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

Fishery Under Assessment	**Plaice *Pleuronectes platessa* ICES divisions 4.a-c, 6.a, 7.a, b, d-h, j**
Date	**March 2019**
Assessor	**Jim Daly**

Application details and summary of the assessment outcome				
Name: FF Skagen				
Address:				
Country: Denmark		**Zip:**		
Tel. No.:		**Fax. No.:**		
Email address:		**Applicant Code**		
Key Contact:		**Title:**		
Certification Body Details				
Name of Certification Body:		**SAI Global Ltd**		
Assessor Name	**Peer Reviewer**	**Assessment Days**	**Initial/Surveillance/Re-approval**	**Whole fish/ By-product**
Jim Daly	Virginia Polonio	0.5	Re-approval	By-product
Assessment Period	2018			

Scope Details	
Management Authority (Country/State)	EU, Common Fisheries Policy
Main Species	Plaice *Pleuronectes platessa*
Fishery Location	ICES divisions 4.a-c, 6.a, 7.a, b, d-h, j
Gear Type(s)	All
Outcome of Assessment	
Overall Outcome	Pass (7 stocks) Fail (1 stock)
Clauses Failed	C (Stock in divisions 7.h-k Celtic Sea)
Peer Review Evaluation	Approve 7 stocks, fail one stock
Recommendation	Approve 7 stocks, Fail one stock (Div. 7.h-k)

Assessment Determination

European plaice in ICES divisions 4.a-c, 6.a, 7.a, b, d-h, j are managed under the EU Common Fisheries Policy. ICES identify several stocks and produce stock assessments where there is sufficient information to do so:

- Division 7.a (Irish Sea)
- Divisions 7.b-c (West of Ireland)
- Division 7.d (eastern English Channel)
- Division 7.e (western English Channel)
- Divisions 7.f-g (Bristol Channel, Celtic Sea)
- Divisions 7.h-k (Celtic Sea South, southwest of Ireland)
- Subarea 4 (North Sea) and Subdivision 20 (Skagerrak)
- Division 6.a no ICES advice but plaice do occur there and are fished.

The stocks in divisions 6.a and 7.b-c, although covered by TAC, lacked other key elements of a species specific management regime and so were assessed using Productivity Susceptibility Analysis (PSA) under Clause D and passed. The other stocks all have species specific management regimes and were assessed under clause C. In all cases except the stock in division 7.h-k, fishery removals are considered in the stock assessment process and the stock has a biomass above the limit reference point (or proxy) and so pass clause C. In division 7.h-k, the stock is below its proxy limit reference point and so fails clause C.

European plaice is listed of least concern on IUCN Red List of Threatened Species (http://www.iucnredlist.org/details/135690/0; accessed 24 April 2018) and is not listed by CITES.

The assessor recommends plaice stocks in divisions 4.a-c, 6.a, 7.a, b, d-g, j for continued approval as by-product material under the IFFO RS Standard but does not recommend approval of the stock in divisions 7.h-k.

Peer Review Comments

The Peer Reviewer agrees with Assessor's recommendation that continuing approval be granted in divisions 4.a-c, 6.a, 7.a, b, d-g, j but not in divisions 7.h-k.

Notes for On-site Auditor

The assessment covers European plaice from the ICES stocks listed above. Division 7h-k stock failed the assessment and so should be separated from IFFO RS approved by-product material.

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A			A1	
			A2	
			A3	
			A4	
Category B				
Category C	Plaice *Pleuronectes platessa:*			
	Subarea 4		pass	
	7.f-g		pass	
	7.e		pass	
	7.d		pass	
	7.a		pass	
	7.h-k		fail	
Category D	Plaice *Pleuronectes platessa*			
	6.a		pass	
	7.b-c		pass	

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

HOW TO COMPLETE THIS ASSESSMENT REPORT

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

Whole Fish

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

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

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

By-products

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

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

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

SPECIES CATEGORISATION

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

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

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

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

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

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

TYPE 1 SPECIES (Representing 95% of the catch or more)
Category A: Species-specific management regime in place.
Category B: No species-specific management regime in place.

