



RESPONSIBLE
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IFFO RS
Global Standard for Responsible Supply
of Marine Ingredients

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**Global Standard for
Responsible Supply
of Marine Ingredients**
Fishery Assessment
Methodology and Template
Report V2.0



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Fishery Under Assessment	Norway pout <i>Trisopterus esmarkii</i> North Sea & Skagerrak-Kattegat (ICES 4 & 3a)
Date	January 2020
Assessor	Jim Daly
Stock(s) Pass	Norway pout <i>Trisopterus esmarkii</i>
Stock(s) Fail	None

Application details and summary of the assessment outcome				
Name: Norway Seafood Federation (NSF)				
Address:				
Country: Norway		Zip:		
Tel. No.:		Fax. No.:		
Email address:		Applicant Code		
Key Contact:		Title:		
Certification Body Details				
Name of Certification Body:		SAI Global Ltd		
Assessor Name	Peer Reviewer	Assessment Days	Initial/Surveillance/ Re-approval	Whole fish/ By-product
Jim Daly	Vito Romito	3	Initial	Whole fish
Assessment Period	2019-2020			

Scope Details	
Management Authority (Country/State)	Ministry of Trade, Industry and Fisheries (Norway); European Union (EU)
Main Species	Norway pout <i>Trisopterus esmarkii</i>
Fishery Location	North Sea & Skagerrak-Kattegat (ICES 4 & 3a)
Gear Type(s)	Small mesh (<32mm cod end) pelagic trawl
Outcome of Assessment	
Overall Outcome	PASS
Clauses Failed	NONE
Peer Review Evaluation	AGREE
Recommendation	APPROVE

Assessment Determination

Norway pout is a small, short-lived fish species (*Gadidae*) that lives at depths ranging from 50–250m. Spawning takes place from January to May in the area between Shetland and Norway (**Figure 1**). Approximately 20% of the population spawns for the first time at age one, while the rest become mature at age two. Norway pout constitute an important link in the marine food web: they feed primarily on crustaceans, particularly krill and copepods; and they themselves are prey for a number of larger fishes such as cod, whiting, saithe, and marine mammals.

The targeted reduction fishery for Norway pout is a small mesh pelagic trawl fishery conducted nearly exclusively by Denmark and Norway. In EU waters the quota is jointly managed with Norway. Total landings (Denmark and Norway fleets) in 2018 from EU waters amounted to 36,060t. No landings were reported for the stock (2018, 2019) by Norwegian vessels operating in Norwegian waters (source Norges Sildesalgslag website, accessed 23.01.20), likely due to the targeting of other industrial species like sprat for which fishing costs are lower. Discard levels of Norway pout in the fishery are considered to be low.

Long-term management strategies have been evaluated by ICES for this stock based on joint EU-Norway requests. The latest advice (October 2019) evaluated additional harvest control rules (HCRs) within the escapement strategy presently used for Norway pout. The ICES default approach for short-lived species (including Norway pout) is to maintain SSB, with 95% probability, above Blim after the fishery has taken place. An international management strategy for the stock has yet to be agreed.

The last benchmark assessment was undertaken in 2016. The current annual assessment and stock advice (2019) includes updates on biological reference points and other key data derived from previous assessments. According to ICES (2019) Spawning Stock Biomass (SSB) was expected to remain high during 2019 due to high 2018 recruitment, growth and 20 % maturity of 1-group fish. (SSB 94,420t) is estimated to have been fluctuating above Bpa (65,000t for most of the time-series (1984-2019).

Some fisheries have the potential to take protected, endangered, or threatened species (i.e., seabirds and marine mammals) as non-targeted bycatch. A recent EU-funded project (fishPi project, 2016) analysed risk from various gears to seabirds and marine mammals in a number of North Sea fisheries and determined that observations were most needed in fisheries using set gillnets, trammel nets, driftnets, and bottom trawls. The reduction fishery for Norway pout is undertaken with small mesh (<32mm cod end) pelagic trawls.

No recent assessment has been made of bird bycatch in the Greater North Sea; there was some evidence of large bycatches of seabirds in coastal gillnets in the past, but the fisheries with high bycatch have either been closed or have subsequently managed to reduce their bycatch risk.

Existing EU technical measures such as the closed Norway pout box, minimum mesh size in the fishery, and by-catch regulations to protect other species have been maintained for all directed fishing in EU waters. Norwegian vessels fishing for the stock in EU waters are obliged to use a sorting grid to reduce unwanted by-catch and discarding of juvenile Norway pout. The closed Norway pout box will guarantee no vessel (trawler or pelagic gear) will interact with the seabed as all fishing operations are prohibited when the box is closed:

Norway pout (Global stock) is currently listed on the IUCN Red list as a species of least concern (website accessed 28.01.20) and is currently not on the latest CITES list of endangered species. No by-catch species assessed in this report are categorised as Endangered or Critically Endangered on the IUCN Red List

Norway pout is approved by the SAI Global assessment team for the production of fishmeal and fish oil under the IFFO-RS v 2.0 by-products standard for whole fish (Category A).

Mackerel from the assessment area is approved under the IFFO-RS v 2.0 by-products standard for whole fish (Category C).

Horse mackerel, Silvery cod and the Lesser Silver Smelt *Argentina sphyraena* from the assessment area are approved for the production of fishmeal and fish oil under the IFFO-RS v 2.0 by-products standard for whole fish (Category D).

Peer Review Comments

The Peer Reviewer agrees with the assessment made in this report for Norway pout, mackerel, horse mackerel, silvery cod and argentine. The Norway pout and mackerel stocks are above Blim and Bpa thresholds. Stocks of horse mackerel, silvery cod and argentine for which data is deficient have passed the PSA. The ecosystem effects for this fishery do not appear to be significant.

The stocks in questions should be approved for the production of fishmeal and fish oil under the IFFO-RS v 2.0 by-products standard.

Notes for On-site Auditor

Note: This table should be completed for whole fish assessments only.

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

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A	Norway pout	99.4	A1	PASS
			A2	PASS
			A3	PASS
			A4	PASS
Category C	Mackerel	<5	PASS	
Category D	Horse mackerel	<5	PASS	
Category D	Silvery cod	<5	PASS	
Category D	Argentine	<5	PASS	

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

HOW TO COMPLETE THIS ASSESSMENT REPORT

This assessment template uses a modular approach to assessing fisheries against the IFFO RS standard.

Whole Fish

The process for completing the template for a **whole fish** assessment is as follows:

1. ALL ASSESSMENTS: Complete the Species Characterisation table, to determine which categories of species are present in the fishery.
2. ALL ASSESSMENTS: Complete clauses M1, M2, M3: Management.
3. IF THERE ARE CATEGORY A SPECIES IN THE FISHERY: Complete clauses A1, A2, A3, A4 for **each** Category A species.
4. IF THERE ARE CATEGORY B SPECIES IN THE FISHERY: Complete the Section B risk assessment for **each** Category B species.
5. IF THERE ARE CATEGORY C SPECIES IN THE FISHERY: Complete clause C1 for **each** Category C species.
6. IF THERE ARE CATEGORY D SPECIES IN THE FISHERY: Complete Section D.
7. ALL ASSESSMENTS: Complete clauses F1, F2, F3: Further Impacts.

A fishery must score a pass in **all applicable clauses** before approval may be recommended. To achieve a pass in a clause, the fishery/species must meet **all** of the minimum requirements.

By-products

The process for completing the template for **by-product raw material** is as follows:

1. ALL ASSESSMENTS: Complete the Species Characterisation table with the names of the by-product species and stocks under assessment. The ‘% landings’ column can be left empty; all by-products are considered as Category C and D.
2. IF THERE ARE CATEGORY C BYPRODUCTS UNDER ASSESSMENT: Complete clause C1 for **each** Category C by-product.
3. IF THERE ARE CATEGORY D BYPRODUCTS UNDER ASSESSMENT: Complete Section D.
4. ALL OTHER SECTIONS CAN BE DELETED. Clauses M1 - M3, F1 - F3, and Sections A and B do not need to be completed for a by-product assessment.

By-product approval is awarded on a species-by-species basis. Each by-product species scoring a pass under the appropriate section may be approved against the IFFO RS Standard.

SPECIES CATEGORISATION

The following table should be completed as fully as the available information permits. Any species representing more than 0.1% of the annual catch should be listed, along with an estimate of the proportion of the catch each species represents. The species should then be divided into Type 1 and Type 2 as follows:

- **Type 1 Species** can be considered the ‘target’ or ‘main’ species in the fishery. They make up the bulk of annual landings and are subjected to a detailed assessment.
- **Type 2 Species** can be considered the ‘bycatch’ or ‘minor’ species in the fishery. They make up a small proportion of the annual landings and are subjected to relatively high-level assessment.

Type 1 Species must represent 95% of the total annual catch. Type 2 Species may represent a maximum of 5% of the annual catch (see Appendix B).

Species which make up less than 0.1% of landings do not need to be listed (NOTE: ETP species are considered separately). The table should be extended if more space is needed. Discarded species should be included when known.

The ‘stock’ column should be used to differentiate when there are multiple biological or management stocks of one species captured by the fishery. The ‘management’ column should be used to indicate whether there is an adequate management regime specifically aimed at the individual species/stock. In some cases, it will be immediately clear whether there is a species-specific management regime in place (for example, if there is an annual TAC). In less clear circumstances, the rule of thumb should be that if the species meets the minimum requirements of clauses A1-A4, an adequate species-specific management regime is in place.

NOTE: If any species is categorised as Endangered or Critically Endangered on the IUCN Red List, or if it appears in the CITES appendices, it **cannot** be approved for use as an IFFO RS raw material. This applied to whole fish as well as by-products.

