

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





Fishery Under Assessment	Norwegian lobster <i>Nephrops norvegicus</i> ICES Subarea VII
Date	April 2019
Assessor	Jim Daly

Application details and summary of the assessment outcome					
Name: Pelagia: Killybegs, Grimsby					
Address:					
Country: UK and Ire	Country: UK and Ireland Zip:				
Tel. No.:		Fax. No.:			
Email address:		Applicant Code			
Key Contact: Geraldi	Key Contact: Geraldine Fox Title: Quality Manager				
Certification Body Details					
Name of Certification	Name of Certification Body: SAI Global Ltd				
Assessor Name	Peer Reviewer	Assessment DaysInitial/Surveillance/Re- approvalWhole fish/ By product			
Jim Daly	Vito Romito	0.5	Surveillance 1	By-product	
Assessment Period 2018					

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

Assessment Determination

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:

- Division VIIa, Functional Unit 14 (Irish Sea, East)
- Division VIIa, Functional Unit 15 (Irish Sea, West)
- Divisions VIIb-c and VIIj-k, Functional Unit 16 (west and southwest of Ireland, Porcupine Bank)
- Division VIIb, Functional Unit 17 (west of Ireland, Aran grounds)
- Divisions VIIa, VIIg, and VIIj, Functional Unit 19 (Irish Sea, Celtic Sea, eastern part of southwest of Ireland)
- Divisions VIIg and VIIh, functional units 20 and 21 (Celtic Sea)
- Divisions VIIg and VIIf, Functional Unit 22 (Celtic Sea, Bristol Channel)

A single TAC covers the entire ICES Subarea VII (**Figure 1**). Management should be implemented at the functional unit level to ensure that fishing opportunities are in line with the scale of the resource for each of the stocks and the corresponding MSY approach.

Norway lobster is subject to a species-specific management regime and is 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 biomass above the limit reference point and so pass clause C.

From 2016 the EU landing obligation was applied to all catches of Norway lobster fisheries in ICES Subarea VII with several exemptions. Observations from the 2016-2017 fishery indicate that discarding above the minimum conservation reference size (MCRS) continues and has not changed markedly. Consequently, ICES is providing advice for 2019 assuming average discard rates as observed over the last two years, which is considered to be a more realistic assumption.

Norway lobster is classed as of least concern on the IUCN Red List of Threatened Species and is not listed on CITES (<u>http://www.iucnredlist.org/details/169967/0</u>, assessment dates from 2009).

Norway lobster is approved by the assessment team for the production of fishmeal and fish oil under the IFFO-RS v 2.0 by-products standard.

Peer Review Comments

Norway lobster in European waters are managed under the EU Common Fisheries Policy. Scientific catch advice is provided by ICES, who identify 34 Functional units (FU), eight of which are relevant and considered in this assessment.

FU14. MSY Btrigger and Fmsy reference points are defined. Historical and current harvest rates are well below Fmsy. The stock size has been above MSY Btrigger since 2010. ICES assesses that fishing pressure on the stock is below FMSY, and spawning stock size is above MSY Btrigger. 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. FU14 passes clause C.

FU15. MSY Btrigger and Fmsy reference points are defined. Since 2003, stock abundance has been above MSY Btrigger. In the last decade the harvest rate has fluctuated around Fmsy and is below Fmsy in 2016 and 2017. ICES assesses that fishing pressure on the stock is below FMSY, and spawning stock size is above MSY Btrigger. 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. FU15 is considered to pass clause C.

FU16. ICES assesses that fishing pressure on the stock is above FMSY, no reference points for stock size have been defined for this stock. Although there is no reference in the ICES advice to indicate the limit reference point being exceeded (because no reference points are defined), we note that biomass is currently above average and in positive growth trajectory. Fishery removals of this stock are included in the stock assessment process. FU16 is considered to pass clause C.

FU17. The harvest rate has largely fluctuated around Fmsy in the last decade and is currently estimated at just above Fmsy. Catch levels (landings and discards) have been less than ICES landings/catch advice in 2015-2016 but were higher in the preceeding two years (ICES, 2017). ICES assesses (2018) that fishing pressure on the stock is below FMSY, and stock size is above MSY Btrigger. Fishery removals of this stock are included in the stock assessment process; and the stock is considered likely, in its most recent assessment, to have a biomass above the limit reference point. FU17 passes clause C.