TYPE 2 SPECIES (Representing 5% OF THE CATCH OR LESS)
Category C: Species-specific management regime in place.
Category D: No species-specific management regime in place.

Common name	Latin name	Stock	% of landings	Management	Category
Plaice	*Pleuronectes platessa*	Subarea 4; divisions 7.f-g; 7.e; 7.d; 7.a; 7.h-k		EU, CFP	C
		Division 6.a; Divisions 7.b-c			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		Plaice *Pleuronectes platessa*	
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

The plaice fishery is managed under the EU Common Fisheries Policy (CFP). Annual Total Allowable Catches (TAC) within EU waters are set as follows (EU Council Regulation 2018/120):

- Subarea 4, Division 2.a; 3.a (excluding Skagerrak and Kattegat): 112,643 tonnes
- Skagerrak: 15,343 tonnes
- Kattegat: 1483 tonnes
- Division 7.a: 1,793 tonnes
- Division 7.b-c: 74 tonnes
- Division 7.d-e: 10,360 tonnes
- Division 7.f-g: 511 tonnes
- Division 7.h-k: 128 tonnes
- Subarea 6, 12 and 14, division 5.b: 658 tonnes
- Subarea 8, 9, 10 , CECAF 34.1.1: 395 tonnes

Scientific advice is provided by ICES on the following stocks:

- Division 7.a (Irish Sea)
- Divisions 7.b-c (West of Ireland)
- Division 7.d (eastern English Channel)
- Division 7.e (western English Channel)
- Divisions 7.f-g (Bristol Channel, Celtic Sea)
- Divisions 7.h-k (Celtic Sea South, southwest of Ireland)
- Subarea 4 (North Sea) and Subdivision 20 (Skagerrak)
- Division 6.a no ICES advice but plaice do occur there and are fished (ICES, 2013)

Denmark:

The responsible authority for monitoring and enforcing EU and national conservation policies is the Danish Agrifish Agency, which is a part of the Ministry of Food, Agriculture and Fisheries, under the 1999 Fisheries Act. The Agency carries out inspections at sea and on landing, as well as verification of EU marketing standards. The Ministry also works for Danish fisheries and aquaculture through:

- Regulation and inspections of the fishing industry
- Support for research in fisheries and aquaculture production

- Support for the development of fisheries, the fish industry, fishery harbours and aquaculture
- Fish management and fishing license arrangements for recreational fisheries

The primary provider of scientific information and advice at the national level within Denmark is the National Institute of Aquatic Resources at the Technical University of Denmark (DTU Aqua). DTU Aqua's stated mission is to conduct research, provide advice, educate at university level and contribute to innovation in sustainable exploitation and management of aquatic resources. DTU Aqua directly advises the Danish Ministry of Food, Agriculture and Fisheries and other public authorities

Division 7.a (Irish Sea)
The stock assessment is an age-based analytical assessment which uses landings and discards in the model. The input data includes commercial catch-at-age data and three survey indices; UK (E&W)-BTS-Q3, NIGFS-WIBTS-Q1, and NIGFS-WIBTS-Q4 (ICES, 2017a).

The spawning–stock biomass (SSB) has been increasing since 2012 and is well above MSY Btrigger (see figure 1). Recruitment (R) continues to fluctuate without an overall trend. Fishing mortality (F) has been rapidly decreasing since 1992 and has been below Fmsy since 2011 (ICES, 2017a).

As fishery removals are considered in the stock assessment process and the stock has a biomass above the limit reference point the Division 7.a stock passes clause C.

