



RESPONSIBLE
SUPPLY

IFFO RS
Global Standard for Responsible Supply
of Marine Ingredients

IFFO RS Limited

T: +44 (0) 2030 539 195

E: Standards@iffors.com

W: www.iffors.com

Unit C, Printworks | 22 Amelia Street
London, SE17 3BZ | United Kingdom



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



RESPONSIBLE
SUPPLY

IFFO RS
Global Standard for Responsible Supply
of Marine Ingredients



Fishery Under Assessment	Norwegian lobster <i>Nephrops norvegicus</i> ICES subarea 4
Date	January 2018
Assessor	Conor Donnelly

Application details and summary of the assessment outcome				
Name: Pelagia – Killybegs, Grimsby				
Address:				
Country: UK and Ireland		Zip:		
Tel. No.:		Fax. No.:		
Email address:		Applicant Code		
Key Contact:		Title:		
Certification Body Details				
Name of Certification Body:		SAI Global		
Assessor Name	Peer Reviewer	Assessment Days	Initial/Surveillance/Re-approval	Whole fish/ By-product
Conor Donnelly	Deirdre Hoare	1	Re-approval	By-product
Assessment Period	2017-2018			

Scope Details	
Management Authority (Country/State)	EU
Main Species	Norwegian lobster <i>Nephrops norvegicus</i>
Fishery Location	Northeast Atlantic ICES subarea 4
Gear Type(s)	Trawl, creel
Outcome of Assessment	
Overall Outcome	Pass
Clauses Failed	None
Peer Review Evaluation	Approve
Recommendation	Approval

Assessment Determination
<p>Norway lobster in European waters are managed under the EU Common Fisheries Policy. Management includes setting of Total Allowable Catches, Minimum Conservation Reference Sizes (MCRS) and the Landing Obligation. Scientific catch advice is provided by ICES, who identify 34 Functional units (FU) for stock assessment purposes. Assessment units considered in this by-product report are as follows:</p> <ul style="list-style-type: none"> • Divisions 4.b and 4.c, Functional Unit 5 (central and southern North Sea, Botney Cut-Silver Pit) • Division 4.b, Functional Unit 6 (central North Sea, Farne Deep) • Division 4.a, Functional Unit 7 (northern North Sea, Fladen Ground) • Division 4.b, Functional Unit 8 (central North Sea, Firth of Forth) • Division 4.b, Functional Unit 9 (central North Sea, Moray Firth) • Division 4.a, Functional Unit 10 (northern North Sea, Noup) • Division 4.b, Functional Unit 34 (central North Sea, Devil's Hole) <p>Norway lobster in FUs 6-9 are subject to a species-specific management regime and are assessed under Clause C. Fishery removals of the stock are included in the stock assessment process and in most cases the stocks are considered, in their most recent assessment, to have a biomass above the limit reference point and so pass clause C. FU10 has no reference points defined for it but fishery removals are negligible so it passes clause C.</p> <p>Given the lack of key elements of a species-specific management regime in FUs 5 and 34, stocks in these FUs are considered further under clause D using productivity susceptibility analysis (PSA). The PSA classes Norway lobster as vulnerable so the stocks were assessed further under D4 and both pass.</p> <p>Norway lobster is classed as of least concern on the IUCN Red List of Threatened Species and is not listed on CITES (http://www.iucnredlist.org/details/169967/0, assessment dates from 2009).</p> <p>Norway lobster in subarea 4 is recommended for approval under the IFFO RS Standard.</p>
Peer Review Comments
Notes for On-site Auditor

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A			A1	
			A2	
			A3	
			A4	
Category B				
Category C	Norwegian lobster <i>Nephrops norvegicus</i>	NA	Pass (FUs 6-10)	
Category D	Norwegian lobster <i>Nephrops norvegicus</i>	NA	Pass (FUs 5, 34)	

[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.

