fisheries Directorate: Electronic Reporting Systems: <https://www.fiskeridir.no/English/Fisheries/Electronic-Reporting-Systems>

**Links**

<b>MarinTrust Standard clause</b>	1.3.1.3
<b>FAO CCRF</b>	7.7.2
<b>GSSI</b>	D1.09

## CATEGORY B SPECIES

Category B species are those which make up greater than 5% of landings in the applicant raw material, but which are not subject to a species-specific research and management regime sufficient to pass all Category A clauses. If there are no Category B species in the fishery under assessment, this section can be deleted.

Category B species are assessed using a risk-based approach. The following process should be completed once for each Category B species.

## Assessment Results

Species Name					
<b>B1</b>	Species Name	<i>Calanus finmarchicus</i>			
	Table used (Ba, Bb)	Table B(b)			
	Outcome	PASS			
<p>Due to economic interest in the ester oil found in <i>Calanus finmarchicus</i>, there has been an ongoing trial fishery of <i>C. finmarchicus</i> for almost 2 decades in the Norwegian Sea, targeting copepods at stages IV–VI. The given quota has been 1000–5000 t wet weight (WW) per year. Recently, a management plan was implemented, increasing the total allowable catch to 254 000 t WW (<a href="https://www.regjeringen.no/no/dokumenter/forskrift-om-regulering-av-hosting-av-rodete-i-2019/id2632216/">https://www.regjeringen.no/no/dokumenter/forskrift-om-regulering-av-hosting-av-rodete-i-2019/id2632216/</a> accessed 05 July 2022). Of these, 3000 t can be caught in waters shallower than 1000 m off the Norwegian coast. The division of the quota, with a more restricted fishery close to shore, aims to limit unwanted bycatch of fish eggs and larvae. Ten licenses were awarded in 2020 to catch this quota, and simulations suggest a typical annual catch is around 17 000 t – 54 000 t, far from the annual quota allowance (Hansen et al 2021).</p> <p>No analytical stock assessments are undertaken for <i>C. finmarchicus</i>. However, annual acoustic surveys cover a substantial part of the Nordic Seas at different seasons. Regular data collection from transects, located at the inflow and outflow regions of ocean basins serve as indicators of the biological and physical state of the basins. Data on <i>C. finmarchicus</i> is collected during these surveys. Estimates of <i>C. finmarchicus</i> production in the Norwegian Sea have formed the basis for commercial quota calculations. Annual surveys undertaken in the assessment area include: IESNS: International Ecosystem Survey in the Nordic Seas (since 1995) IESSNS: International Ecosystem Summer Survey in the Nordic Seas (July-August). Results of these surveys are submitted for discussion to ICES Working Group of International Pelagic Surveys (WGIPS).</p> <p>Annual acoustic surveys suggest an annual production range estimated to be 190 - 290 million tons in the Norwegian Sea (Melle et al. 2004, Skjoldal et al. 2004, Hjøllø et al. 2012). With a standing stock biomass of close to 30 million tons WW (Hansen et al 2021).</p> <p><i>C. finmarchicus</i> is a low trophic level species and assumed to have high resilience to fishing pressure. This is supported by a recent scientific study that concluded even if catches were increased to 349 000 t yr<sup>-1</sup>, no ecosystem effects were found, neither on the <i>C. finmarchicus</i> biomass nor on the Norwegian spring spawning herring biomass (Hansen et al 2021).</p> <p>Table B(b) was used to score this fishery. Given that <i>C. finmarchicus</i> is an underexploited resource it was assumed that the standing biomass = <math>B_{av}</math>. No reference points for fishing mortality exist, though given that ecosystem simulations suggest that the current annual catch is very likely to be conservative (Hansen et al 2021) fishing mortality is likely to be insignificant. Therefore the fishery passes the Category B assessment.</p>					
<b>B &gt; B<sub>av</sub> and F &lt; F<sub>av</sub></b>		Pass	Pass	Pass	Fail
<b>B &gt; B<sub>av</sub> and F or F<sub>av</sub> unknown</b>		Pass	Pass	Fail	Fail
<b>B = B<sub>av</sub> and F &lt; F<sub>av</sub></b>		Pass	Pass	Fail	Fail
<b>B = B<sub>av</sub> and F or F<sub>av</sub> unknown</b>		Pass	Fail	Fail	Fail
<b>B &gt; B<sub>av</sub> and F &gt; F<sub>av</sub></b>		Pass	Fail	Fail	Fail
<b>B &lt; B<sub>av</sub></b>		Fail	Fail	Fail	Fail
<b>B unknown</b>		Fail	Fail	Fail	Fail
<b>Resilience</b>		High	Medium	Low	Very Low

**References**

*Calanus finmarchicus* management plan - <https://www.regjeringen.no/no/dokumenter/forskrift-om-regulering-av-hosting-av-rodete-i-2019/id2632216/> accessed 05 July 2022

Hansen, C. et al. 2021. Patterns, efficiency and ecosystem effects when fishing *Calanus finmarchicus* in the Norwegian Sea — using an individual-based model. *Marine Ecology Progress Series* 680 (15 – 32)

Hjøllo SS, Huse G, Skogen MD, Melle W (2012) Modelling secondary production in the Norwegian Sea with a fully coupled physical/primary production/individual-based *Calanus finmarchicus* model system. *Mar Biol Res* 8: 508–526

Melle W, Ellertsen B, Skjoldal HR (2004) Zooplankton: the link to higher trophic levels. In: Skjoldal HR (ed) *The Norwegian Sea ecosystem*. Tapir Academic Press, Trondheim, p 137–202

Skjoldal HR, Saetre R, Fernö A, Misund OA, Dommasnes A (2004) *The Norwegian Sea ecosystem*. Tapir Academic Press, Trondheim

**Links**

<b>MarinTrust Standard clause</b>	<b>1.3.2.2, 4.1.4</b>
<b>FAO CCRF</b>	<b>7.5.1</b>
<b>GSSI</b>	<b>D.5.01</b>

## CATEGORY C SPECIES

In a whole fish assessment, Category C species are those which make up less than 5% of landings, but which are subject to a species-specific management regime. In most cases this will be because they are a commercial target in a fishery other than the one under assessment.

