

**IFFO RS** Global Standard for Responsible Supply of Marine Ingredients

#### **IFFO RS Limited**

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

Version No.: 2.0 Date: July 2017 Page 1



**IFFO RS** Global Standard for Responsible Supply of Marine Ingredients



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

Scope Details	
Management Authority (Country/State)	Ireland & UK, EU
Main Species	Edible crab Cancer pagurus
Fishery Location	Ireland
Gear Type(s)	Pots and creels
Outcome of Assessment	
Overall Outcome	Pass 3 units, fail 1 unit
Clauses Failed	D4.2 (N. Irish Sea)
Peer Review Evaluation	
Recommendation	Approve 3 stocks, fail 1 unit (N. Irish Sea)

#### **Assessment Determination**

There are 4 crab fishery assessment units around Ireland (listed below and see figure in section C). This assessment is based on the latest available information which was readily available. It is relatively old – information on the Irish units' stock status relative to reference points is up to 2013.

- South East Ireland
- South West Ireland
- Malin
- N. Irish Sea

South East Ireland, South West Ireland and Malin units pass this assessment under section C as fishery removals of edible crab are included in the stock assessment process and the species is considered, in the most recent available stock assessment, to have a biomass above the limit reference point.

The N. Irish Sea unit lacked information on the stock assessment process and reference points and so were assessed using the productivity susceptibility analysis in section D. The PSA found edible crab to be vulnerable so this unit required further consideration. It failed clause D.4 because at this stage there is a lack of evidence to assess whether the fishery has a negative impact on edible crab.

Edible crab is not listed on the IUCN Red List of Threatened Species or CITES.

# The South East Ireland, South West Ireland and Malin units are recommended for approval for use as by-product under the IFFO RS standard. The N. Irish Sea stock unit is not recommended for approval.

#### **Peer Review Comments**

Data on stock status for all assessment units needs to be improved; in particular landings data from the under 10m fleet should be included in future assessments (Ireland).

The client (Pelagia) must demonstrate physical separation during processing of edible crab material from assessment units that have passed from those assessment units not currently certified for use of this material as by-product.

Should additional data on stock status from the failed units be made available to the assessment team we would use these data to again assess compliance to the IFFO RS standard.

#### **Notes for On-site Auditor**

Edible crab by-product from N. Irish Sea should be separated from other Irish edible crab units that are IFFO RS approved (South East Ireland, South West Ireland and Malin).

## Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)
			A1
Cotogomy A			A2
Calegory A			A3
			A4
Category B			
Catagory C	Edible crab Cancer pagurus		Pass (South West Ireland,
CategoryC			South East Ireland, Malin)
Category D	Edible crab Cancer pagurus		Fail (N. Irish Sea)

[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
Edible crab	Cancer pagurus	South West Ireland, South East Ireland, Malin		UK & Ireland	С
Edible crab	Cancer pagarus	N. Irish Sea		UK & Ireland	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.

<b>Species Name</b>		ame	Edible crab Cancer pagurus	
<b>C</b> 1	C1 Category C Stock Status - Minimum Requirements			
$\mathbf{v}$	C1.1	Fishery rem	novals of the species in the fishery under assessment are included in the	Pass
		stock assess	sment process, OR are considered by scientific authorities to be negligible.	
	C1.2	The species	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:	Pass

Evidence

There are twenty crab assessment areas around the UK and Ireland, summarised in figure 1. The 'Assessment Units' reflect the spatial scale at which the ICES Working Group on the Biology and Life History of Crabs (WGCRAB) believe fisheries data should be aggregated. They don't reflect stocks as there isn't a consistent approach to defining the latter and insufficient information to properly define stocks at present (ICES, 2010).



**Figure 1**. Assessment units for brown crabs fished by vessels from UK, Ireland, France, Channel Islands, Norway and Sweden. Source: ICES, 2010.

The status of stock assessments around Ireland are summarised in ICES (2017). There are four stocks/assessment units around the Irish coast (Malin, SW Ireland, SE Ireland/Celtic Sea, N. Irish Sea). Landings data is available (see tables 1 and 2) but ICES note that the quality of the landings data from the official national databases are variable and may at times reflect changes in the efficacy of recording rather than the crab fishery itself (ICES, 2017). Edible crab in the assessment units have been assessed using a length cohort analysis (LCA) and exploitation rates and stock levels estimated and reported in relation to MSY reference points (Table 3) (Marine Institute & BIM, 2014).