Common name	Latin name	Stock	% of landings	Management	Category
Norway lobster	<i>Nephrops norvegicus</i>	FUs 6-10		EU, CFP	C
		FUs 5, 34			D

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		Norwegian lobster <i>Nephrops norvegicus</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/ Fail
Clause outcome:			Pass/ Fail
Evidence			
Norway lobster are managed under the EU Common Fisheries Policy and in Norwegian waters under their national management regime. TACs are set for the following ICES subareas and divisions (EU TAC unless otherwise stated, 2018 quotas shown, EU Council Regulation 2018/120):			
<ul style="list-style-type: none">• 3a (11,738 tonnes)• 2a and 4 (24,518 tonnes)• 4 (Norwegian waters, EU quota is 800 tonnes)• 6 and 5.b (12,129 tonnes)• 7 (29,091 tonnes)• 8.a-b, d-e (3,614 tonnes)• 8.c (0 tonnes)• 9 and 10 (381 tonnes)			
34 Functional units (FU) for assessment purposes are identified by ICES. There is significant disparity between management areas (ie the TACs) and assessment units. Assessment units considered in this by-product report are as follows (see also Figure 1 below):			
<ul style="list-style-type: none">• Divisions 4.b and 4.c, Functional Unit 5 (central and southern North Sea, Botney Cut-Silver Pit)• Division 4.b, Functional Unit 6 (central North Sea, Farne Deep)• Division 4.a, Functional Unit 7 (northern North Sea, Fladen Ground)• Division 4.b, Functional Unit 8 (central North Sea, Firth of Forth)• Division 4.b, Functional Unit 9 (central North Sea, Moray Firth)• Division 4.a, Functional Unit 10 (northern North Sea, Noup)• Division 4.b, Functional Unit 34 (central North Sea, Devil's Hole)			