Clause C1 should be completed for **each** Category C species. If there are no Category C species in the fishery under assessment, this section can be deleted. Where a species fails this Clause, it may be assessed as a Category D species instead, EXCEPT if there is evidence that it is currently below the limit reference point.

Species Name		<i>Gadus morhua</i>		
<b>C1</b>	<b>Category C Stock Status - Minimum Requirements</b>			
	<b>C1.1</b>	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.		Yes
	<b>C1.2</b>	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.		Yes
<b>Clause outcome:</b>				<b>PASS</b>
<p><b>C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.</b></p> <p>At the scale the fishery currently operates the impact on the eggs / larvae of cod is considered to be negligible (Hansen et al 2021).</p> <div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p><b>Catches</b></p> </div> <div style="width: 45%;"> <p><b>Biomass index</b></p> </div> </div> <p><b>C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.</b></p> <p>The biomass of southern Norwegian coastal cod is on an upward trajectory, though no limit reference point is defined (ICES 2021). Removals of pre-recruit juvenile fish are unlikely to have an impact on the stock (Hansen et al 2021).</p>				
<p><b>References</b></p> <p>Hansen, C. et al. 2021. Patterns, efficiency and ecosystem effects when fishing <i>Calanus finmarchicus</i> in the Norwegian Sea — using an individual-based model. <i>Marine Ecology Progress Series</i> 680 (15 – 32)</p> <p>ICES 2021. Cod (<i>Gadus morhua</i>) in Subarea 2 between 62°N and 67°N (Norwegian Sea), southern Norwegian coastal cod. 15.06.2021 <a href="https://ices-">https://ices-</a></p>				



[library.figshare.com/articles/report/Cod Gadus morhua in Subarea 2 between 62 N and 67 N Norwegian Sea southern Norwegian coastal cod/18638588?backTo=/collections/ICES Advice 2021/5796932](https://library.figshare.com/articles/report/Cod_Gadus_morhua_in_Subarea_2_between_62_N_and_67_N_Norwegian_Sea_southern_Norwegian_coastal_cod/18638588?backTo=/collections/ICES_Advice_2021/5796932)

**Links**

MarinTrust Standard clause	1.3.2.2
FAO CCRF	7.5.3
GSSI	D.3.04, D5.01

**Species Name**

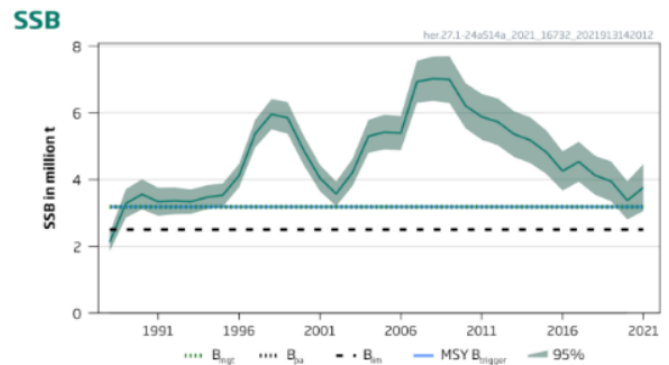
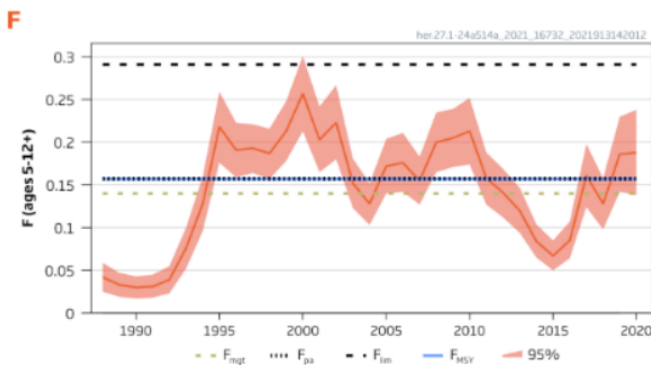
*Clupea harengus*

<b>C1</b>	<b>Category C Stock Status - Minimum Requirements</b>		
	<b>C1.1</b>	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	Yes
	<b>C1.2</b>	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	Yes

Clause outcome: PASS

**C1.1** Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.

At the scale the fishery currently operates the impact on the larvae of herring is considered to be negligible (Hansen et al 2021).



**C1.2** The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

The biomass of Norwegian spring-spawning herring is above the limit (and target) reference point (ICES 2021). Removals of pre-recruit juvenile fish are unlikely to have an impact on the stock (Hansen et al 2021).

**References**

Hansen, C. et al. 2021. Patterns, efficiency and ecosystem effects when fishing *Calanus finmarchicus* in the Norwegian Sea — using an individual-based model. *Marine Ecology Progress Series* 680 (15 – 32)

ICES 2021. Herring (*Clupea harengus*) in subareas 1, 2, and 5, and in divisions 4.a and 14.a, Norwegian spring-spawning herring (the Northeast Atlantic and the Arctic Ocean). 30.09.2021 <https://ices->

[library.figshare.com/articles/report/Herring Clupea harengus in subareas 1 2 and 5 and in divisions 4 a and 14 a Norwegian spring-spawning herring the Northeast Atlantic and the Arctic Ocean /18639203?backTo=/collections/ICES Advice 2021/5796932](https://library.figshare.com/articles/report/Herring_Clupea_harengus_in_subareas_1_2_and_5_and_in_divisions_4_a_and_14_a_Norwegian_spring-spawning_herring_the_Northeast_Atlantic_and_the_Arctic_Ocean_/18639203?backTo=/collections/ICES_Advice_2021/5796932)