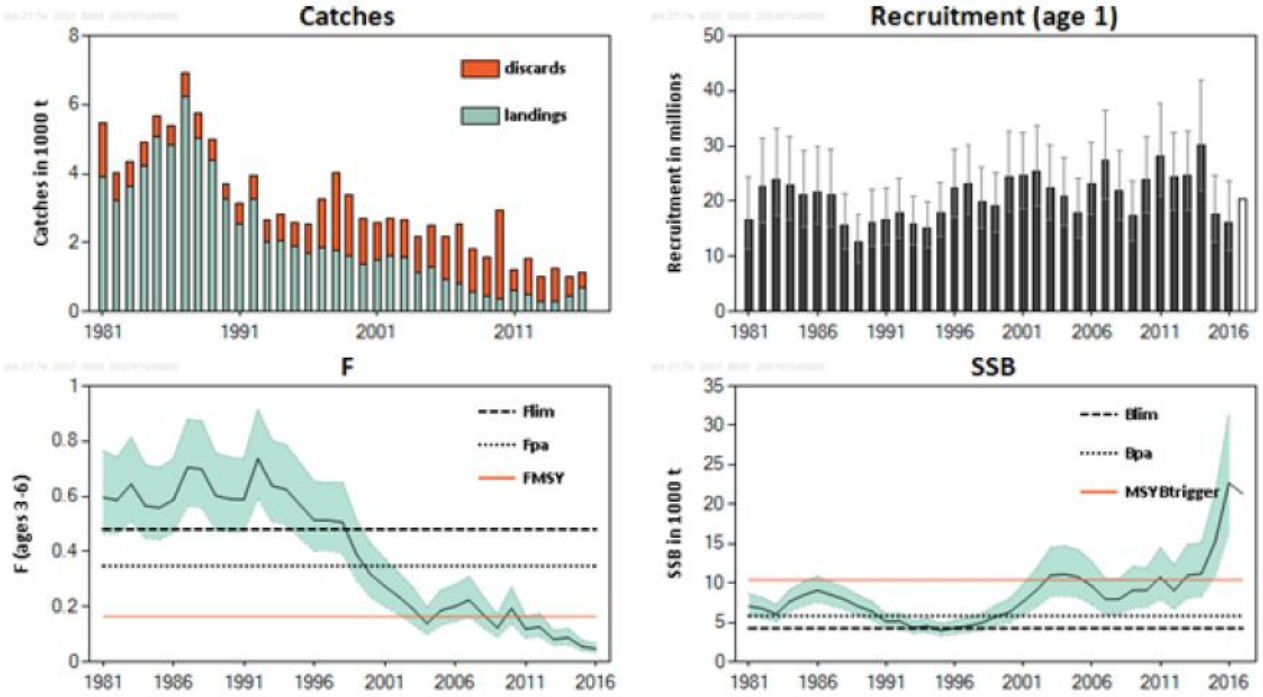


Figure 1. Plaice in Division 7.a. Summary of the stock assessment. Assumed recruitment values are not shaded. Recruitment, F, and SSB have uncertainty boundaries (2 × standard deviation) in the plot. Source: ICES, 2017a.

Divisions 7.b-c (West of Ireland)
ICES consider that catches in this area are too low to support the collection of necessary information for an assessment of stock status. Consequently no stock assessment is undertaken, reference points are not defined and stock status is unknown. Landings data, from official landings statistics, is available (figure 2) but ICES cannot quantify the total catches because recent discard estimates are highly variable and uncertain. Landings since 2000 have been low (ICES, 2017b).

The ICES framework for category 6 stocks was applied (ICES, 2012). For stocks without information on abundance or exploitation, ICES considers that a precautionary reduction of catches should be implemented unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock (ICES, 2017b). **Although this stock has a TAC it is assessed under clause D because of the lack of other key elements of a species specific management regime in particular a stock assessment**.