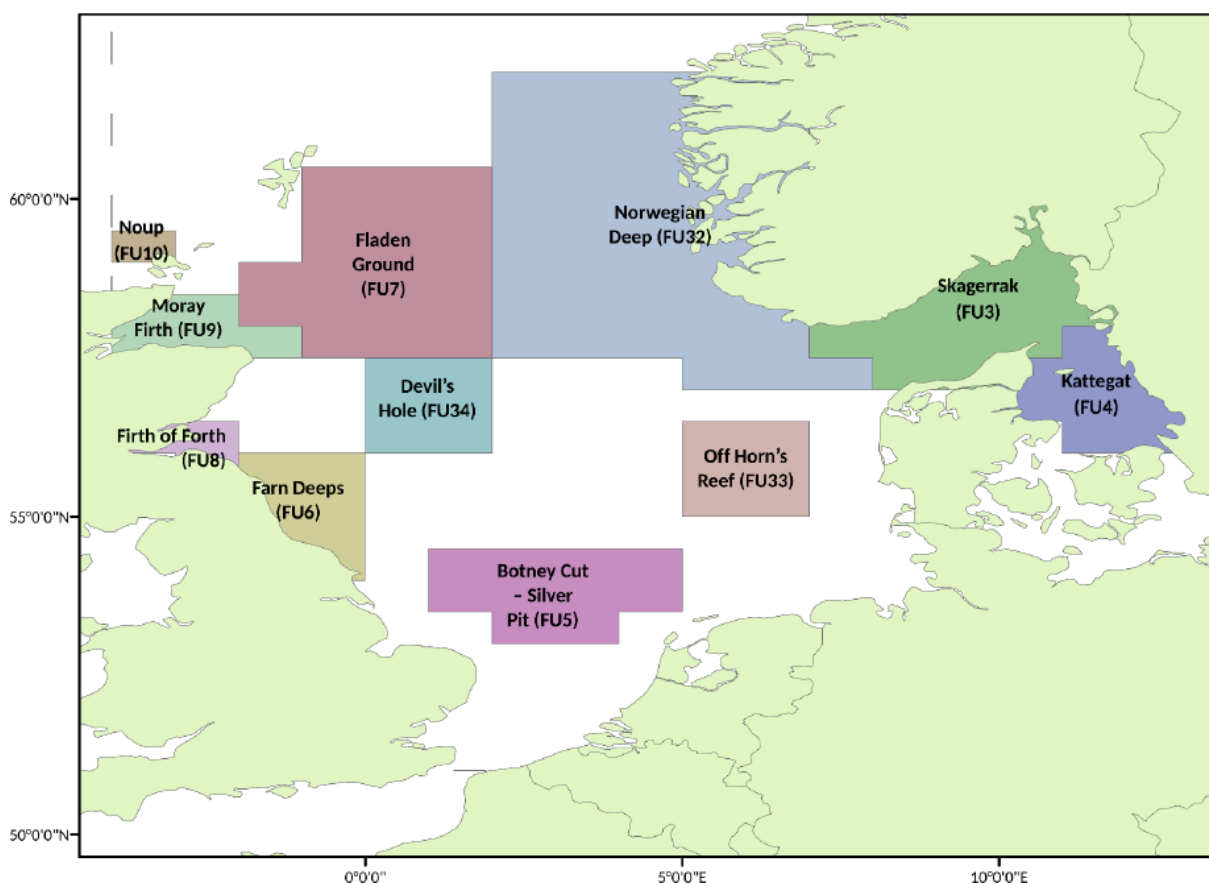


Figure 1. Norway lobster functional units in the North Sea and Skagerrak/Kattegat region. Source: ICES, 2016a.

Divisions 4.b and 4.c, Functional Unit 5 (central and southern North Sea, Botney Cut-Silver Pit)

Data limited assessment method (ICES category 4 stock). Input data comprise commercial catches (international landings and length frequencies from Dutch catch sampling); one survey index (UWTV estimates of density per m² in 2010, 2012, and 2013); habitat extent from VMS analysis and sediment maps.

No reference points. The state of this stock is unknown. Preliminary stock surveys (2010 and 2012) indicate relatively high density compared to neighbouring FUs (ICES, 2016a).

Given the lack of key elements of a species-specific management regime this stock is considered further under clause D.

Division 4.b, Functional Unit 6 (central North Sea, Farne Deeps)

ICES data category 1 stock for which analytical assessment possible. Assessment is an underwater TV survey linked to yield-per-recruit analysis from length data. Input data comprise one survey index (UWTV); length-frequency data from the fishery; commercial catches (international landings and length frequencies from English catch sampling, covering 90% of the landings); maturity data from commercial catch sampling and natural mortalities from Morizur (1982): 0.3 for males and immature females, and 0.2 for mature females for all years.

MSY Btrigger and Fmsy reference points defined. The stock abundance index has increased since 2015, and currently it is just above MSY Btrigger. Harvest rates have been above the MSY level since 2008 (ICES, 2017a).

Fishery removals of this stock are included in the stock assessment process and the stock is considered, in its most recent assessment, to have a biomass above the limit reference point. FU6 passes clause C.

Division 4.a, Functional Unit 7 (northern North Sea, Fladen Ground)

ICES data category 1 stock for which analytical assessment possible. Assessment is an underwater TV survey linked to yield-per-recruit analysis from length data. Input data comprise commercial catches (international landings, length frequencies from Scottish catch sampling); one survey index (FU 7 UWTV); maturity data from commercial catch sampling and natural mortalities from Morizur (1982): 0.3 for males and immature females, 0.2 for mature females for all years.

MSY Btrigger and Fmsy reference points defined. The stock size declined from the highest observed value in 2008 to the lowest abundance estimate in the time-series in 2015. From 2016 the stock size increased and is currently above MSY Btrigger. The harvest rate has declined since 2010 and remains well below Fmsy (ICES, 2017b).

Fishery removals of this stock are included in the stock assessment process and the stock is considered, in its most recent assessment, to have a biomass above the limit reference point. FU7 passes clause C.

Division 4.b, Functional Unit 8 (central North Sea, Firth of Forth)

ICES data category 1 stock for which analytical assessment possible. Assessment is an underwater TV survey linked to yield-per-recruit analysis from length data. Input data comprise commercial catches (international landings, length frequencies from Scottish catch sampling); one survey index (FU 8 UWTV); maturity data from commercial catch sampling and natural mortalities from Morizur (1982): 0.3 for males and immature females, 0.2 for mature females for all years.

MSY Btrigger and Fmsy reference points defined. The stock size is above MSY Btrigger and has been for most of the time-series (dating from 1993). The harvest rate is varying and is now below Fmsy (ICES, 2017c).

Fishery removals of this stock are included in the stock assessment process and the stock is considered, in its most recent assessment, to have a biomass above the limit reference point. FU8 passes clause C.

Division 4.b, Functional Unit 9 (central North Sea, Moray Firth)

ICES data category 1 stock for which analytical assessment possible. Assessment is an underwater TV survey linked to yield-per-recruit analysis from length data. Input data comprise commercial catches (international landings, length frequencies from Scottish catch sampling); one survey index (FU 9 UWTV); maturity data from commercial catch sampling and natural mortalities from Morizur (1982): 0.3 for males and immature females, 0.2 for mature females for all years.