**Links**

MarinTrust Standard clause	1.3.2.2
FAO CCRF	7.5.3
GSSI	D.3.04, D5.01

<b>Species Name</b>	<b><i>Brosme brosme</i></b>
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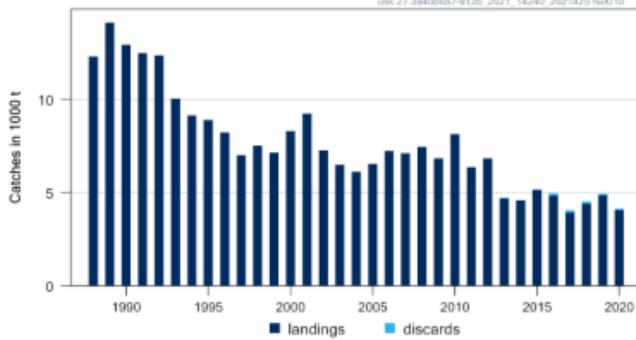
<b>C1</b>	<b>Category C Stock Status - Minimum Requirements</b>	
	<b>C1.1</b>	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.
	<b>C1.2</b>	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

**Clause outcome:** PASS

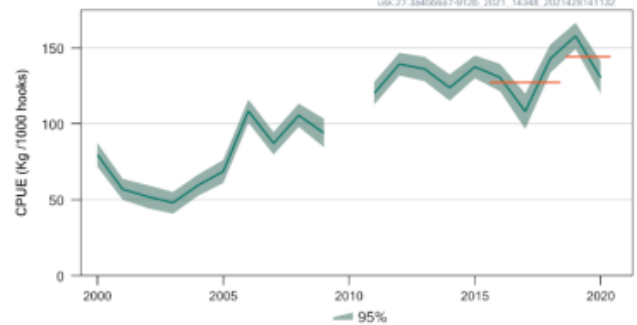
**C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.**

At the scale the fishery currently operates the impact on the eggs / larvae of tusk is considered to be negligible (Hansen et al 2021).

**Catches**



**Biomass index**



**C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.**

The biomass of tusk has been on a long-term upward trend, though no limit reference point is defined (ICES 2021). Removals of pre-recruit juvenile fish are unlikely to have an impact on the stock (Hansen et al 2021).

**References**

Hansen, C. et al. 2021. Patterns, efficiency and ecosystem effects when fishing *Calanus finmarchicus* in the Norwegian Sea — using an individual-based model. *Marine Ecology Progress Series* 680 (15 – 32)

ICES 2021. Tusk (*Brosme brosme*) in subareas 4 and 7–9, and in divisions 3.a, 5.b, 6.a, and 12.b (Northeast Atlantic). 10.06.2021 <https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2021/2021/usk.27.3a45b6a7-912b.pdf>

Links	
MarinTrust Standard clause	1.3.2.2
FAO CCRF	7.5.3
GSSI	D.3.04, D5.01

<b>Species Name</b>	<b><i>Melanogrammus aeglefinus</i></b>
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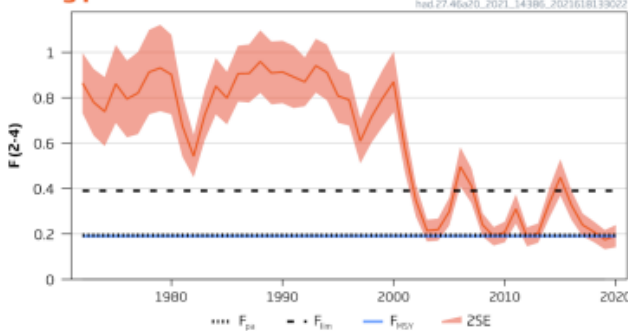
<b>C1</b>	<b>Category C Stock Status - Minimum Requirements</b>	
	<b>C1.1</b>	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.
	<b>C1.2</b>	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.

**Clause outcome:** PASS

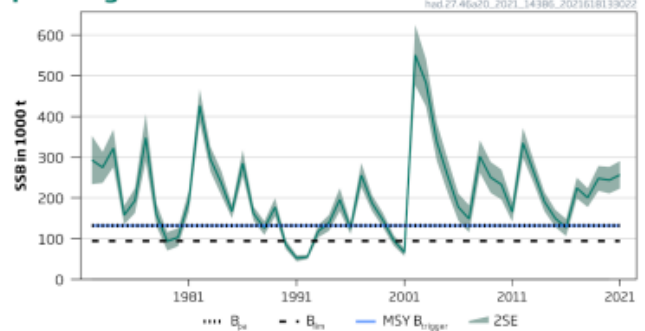
**C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.**

At the scale the fishery currently operates the impact on the eggs / larvae of haddock is considered to be negligible (Hansen et al 2021).

**Fishing pressure**



**Spawning Stock Biomass**



**C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.**

The biomass of haddock in the Greater North Sea region is above the limit (and target) reference point (ICES 2021). Removals of pre-recruit juvenile fish are unlikely to have an impact on the stock (Hansen et al 2021).

**References**

Hansen, C. et al. 2021. Patterns, efficiency and ecosystem effects when fishing *Calanus finmarchicus* in the Norwegian Sea — using an individual-based model. *Marine Ecology Progress Series* 680 (15 – 32)

ICES. 2021. Haddock (*Melanogrammus aeglefinus*) in Subarea 4, Division 6.a, and Subdivision 20 (North Sea, West of Scotland, Skagerrak). 30.06.2021 [https://ices-library.figshare.com/articles/report/Haddock Melanogrammus aeglefinus in Subarea 4 Division 6 a and Subdivision 20 North Sea West of Scotland Skagerrak /18638720?backTo=/collections/ICES Advice 2021/5796932](https://ices-library.figshare.com/articles/report/Haddock_Melanogrammus_aeglefinus_in_Subarea_4_Division_6_a_and_Subdivision_20_North_Sea_West_of_Scotland_Skagerrak_/18638720?backTo=/collections/ICES_Advice_2021/5796932)

**Links**

<b>MarinTrust Standard clause</b>	1.3.2.2
<b>FAO CCRF</b>	7.5.3
<b>GSSI</b>	D.3.04, D5.01

## FURTHER IMPACTS

The three clauses in this section relate to impacts the fishery may have in other areas. A fishery must meet the minimum requirements of all three clauses before it can be recommended for approval.