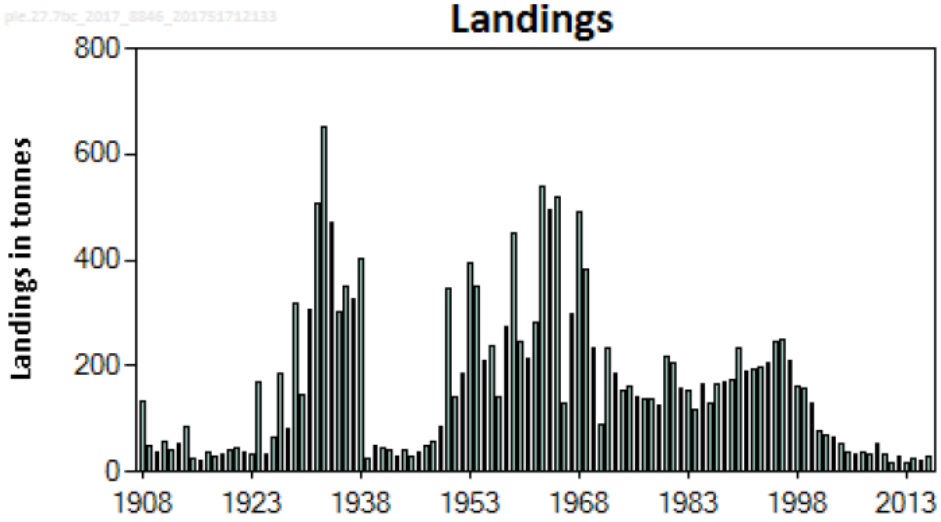


Figure 2. Plaice in divisions 7.b–c. Official landings. Source: ICES, 2017b.

Division 7.d (eastern English Channel)
The stock assessment is an age-based analytical assessment that uses catches in the model and forecast. Input data includes commercial catch data (international landings, with age frequencies from catch sampling covering 88% of the landings) and two survey indices UK-BTS, FGFS.

F has declined since the early 2000s and has been below Fmsy since 2009. SSB has increased since 2008 and has been above MSY Btrigger since 2012. Recruitment (R) in 2016 is the lowest in the time-series (figure 3) (ICES, 2017c).

As fishery removals are considered in the stock assessment process and the stock has a biomass above the limit reference point the Division 7.d stock passes clause C.