TYPE 1 SPECIES (Representing 95% of the catch or more)

Category A: Species-specific management regime in place.

Category B: No species-specific management regime in place.

TYPE 2 SPECIES (Representing 5% OF THE CATCH OR LESS)

Category C: Species-specific management regime in place.

Category D: No species-specific management regime in place.

**Ref: R4: ICES (2019): WORKING GROUP ON THE ASSESSMENT OF DEMERSAL STOCKS IN THE NORTH SEA AND SKAGERRAK (WGNSSK) pp 546-627:*

Common name	Latin name	Stock	*% of landings	Management	Category
Norway pout	<i>Trisopterus esmarkii</i>	NEA	99.4	EU/Norway	A
Mackerel	<i>Scomber scombrus</i>	NEA	<5	EU/Norway	C
Horse mackerel	<i>Trachurus trachurus</i>	NEA	<5	EU/Norway	D
Silvery cod	<i>(Gadiculus argenteus thori)</i>	NEA	<5	EU/Norway	D
Argentine	<i>Argentina sphyraena</i>	NEA	<5	EU/Norway	D

MANAGEMENT

The two clauses in this section relate to the general management regime applied to the fishery under assessment. 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	PASS
	M1.2	There is an organisation responsible for collecting data and assessing the fishery	PASS
	M1.3	Fishery management organisations are publically committed to sustainability	PASS
	M1.4	Fishery management organisations are legally empowered to take management actions	PASS
	M1.5	There is a consultation process through which fishery stakeholders are engaged in decision-making	PASS
	M1.6	The decision-making process is transparent, with processes and results publically available	PASS
Clause outcome:			PASS
<p>Evidence:</p> <p>M1.1:</p> <p>Norway & EU:</p> <p>Norway pout is jointly managed in EU waters (Figure 1). There is currently no agreed international long-term management strategy. Based on a request from Norway and the EU an ICES Workshop for Management Strategy Evaluation (MSE) gave advice (Feb 2018) on long-term management strategies for the stock. The proposed strategy is based on ICES's escapement strategy, with the aim of achieving a 95% probability of having minimum SSB required (above B_{lim}) for the following year.</p> <p>Quotas have been set to ensure that on January 1, after the fishing year ends, remaining spawning stock should be greater than 150,000t. Because Norway pout is short-lived this may result in high recruitment variability, and a spawning-stock biomass that varies widely between years.</p> <p>Norway:</p> <p>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.</p> <p>The Department for Fisheries and Aquaculture is responsible for matters related to fisheries and the fishing fleet. The Department manages, <i>inter alia</i>:</p> <ul style="list-style-type: none"> • Quota negotiations with the European Union and Third Countries. • International fisheries agreements. • Prevention of IUU fishing. • Fishing regulations and rights including licensing. <p>The Directorate of Fisheries and Aquaculture's role is:</p> <ul style="list-style-type: none"> • To provide analyses, statistics and advice. • Implement political decisions. • Process applications and appeals. • Conduct monitoring and control. • Actively cooperate with trade and industry, the research community and other public services. • Knowledge sharing with various stakeholders and the public. 			

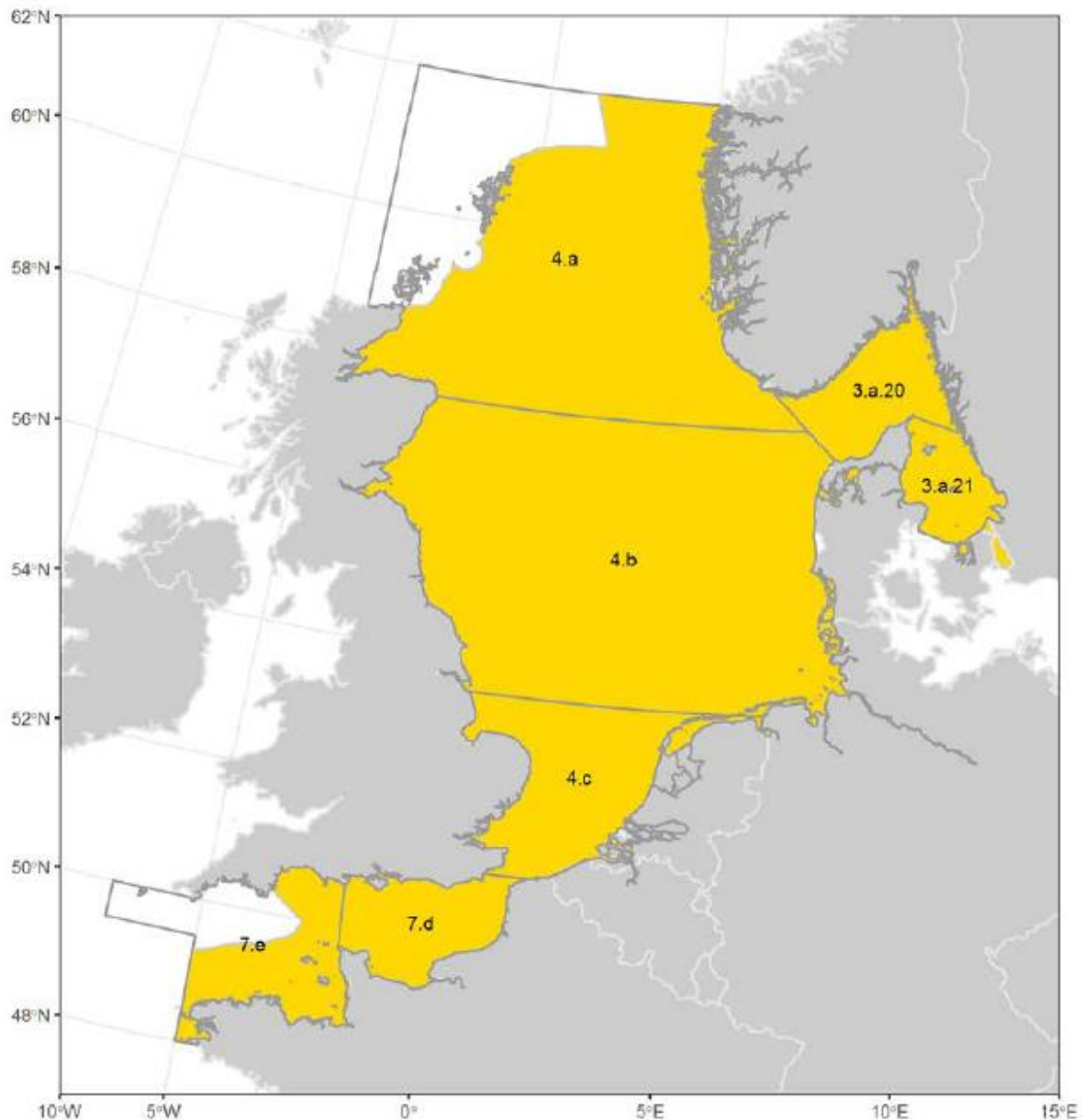


Figure 1: Greater North Sea ecoregion (in yellow) as defined by ICES. The relevant ICES statistical areas are shown. **R1**

In Norwegian waters there were no landings of the Norway pout stock in 2018 and 2019 (source Norges Sildesalgslag website accessed 23.01.20).

European Union:

In force since 1983, the Common Fisheries Policy (CFP) aims to reconcile resource conservation with the preservation of income and jobs in coastal zones. It therefore covers not just resources but also markets and structures. Regarding resource management, the CFP regulations comprise:

- A traditional management tool based on Total Allowable Catches (TACs) and Quotas;
- Technical measures relating to gear or catch;
- Effort-related management based on vessel engine power and the number of days at sea.

The CFP also provides for the introduction of measures to rebuild, over a period of several years, stocks threatened in terms of sustainable harvesting, and for recourse to effort-related management rules to supplement TACs and quotas.

The CFP is periodically reviewed and reformed. The last reform (2014) introduced multi-annual plans which contain goals and tools for fish stock management and a roadmap to achieve objectives in a sustainable and inclusive way.

NEAFC:

The North East Atlantic Fisheries Commission (NEAFC) is the Regional Fisheries Management Organisation (RFMO) in the assessment area. The European Union (including Denmark) and Norway are Contracting Parties to this RFMO.

NEAFC'S objective is to ensure long-term conservation and optimum utilisation of fishery resources in their Convention Area, providing sustainable economic environmental and social benefits. To this end, NEAFC adopts management measures for various fish stocks and control measures to ensure that they are properly implemented. NEAFC also adopts measures to protect other parts of the marine ecosystem from potential negative impacts of fisheries.

M1.2:

Norway:

In Norway the main research body is the Institute of Marine Research (IMR). In 2018 IMR was merged with NIFES (National Institute of Nutrition and Seafood Research). IMR is an independent knowledge provide, publicising research results both in Norway and internationally. Ecosystem research surveys are conducted by IMR with international partners over a substantial part of the Nordic Seas during different seasons. Biomass and other data collected from regular ecosystem research surveys and transects are collated and added to fishery-dependent data generated for stock assessment purposes.

ICES:

ICES workshops for management strategy evaluation for Norway Pout (WKNPOUT) in the assessment area include scientific experts and stakeholders from Denmark and Norway. Long-term management strategies for the stock are proposed. The latest workshop took place in Feb 2018.

The latest benchmark assessment (ICES Advisory Committee ACOM) for the stock was published in 2016. ICES working group on the assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK) published (2019) updates on biological reference points for the stock and other key data derived from previous assessments.

Annual advice on TAC and quota (EU flagged vessels and Norwegian flagged vessels fishing in EU waters) is also provided by ICES.