F1	Impacts on ETP Species - Minimum Requirements	
F1.1	Interactions with ETP species are recorded.	Yes
F1.2	There is no substantial evidence that the fishery has a significant negative effect on ETP species.	Yes
F1.3	If the fishery is known to interact with ETP species, measures are in place to minimise mortality.	Yes
<b>Clause outcome:</b>		PASS
<p>The Calanus AS fishery is unlikely to interact with ETP species. Capture of <i>C. finmarchicus</i> is undertaken by towing a bespoke trawl at low speed, and likely to be highly targeted. The main bycatch species will be larval fish and eggs (see Section C assessments).</p> <p><b>F1.1 Interactions with ETP species are recorded.</b></p> <p>There is a monitoring programme inherent to the Fishery. This programme is designed in collaboration with IMR and the Directorate. For every haul a visual interpretation of bycatch can be conducted retrospectively; for all hauls there is a sample taken of the catch to assess the amount of eggs, larvae and juveniles. If the amount of bycatch during fishery (visual inspection) is deemed above acceptable limits (currently 10% of catch by volumetric sampling) fishing vessels relocate, and hunt for grounds with lower abundance of bycatch. A study undertaken by the Directorate in 2017 looked at bycatch levels in the Calanus fishery. Bycatch consisted of eggs from 13 fish species/groups; and larvae and juveniles from 15 species groups. Eggs of cod, haddock and tusk, accounted for 75% of all eggs retained in the trawls; herring and cod larvae and fry were the most common larvae bycatch.</p> <p><b>F1.2 There is no substantial evidence that the fishery has a significant negative effect on ETP species.</b></p> <p>Marine species listed as threatened, found in Norwegian waters include 8 fish, 8 birds, 4 mammals, 8 molluscs, 3 crustaceans, 2 annelids, 3 vascular plants and 9 species of algae. The overall number listed (2015) as threatened is two higher than in the previous edition of Norway's Red List. One species, the North Atlantic right whale, has been listed as regionally extinct since the first edition of the Red List was published in 1998. Statistics and biomass models show a population decline of 70–90 % of Golden redfish (<i>Sebastes norvegicus</i>) since 1990. Under criteria developed by IUCN this species is classified in Norwegian waters as endangered. Combining lists from several endangered species lists the following may also be found in Norwegian waters: Shark (spp); Atlantic Cod (<i>Gadus morhua</i>); Atlantic Halibut (<i>Hippoglossus hippoglossus</i>); European Eel (<i>Anguilla anguilla</i>); Long-nosed skate (<i>Dipturus oxyrinchus</i>); Porbeagle (<i>Lamna nasus</i>) and Rabbitfish (<i>Chimaera monstrosa</i>). Due to low towing speeds (approximately one knot/hr) adult fish, ETP species and mobile bycatch may also escape the trawl.</p> <p><b>F1.3 If the fishery is known to interact with ETP species, measures are in place to minimise mortality.</b></p> <p>The bespoke Calanus trawl is a pelagic trawl employs an appropriately designed bycatch sorting grid. The main purpose of this grid is to minimize bycatch of larvae and juveniles. If the amount of bycatch during fishery is deemed above acceptable limits, the fishing vessels relocate, and hunt for grounds with lower abundance of bycatch. Authorities continue to develop a management plan for the stock based on long-term ecosystem-based management in line with the precautionary principle and other obligations under the MRA.</p>		
<p><b>References</b></p> <p>Calanus AS: New bio-industry based on the marine copepod Calanus finmarchicus - <a href="https://www.ices.dk/events/symposia/zp6/Documents/Presentations/W3/w3_wednesd_0905_tande_calanus.pdf">https://www.ices.dk/events/symposia/zp6/Documents/Presentations/W3/w3_wednesd_0905_tande_calanus.pdf</a></p> <p>Norway Red List <a href="https://www.biodiversity.no/Pages/135380">https://www.biodiversity.no/Pages/135380</a> R29 Cecilie Broms, Espen Strand, Webjørn Melle: IMR (2017): Bycatch (eggs, larvae and fry) in the Calanus fishery. pdf 17pp (NO)</p> <p>Commercial Exploitation of Zooplankton in the Norwegian Sea: Eduardo Grimaldi and Svein Helge Gjøvsund SINTEF Fisheries and Aquaculture Norway.</p>		

<b>Links</b>	
<b>MarinTrust Standard clause</b>	1.3.3.1
<b>FAO CCRF</b>	7.2.2 (d)
<b>GSSI</b>	D4.04, D.3.08

<b>F2</b>	<b>Impacts on Habitats - Minimum Requirements</b>		
	<b>F2.1</b>	Potential habitat interactions are considered in the management decision-making process.	Yes
	<b>F2.2</b>	There is no substantial evidence that the fishery has a significant negative impact on physical habitats.	Yes
	<b>F2.3</b>	If the fishery is known to interact with physical habitats, there are measures in place to minimise and mitigate negative impacts.	Yes
<b>Clause outcome:</b>			<b>PASS</b>

**F2.1 Potential habitat interactions are considered in the management decision-making process.**

Pelagic fishing by multinational fleets is the major activity in the Norwegian Sea Ecoregion. The number of fishing vessels is declining while vessel size is increasing. The Norwegian commercial fleet has the highest fishing activity in the shelf area, particularly along the coast of Norway and the continental shelf edge.

Bottom trawls are regulated along the Norwegian continental slope through closed areas to avoid extended damage on fragile and vulnerable benthic communities and reef-building organisms.

The bespoke Calanus trawl is a pelagic trawl with minimal impact on the ocean floor. A bycatch sorting grid has been designed. The main purpose of this grid is to minimize bycatch of larvae and juveniles. Permits are awarded in the fishery on condition of a minimum mesh size of 2000 µm throughout the trawl to limit bycatch of fish fry and small fish. If the amount of bycatch during fishery is deemed above acceptable limits, the fishing vessels relocate, and hunt for grounds with lower abundance of bycatch. The ICES Working Group on the Integrated Assessments of the Norwegian Sea (WGINOR) aims to conduct and further develop Integrated Ecosystem Assessments (IEA's) for the Norwegian Sea as a step towards implementing the ecosystem approach. It is WGINOR's role to develop an operational approach for integrated assessment of the Norwegian Sea ecosystem based on a common framework. The application of the Ecosystem Approach to Fisheries Management (EAFM) is now mandatory in Norway. The Ministry has power to: 'evaluate which types of management measures are necessary to ensure sustainable management of wild living marine resources' This includes looking at effective control of harvesting methods and the way gear is used to consider the need to reduce possible negative impacts on living marine resources, including marine habitats. Additional ecosystem considerations will be incorporated as new scientific knowledge becomes available concerning multispecies interactions, effects of fishing on benthic habitats and the effects of by-catch of fish, seabirds and marine mammals, where relevant.