FU19. 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 harvest rate below FMSY, which should theoretically lead to a biomass above the limit reference levels. FU19 passes clause C.

FU20 and 21. Fishery removals of this stock are included in the stock assessment process. While the stock is above average, fishing mortality is well below its Fmsy reference point so FUs 20 and 21 are considered to pass clause C.

FU22. The latest estimate of stock abundance is below the MSY Btrigger (990 million). Fishery removals of this stock are included in the stock assessment process and the stock is considered, in its most recent assessment, to be slightly below the MSY Btrigger threshold, and as such, likely to have a biomass above limit reference levels. FU22 passes clause C.

The Peer Reviewer agrees that Norway lobster should be approved by the assessment team for the production of fishmeal and fish oil under the IFFO-RS v 2.0 by-products standard.

Notes for On-site Auditor

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)
			A1
Catagory			A2
Category A			A3
			A4
Category B			
Category C	Norwegian lobster Nephrops norvegicus	N/A	Pass
Category D			

[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	Nephrops norvegicus	FUs 14-17, 19-22	N/A	EU, CFP	С

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		ame	Norwegian lobster Nephrops norvegicus		
C1	C1 Category C Stock Status - Minimum Requirements				
	C1.1	Fishery rem	novals of the species in the fishery under assessment are included in the	Pass	
	stock assessment process, OR are considered by scientific authorities to be negligible.				
C1.2 The species is considered, in its most recent stock assessment, to have a biom			s is considered, in its most recent stock assessment, to have a biomass	Pass	
above the limit reference point (or proxy), OR removals by the fishery under					
assessment are considered by scientific authorities to be negligible.					
Clause outcome: H				Pass	

Evidence:

34 Functional units (FU) for assessment purposes identified by ICES. There is significant disparity between management areas (i.e. the TACs) and assessment units. Assessment units considered in this by-product report are as follows (**Figure 1**):

- Division VIIa, Functional Unit 14 (Irish Sea, East)
- Division VIIa, Functional Unit 15 (Irish Sea, West)
- Divisions VIIb-c and VIIj-k, Functional Unit 16 (west and southwest of Ireland, Porcupine Bank)
- Division VIIb, Functional Unit 17 (west of Ireland, Aran grounds)
- Divisions VIIa, VIIg, and VIIj, Functional Unit 19 (Irish Sea, Celtic Sea, eastern part of southwest of Ireland)
- Divisions VIIg and VIIh, functional units 20 and 21 (Celtic Sea)
- Divisions VIIg and VIIf, Functional Unit 22 (Celtic Sea, Bristol Channel)



Figure 1. Norway lobster functional units in Subareas VI and VII R1.

Division VIIa Functional Unit 14 (Irish Sea, East):

Since 2008 the underwater TV survey (UWTV) has provided abundance estimates for Functional Unit (FU) 14 with acceptable precision. Catch sampling was poor during 2010-2012 and harvest rates and mean weight estimates are unreliable in that period. From 2013 onwards sampling information is of improved quality and used in the calculation of catch scenarios. Improved sampling in 2016-2017 indicated a substantial change in mean weight. Hence, a two-year average (rather than a three-year average) of mean weights was used in the calculation of catch scenarios.

The density of Nephrops in FU 14 is considered medium (~ 0.48 burrow m-2, average 2011-2018) compared with other FUs. Some biological parameters are poorly known and the sampling levels in the recent past have been low and variable. Harvest rate estimates have been below the F0.1 for combined sexes. Based on these considerations ICES considers that F0.1 is a suitable FMSY proxy for this stock.

MSY Btrigger and Fmsy reference points are defined. Historical and current harvest rates are well below Fmsy. The stock size has been above MSY Btrigger since 2010. ICES assesses that fishing pressure on the stock is below FMSY, and spawning stock size is above MSY Btrigger.

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. FU14 passes clause C.

Division VIIa, Functional Unit 15 (Irish Sea, West):

An annual UWTV survey has taken place since 2003 which gives abundance estimates for the Functional Unit (FU) 15 with high precision. The quality of input data and level of sampling for this stock are good. MSY Btrigger and Fmsy reference points are defined. Since 2003, stock abundance has been above MSY Btrigger. In the last decade the harvest rate has fluctuated around Fmsy and is below Fmsy in 2016 and 2017. ICES assesses that fishing pressure on the stock is below FMSY, and spawning stock size is above MSY Btrigger.