M1.3:

Norway:

The Norwegian Ministry aids in coordinating efforts to ensure a sound and unified seafood policy. The Norwegian management system takes form as a 'Regulatory Chain' an annual, interactive process based on incremental change (**Figure 2**). The Regulatory chain incorporates stages such as gathering research data, quota negotiations with other states, as well as allocating quotas to various vessel groups. Real-time data is included in decision-making to ensure sustainability of all targeted fish stocks.

A 2009 Report by the Ministry outlined strategies in place to ensure sustainable harvesting of all marine resources, based on best available understanding and scientific advice from ICES and IMR. Norway has committed to international agreements on sustainable management for all fish stocks under its management which entail defined exploitation rates and minimum limit B_{lim} for spawning stocks.

The purpose of the Norway's Marine Resources Act (MRA) is to ensure sustainable and economically profitable management of wild living marine resources and genetic material derived from them.

European Union:

The CFP is the primary instrument for sustainable fisheries management. As such it looks to address impacts of fishing on target stocks as well as impacts on other ecosystem components. Implementing an ecosystem approach to fisheries management has been set as one of the objectives of the CFP:

“...to ensure that negative impacts of fishing activities on the marine ecosystem are minimized and that aquaculture and fisheries activities avoid degradation of the marine environment.” (Article 2.3 2014 CFP Reform).

The CFP contributes to the protection of the marine environment, to the sustainable management of all commercially exploited species, and to the achievement of good environmental status, as set out in Regulation (EU) No 1380/2013 (Common Fisheries Policy Reform).

M1.4:

Norway:

The Directorate of Fisheries operates under the following legal instruments:

Marine Resources Act (MRA):

The Act 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 Act 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 3 of the Act (Catch quantities and quotas) allows the Ministry to prescribe maximum permitted quantities (national quotas) of 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.

Chapter 4 of the Act (Conduct of harvesting operations and other utilisation of wild living marine resources) specifies that all catches of fish shall be landed (discard ban). The Ministry also may by regulations grant exemptions from the obligation to land catches and may also prohibit discarding of biological waste.

Chapters 6 & 7 of the Act specifies arrangements for control and enforcement including 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 outlines measures in place to deter illegal, unreported and unregulated (IUU) fishing. Chapter 11 empowers the Ministry to impose coercive and infringement fines to ensure compliance with provisions made in or under the Act. The MRA entered into force on 06 June 2008.

Existing technical measures such as the closed Norway pout box, minimum mesh size and by-catch regulations to protect other species have been maintained by Norwegian flagged vessels fishing in EU waters in the assessment area.

European Union:

The control system applies to all fishing activities in EU waters, and to all fishing carried out by EU fishing vessels and EU nationals, wherever they may fish. In 2017 the European Court of Auditors published its evaluation of the Fisheries Control Regulation (EC 1224/2009). The report shows that Member States (including Denmark) have generally been compliant with main obligations set by this regulation, which remains a key pillar for delivering on the objectives of the CFP.

The current reform of the CFP will change the way in which it is managed, giving EU countries greater control at both national and regional level.

M1.5:

Norway:

Representatives of the fishing industry and governmental authorities cooperate in the formulation of the regulatory chain (**Figure 2**). 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 in Norway is achieved through Advisory Meetings for Fisheries Regulations representing fishermen's associations, fishing industries, trade unions, the Sami Parliament (Indigenous population), local authorities, environmental organisations and other stakeholders.

Both ICES (when available) and IMR advice are factored heavily into management decisions (**Figure 2**), and in turn the direction and specifics of future research are guided by experiences within the fishery throughout the year.

A regulatory council with representatives from both parties debate on the distribution of quotas within the fishing industry and provide advice for the Ministry of Fisheries. The Ministry then decides on final management strategies:



Figure 2: Regulatory chain of Norwegian fishery management **R2**

European Union:

The EU receives scientific advice on EU fisheries from its Scientific, Technical and Economic Committee for Fisheries (STECF). STECF is composed of independent scientists and experts representing a broad range of opinion and is systematically consulted before any proposals are drafted. On biological issues, STECF depends to a great extent on advice from ICES.

Advice provided by ICES to the European Union include stock assessments and deeper analyses on which the European Commission bases both annual recommendations for setting TACs and quotas, and more long-term proposals on how fisheries in European waters can be managed sustainably.

Increasingly ICES also provides a great deal of integrated advice at ecosystem level, in support of the shift towards a more holistic approach to managing Europe's seas. ICES Workshops on Management Strategy Evaluation (WKNPOUT) provide expert advice on the state of the stock and long-term management objectives.

The Pelagic Advisory Council prepares and provides advice on the management of pelagic fish stocks on behalf of the fisheries sector and other stakeholders. It covers the pelagic stocks of all the areas, excluding the stocks in the Baltic Sea and Mediterranean Sea. Members of the General Assembly (GA) are representatives of the European fisheries sector and other interest groups. The fisheries sector includes ship owners, small-scale fishermen, employed fishermen and producer organisations as well as processors and traders. Other stakeholders represented are environmental NGOs and recreational fishermen.

M1.6:**Norway:**

The Norwegian Directorate's communications office is organised directly under the Directorate. This office has overall responsibility for all external and internal information, including continuous development of strategic communication within the Directorate. Other main areas of responsibility are the maintenance and development of the Directorate's Internet and intranet pages, presentation of information material for the 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 through which authorities provide information about Norwegian fisheries and aquaculture management. Information on fisheries management; real-time closures and other announcements are made available on the Directorate's website. The Regulatory Chain is described online and updated frequently.

European Union:

Stock assessment advice is prepared, finalized and adopted by ICES Advisory Committees (ACOM's). ICES has implemented a benchmarking process in which methods, including the data series to be used by the expert groups in addressing advice requests, are developed. Results from benchmarks are subjected to a peer-review process (ICES 2016) before publication.

In ICES Advisory Committees and Workshops on Management Strategy Evaluation (WKNPOUT) publish expert advice on the state of the Norway pout stock and management objectives. All stock assessment and catch advice (ICES Advisory Committees) is publically available on the ICES website.

The ICES Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK) collate and publish annual catch data (and by-catch) from Norwegian and Danish Competent Authorities.

ICES publish regular Norwegian Sea Ecoregion Fisheries overviews (latest in 2019). Information is provided on environmental and ecosystem impacts of fisheries activities in the assessment area.

All decisions on quota allocation for both EU and Norwegian flagged vessels are peer reviewed by the relevant RFMO's and FPO's (Fish Producers Organisations) both before and following publication.

R1-R2; R4-R12; R16-R19, R38, R41

References pp40-41

Standard clauses 1.3.1.1, 1.3.1.2

M2	Surveillance, Control and Enforcement - Minimum Requirements	
M2.1	There is an organisation responsible for monitoring compliance with fishery laws and regulations	PASS
M2.2	There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken	PASS
M2.3	There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing	PASS
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.	PASS

Clause outcome:	PASS
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Evidence

M2.1:

Norway:

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. 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. Fishing inside baselines is prohibited. Fishing inside 12 nm (Jan Mayen-zone **Figure 10**) is also prohibited. The Directorate may also require that inspectors/observers are put on board vessels.

EU:

European Fisheries Control Agency (EFCA):

The agency's mission is to promote the highest common standards for control, inspection and surveillance under the CFP. Its primary role is to organise coordination and cooperation between national control and inspection activities so that the rules of the CFP are respected and applied effectively.

Denmark:

The responsible authority for monitoring and enforcing EU and national conservation policies is the Danish Agrifish Agency, which is a part of the Ministry of Food, Agriculture and Fisheries, under the 1999 Fisheries Act. The Agency carries out inspection at sea and landings, as well as verification of EU marketing standards.

M2.2:**Norway:**

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 counted 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.

European Union:

The European Union has established a list of serious infringements of the rules of the CFP. EU countries must include in their legislation effective, proportionate and dissuasive sanctions, and ensure that rules are respected. Under the points system for serious infringements, national authorities will, for serious infringements, suspend a vessel's licence when a pre-set number of points have been accumulated in a 3-year period.

M2.3:

Norway adopted a black list 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 black list was later adopted by several Regional Fisheries Management Organizations (RFMO's) and also by the European Union.

The EU Regulation (EC No 1005/2008) to prevent, deter and eliminate illegal, unreported and unregulated fishing (IUU) entered into force in 2010. The Commission is working actively with all stakeholders to ensure coherent application of the IUU Regulation

M2.4:**Norway:**

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 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.

VMS transmitters on Norwegian vessels must be approved by the Directorate and installed only by those authorized by the Directorate. Norwegian vessels involved in fishing operations 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 24m or more (15m or more in the case of EU vessels) are subject to position reporting when operating in Norwegian waters outside Skagerrak.

For the Norwegian fishery, an ordinance was introduced in 2010 requiring the use of sorting grids to further reduce bycatch. This is still in force for Norwegian vessels fishing in EU waters, in the directed fishery for Norway pout.

European Union:

VMS provides data to fisheries authorities at regular intervals on location, course and speed of each vessel. The system is compulsory for EU vessels above 12m. Non-EU vessels of the same size are obliged to have an operational satellite tracking device installed on board whenever they are in Community waters.

Through Joint Deployment Plans EFCA organises deployment of human and material resources of control and inspection pooled by Member States and EFCA in EU waters. The deployment is coordinated by EFCA in cooperation with Member States; frequently with the presence of national coordinators at EFCA premises (Vigo, Spain).

R5, R7, R20-R23, R41

References pp40-41

Standard clause 1.3.1.3

CATEGORY A SPECIES

The four clauses in this section apply to Category A species. Clauses A1 - A4 should be completed for **each** Category A species. If there are no Category A species in the fishery under assessment, this section can be deleted. A Category A species must meet the minimum requirements of all four clauses before it can be recommended for approval. If the species fails any of these clauses it should be re-assessed as a Category B species.