**F2.2 There is no substantial evidence that the fishery has a significant negative impact on physical habitats.**

Most commercial fish species living in the Norwegian Sea spawn on the Norwegian coast. Most fish species have pelagic eggs, within the top 50m of the water column. Exceptions include bottom spawning herring. Eggs, larvae and fry drift North with the coastal current, eggs spawned in the South will be found as larvae and fry further North later in the season. The bespoke Calanus trawl is a pelagic trawl with minimal impact on the ocean floor.

**F2.3 If the fishery is known to interact with physical habitats, there are measures in place to minimise and mitigate negative impacts.**

There is a monitoring programme inherent to the Fishery; designed in collaboration with IMR and the Directorate. The Directorate has the power to impose seasonal and geographic restrictions; total time-at-sea restrictions; gear restrictions and other effort restrictions if deemed necessary. Chapter 7 (Control and enforcement) Section 47 (Placing inspectors and observers on board vessels) of the MRA obliges vessel owners, when requested, to provide board and lodging at the vessel's expense and use of communication equipment without charge.

If the amount of bycatch during fishing is deemed above acceptable limits, the fishing vessels relocate, and hunt for grounds with lower abundance of bycatch. If the fishery is known to interact with physical habitats, these data would be captured in observer reporting.

**References**

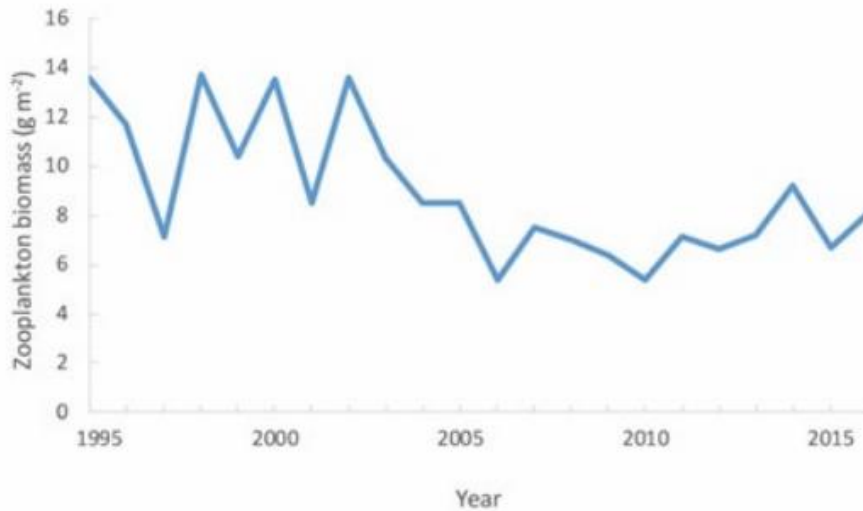
Gullestad, P et al (2017) Marine Policy Vol 77 pp104-110 Towards Ecosystem based fisheries management in Norway (2017) EN <https://www.sciencedirect.com/science/article/pii/S0308597X16305383>

**Links**

<b>MarinTrust Standard clause</b>	1.3.3.2
<b>FAO CCRF</b>	6.8
<b>GSSI</b>	D.2.07, D.6.07, D3.09

F3 Ecosystem Impacts - Minimum Requirements		
F3.1	The broader ecosystem within which the fishery occurs is considered during the management decision-making process.	Yes
F3.2	There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.	Yes
F3.3	If one or more of the species identified during species categorisation plays a key role in the marine ecosystem, additional precaution is included in recommendations relating to the total permissible fishery removals.	Yes
<b>Clause outcome:</b>		PASS
<p><b>F3.1 The broader ecosystem within which the fishery occurs is considered during the management decision-making process.</b></p> <p><i>C. finmarchicus</i> is important ecologically because it shows rapid responses to climate variability, including shifts in species' distribution and abundance. <i>C. finmarchicus</i> is a key component in the food web of the North Atlantic, providing sustenance for a variety of marine organisms including fish, shrimp, and whales. Calanoid copepods (especially <i>C. finmarchicus</i>) were the most important contributor to the overall diet of mackerel in years studied (2011-14 &gt;70%, source WGINOR 2019). WGINOR research functional connections and linkages within the ecosystem, compiling time-series on absolute abundance of major components of the physical and biological ecosystem and look to develop models suitable for integrated ecosystem assessment. Two statistical methods were introduced (WGINOR 2019) as possible tools to develop food web assessment of the pelagic ecosystem in the Norwegian Sea, empirical dynamic modelling and modelling based on principles of chance and necessity. Future work involves evaluating both models and assessing whether they are useful tools to make short term forecast for food web status. Development of a framework for ecosystem warning signals was also reported on in the 2019 Report. Another goal of WGINOR is to utilize multispecies and ecosystem models to evaluate effects of single and multispecies harvest control rules on fishing yield and ecosystem state of the pelagic ecosystem (Norwegian Sea). WGINOR will report on these and other findings by 2021. One project will look at changes in the distribution of <i>C finmarchicus</i> and the effect on distribution of fish stocks</p> <p><b>F3.2 There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.</b></p> <p>One of the most important zooplankton groups in the Norwegian Sea is the genus <i>Calanus</i>, both in numbers and biomass. In the Norwegian coastal and Atlantic habitats <i>C. finmarchicus</i> dominates the zooplankton biomass in spring and summer, and <i>C. helgolandicus</i> is also found in southern and eastern parts of these habitats. In the Arctic habitat <i>C. hyperboreus</i> is important. Of other species, the krill <i>Thysanoessa inermis</i>, <i>T. longicaudata</i>, and <i>Meganyctiphanes norvegica</i> are widespread, the latter especially in the warmer Atlantic and coastal habitats. The amphipod <i>Themisto libellula</i> is abundant in the Arctic, and <i>T. abyssorum</i> in the Atlantic habitats. The seasonal pulse of zooplankton production starts in southern and eastern parts of the Norwegian Sea, with a time delay towards the colder areas in the western and northern parts.</p>		





Indices of zooplankton dry weight ( $\text{g m}^{-2}$ ) sampled in May in and near the Norwegian Sea, from 1995 to 2016. For details see ICES (2016a).