Assessment Unit	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Central North Sea	2726.4	1550.6					6.1	79.9			13.8
Clyde						2.6					
Eastern Channel											1.6
Hebrides			0.9			850.2					
Malin	403.1	1436.1	3177.2	4462.8	8931.2	6029.7	3146.2	2631.0	3788.4	3359.2	2906.3
N. Irish Sea		0.5	147.8				34.7	43.4	25.7	35.5	17.0
North Coast						249.9					
Orkney											
Outside			614.0	28.0		692.7	2.0	2.0		5.4	19.7
Papa											
SE Ireland/Celtic Sea	143.3	585.4	595.2			110.8	296.5	220.2	118.7	176.0	223.4
Shetland											
South Minch						157.7					31.8
Southern North Sea							979.7	1182.1		1389.2	
Sule						855.2					
SW Ireland	42.1	23.0	114.3	807.1	843.2	554.2	339.6	520.3	365.1	536.4	472.5
Western Channel			0.8				35.4			13.3	
Not Recorded											4.1
Total	3314.9	3595.6	4650.2	5297.9	9774.4	9503.0	4840.2	4678.9	4297.9	5515.0	3690.3

**Table 1**. Landings (tonnes) by assessment unit of *Cancer pagurus* by Irish vessels from 2005 to 2015. Data is based on operational data from logbooks and does not include landings from under 10metre vessels. ('Outside'refers to landings caught from outside the assessment units agreed upon at WGCRAB 2010 and 'Not Recorded' refers to landings where the ICES Rectangle was not recorded). Source: ICES, 2017.

Assessment Unit	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Malin	3825.7	3220.3	827.9	1135.8	712.7	863.0	816.6	17.8	27.8	442.7	33.0
N. Irish Sea	107.0	68.5	173.2	261.9	2.0	65.9	326.7	17.8	450.6	150.1	750.3
Outside											
SE Ireland/Celtic Sea	1116.5	91.5	45.0		249.5	609.9	807.4	1014.7	627.6	431.0	198.0
SW Ireland	592.1	1684.3	25630.2	147.0	195.9	300.5	173.4	465.4	351.4	717.7	1406.9
Not Recorded											
Total	5641.3	5064.6	26676.3	1544.7	1160.1	1839.3	2124.1	1515.7	1457.4	1741.5	2388.2

**Table 2.** Landings (tonnes) by assessment unit of *Cancer pagurus* by Irish vessels under 10 metre vessels from 2005–2015. Source: ICES, 2017.

		-		Exploitation status		Stock status		MLS	
				F (in relation to F <sub>msy</sub> )					
ICES	Stock Assessment Unit	Main Fleets	Assessment	Male	Female	Male	Female	Male	Female
VII	Celtic Sea, SE Ireland	Ireland, UK, France	LCA, Trends	Unreported	F=>Fmsy	Unreported	High	130-160	130-150
VII	SW Ireland	Ireland	Trends	Unreported	Unreported	Stable	Stable	130	130
VII,									
VI	Malin	Ireland, N.Ireland, Scotland	Trends	Unreported	Unreported	Stable	Stable	130	130
VII	N Irish Sea	Ireland, IoM, Wales, England	Trends	Unreported	Unreported	Unreported	Unreported	130	130

**Table 3**. Summary of exploitation status and stock status for 20 stock assessment units. Stock status; High = close to or at biomass target reference point, Moderate = between biomass target and limit reference points, Low = at or below biomass limit reference point, Stable = in relation to trends in CPUE. Source: published assessments from Marine Scotland and CEFAS, trend indicators MI (cited in Marine Institute & BIM, 2014)

Since fishery removals of edible crab in SE Ireland, SW Ireland and Malin are included in the stock assessment process and the species is considered, in the most recent available assessments for these units, to have a biomass above the limit reference point or proxy these assessment units pass this clause. Since there is no stock assessment and landings cannot be considered negligible it is not possible to pass this clause for N Irish Sea. It is assessed under clause D.