Species Name		Norway pout <i>Trisopterus esmarkii</i>	
A1	Data Collection - Minimum Requirements		
	A1.1	Landings data are collected such that the fishery-wide removals of this species are known.	PASS
	A1.2	Sufficient additional information is collected to enable an indication of stock status to be estimated.	PASS
Clause outcome:			PASS

Evidence

A1.1:

Input data is derived from commercial catches (Quarterly catches; catch-at-age and mean weight-at-age from catch sampling from the main Danish and Norwegian fisheries) and a total of four annual survey indices. Constant maturity data from survey estimates, constant natural mortality (estimated from survey indices) and constant mean weight-at-age (commercial catch estimates) are used in assessments. Discarding and bycatch is considered negligible and not included in assessments. The assessment for this stock was last benchmarked in 2016.

The directed fishery was closed in 2005, in the first half of 2006, and in 2007 as well as in the first half of 2011 and 2012. Catches were above 100, 000t in 2010, but have in the period 2012-2019 been below 100, 000; the quota has not been taken in those years. This was likely due to targeting of other industrial species like sprat for which fishing costs are lower.

Total landings (Denmark and Norway fleets) in 2018 from EU waters amounted to 36,060t; (**Table 1**). No landings were reported (2018-19) for Norwegian vessels operating in Norwegian waters.

ICES Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK) collate annual catch data (and by-catch) from Norwegian and Danish Competent Authorities:

Table 1: Reported catch and by-catch in the directed fishery for Norway pout **R17**

Norway pout Sub-area IV and IIIa (Skagerrak) combined											
Country	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Denmark	32.558	19.821	71.312	4.072	25.558	38.363	28.448	13.033	23.507	12.467	10.546
Faroe Islands	0	0	0	0	0	0	0	5.270	3.156	0	0
Norway	6.650	37.252	65.634	3.210	4.587	46.601	18.664	44.360	36.052	21.357	25.504
Sweden	10	0	10	1	3	5	2	727	2	6	5
Netherlands	0	22	18	0	0	0	0	18	8	1	2
Germany	0	75	0	0	0	0	0	22	27	14	3
UK	0	0	0	0	0	0	6	0	18	0	0
Total nominal landings	39.218	57.170	136.974	7.283	30.148	84.969	47.120	63.430	62.770	33.845	36.060
By-catch of other species and other	-3.080	-2.670	-11.019	-759	-3.075	-2.869	-2.950	-30	630	88	87
ICES estimate of total landings (IV+IIIaN)	36.138	54.500	125.955	6.524	27.073	82.100	44.170	63.400	63.400	33.933	36.147
Agreed TAC	114.616 x	116.279 x	162.950 x	4.500 x	70.683 x	165.700 x	128.250 x	150.000 x	150.000 x	150.000 x	150.000 x

A1.2:

The September 2019 assessment (**R13**) is an updated assessment based on the 2016 benchmark assessment. The assessment is a “real time” monitoring and management run up to 1 October 2019 and includes new information from the 2nd half of 2018 and also for Quarters 2, 3 and 4 (2019).

A new assessment model has been introduced, the Seasonal Stochastic Assessment Model (SESAM).

A short-term prognosis (forecast) up to November 2020 is given for the stock based on this model. Catch projections are based on a changed forecast year from 1 November to 31 October annually.

WGSSK also collate and present data on stock distribution and spawning patterns (**Figure 3**)

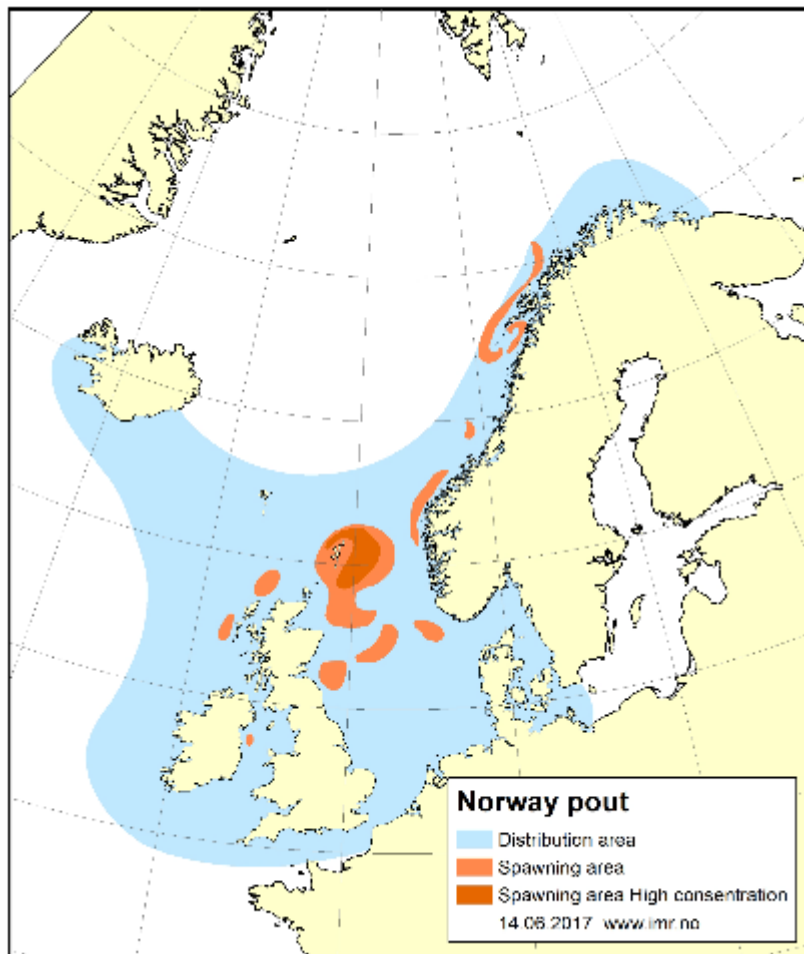


Figure 3 Norway pout distribution and spawning (2017 data, source IMR) **R17**
R13, R17, R24

References p40-41

Standard clause 1.3.2.1.1

A2 Stock Assessment - Minimum Requirements		
A2.1	A stock assessment is conducted at least once every 3 years (or every 5 years if there is substantial supporting information that this is sufficient for the long-term sustainable management of the stock) and considers all fishery removals and the biological characteristics of the species.	PASS
A2.2	The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.	PASS
A2.3	The assessment provides an indication of the volume of fishery removals which is appropriate for the current stock status.	PASS
A2.4	The assessment is subject to internal or external peer review.	PASS
A2.5	The assessment is made publically available.	PASS
Clause outcome:		PASS

Evidence

A2.1:

The last benchmark assessment was undertaken in 2016. The current annual assessment and stock advice (2019) includes updates on biological reference points and other key data derived from previous assessments. Bi-annual information is available to perform real time monitoring and management of the stock. This can be carried out both with both fishery independent and fishery dependent information. Real time advice and management options forecast for 2020 (up to 31 October) are provided.

A2.2:

According to ICES (2019) SSB was expected to remain high during 2019 due to high 2018 recruitment, growth and 20 % maturity of 1-group even when considering high natural mortality and short life span.

Spawning-stock biomass (SSB) is estimated to have been fluctuating above Bpa for most of the time-series (**Figure 4**). Fishing mortality (F) declined between 1985 and 1995 and has been fluctuating at a lower level since 1995. Recruitment in 2018 and 2019 was above the long-term average:



Figure 4: Norway pout in Subarea 4 and Division 3.a. Summary of the stock assessment, SSB is estimated at the beginning of quarter 4. Shaded areas (F, SSB) and error bars (R) indicate 95% confidence intervals. **R13**

ICES assess that the spawning stock size (94,420t) is above Bpa and Blim (39,450t); no reference points for fishing pressure or for MSY Btrigger have been defined for this stock (ICES 2019).

The default ICES approach to MSY-based management for short-lived species (including Norway pout) is an escapement strategy, to maintain SSB, with 95% probability, above Blim after the fishery has taken place. Uncertainties in the assessment and forecast are directly considered to ensure SSB stays above Blim with a 95% probability. Norway and the EU requested (2018) an evaluation by ICES of current harvest control rules for the stock (**A2.3**).

A2.3:

ICES advise that when the MSY approach is applied, catches from 1 November 2019 to 31 October 2020 should be no more than 167,105t. The agreed 2019 TAC for the stock in EU waters (Union vessels) was 85,265t of which Denmark was allocated 85,186t and Norway allocated 15,000t. There was no uptake of the stock in 2018 (Quota 90,978t) or 2019 (Quota 82,230t) by Norwegian flagged vessels operating in Norwegian waters.

An ICES Workshop for management strategy evaluation for Norway Pout (WKNPOUT Feb 2018) gave advice on long-term management strategies of Norway Pout in the assessment area. The proposed management strategy is based on ICES default escapement strategy.

ICES (WKNPOUT) also tested whether current procedures for providing TAC advice were precautionary. Results showed that advice is only precautionary with an Fcap (Upper limit Fishing mortality) at or below 0.7. Since the release of the 2018 WKNPOUT report the EU have requested additional advice.

A2.4:

Norway:

Representatives of the fishing industry and governmental authorities cooperate in the formulation of the regulatory chain (**Figure 2**). 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 the Advisory Meeting for Fisheries Regulations representing fishermen's associations, fishing industries, trade unions, the Sami (Indigenous population); Parliament, local authorities, environmental organisations and other stakeholders.