MSY Btrigger and Fmsy reference points defined. The stock has been above MSY Btrigger for the entire time-series. The harvest rate has fluctuated around Fmsy and is now just above it (ICES, 2017d).

Fishery removals of this stock are included in the stock assessment process and the stock is considered, in its most recent assessment, to have a biomass above the limit reference point. FU9 passes clause C.

Division 4.a, Functional Unit 10 (northern North Sea, Noup)

Data limited assessment method (ICES category 4 stock). Input data comprise habitat extent, mean size, occasional UWTV surveys (incomplete time-series 1994, 1999, 2006, 2007, 2014); commercial catches not included in the assessment but available for monitoring (international landings, length frequencies from Scottish catch sampling) and one survey index (UWTV survey – limited time-series).

No reference points. The underwater TV (UWTV) surveys in FU10 been conducted sporadically and indicated that the density is relatively low (0.13 *Nephrops* m⁻²). Landings are at a historical minimum (figure 2) (ICES, 2016b).

Fishery removals are negligible. FU10 passes clause C.

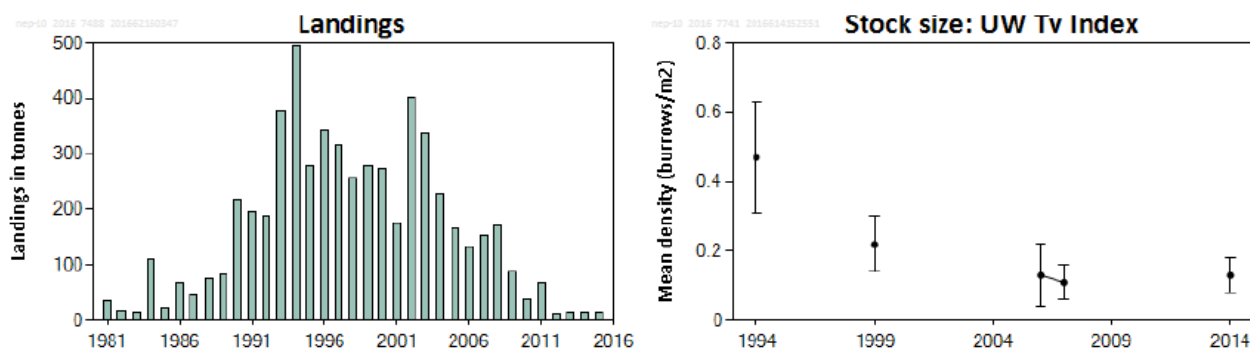


Figure 2. Norway lobster in Division 4.a, FU 10. Landings and stock density. Source: ICES, 2016b.

References

- ICES, 2017a. <http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/nep.fu.6.pdf>
 ICES, 2017b. <http://ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/nep.fu.7.pdf>
 ICES, 2017c. <http://ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/nep.fu.8.pdf>
 ICES, 2017d. <http://ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/nep.fu.9.pdf>
 ICES, 2016a. <http://ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/nep-5.pdf>
 ICES, 2016b. <http://ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/nep-10.pdf>
 ICES, 2016c. <http://ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/nep-34.pdf>

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.