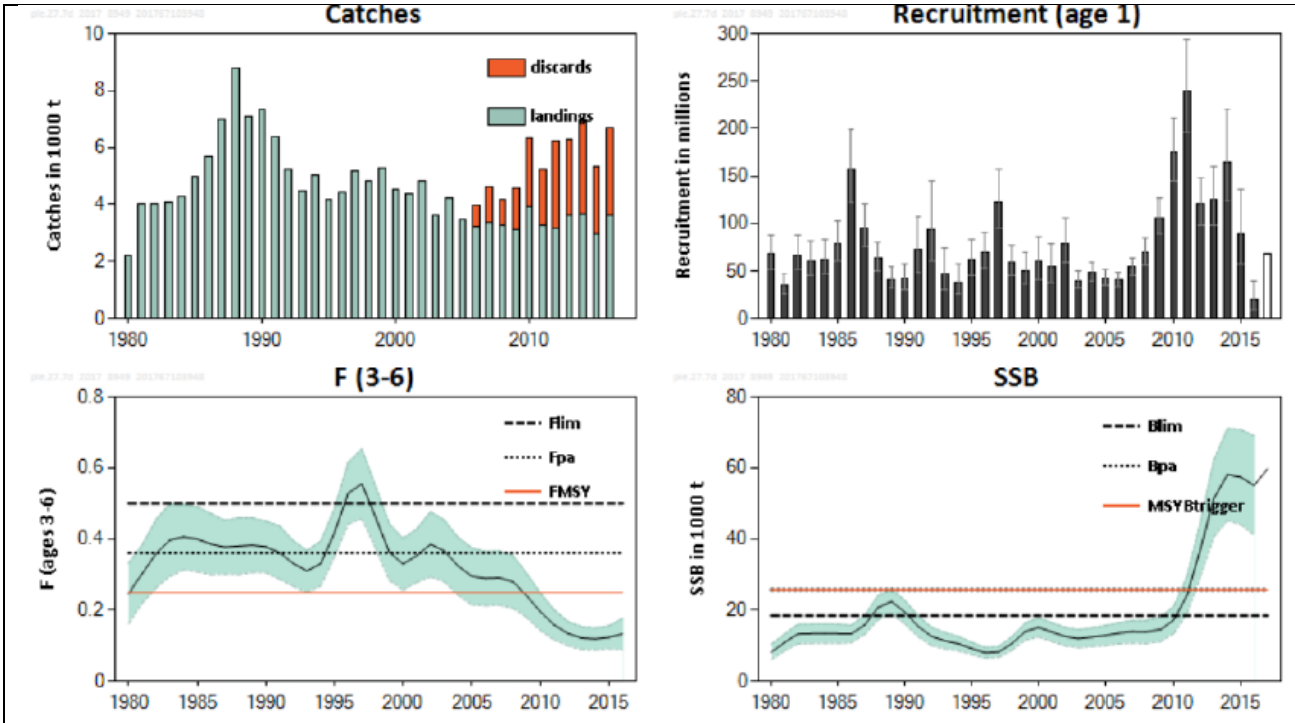


Figure 3. Plaice in Division 7.d. Summary of the stock assessment. Predicted values of recruitment are not shaded. Shaded areas (F, SSB) and error bars (R) indicate ±2 standard errors (approximately 95% confidence intervals). Source: ICES, 2017c.

Division 7.e (western English Channel)

The stock assessment is an age-based analytical assessment but is considered indicative of trends only (ICES data category 3 stock). Input data includes commercial catch information (international landings, ages and length frequencies from catch sampling) and two survey indices (UK-FSP and Q1SWBeam).

Fishing mortality has declined substantially since 2007 and is at Fmsy in 2016. The spawning–stock biomass has increased substantially since 2008 and is currently at the time-series maximum and is well above MSY Btrigger. Recruitment has been fluctuating without trend (figure 4) (ICES, 2017d).

As fishery removals are considered in the stock assessment process and the stock has a biomass above the limit reference point the Division 7.e stock passes clause C.