European Union:

ICES advice on stock assessments form the basis for the EU's annual decisions on quota allocation. Peer review of these assessments helps to ensure that analyses do not contain errors and that assessments have accounted for potential biases in underlying data and models. Fisheries Management Organizations in many Coastal States have developed their own peer review processes. An ICES Management Conference (2017) compared these processes.

A2.5:

ICES advice on quota management and long-term management of the stock are published on their website. IMR provide data on their website outlining research activities in the assessment area.

ICES has implemented a benchmark process in which methods, including the data series to be used by expert groups in addressing advice requests are developed. Results from benchmarking exercises are subjected to a peer-review process and are published online.

The ICES Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK) collate and publish, *inter alia*, annual catch data (and by-catch) from Norwegian and Danish Competent Authorities.

R2, R9, R12-R13, R17, R24-R25

References pp40-41

Standard clause 1.3.2.2, 1.3.2.1.2, 1.3.2.1.4

A3	Harvest Strategy - Minimum Requirements		
	A3.1	There is a mechanism in place by which total fishing mortality of this species is restricted.	PASS
	A3.2	Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Where a specific quantity of removals is recommended, the actual removals may exceed this by up to 10% ONLY if the stock status is above the limit reference point or proxy.	PASS
	A3.3	Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible).	PASS
Clause outcome:			PASS
<p>Evidence</p> <p>A3.1:</p> <p>The EU apply the MSY approach for short-lived species in taking measures to protect and conserve living aquatic resources, to provide for their sustainable exploitation and to minimise the impact of fishing on marine ecosystems. The directed fishery was closed in 2005, in the first half of 2006, and in 2007 as well as in the first half of 2011 and 2012. Catches were above 100, 000t in 2010, but have in the period 2012-2019 been below 100, 000; the quota has not been taken in those years; likely due to the targeting of other industrial species like sprat for which fishing costs are lower.</p> <p>A3.2:</p> <p>The ICES Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK) collate annual catch data (and by-catch) from Norwegian and Danish Competent Authorities from the directed fishery for Norway pout (Table 1). With the exception of the 2011 fishery (TAC of 4,500t) total removals (EU waters) did not exceed levels stated in agreed TAC's from 2008-2018. No landings were reported (2018-19) for Norwegian vessels operating in Norwegian waters.</p> <p>A3.3:</p> <p>Norway:</p> <p>Chapters 6 & 7 of the MRA (Norway) specify arrangements for control and enforcement including facilitating vessel inspections, use of logbooks to record catches and listing the powers of the Directorate of Fisheries Inspectors 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.</p> <p>European Union:</p> <p>On basis of real time management advice from ICES, EU and Norway agreed to close the directed fishery in 2005, first part of 2006, all of 2007 and in first part of 2011 and 2012.</p> <p>R17, R27-R28</p>			
References pp40-41			
<i>Standard clause 1.3.2.1.3</i>			

A4	Stock Status - Minimum Requirements		
	A4.1	<p>The stock is at or above the target reference point, OR IF NOT:</p> <p>The stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure OR IF NOT:</p> <p>The stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.</p>	PASS
Clause outcome:			PASS
Evidence A4.1: ICES assess that spawning stock size (94,420t) is above Bpa and Blim (39,450t). ICES also advise that when the MSY approach is applied, catches from 1 November 2019 to 31 October 2020 should be no more than 167,105t. R13			
References p41			
<i>Standard clause 1.3.2.1.4</i>			

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. In a by-product assessment, Category C species are those which are subject to a species-specific management regime and are usually targeted species in fisheries for human consumption.

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. A Category C species does not meet the minimum requirements of clause C1 should be re-assessed as a Category D species.

Species Name		Mackerel	<i>Scomber scombrus</i>
C1	Category C Stock Status - Minimum Requirements		
	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.	PASS
	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.	PASS
Clause outcome:			PASS
Evidence:			
C1.1			
Catch data, coded wire tagging data (1980-2006) and RFID tagging data (2014-2017) from three survey indices are included in the assessment:			
<ul style="list-style-type: none">SSB index from the triennial egg survey (1992-2016)Abundance indices from the IBTS survey (combined Q1 and Q4; age 0, 1998-2017)IESSNS survey (ages 3-11, 2010, 2012-2018).			
Catches prior to 2000 are given a very low weight in the assessment. Natural mortality (0.15 for all ages and years) is based on tagging studies from the early 1980s. The stock was benchmarked in 2017 by the ICES Working group on Widely Distributed Stocks; all biological reference points were evaluated and updated as was also the case during an April 2019 interbenchmarking when tagging data was also reviewed.			
Assessment results are very sensitive to both input data and model settings; minor changes implemented in 2019 have led to a significant upward revision in estimates of SSB, a downwards revision of the estimates of F in recent years, and a change in the pattern of estimated recruitment.			
The model configuration has been updated to more appropriately reflect the lack of information in the catch data with regard to the abundance of younger fish (0- and 1-year-olds). This has resulted in increased influence of the survey index for young fish and an upward revision in recent recruitment estimates.			
C1.2			
Spawning-stock biomass (SSB) is estimated to have increased in the late 2000s, reaching a maximum in 2014. It has declined since but has remained above MSY Btrigger since 2008. Fishing mortality (F) has declined from high levels in the mid-2000s but remains above FMSY. There has been a succession of large year classes since the early 2000s, with year classes since 2012 estimated to be above average:			

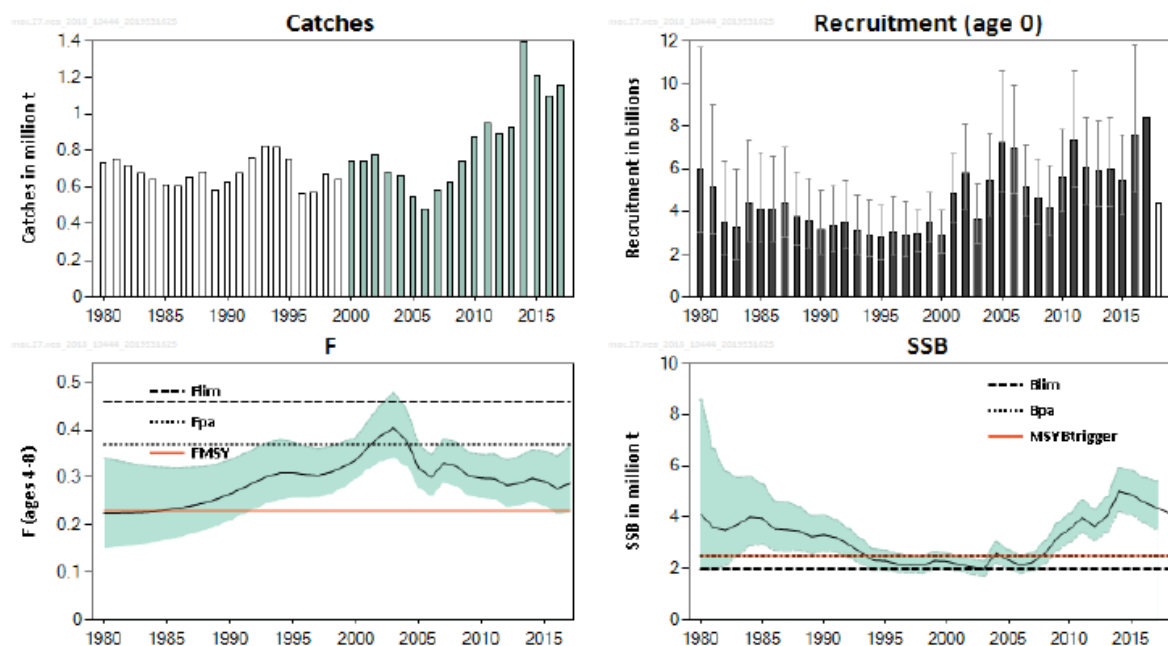


Figure 5: Mackerel, summary of the stock assessment. Recruitment value for 2018 is geometric mean of recruitments from 1990 to 2016. Confidence intervals (95%) are included in recruitment, fishing mortality, and spawning-stock biomass plots. **R29**

ICES assess that fishing pressure on the stock is above FMSY but below Fpa and Flim, while spawning stock size is above MSY Btrigger, Bpa, and Blim:

Table 2 Mackerel in subareas 1–8 and 14, and in Division 9.a. State of the stock and fishery relative to reference points. **R29**

		Fishing pressure				Stock size			
		2015	2016	2017		2016	2017	2018	
Maximum sustainable yield	F_{MSY}	✗	✗	✗	Above	MSY $B_{trigger}$	✓	✓	✓ Above trigger
Precautionary approach	F_{pa}, F_{lim}	✓	✓	✓	Harvested sustainably	B_{pa}, B_{lim}	✓	✓	✓ Full reproductive capacity
Management plan	F_{MGT}	—	—	—	Not applicable	B_{MGT}	—	—	— Not applicable

While there is no long-term management strategy for Northeast Atlantic (NEA) mackerel agreed by all parties involved in the mackerel fishery, Coastal State Delegations from Norway, the EU, and the Faroes agreed an arrangement for a long-term management strategy for mackerel (Anon, 2017).

R29-R31

References p 41

Standard clauses 1.3.2.2

CATEGORY D SPECIES

In a whole fish assessment, Category D species are those which make up less than 5% of landings and are not subject to a species-specific management regime. In the case of mixed trawl fisheries, Category D species may make up the majority of landings. In a by-product assessment, Category D species are those which are not subject to a species-specific management regime. In both cases, the comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

The process for assessing Category D species involves the use of a Productivity-Susceptibility Analysis (PSA) to further subdivide the species into ‘Critical Risk’, ‘Major Risk’ and ‘Minor Risk’ groups. If there are no Category D species in the fishery under assessment, this section can be deleted.