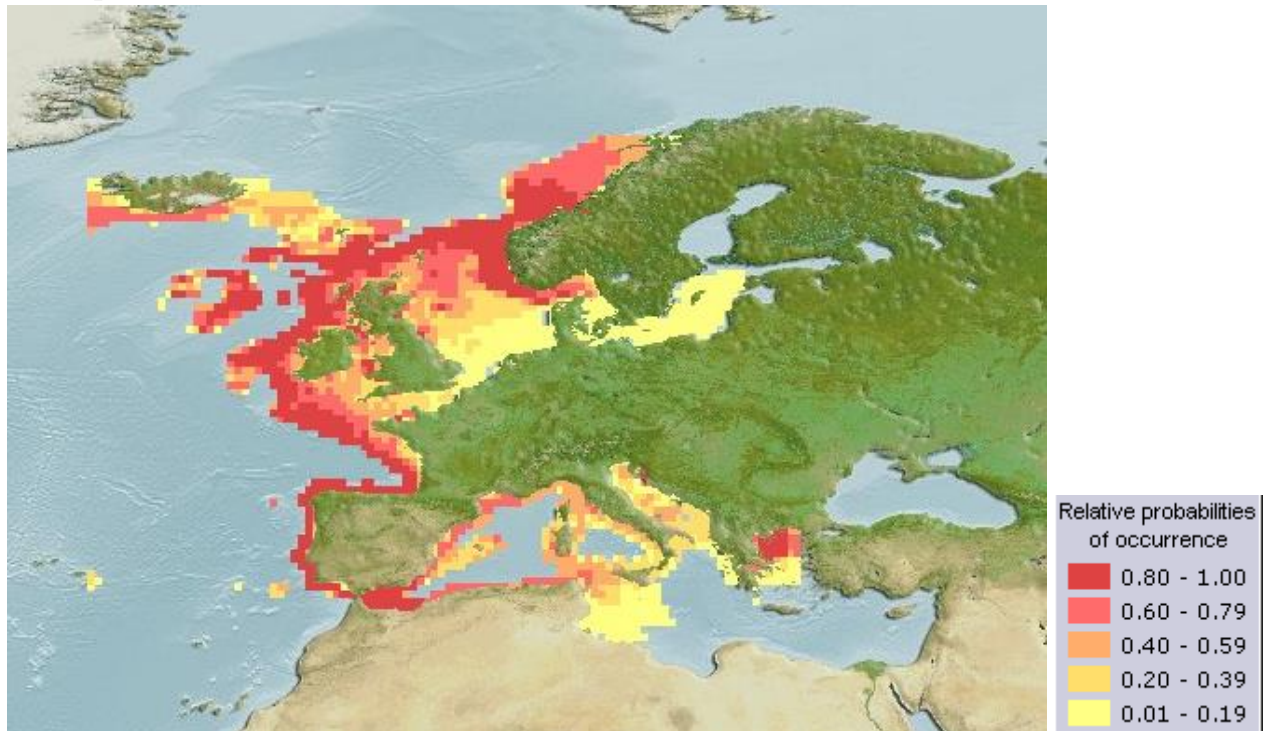
D1	Species Name:	Norwegian lobster <i>Nephrops norvegicus</i> FUs 5, 34	
	Productivity Attribute	Value	Score
	Average age at maturity (years)	2.0	2
	Average maximum age (years)	22	2
	Fecundity (eggs/spawning)	735	3
	Average maximum size (cm)	10-20	1
	Average size at maturity (cm)	3.62	1
	Reproductive strategy	Eggs laid and carried	2
	Mean trophic level	3.3	3
	Average Productivity Score		2
	Susceptibility Attribute	Value	Score
	Overlap of adult species range with fishery	>50% of stock occurs in area fished	3
	Distribution	Not scored if overlap scored	
	Habitat	Benthic	3
	Depth range	20-800m, usually 200-600m	1
	Selectivity	Up to 4m length	3
	Post-capture mortality	Most dead or retained	3
	Average Susceptibility Score		3
	PSA Risk Rating (From Table D3)		D4
	Compliance rating		
	References		
	Maximum age		

Sigurvin Bjarnason, 2016. *Age and growth of the Norway lobster (Nephrops norvegicus) in Icelandic waters*, Master's thesis, Faculty of Life and Environmental Sciences, University of Iceland, pp. 68.
https://skemman.is/bitstream/1946/24865/1/MS_ritgerd_Sigurvin_Nephrops_.pdf

Trophic level

Oakley (1978) cited in: Jiming, Y. A (1982). Tentative Analysis of the Trophic Levels of North Sea Fish. Mar. Ecol. Prog. Ser. Vol 7: 247-252.
<http://www.int-res.com/articles/meps/7/m007p247.pdf>

Overlap attribute



Computer generated distribution maps for *Nephrops norvegicus* (Norway lobster), with modelled year 2100 native range map based on IPCC A2 emissions scenario. www.aquamaps.org, version of Aug. 2016. Web. Accessed 1 May. 2018