Bycatch consisted of eggs from 13 fish species/groups; and larvae and juveniles from 15 species groups. Eggs of cod, haddock and tusk accounted for 75% of all eggs retained in the trawls; herring and cod larvae and fry were the most common larvae bycatch. Other retained species are non-commercial. These included gelatinous forms (jellyfish) and zooplankton of similar size to *C. finmarchicus*. However, the amount of these species is highly insignificant due to low abundance. The authors of the 2017 report concluded that bycatch levels of larvae and eggs reported in 2017 do not constitute any significant increases in mortality and considers that bycatch in the 2017 fishery had negligible effects on fish stocks. Echo sounders at different frequencies have been deployed which map *C. finmarchicus* more efficiently and give information on catch/by-catch ratio before the net is deployed.

A recent ecosystem simulation of 10 vessels (that allowed under existing regulations) found that the allocated quota (254,000t) for *C. finmarchicus* was not caught. No ecosystem effects were found, neither on the *C. finmarchicus* biomass nor on the Norwegian spring spawning herring biomass. This finding indicates that the proposed quota of *C. finmarchicus* supports a sustainable fishery (Hansen et al 2021).

**F3.3 If one or more of the species identified during species categorisation plays a key role in the marine ecosystem, additional precaution is included in recommendations relating to the total permissible fishery removals.**

The main purpose of this grid is to minimize bycatch of larvae and juveniles, during summer months. Grid dimensions are calculated to allow catches of *C. finmarchicus*, while juveniles and larvae of fish and other species are directed out through the end section of the trawl. The precautionary approach is applied to all fisheries in Norway, and this strategy has proven effective. Few stocks have been decimated below critical thresholds and there have been no major breakdowns or collapses of stocks.

The precautionary approach is entailed within the MRA. An update was provided on two projects, supported by Calanus AS, to minimise ecosystem effects of the fishery.

OASIS: The objective of this project is to develop a new generation of harvesting equipment which will allow Calanus AS harvest on lower concentrations compared to previously, and to avoid areas with high presence of larvae and juveniles. The Oasis 2 floatation rig testing has been postponed until 2021. Testing of scale models of the rig in a flume tank showed promising results for full scale testing. The rig will include a net for selection/separation of incoming biomass to reduce bycatch levels.

Drones: These could be used to provide for a better spatial mapping of the stock. The effect would be a reduction in time spent searching for *C. finmarchicus*; reducing fuel emissions and search costs. Calanus AS are continuing to examine this option.

**References**

Drone fishing project (Calanus AS) pdf 20pp: EFFEKTIVISERING AV HØSTING ETTER RAUDÅTE VED HJELP AV DRONER (Annen).

Calanus AS OASIS 2 - 2nd Generation Zooplankton Harvesting System (Feb 2018) 17pp <https://www.calanus.no/resource/>

Hansen, C. et al. 2021. Patterns, efficiency and ecosystem effects when fishing Calanus finmarchicus in the Norwegian Sea — using an individual-based model. Marine Ecology Progress Series 680 (15 – 32)

Wourms, J.P., 1991. Reproduction and development of Sebastes in the context of the evolution of piscine viviparity. Environ. Biol. Fish. 30:111-126

**Links**

<b>MarinTrust Standard clause</b>	1.3.3.3
<b>FAO CCRF</b>	7.2.2 (d)
<b>GSSI</b>	D.2.09, D3.10, D.6.09

## SOCIAL CRITERION

In addition to the scored criteria listed above, applicants must commit to ensuring that vessels operating in the fishery adhere to internationally recognised guidance on human rights. They must also commit to ensuring there is no use of enforced or unpaid labour in the fleet(s) operating upon the resource.

## Appendix A - Determining Resilience Ratings

The assessment of Category B species described in this assessment report template utilises a resilience rating system suggested by the American Fisheries Society. This approach was chosen because it is also used by FishBase, and so the resilience ratings for many thousands of species are freely available online. As described by FishBase, the following is the process used to arrive at the resilience ratings:

*“The American Fisheries Society (AFS) has suggested values for several biological parameters that allow classification of a fish population or species into categories of high, medium, low and very low resilience or productivity (Musick 1999). If no reliable estimate of  $r_m$  (see below) is available, the assignment is to the lowest category for which any of the available parameters fits. For each of these categories, AFS has suggested thresholds for decline over the longer of 10 years or three generations. If an observed decline measured in biomass or numbers of mature individuals exceeds the indicated threshold value, the population or species is considered vulnerable to extinction unless explicitly shown otherwise. If one sex strongly limits the reproductive capacity of the species or population, then only the decline in the limiting sex should be considered. We decided to restrict the automatic assignment of resilience categories in the Key Facts page to values of  $K$ ,  $t_m$  and  $t_{max}$  and those records of fecundity estimates that referred to minimum number of eggs or pups per female per year, assuming that these were equivalent to average fecundity at first maturity (Musick 1999). Note that many small fishes may spawn several times per year (we exclude these for the time being) and large live bearers such as the coelacanth may have gestation periods of more than one year (we corrected fecundity estimates for those cases reported in the literature). Also, we excluded resilience estimates based on  $r_m$  (see below) as we are not yet confident with the reliability of the current method for estimating  $r_m$ . If users have independent  $r_m$  or fecundity estimates, they can refer to Table 1 for using this information.”*