Productivity and susceptibility ratings are calculated using a process derived from the APFIC document “Regional Guidelines for the Management of Tropical Trawl Fisheries, which in turn was derived from papers by Patrick *et al* (2009) and Hobday *et al* (2007). Table D1 should be completed for each Category D species as follows:

- Firstly, the best available information should be used to fill in values for each productivity and susceptibility attribute.
- Table D2 should be used to convert each attribute value into a score between 1 and 3.
- The average score for productivity attributes and the average for susceptibility attributes should be calculated.
- Table D3 should be used to determine whether the species is required to meet the requirements of Table D4. A species which does not need to meet the requirements of D4 is automatically awarded a pass.
- Table D4 should be used to assess those species indicated by Table D3 to determine a pass/fail rating.
- Any Category D species which has been categorised by the IUCN Red List as Endangered or Critically Endangered, or which appears in the CITES appendices, automatically results in a fail.

D1	Species Name:	Horse mackerel	<i>Trachurus trachurus</i>
	Productivity Attribute	Value	Score
	Average age at maturity (years)*	2-4	2
	Average maximum age (years)*	11	2
	Fecundity (eggs/spawning)	140,000	1
	Average maximum size (cm)	70	2
	Average size at maturity (cm)	23.9	1
	Reproductive strategy	Batch spawners, pelagic eggs	1
	Mean trophic level	3.7	3
	Average Productivity Score		1.71
	Susceptibility Attribute	Value	Score
	Overlap of adult species range with fishery <i>Figure 6</i>	<25%	1
	Distribution	Not used	-
	Habitat	Not used	-
	Depth range	0-1050m, usually 100-200m	1
	Selectivity	70cm	3
	Post-capture mortality	Discards low	3
	Average Susceptibility Score		2.0
	PSA Risk Rating (From Table D3)		PASS

* Ref: Age at maturity/Maximum age:

Smith-Vaniz, W.F., Heessen, H., Collette, B., Fernandes, P. & Herrera, J. 2015. *Trachurus trachurus*. The IUCN Red List of Threatened Species 2015: e. T198647A44767022.

<http://www.iucnredlist.org/details/summary/198647/1>

Evidence:

No reference points for stock size have been defined for this stock. The comparative lack of scientific information on the status of the population of the species means that a risk-assessment style approach must be taken.

Horse mackerel (*Trachurus trachurus*) is assessed on the IUCN Red List as a species of least concern and is not on the current list of CITES endangered species (websites accessed 27.01.2020).

The species passes this risk-based assessment (**Table D3 p35**).

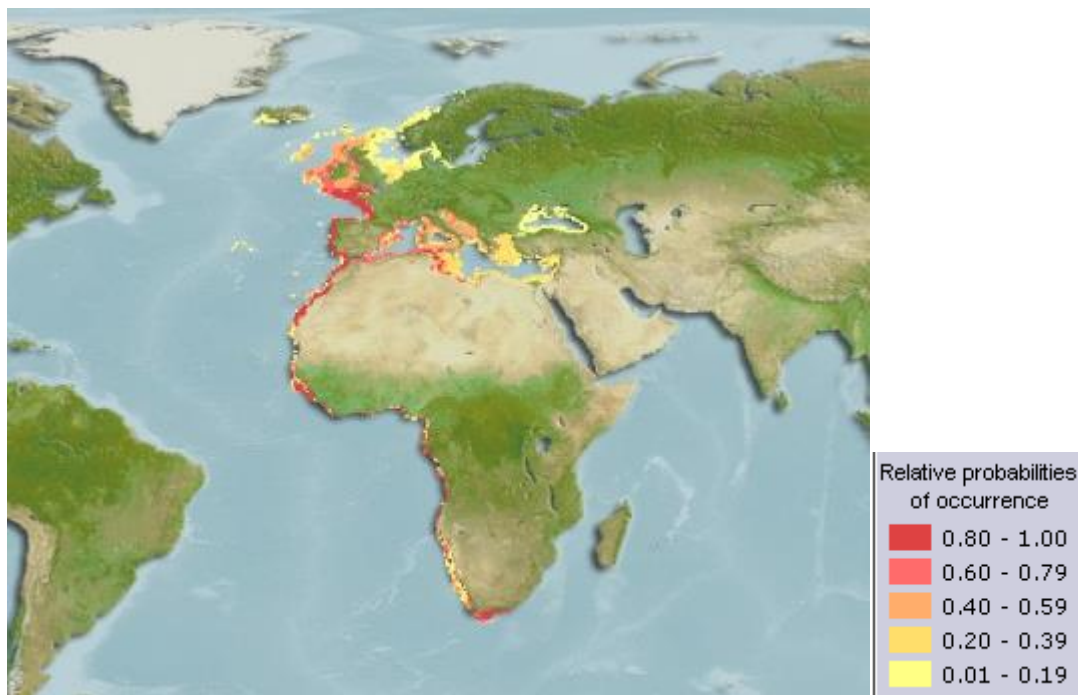
Distribution of the stock:

Figure 6: Reviewed distribution maps for *Trachurus trachurus* (Atlantic horse mackerel), www.aquamaps.org, Aug. 2016. Website accessed January 2020 **R33**

R32-R33

References p41

Standard clauses 1.3.2.2

D1	Species Name:	Silvery cod (<i>Gadiculus argenteus thori</i>)	
	Productivity Attribute	Value	Score
	Average age at maturity (years)*	1	1
	Average maximum age (years)*	3.3	1
	Fecundity (eggs/spawning)	No data	-
	Average maximum size (cm)	15	1
	Average size at maturity (cm)	12	1
	Reproductive strategy	Open water/substratum egg scatterers	1
	Mean trophic level	3.5	3
	Average Productivity Score		1.33
	Susceptibility Attribute	Value	Score
	Overlap of adult species range with fishery Fig 7	25-50%	2
	Distribution	Not used	-
	Habitat	Not used	-
	Depth range	100-1000m	1
	Selectivity	>mesh	3
	Post-capture mortality	Dead or retained	3
	Average Susceptibility Score		2.25
	PSA Risk Rating (From Table D3)		PASS

* **Fishbase Life history tool (Figure 8)**

Evidence:

The comparative lack of scientific information on the status of the population in the assessment area means that a risk-assessment style approach must be taken. The fishery was assessed using the risk-based Productivity, Susceptibility Analysis (PSA) as per IFFO-RS v 2.0 procedures for Category D species. The species has passed this risk-based assessment.

Silvery cod / Silvery pout (*Gadiculus argenteus thori*) is assessed on the IUCN Red List as a species of least concern and is not on the current list of CITES endangered species (websites accessed 27.01.2020).

Distribution:

[Native range](#) | [All suitable habitat](#) | [Point map](#) | [Year 2100](#)



Reviewed map

[Gadiculus thori](#) [AquaMaps](#) Data sources: [GBIF](#) [OBIS](#)

Figure 7: Native range Silvery Cod R34

Life History Data on *Gadiculus thori*

Family:	Gadidae Cods and haddocks		
Max. length (Lmax):	<input type="text" value="15.0"/> cm TL		
L infinity (Linf):	= <input type="text" value="16.0"/> cm TL <input type="button" value="▼"/>	<input type="button" value="Recalculate"/>	
K:	<input type="text" value="0.85"/> /year $\phi' = $ <input type="text" value="2.34"/>	<input type="button" value="Recalculate"/>	Growth & mortality data
	Median ϕ' value with related Linf. and K.		
to:	<input type="text" value="-0.22"/> years Estimated from Linf and K.		
Natural mortality (M):	<input type="text" value="1.24"/> s.e. <input type="text" value="0.82"/> - <input type="text" value="1.88"/> /year	<input type="button" value="Recalculate"/>	
	Estimated from Linf., K and annual mean temp. = <input type="text" value="11.0"/> °C		
Life span (approx.):	<input type="text" value="3.3"/> years Estimated from Linf., K and to. Max. age & size data		
Generation time:	<input type="text" value="1.1"/> years Estimated from Lopt, Linf., K and to.		
Age at first maturity (tm):	<input type="text" value="1.0"/> years Estimated from Lm, Linf., K and to.		
L maturity (Lm):	<input type="text" value="10.1"/> s.e. <input type="text" value="7.5"/> - <input type="text" value="13.5"/> cm TL		
	Estimated from Linf. Maturity data		
L max. yield (Lopt):	<input type="text" value="10.8"/> s.e. <input type="text" value="n.a."/> - <input type="text" value="n.a."/> cm TL		
	Estimated from Linf., K and M.		
Reproductive guild:	nonguarders: open water/substratum egg scatterers Reproduction		
Fecundity:	[no value (min.)-no value (max.)] Estimated as geometric mean. Fecundity		
Relative Yield per Recruit (Y'/R):	<input type="text" value="0.0460"/>	Estimate Y'/R from M/K, Lc/Linf and E. Lc = <input type="text" value="6.4"/> cm TL E = <input type="text" value="0.50"/> /year Emsy <input type="text" value="0.80"/> /year Eopt <input type="text" value="0.54"/> /year Fmsy <input type="text" value="1.88"/> /year Fopt <input type="text" value="1.46"/> /year	<input type="button" value="Recalculate"/>
Exploitation:	Z = <input type="text"/> F = <input type="text"/> E = <input type="text"/>	Estimate Z, F, E from Lc, Lmean, Linf, K, M Lc = <input type="text" value="6.4"/> cm TL Lmean = <input type="text"/> cm TL	<input type="button" value="Recalculate"/>
Resilience / productivity:	High; decline threshold 0.99 Vulnerable to extinction if decline in biomass or numbers exceeds threshold over the longer of 10 years or 3 generations.		
Intrinsic rate of increase (rm):	<input type="text" value="3.72"/> /year	Lr = <input type="text" value="6.4"/> cm TL Estimated from Fmsy at Lc = length of recruitment (Lr).	<input type="button" value="Recalculate"/>
Main food:	mainly animals (troph. 2.8 and up)		
Trophic level:	<input type="text" value="3.5"/> +/- s.e. 0.50 Estimated from food data. Food		