Other attributes

<http://www.sealifebase.org/summary/Nephrops-norvegicus.html>

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

D4		Species Name	Norway lobster <i>Nephrops norvegicus</i> FUs 5, 34
Impacts On Species Categorised as Vulnerable by D1-D3 - Minimum Requirements			
D4.1	The potential impacts of the fishery on this species are considered during the management process, and reasonable measures are taken to minimise these impacts.		Pass
D4.2	There is no substantial evidence that the fishery has a significant negative impact on the species.		Pass
			Outcome: Pass
Evidence			
As noted in clause C, these FUs are managed under the CFP with management measures in place including a TAC (covering subarea 4 and division 2.a), although the management area and assessment areas do not align which risks unsustainable levels of fishing. A Minimum Conservation Reference Size (MCRS) has also been set (EU: 25mm; Denmark, Sweden and Norway: 32mm). In 2016 the landing obligation was introduced in subarea 4 for <i>Nephrops</i> 80-99mm trawl fisheries. ICES provides catch advice.			
FU5			
ICES (2017o) note: “The status of this stock is uncertain although there are no consistent signals that this stock is suffering from over-exploitation. The lack of reliable length information on this stock in recent years means that there is no information regarding incoming recruitment. The advent of discard data from the Dutch fleet from 2015 indicates that harvest rates are likely to have been significantly higher than previously assumed although it is not known how long these high discard rates have been in practice.”			
Further, ICES (2016a) note: “While this is the only estimate available for this stock, the 2012 survey estimate (0.7 <i>Nephrops</i> m-2) is relatively high compared with most Norway lobster stocks in the North Sea. Landings per unit of effort (LPUE) from English directed fisheries shows no trend in abundance over the period 2006-2015, which may suggest that density has remained stable. Sensitivity analyses show that if the density is lower than 0.6 <i>Nephrops</i> m-2, the harvest rates would be higher than the upper bound of ICES advice, 7.5%” (which is based on the lower boundary of MSY harvest rates estimated for other FUs, ranging between 7.5 and 16%).			
ICES note that given the paucity of metrics available for monitoring stock development, the exploitation of this stock should be monitored closely (ICES, 2017o). However, based on the available limited information, there appears to be no substantial evidence that the fishery has a significant negative impact on the species. This FU passes clause D.			
FU34			
This is a relatively new FU, designated in 2010 and ICES state that the current state of the stock is unknown (ICES, 2017o). The 2015 UWTv survey found mean density to be 0.16 <i>Nephrops</i> m² which, taking into account ICES findings for FU5 above, suggests density in FU34 is also relatively high for a North Sea Norway lobster stock. The latest ICES advice for 2017 and 2018, based on the precautionary approach (2014 advice +20%) proposed a total catch of 492 tonnes and implied a harvest rate of 5.92% (ICS, 2016c).			
Based on the available limited information, there does not appear to be substantial evidence that the fishery has a significant negative impact on the species. This FU passes clause D.			

References

ICES, 2017o. ICES, WGNSSK Report 2017.

<http://ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2017/WGNSSK/13%20WGNSSK%20Report%20-%20Section%2011%20Nephrops%20in%20Subarea%204.pdf>

Standard clause 1.3.2.2

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>

Appendix B – Background on the 5% catch rule

The proposed fishery assessment methodology uses a species categorisation approach to divide the catch in the assessment fishery into groups. These groups are:

- **Category A:** “Target” species with a species-specific management regime in place.
- **Category B:** “Target” species with no species-specific management regime in place.
- **Category C:** “Non-target” species with a species-specific management regime in place.
- **Category D:** “Non-target” species with no species-specific management regime in place

The distinction between 'target' and 'non-target' species is made to enable the assessment to consider the impact of the fishery on all the species caught regularly, without requiring a full assessment be conducted for each. Thus 'target' species are subjected to a more detailed assessment, while 'non-target' species are considered more briefly. For the purposes of the IFFO RS fishery assessment, 'target' and 'non-target' species are defined by their prevalence in the catch, by weight. Applicants must declare which species are considered 'target' species in the fishery, and the combined weight of these must be at least 95% of the annual catch. The remaining 5% can be made up of 'non-target' species. Note also that ETP species are considered separately, irrespective of their frequency of occurrence in the catch.

The proposed use of 5% as a limit for 'non-target' species is one area in which feedback is being sought via the public consultation. The decision to propose a value of 5% ensures consistency with other fishery assessment programmes, such as the MSC which uses 5% to distinguish between 'main' and 'minor' species (see MSC Standard, SA3.4 and GSA3.4.2); and Seafood Watch, which uses 5% when defining the 'main' species for the assessment (see Seafood Watch Standard, Criterion 2). The value is also consistent with the approach used in Version 1 of the IFFO RS Standard, in which up to 5% of the raw material could be comprised of 'unassessed' species.