#### References

ICES, 2017. Report of the Working Group on the Biology and Life History of Crabs (WGCRAB), 1–3 November 2016, Aberdeen, Scotland, UK. ICES CM 2016/SSGEPD:10. 78 pp.

http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/SSGEPD/2016/01%20W GCRAB%20-

<u>%20Report%20of%20the%20Working%20Group%20on%20the%20Biology%20and%20Life%20History%</u>20of%20Crabs.pdf

ICES, 2010. Report of the Working Group on the Biology and Life History of Crabs (WGCRAB), 19–22 October 2010, Galway, Ireland. ICES CM 2010/SSGEF:16. 110 pp. <u>http://ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/SSGEF/2010/WGCRAB10.pd</u> f

Marine Institute and BIM, 2014. Shellfish Stocks and Fisheries, Review 2014. An Assessment of selected stocks.

https://oar.marine.ie/bitstream/handle/10793/1063/Shellfish%20Stocks%20and%20Fisheries%20Review%2 02014\_v2.pdf?sequence=1&isAllowed=y

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.

<b>D1</b>	Species Name:	Edible crab Cancer pagurus		
	Productivity Attribute		Value	Score
	Average age at maturity (ye	10+	3	
	Average maximum age (yea	rs)	20-100	3
	Fecundity (eggs/spawning)		780,000- 2.4million	1
	Average maximum size (cm	)	20	1
	Average size at maturity (cr	n)	11	1
	Reproductive strategy		External brooders	2
	Mean trophic level		3.1	2
		Average Pro	ductivity Score	1.86
	Susceptibility Attribute	Average Pro	ductivity Score Value	1.86 Score
	Susceptibility Attribute Overlap of adult species ran	Average Pro	Value See distribution map	<b>1.86</b> <b>Score</b> 3
	Susceptibility Attribute Overlap of adult species ran Distribution	Average Pro	ductivity Score Value See distribution map NA	1.86   Score   3   NA
	Susceptibility Attribute Overlap of adult species ran Distribution Habitat	ge with fishery	Value See distribution map NA Demersal rocky / sandy bottom	1.86   Score   3   NA   3

	Compliance rating	
	PSA Risk Rating (From Table D3)	Table D4
	Average Susceptibility Score	2.75
	hour trawl)	2
Post-capture mortality	15-70% (2	r
	length	3
Selectivity	Up to 4m in	2

#### References

Average age at maturity, average maximum age, size at maturity:

Neal, K.J. & Wilson, E. 2008. *Cancer pagurus* Edible crab. In Tyler-Walters H. and Hiscock K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 15-03-2018]. https://www.marlin.ac.uk/species/detail/1179

Distribution:



Relative probabilities									
of	of occurrence								
	0.80 - 1.00								
	0.60 - 0.79								
	0.40 - 0.59								
	0.20 - 0.39								
	0.01 - 0.19								

Distribution range colours indicate degree of suitability of habitat which can be interpreted as probabilities of occurrence

Source: Computer generated distribution maps for *Cancer pagurus* (ox crab), with modelled year 2100 native range map based on IPCC A2 emissions scenario. www.aquamaps.org, version of Aug. 2016. Web. Accessed 15 Mar. 2018.

Post capture mortality:

Bergmann, M. and Moore, P. G. 2001. Survival of decapod crustaceans discarded in the *Nephrops* fishery of the Clyde Sea area, Scotland. – ICES Journal of Marine Science, 58: 163–171. <u>http://epic-reports.awi.de/10385/1/Ber2001e.pdf</u>

Other attributes:

Sealifebase, <u>http://www.sealifebase.org/summary/Cancer-pagurus.html</u>. Accessed 15 March 2018.