Figure 8 Life history data Silvery Cod **R34**

R34-R35

References p 41

Standard clauses 1.3.2.2

D1	Species Name:	Argentine Lesser Silver smelt <i>Argentina sphyraena</i>	
	Productivity Attribute	Value	Score
	Average age at maturity (years)*	2.7	2
	Average maximum age (years)	16	2
	Fecundity (eggs/spawning)	No data	-
	Average maximum size (cm)	35	1
	Average size at maturity (cm)	20	1
	Reproductive strategy Pelagic eggs, larvae	Pelagic	1
	Mean trophic level	3.5	3
	Average Productivity Score		1.67
	Susceptibility Attribute	Value	Score
	Overlap of adult species range with fishery	25-50%	2
	Distribution	Not used	-
	Habitat	Not used	-
	Depth range	50-500m	1
	Selectivity		3
	Post-capture mortality		3
	Average Susceptibility Score		2.25
	PSA Risk Rating (From Table D3)		PASS

Evidence:

*** Life history tool Fishbase Figure 10**

The comparative lack of scientific information on the status of the population in the assessment area means that a risk-assessment style approach must be taken. The fishery was assessed using the risk-based Productivity, Susceptibility Analysis (PSA) as per IFFO-RS v 2.0 procedures for Category D species. The species has passed this risk-based assessment.

Argentine (*Argentina sphyraena*) is assessed on the IUCN Red List as a species of least concern and is not on the current list of CITES endangered species (websites accessed 27.01.2020).

Distribution:



Reviewed map

Argentina sphyraena AquaMaps Data sources: GBIF OBIS

Figure 9 Global distribution Argentine R36

Life history:

Life History Data on *Argentina sphyraena* Argentina

Family:	Argentinidae		Argentines or herring smelts
Max. length (Lmax):	35.0 cm SL		
L infinity (Linf):	= 22.3 cm TL		Recalculate
K:	0.28 /year	$\phi' = 2.14$	Recalculate Growth & mortality data
to:	-0.65 years Estimated from Linf and K.		
Natural mortality (M):	0.54 s.e. 0.35 - 0.81 /year	Estimated from Linf., K and annual mean temp. = 14.0 °C	Recalculate
Life span (approx.):	10.1 years Estimated from Linf., K and to. Max. age & size data		
Generation time:	3.7 years Estimated from Lopt, Linf., K and to.		
Age at first maturity (tm):	2.7 years Estimated from Lm, Linf., K and to.		
L maturity (Lm):	13.6 s.e. 10.1 - 18.2 cm TL	Estimated from Linf.	
L max. yield (Lopt):	13.6 s.e. n.a. - n.a. cm TL	Estimated from Linf., K and M.	
Length-weight:	22.3 cm TL => 85.2 g (wet weight) W = 0.0040 * L ^ 3.12400		Recalculate Length-weight data
Nitrogen & protein:	Weight 88 (g) => whole-body nitrogen (N) 1.7 (g) => whole-body crude protein 10.3 (g)		Recalculate
Fecundity:	[no value (min.)-no value (max.)] Estimated as geometric mean. Fecundity		
Relative Yield per Recruit (Y'/R):	0.0299	Estimate Y'/R from M/K, Lc/Linf and E. Lc=8.9 cm TL E=0.50 /year Emsy 0.64 /year Eopt 0.57 /year Fmsy 0.96 /year Fopt 0.72 /year	Recalculate
Exploitation:	Z= F= E=	Estimate Z, F, E from Lc, Lmean, Linf, K, M Lc = 8.9 cm TL Lmean = cm TL	Recalculate
Resilience / productivity:	Medium; decline threshold 0.95 Vulnerable to extinction if decline in biomass or numbers exceeds threshold over the longer of 10 years or 3 generations.		
Intrinsic rate of increase (rm):	1.92 /year	Lr = 8.9 cm TL Estimated from Fmsy at Lc = length of recruitment (Lr).	Recalculate
Main food:	mainly animals (troph. 2.8 and up)		
Trophic level:	3.5 +/- s.e. 0.50 Estimated from diet data. Diet		

Figure 10 Life history Argentine Lesser silver smelt *A. sphyraena* R36

References p41

Standard clauses 1.3.2.2

Table D2 - Productivity / Susceptibility attributes and scores.

Productivity attributes	Low productivity/ High risk	Medium productivity/ Medium risk	High productivity/ Low risk
	Score 3	Score 2	Score 1
Average age at maturity (years)	>4	2 to 4	<2
Average maximum age (years)	>30	10 to 30	<10
Fecundity (eggs/spawning)	<1 000	1 000 to 10 000	>10 000
Average maximum size (cm)	>150	60 to 150	<60
Average size at maturity (cm)	>150	30 to 150	<30
Reproductive strategy	Live bearer, mouth brooder or significant parental investment	Demersal spawner "berried"	Broadcast spawner
Mean trophic level	>3.25	2.5–3.25	<2.5

Susceptibility attributes		High susceptibility/ High risk	Medium susceptibility/ Medium risk	Low susceptibility/ Low risk
		Score 3	Score 2	Score 1
Availability	1) Overlap of adult species range with fishery	>50% of stock occurs in the area fished	Between 25% and 50% of the stock occurs in the area fished	<25% of stock occurs in the area fished
	2) Distribution	Only in the country/ fishery	Limited range in the region	Throughout region/ global distribution
Encounterability	1) Habitat	Habitat preference of species make it highly likely to encounter trawl gear (e.g. demersal, muddy/sandy bottom)	Habitat preference of species make it moderately likely to encounter trawl gear (e.g. rocky bottom/reefs)	Depth or distribution of species make it unlikely to encounter trawl gear (e.g. epi-pelagic or meso-pelagic)
	2) Depth range	High overlap with trawl fishing gear (20 to 60 m depth)	Medium overlap with trawl fishing gear (10 to 20 m depth)	Low overlap with trawl fishing gear (0 to 10 m, >70 m depth)
Selectivity		Species >2 times mesh size or up to 4 m length	Species 1 to 2 times mesh size or 4 to 5 m length	Species <mesh size or >5 m length
Post capture mortality		Most dead or retained Trawl tow >3 hours	Alive after net hauled Trawl tow 0.5 to 3 hours	Released alive Trawl tow <0.5 hours

Note: Availability 2 is only used when there is no information for Availability 1; the most conservative score between Encounterability 1 and 2 is used.

D3		Average Susceptibility Score		
		1.00 – 1.75	1.76 – 2.24	2.25 – 3.00
Average Productivity Score	1.00 – 1.75	PASS	PASS	PASS
	1.76 – 2.24	PASS	PASS	TABLE D4
	2.25 – 3.00	PASS	TABLE D4	TABLE D4

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	F1.1	Interactions with ETP species are recorded.	PASS
	F1.2	There is no substantial evidence that the fishery has a significant negative effect on ETP species.	PASS
	F1.3	If the fishery is known to interact with ETP species, measures are in place to minimise mortality.	PASS
Clause outcome:			PASS
Evidence			
F1.1:			
<p>Some fisheries have the potential to take protected, endangered, or threatened species (seabirds and marine mammals) as non-targeted bycatch. Recording of the catch of these species has been undertaken in a few North Sea fisheries, where there is perceived particular risk of such bycatch. A recent EU-funded project (fishPi project, 2016) analysed risk from various gears to seabirds and marine mammals and determined that observations were most needed in fisheries using set gillnets, trammel nets, driftnets, and bottom trawls. The reduction fishery for Norway pout is undertaken in the main with small mesh (<32mm cod end) pelagic trawls.</p> <p>In Norway 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 including reporting of incidental by-catch of ETP species are the focus areas. Inspectors may board vessels at any time when at sea.</p> <p>In EU waters the European Fisheries Control Agency's (EFCA) mission is to promote the highest common standards for control, inspection and surveillance under the Common Fisheries Policy. Its primary role is to organise coordination and cooperation between national control and inspection activities so that rules are respected and applied effectively. The obligation for skippers of EU flagged vessels to record interaction with ETP species is enforced through Joint Deployments of shared Member States resources during land-based and at sea inspections.</p>			
F1.2:			
<p>Marine species listed as threatened that are 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 (Norway Red List 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.</p> <p>The abundance of harbour seals in central Norway has decreased since the late 1990s, mainly from hunting, but abundance is now said to be increasing. Surveys of grey seals have shown a 50-60% reduction in pup</p>			

production between 2007-2008 and 2014-2015 in mid-Norway, probably as a result of increased bycatches in gillnet fisheries for monkfish *Lophius piscatorius* and cod *Gadus morhua* rather than the reduction fishery for Norwegian pout, carried out between 50m-250m depth in the open ocean.

Eight species of elasmobranchs that occur in the Greater North Sea are listed on OSPAR's list of threatened and declining species. Some of these are rare (e.g. basking shark, angel shark) and seldom caught in fisheries. Other species (e.g. spotted ray, thornback ray) are harvested in some targeted demersal fisheries. Most often, elasmobranchs are taken as incidental bycatch and then discarded particularly when there is a zero TAC for a species.

Throughout most of the North Sea the small-mesh (< 32 mm cod end) pelagic trawl fishery is prosecuted mainly by vessels >40 m and targets sandeel, Norway pout, sprat, and blue whiting for reduction purposes. Given the position of these trawls in mid-water and the small mesh used there is no substantial evidence that the reduction fishery has a significant negative effect on ETP species.