Parameter	High	Medium	Low	Very low
Threshold	0.99	0.95	0.85	0.70
$r_{max}$ (1/year)	> 0.5	0.16 - 0.50	0.05 - 0.15	< 0.05
$K$ (1/year)	> 0.3	0.16 - 0.30	0.05 - 0.15	< 0.05
Fecundity (1/year)	> 10,000	100 - 1000	10 - 100	< 10
$t_m$ (years)	< 1	2 - 4	5 - 10	> 10
$t_{max}$ (years)	1 - 3	4 - 10	11 - 30	> 30

[Taken from the FishBase manual, “Estimation of Life-History Key Facts”, <http://www.fishbase.us/manual/English/key%20facts.htm#resilience>]

## Glossary

**Non-target:** Species for which the gear is not specifically set, although they may have immediate commercial value and be a desirable component of the catch. OECD (1996), Synthesis report for the study on the economic aspects of the management of marine living resources. AGR/FI(96)12

**Target:** In the context of fishery certification, the target catch is the catch of stock under consideration by the unit of certification – i.e. the fish that are being assessed for certification and ecolabelling. (GSSI)

## Appendix B. Peer Review Report

### MarinTrust Fishery Assessment Peer Review Template

This section comprises a summary of the fishery being assessed against version 2 of the MarinTrust Standard.

<b>Fishery under assessment</b>	Whole fishery assessment – Norway <i>Calanus finmarchicus</i>	
<b>Management authority (Country/State)</b>	Ministry of Trade, Industry and Fisheries (Norway)	
<b>Main species</b>	Copepod ( <i>Calanus finmarchicus</i> )	
<b>Fishery location</b>	FAO 27 Northeast Atlantic, Norway Economic Exclusion Zone	
<b>Gear type(s)</b>	AS pelagic trawl (Calanus bespoke)	
<b>Overall recommendation. (Approve/ Fail)</b>	CAB	Approve
	Peer Review	FAIL without further evidence or clarification (on A2.1-5 & A4.1)

**Summary: in this section, provide any additional information about the fishery that the reviewers feel is significant to their decision.**

The peer reviewer agrees with most scoring however for a few (A2.1-5, A4.1, F1.1-3), additional evidence or clarification is required to adequately support the pass mark / approve recommendation. Please refer to the comment boxes below for more details.

**General Comments on the Draft Report provided to the peer reviewer**

MarinTrust Fishery Assessment Peer Review

{ 1 }

### Summary of Peer Review Outcomes

Peer reviewers should review the fishery assessment report with the primary objective of answering the key questions listed in the table below. Where the situation is more complicated, reviewers may instead answer “See Notes”.

	YES	NO	See Notes
<b>A – Fishery Assessment</b>			
1. Has the fishery assessment been fully completed, using the recognised MarinTrust fishery assessment methodology and associated guidance?		X	X
2. Does the Species Categorisation section of the report reflect the best current understanding of the catch composition of the fishery?	X		X
3. Are the scores in the following sections accurate (i.e. do the scores reflect the evidence provided)?		X	X
Section M - Management	X		X
Category A Species		X	X
Category B Species	n.a	n.a	n.a
Category C Species	X		
Category D Species	n.a	n.a	n.a
Section F – Further Impacts	X		X

### Detailed Peer Review Justification

Peer reviewers should provide support for their answers in the boxes provided, by referring to specific scoring issues and any relevant documentation as appropriate.

Detailed justifications are only required where answers given are one of the ‘No’ options. In other (Yes) cases, either confirm ‘scoring agreed’ or identify any places where weak rationales could be strengthened (without any implications for the scores).

Boxes may be extended if more space is required.

<p>1. Is the scoring of the fishery consistent with the MarinTrust standard, and clearly based on the evidence presented in the assessment report?</p> <p>In part, peer reviewer agrees with most scoring however for a few (A2.1-5, A4.1, F1.1-3), additional evidence or clarification is required to adequately support the pass mark / approve recommendation. Please refer to the comment boxes below for more details.</p> <p><b>Certification body response</b></p> <p>We’ve addressed the peer-review’s comments as outlined below.</p>
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<p>2. Has the fishery assessment been fully completed, using the recognised MARINTRUST fishery assessment methodology and associated guidance?</p>
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Not always, I think in parts the assessment would have benefited from a side-by-side comparison of what the assessment methodology and guidance ask for in terms of scoring content, and evidence.

**Certification body response**

See comments to responses below.

**3. Does the Species Categorisation section of the report reflect the best current understanding of the catch composition of the fishery?**

There is a species specific management plan in place for the target species, Copepod (*C.finmarchius*), the auditor has correctly designated it as a Category A species under the scoring evaluation.

The other species identified in the catch and scored are Atlantic cod (*G.morhua*), Atlantic Haddock (*M.aeglefinus*), Tusk (*B.brosme*) and Atlantic herring (*C.harengus*). These species are typically recorded in their juvenile or larvae phases and comprise 3% of the catch. As non-target species with species specific management regimes in place, the auditor has correctly identified them as category C species.

**Recommendation:** pg. 6 species categorisation rationale the auditor states - *“The categorisation has been done following the approach given in the initial assessment as no additional information has been submitted to the assessment team for this re-approval.”* A note should be made to highlight this to the onsite auditor. The catch composition should be verified to ensure scoring accuracy of both target and non-target species.

**Certification body response**

Now assessed as a Cat B species based on peer-reviewer’s comments below. I think scored Cat A originally due to the existence of the species-specific management plan. Though makes more sense to score as a Cat B given lack of stock assessment and reference points.

As for the species categorisation we have made a note for this to be discussed at the onsite audit.

3M. Are the scores in “Section M – Management” clearly justified? YES	
M1.1 There is an organisation responsible for managing the fishery.	YES
M1.2 There is an organisation responsible for collecting data and assessing the fishery.	YES
M1.3 Fishery management organisations are publicly committed to sustainability.	YES
M1.4 Fishery management organisations are legally empowered to take management actions.	YES
M1.5 There is a consultation process through which fishery stakeholders are engaged in decision-making.	YES
M1.6 The decision-making process is transparent, with processes and results publicly available.	YES
M2.1 There is an organisation responsible for monitoring compliance with fishery laws and regulations.	YES
M2.2 There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken.	YES
M2.3 There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing.	YES
M2.4 Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS.	YES

Peer reviewer agrees with scoring and rationale provided.