Standard clauses 1.3.2.2

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

### Table D2 - Productivity / Susceptibility attributes and scores.

Susceptibility attributes		High susceptibility/ High risk	Medium susceptibility/ Medium risk	Low susceptibility/ Low risk Score 1	
		Score 3	Score 2		
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 or<br="" size="">&gt;5 m length</mesh>
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	1.00 – 1.75	PASS	PASS	PASS
Score		1.76 – 2.24	PASS	PASS	TABLE D4
		2.25 - 3.00	PASS	TABLE D4	TABLE D4

<b>D4</b>	Species Name		Edible crab <i>Cancer pagurus</i> N. Irish Sea Unit			
	Impacts On Species Categorised as Vulnerable by D1-D3 - Minimum Requirements					
	D4.1	The potential impa	cts of the fishery on this species are considered during the	Pass		
	management process, and reasonable measures are taken to minimise these impacts.					
	D4.2 There is no substantial evidence that the fishery has a significant negative impact on					
		the species.				
			Outcome:	Fail		

#### Evidence

In Europe, crabs are managed at EU, national, regional, and local level. Management is relatively light touch and is based on technical measures. The key technical measure is the minimum conservation reference size (MCRS, formerly MLS), designed to ensure animals are allowed to grow to maturity to sustain breeding stocks. Undersized animals returned to sea from pots suffer low mortality rates (mortality rates are likely higher in trawl and net fisheries).

In Ireland vessels fishing for edible crab must hold a polyvalent or pot fishing license (Tully et al, 2006). The Minimum Conservation Reference Size, set by EU legislation and effort restrictions apply (BIM, 2017; Tully et al, 2006). Management recommendations are made by Marine Institute and BIM in the 2009 and 2012 reports, for example;

- access to the fishery should be controlled through a restrictive licensing regime in each assessment unit,
- management plans be developed for each unit including effort / catch control,
- scaling up of monitoring of biological and economic indicators,
- closed seasons during periods of low catch rate,
- effort reduction at regional level to reduce gear competition.

However, it is not clear how far they have been considered and implemented by managers. A <u>Fishery</u> <u>Improvement Project</u> for Irish brown crab was established in 2017 to drive forward improvements in the fishery and involves two pilots, one in the north west and the other in the south west of the country.

The N. Irish Seas unit also includes UK waters. UK pot fisheries for crabs are controlled through a shellfish licensing scheme, which restricts entry of new vessels to the fishery, and requires returns of catch and fishing effort information. Local or regional management measures are enforced through Inshore Fishery and Conservation Authority (IFCA) bye-laws that apply out to the 6 mile fishery limit around England and Wales. There are analogous local management bodies in Scotland, such as the Shetland Shellfish Management Organisation (9). However, most Scottish and Northern Irish crab fisheries are regulated by the devolved governments and EU legislation.

In addition to licensing and MLS regulations, EU or national legislation on crabs, includes bans on landing berried females and soft pre-moult or recently moulted crabs. In certain areas, crabs are taken as by-catch in

static gear, such as gill nets. It is difficult to remove them whole from the nets so they are often de-clawed and only claws retained. This is regulated by EU legislation and local bye-laws (Seafish, 2013).

There is a lack of evidence to assess whether the fishery has a negative impact on the species in the N. Irish Sea assessment units. For this reason this unit does not pass clause D4.2.

References

Seafish (2013). Responsible Sourcing Guide: Crabs and lobsters. Version 4 – September 2013. http://www.seafish.org/media/publications/SeafishResponsibleSourcingGuide CrabsLobsters 201309.pdf

BIM Fisheries Management Chart, 2017. http://www.bim.ie/media/bim/content/downloads/Fish-Man-Cht-2017.pdf

Marine Institute and BIM, 2009. Shellfish stocks and fisheries Review 2009. An Assessment of Selected Stocks.

Marine Institute and BIM, 2012. Shellfish stocks and fisheries Review 2012. An Assessment of Selected Stocks.

https://oar.marine.ie/handle/10793/959

Oliver Tully, Martin Robinson, Eimear O'Keefe, Ronan Cosgrove, Owen Doyle and Bridget Lehane, 2006. The Brown Crab (Cancer pagurus L.) Fishery: Analysis of the resource in 2004 - 2005. Fisheries Resource Series, Bord Iascaigh Mhara (Irish Sea Fisheries Board), Dun Laoghaire, Ireland Vol. 4, 2006, 48pp. <u>http://www.bim.ie/media/bim/content/publications/bimNo,4,The,Brown,-,Crab,Cancer,pagurus,L,-</u>,Fishery,Analysis,of,the,resource,in,2004-2005,.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 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 <sub>max</sub> (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 <sub>m</sub> (years)	< 1	2-4	5 - 10	> 10
t <sub>max</sub> (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.