F1.3:

No recent assessment has been made of bird bycatch in the Greater North Sea; there was some evidence of large bycatches of seabirds in coastal gillnets in the past, but the fisheries with high bycatch have either been closed or have subsequently managed to reduce their bycatch risk.

Existing EU technical measures such as the closed Norway pout box, minimum mesh size in the fishery, and by-catch regulations to protect other species have been maintained for all directed fishing in EU waters. Norwegian vessels fishing for Norway pout in EU waters are obliged to use a sorting grid to reduce unwanted by-catch and discarding of juvenile Norway pout. Fishing effort (2018,19) by the Norwegian fleet in Norwegian waters for Norway pout has been minimal, with no reported landings (source Norges Sildesalgslag website).

R5, R17, R20, R31, R37-R39

References pp40-41

Standard clause 1.3.3.1

F2	Impacts on Habitats - Minimum Requirements		
	F2.1	Potential habitat interactions are considered in the management decision-making process.	PASS
	F2.2	There is no substantial evidence that the fishery has a significant negative impact on physical habitats.	PASS
	F2.3	If the fishery is known to interact with physical habitats, there are measures in place to minimise and mitigate negative impacts.	PASS
Clause outcome:			PASS
Evidence			
F2.1:			
<p>Environmental issues are managed by Norwegian agencies and through OSPAR, with advice also being provided by, increasingly, ICES. The International Whaling Commission (IWC) has regulations for the conservation and harvesting of whales (Minke only, in the Norwegian Sea). Marine mammal issues are also considered in cooperation under the North Atlantic Marine Mammal Commission (NAMMCO).</p> <p>In managing this fishery, by-catches of other species have been considered. Existing technical measures such as the closed Norway pout box, minimum mesh size in the fishery, and by-catch regulations to protect other species and the marine habitat have been maintained.</p> <p>Bottom trawls are regulated along the Norwegian continental slope (Figure 1) through closed areas to avoid extended damage on fragile and vulnerable benthic communities and reef-building organisms. Regulations established in 2011 have restricted the use of bottom trawls in areas with coral reefs and at depths exceeding 1,000 m.</p>			
F2.2:			
<p>The pelagic trawl fishery for human consumption is operated by refrigerated seawater trawlers (>40 m) and freezer trawlers (>60 m) and target herring, mackerel, and horse mackerel. Some blue whiting is taken by these vessels in the northern North Sea.</p> <p>Abrasion occurs from towed bottom-contacting gear with some damage to benthic organisms and habitats. Physical disturbance of benthic habitats by bottom-trawl fishing gear is described by using vessel monitoring system (VMS) and logbook data. The extent, magnitude, and impact of mobile bottom-contacting fishing gear on seabed and benthic habitats varies geographically across the Norwegian Sea. Relatively little such gear is used in the Norwegian Sea ecosystem, mainly on the shelf in the southern part of the ecoregion.</p> <p>Norway pout is targeted in the assessment area using small mesh (<32mm cod end) pelagic trawls which do not interact with the seabed.</p>			
F2.3:			
<p>Existing EU technical measures such as the closed Norway pout box, minimum mesh size in the fishery, and by-catch regulations to protect other species have been maintained for all directed fishing in EU waters. Norwegian vessels fishing for the stock in EU waters are obliged to use a sorting grid to reduce unwanted by-catch and discarding of juvenile Norway pout. The closed Norway pout box will guarantee no vessel (trawler or pelagic gear) will interact with the seabed as all fishing operations are prohibited when the box is closed:</p>			
R38, R40			
References pp40-41			
<i>Standard clause 1.3.3.2</i>			

F3	Ecosystem Impacts - Minimum Requirements		
	F3.1	The broader ecosystem within which the fishery occurs is considered during the management decision-making process.	PASS
	F3.2	There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.	PASS
	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.	PASS
Clause outcome:			PASS
<p>Evidence</p> <p>F3.1:</p> <p>The ICES ecosystem-based management strategy emphasizes the importance of maintaining healthy stocks of species which serve as food base for important predators. With present fishing mortality levels in recent years the status of the Norway pout stock is more determined by natural processes and less by the fishery. In general, the fishing mortality on 0-group Norway pout is low (ICES WGNSSK 2019).</p> <p>There is a need to ensure that the stock remains high enough to provide food for a variety of predator species. Natural mortality levels by age and season used in the stock assessment include predation mortality levels estimated for this stock.</p> <p>In order to protect other species (cod, haddock, whiting, saithe and herring as well as mackerel, squids, flatfish, gurnards, nephrops) there is a suite of technical management measures in force for the small meshed fishery in the North Sea such as the closed Norway pout box, by-catch regulations, minimum mesh size, and minimum landing size.</p> <p>Bottom trawls are regulated along the Norwegian continental slope (Figure 11) through closed areas to avoid extended damage on fragile and vulnerable benthic communities and reef-building organisms. Regulations established in 2011 have restricted the use of bottom trawls in areas with coral reefs and at depths exceeding 1,000 m.</p> <p>F3.2:</p> <p>The annual catch in the ecoregion varies between 700, 000t - 1,000,000t (2012 data): Norwegian Spring Spawning (NSS) Herring, Mackerel, Blue Whiting, Saithe <i>Pollachius virens</i>, Redfish <i>Sebastes</i> sp., and Silver smelt <i>Argentina silus</i> are targeted.</p> <p>The fishing pressure on the largest commercially exploited fish stocks have varied since the 1980s, for a number of reasons. They are now harvested at fishing mortalities close to those in the management plans and have full reproductive capacity:</p>			

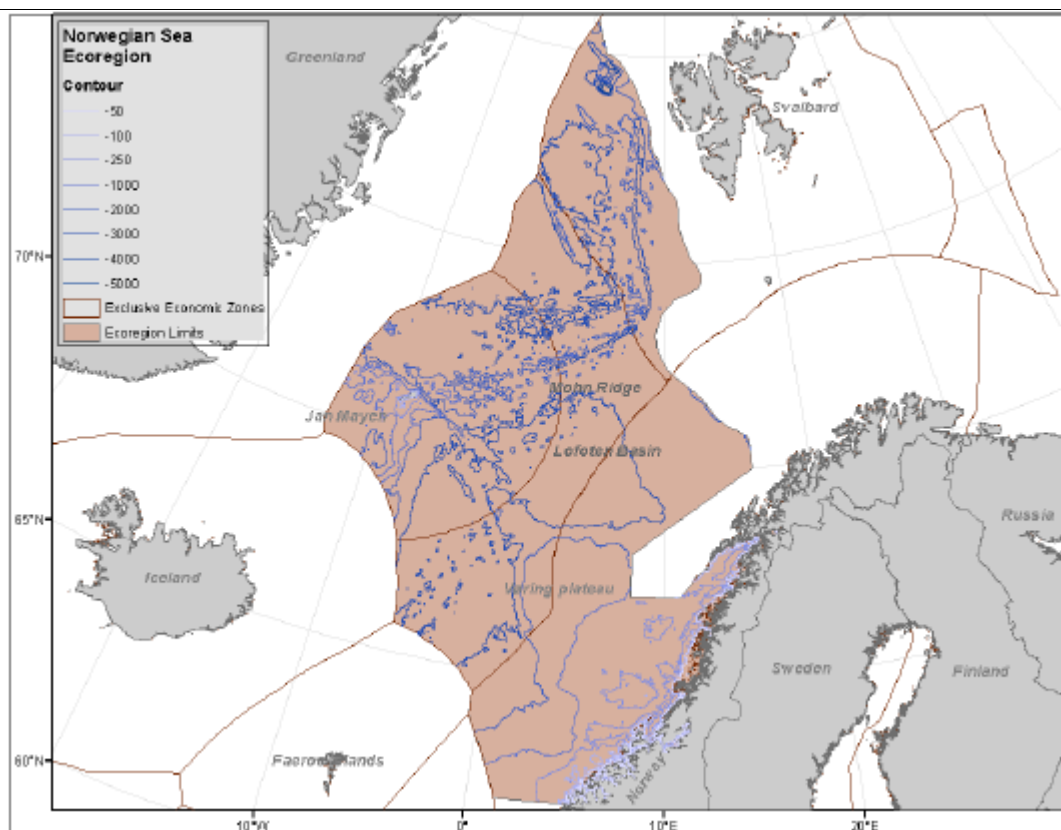


Figure 11: The Norwegian Sea ecoregion, showing EEZs and depth contours. **R38**

Most bird populations have decreased steeply over the last decade. No single factor explains all these trends; however, long-term breeding failures for species such as Atlantic puffin *Fratercula arctica*, Black-legged kittiwake *Rissa tridactyla*, Common guillemot *Uria aalge*, and Northern fulmar *Fulmarus glacialis* indicate that much of the problem along the mainland coast is related to changes in the availability of 0-group fish (especially herring), and also linked to variations in ocean climate. The latest stock assessment for Norway pout does not highlight any major changes in abundance or availability in the assessment area. Mortality of the stock through natural predation is factored into the assessments.

F3.3:

Norway pout constitute an important link in the marine food web: they feed primarily on crustaceans, particularly krill and copepods; and they themselves are prey for a number of larger fishes such as cod, whiting, and saithe, and also marine mammals (Source IMR).

Existing EU technical measures such as the closed Norway pout box, minimum mesh size in the fishery, and by-catch regulations to protect other species have been maintained for all directed fishing in EU waters. Norwegian vessels fishing for the stock in EU waters are obliged to use a sorting grid to reduce unwanted by-catch and discarding of juvenile Norway pout.

R17, R26, R38-R39

References pp40-41

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