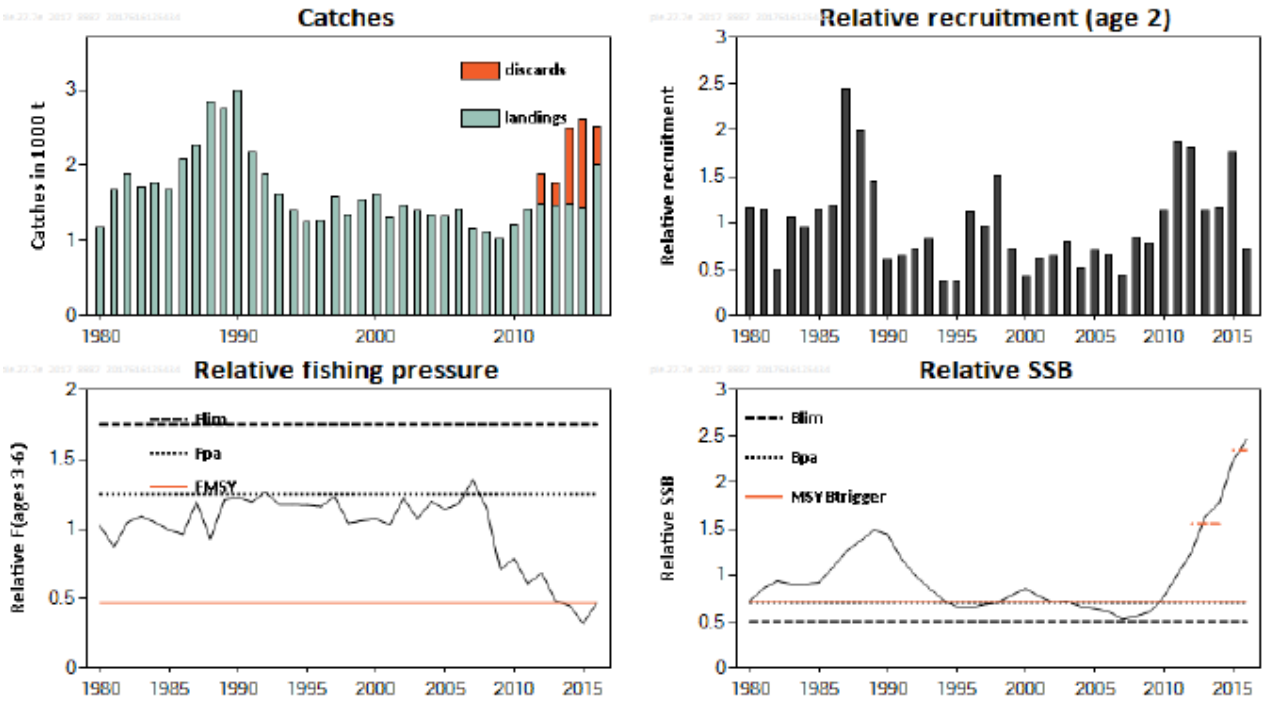


Figure 4. Plaice in Division 7.e. Summary of the stock assessment. Recruitment, fishing pressure, and SSB are relative in relation to the average of the time-series. The dashed lines in the relative SSB plot indicate the average values of the respective years. Discard data are only available for 2012–2016 and are not included in the assessment. Source: ICES, 2017d.

Divisions 7.f-g (Bristol Channel, Celtic Sea)
The stock assessment is an age-based analytical assessment but is considered indicative of trends only (ICES data category 3 stock). Input data includes commercial landings and discards information and two survey indices (UK (E&W)-BTS-Q3, IGFS-WIBTS-Q4).

No reference points are defined for this stock in terms of absolute values but SPiCT-estimated values of the ratios F/FMSY and B/BMSY are used to estimate stock status relative to proxy MSY reference points. F is below Fmsy proxy and stock biomass is above MSY Btrigger proxy (ICES, 2017e).

As fishery removals are considered in the stock assessment process and the stock has a biomass above the proxy limit reference point the Division 7.f-g stock passes clause C.