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. FU15 passes clause C.

Divisions VIIb–c and 7.j–k, Functional Unit 16 (West and Southwest of Ireland, Porcupine Bank): ICES data Category 1 stock for which analytical assessment possible. Assessment is an underwater TV survey; commercial catches (international landings and length frequencies reconstructed from sampling and industry data); one UWTV survey (UWTV-FU 16); fixed maturity and natural mortality. This stock was benchmarked in 2013.

Stock abundance is estimated to have increased in 2018. The harvest rate has been increasing since 2014 and is above FMSY in 2017(**Figure 2**):



Figure 2 Norway lobster in divisions 7.b-c and 7.j-k, Functional Unit 16. Summary of the stock assessment. Catches (1979-2015 with negligible discards, Landings 2016 onwards), harvest rate (sum of landings in numbers, divided by total abundance), stock abundance (Underwater TV, millions; SSB proxy; 95% confidence intervals). The harvest rate in 2015 was calculated using an interpolated value for abundance since no survey data are available for 2015. The orange line represents the FMSY harvest rate. R1

ICES assesses that fishing pressure on the stock is above FMSY, no reference points for stock size have been defined for this stock. Although there is no reference in the ICES advice to indicate the limit reference point being exceeded (because no reference points are defined), we note that biomass is currently above average and in positive growth trajectory. Fishery removals of this stock are included in the stock assessment process. **FU16 is considered to pass clause C.**

Division VIIb, Functional Unit 17 (west of Ireland, Aran grounds):

ICES data category 1 stock for which analytical assessment possible. Assessment is an underwater TV survey. Input data comprise one survey index (UWTV-FU 17); commercial catches (international landings, length frequencies from Irish catch sampling); maturity data (commercial catch and discard sampling, survey sampling); fixed natural mortality and discard survival rate. ICES note that the observed burrow density has declined, from high (> 0.8 individuals m-2) at the start of the series to medium density (~0.3 individuals m-2) towards the end of the time-series. The nature of the fishery has also changed, from a continuous fishery throughout the year to a fishery more concentrated on periods of high catch rates.



MSY Btrigger and Fmsy reference points are defined (**Figure 3**):

Figure 3 Norway lobster in Division 7.b, Functional Unit 17. Summary of the stock assessment. Catches (discard data only available from 2002), harvest rate (sum of landings and dead discards in numbers, divided by total abundance), survey abundance (Underwater TV, millions; SSB proxy; 95% confidence intervals). Orange lines represent MSY Btrigger and the FMSY harvest rate. **R1**

The harvest rate has largely fluctuated around Fmsy in the last decade and is currently estimated at just above Fmsy. Catch levels (landings and discards) have been less than ICES landings/catch advice in 2015-2016 but were higher in the preceeding two years (ICES, 2017). ICES assesses (2018) that fishing pressure on the stock is below FMSY, and stock size is above MSY Btrigger.

Fishery removals of this stock are included in the stock assessment process; and the stock is considered likely, in its most recent assessment, to have a biomass above the limit reference point. FU17 passes clause C

Divisions VIa, VIIg, and VIIj, Functional Unit 19 (Irish Sea, Celtic Sea, eastern part of southwest of Ireland):

This is an ICES data category 1 stock for which analytical assessment is possible. Assessment is an underwater TV survey. Input data comprise commercial catches (international landings from Ireland, France, and UK); length frequencies from catch and discard sampling (Ireland); one UWTV survey index (UWTV-FU 19); maturity data from commercial catch and survey sampling; fixed natural mortality and discard survival rate.

MSY Btrigger and Fmsy reference points are defined for this stock. Harvest rates have been below FMSY since 2014. Stock abundance has shown a declining trend and is now below MSY Btrigger. No information is provided on whether stock status is below Blim, as this reference points is undefined.

The latest estimate of stock abundance is below MSY Btrigger (430 million). The ICES MSY approach states that under such conditions the FMSY harvest rate (9.3%) for Functional Unit (FU) 19 should be reduced by multiplying it by the ratio of current abundance to MSY Btrigger. This corresponds to a harvest rate of [9.3 \times (176/430)] = 3.8% for the advice in 2019. The MSY approach is being used to manage this FU.