**Recommendation:** M2.2 scoring rationale the auditor states – “*Calanus AS regularly have inspectors from the Fisheries Monitoring Centre (FMC) onboard during harvesting.*” – it should be clear how many inspection reports were reviewed by the auditor to confirm compliance, and the % of hauls inspected by the compliance authority.

#### Certification body response

M2.2 – we agree with this, and will try and seek confirmation from the applicant

If the applicant does not respond to our query this should be checked at the onsite audit (this has been noted on the assessment)

#### 3A. Are the “Category A Species” scores clearly justified? NO

A1.1. \_ I agree with scoring outcome and rationale clearly justified.

A1.2. \_ I agree with scoring outcome and rationale clearly justified.

A2.1. \_ It is unclear how A2.1. is met with no available stock assessment completed for the Calanus stock. The supporting information would suggest the ‘or every 5 years’ qualifier would be appropriate, but there is no evidence provided as to when the last stock estimate was provided, or when the next one is planned. There are also instances throughout the report where different values are given for stock estimates (and supporting references are not always provided) – pg 3. 290 mill t - pg.14 33 mill t?



A2.2 \_ Again, it is unclear how A2.2 is met with no available stock estimate, which is relative to generic reference points appropriate to the species category. The auditor should clarify the process (and organisational roles) for completing the stock assessment, does ICES provide the advice? Where is it published etc..

A2.3 \_ **NOTE: ERROR IN TEMPLATE** \_ The report has A2.3 as *“The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.”* This is the A2.2 scoring wording. Regardless, it looks like the text provided by the auditor is appropriate for A2.3. However, it should still be clarified who completed the stock assessment, and what the stock estimate is. It is clear from the rationale how the IMR converts this estimate into advised TAC, and subsequently annual quota.

A2.4 \_ It is unclear what the process for internal or external review of the stock assessment is, or how this clause is met. The rationale details stakeholder involvement in the wider management processes, but not specifically input on the Calanus stock assessment. If the stock assessment is completed by ICES their processes should be reviewed by the auditor for appropriateness.

A2.5 \_ As above, the rationale provided is insufficient to justify this clause being met. No reference is provided to the stock assessment of Calanus, indicating it is not available to the auditor or general public.

A3.1 \_ I agree with scoring outcome and rationale clearly justified.

A3.2 \_ The auditor provides evidence of total landings, but not what the corresponding TAC that was set for each year. This evidence is required to adequately justify the pass awarded.

A3.3 \_ The rationale provided doesn't meet the MT guidance provided exactly. However, given the relatively low catches, and the small number of vessels involved in the fishery (only the client), the rationale provided which clearly demonstrates provisions within the management regulations to apply stronger controls if needed, is considered sufficient to meet A3.3.

A4.1 \_ As for A2.1-5 the justification is not on clear who completes the stock assessment, and how this relates to target reference points. The auditor should revisit MT's whole fishery guidance document and provide further clarification in the text.

**Recommendation:** Revisit scoring for A2.1-5 and A4.1 to ensure details of the Calanus stock assessment are clearer. If the fishery fails under Category A, it should be scored as a Category B species.

**Certification body response**

We agree with the peer-reviewer's comments, and reassessed as Category B with more recent information, and hopefully this now resolves any ambiguities.

**3B. Are the “Category B Species” scores clearly justified?**

If having addressed the above comments on Category A and the species fails, it should be scored as a category B species.

**Certification body response**

Now scored as Cat B, and passes this assessment based on inferences made from best available information (i.e. Hansen et al 2021).

**3C. Are the “Category C Species” scores clearly justified? YES**

C1.1\_ I agree with scoring outcome and rationale clearly justified (all species).  
 C1.2\_ I agree with scoring outcome and rationale clearly justified (all species).

**Certification body response**

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**3D. Are the “Category D Species” scores clearly justified?**

I agree with not scoring species at Category D.

**Certification body response**

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**3F. Are the scores in “Section F – Further Impacts” clearly justified? NO**

F1.1 \_ The rationale provided for F1.2 is of more relevance here. The current text is good background but does not directly address scoring methodology requirements. Are there plans to complete the 2017 bycatch study again?

F1.2 \_ The rationale here should elaborate on the 13 fish species, and 15 larvae / juvenile groups recorded in the 2017 assessment of bycatch. Are any ETP? How much of the other 25% of the catch do they makeup, is it enough to be considered a significant impact, or if limits are set, outside of these limits.

F1.3 \_ Future research or analyses are irrelevant to scoring, paragraph 2 & 3. The justification should focus on what ETPs are interacting with the fishery, and species-specific management measures to minimise mortality. E.g., what’s the acceptable limit for bycatch? How is monitored if catch is not segregated on board in real-time? If there are no ETPs then the argument here is that the bespoke gear has lowered mortality as low as practicable possible (without implementing onboard genetic testing which would be madness).

F2.1 \_ I agree with the scoring outcome and the rationale is clearly justified.

F2.2 \_ I agree with the scoring outcome and the rationale is clearly justified.

F2.3 \_ I agree with the scoring outcome and the rationale is clearly justified.

F3.1 \_ I agree with the scoring outcome and the rationale is clearly justified.

F3.2 \_ I agree with the scoring outcome and the rationale is clearly justified.

F3.3 \_ I agree with the scoring outcome and the rationale is clearly justified.

**Recommendation:** Although there probably is not an issue with this fishery and ETP interactions, additional evidence should be provided to ensure adequate recording and monitoring is in place. An additional note to consider, the auditor should be careful not to reference or rely on future work in justifying scoring outcomes (although it’s exciting to read about! Just be careful it’s not the only meaty thing in there to back up your scoring outcome).

Certification body response

Section F1 – we agree with the peer-reviewer’s comments and rearranged the text to make more sense. Based on our knowledge of the fishery it is unlikely to interact with ETP species, the main bycatch being larval fish species and eggs. These are assessed as Cat C species and pass this assessment.

Optional: General comments on the Peer Review Draft Report

No further comments.

Certification body response