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 harvest rate below FMSY, which should theoretically lead to a biomass above the limit reference levels. FU19 passes clause C.

Divisions VIIg and VIIh, functional units 20 and 21 (Celtic Sea):

ICES data category 1 stock for which analytical assessment possible. Assessment is an underwater TV survey. Input data comprise one survey index (UWTV-FU 2021); commercial catches (international landings (Ireland, France and UK); length frequencies from Irish and French catch and discard sampling); maturity data (from commercial catch sampling and surveys); fixed natural mortality and discard survival rate.

No MSY Btrigger reference point but Fmsy reference point is defined. The historical harvest rate is below Fmsy for the time-series. Stock abundance decreased in 2018 (**Figure 4**):



Figure 4 Norway lobster in divisions 7.g and 7.h, functional units 20 and 21. Summary of the stock assessment. Catches (discard data only available from 2012), harvest rate (sum of landings and dead discards in numbers divided

by total abundance), survey abundance (Underwater TV, millions; SSB proxy; 95% confidence intervals). The orange line represents the FMSY harvest rate. **R1**

ICES assesses that fishing pressure on the stock is below FMSY; no reference points for stock size have been defined for this stock.

Fishery removals of this stock are included in the stock assessment process. While the stock is above average, fishing mortality is well below its Fmsy reference point so FUs 20 and 21 are considered to pass clause C.

Divisions VIIg and VIIf, Functional Unit 22 (Celtic Sea, Bristol Channel):

The harvest rate has fluctuated over the time-series and it is now just below FMSY. The stock abundance has been above MSY Btrigger, except for 2016 and 2018. ICES assesses that fishing pressure on the stock is below FMSY and stock size is below MSY Btrigger.

The latest estimate of stock abundance is below the MSY Btrigger (990 million). The ICES maximum sustainable yield (MSY) approach states that under such conditions the FMSY harvest rate (12.8%) for Functional Unit (FU) 22 should be reduced by multiplying it by the ratio of current abundance to MSY Btrigger. This corresponds to a harvest rate of $[12.8 \times (876/990)] = 11.3\%$ for the advice in 2019.

Fishery removals of this stock are included in the stock assessment process and the stock is considered, in its most recent assessment, to be slightly below the MSY Btrigger threshold, and as such, likely to have a biomass above limit reference levels. FU22 passes clause C.

References

R1 ICES Advice (2018) Norway Lobster:

- Division VIIa, Functional Unit 14 (Irish Sea, East) <u>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/nep.fu.14.pdf</u>
- Division VIIa, Functional Unit 15 (Irish Sea, West) <u>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/nep.fu.15.pdf</u>
- Divisions VIIb–c and VIIj–k, Functional Unit 16 (west and southwest of Ireland, Porcupine Bank) <u>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/nep.fu.16.pdf</u>
- Division VIIb, Functional Unit 17 (west of Ireland, Aran grounds): <u>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/nep.fu.17.pdf</u>
- Divisions VIIa, VIIg, and VIIj, Functional Unit 19 (Irish Sea, Celtic Sea, eastern part of southwest of Ireland): <u>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/nep.fu.19.pdf</u>
- Divisions VIIg and VIIh, functional units 20 and 21 (Celtic Sea) <u>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/nep.fu.2021.pdf</u>
- Divisions VIIg and VIIf, Functional Unit 22 (Celtic Sea, Bristol Channel): <u>http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/nep.fu.22.pdf</u>

R2 EU 2016: Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on establishing a multi-annual plan for demersal stocks in the North Sea and the fisheries exploiting those stocks and repealing Council Regulation (EC) 676/2007 and Council Regulation (EC) 1342/2008. COM(2016) 493 final. 23 pp. <u>https://eur-lex.europa.eu/resource.html?uri=cellar:9aa2aaae-5956-11e6-89bd-01aa75ed71a1.0008.02/DOC_1&format=PDF.</u>

R3 Nephrops IUCN Redlist: <u>https://www.iucnredlist.org/search?taxonomies=107878&searchType=species</u>

R4 ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES CM 2012/ACOM 68. 42 pp.

Standard clauses 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 rm. 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 approached used in Version 1 of the IFFO RS Standard, in which up to 5% of the raw material could be comprised of 'unassessed' species.