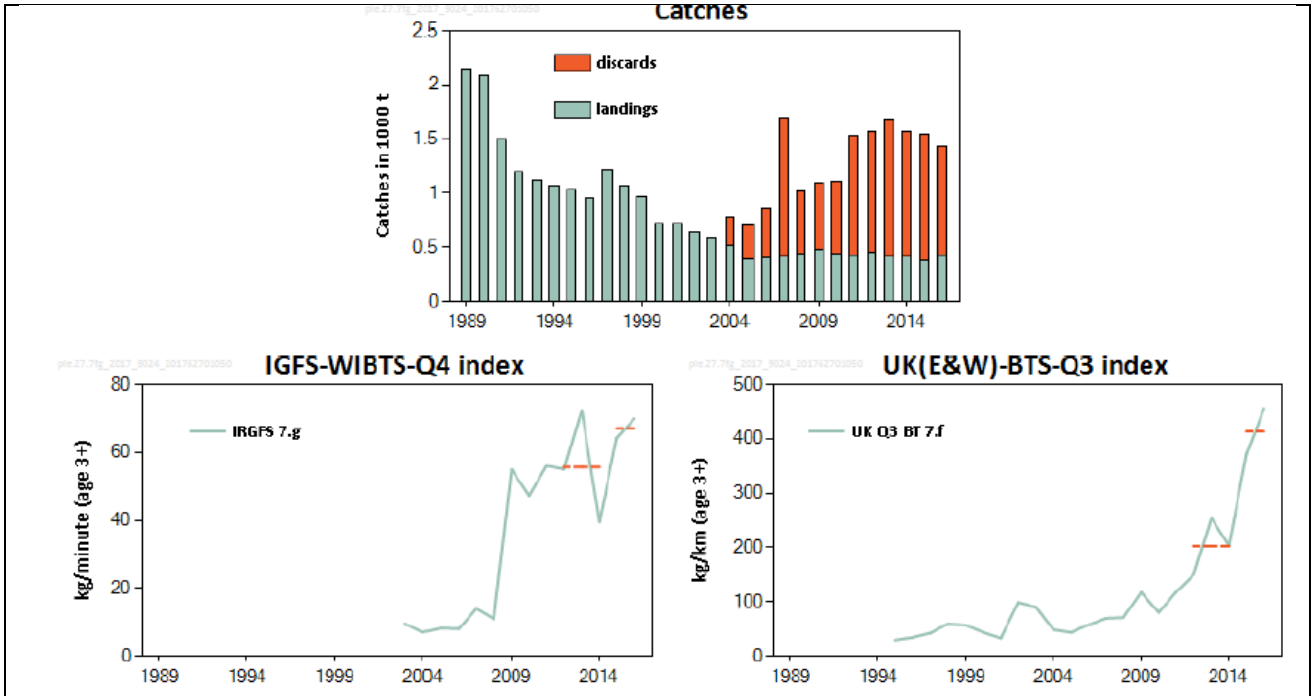


Figure 5. Plaice in divisions 7.f and 7.g. Catches (thousand tonnes). Discards only estimated from 2004. UK (E&W)-BTS-Q3 and IGFS-WIBTS-Q4 survey biomass of plaice older than or equal to 3 years old. Source: ICES, 2017e.

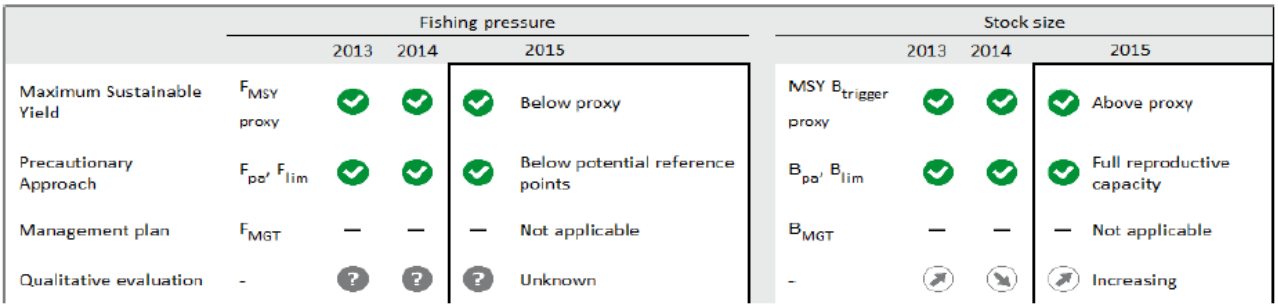


Figure 6. Plaice in divisions 7.f and 7.g. State of the stock and fishery relative to proxy reference points. Source: ICES, 2017e.

Divisions 7.h-k (Celtic Sea South, southwest of Ireland)

The stock assessment is an age-based analytical assessment, indicative of stock trends (ICES data category 3 stock). Input data includes commercial landings (international landings from divisions 7.j-k, Irish age compositions from landings sampling in 7.j) and commercial tuning index (IRL-VMS-OTB). Discarding is known to take place but cannot be reliably quantified owing to limited sampling therefore are not included (ICES, 2017f).

Proxy reference points are defined for this stock. Spawning-stock biomass has decreased significantly since the 1990s and has been below Blim since 2002. Fishing mortality (F) is highly variable but shows no long-term trend (figure 7) (ICES, 2017f, 2018).

Fishery removals are considered in the stock assessment process however, the stock has a biomass below the proxy limit reference point so the Division 7.h-k stock fails clause C.

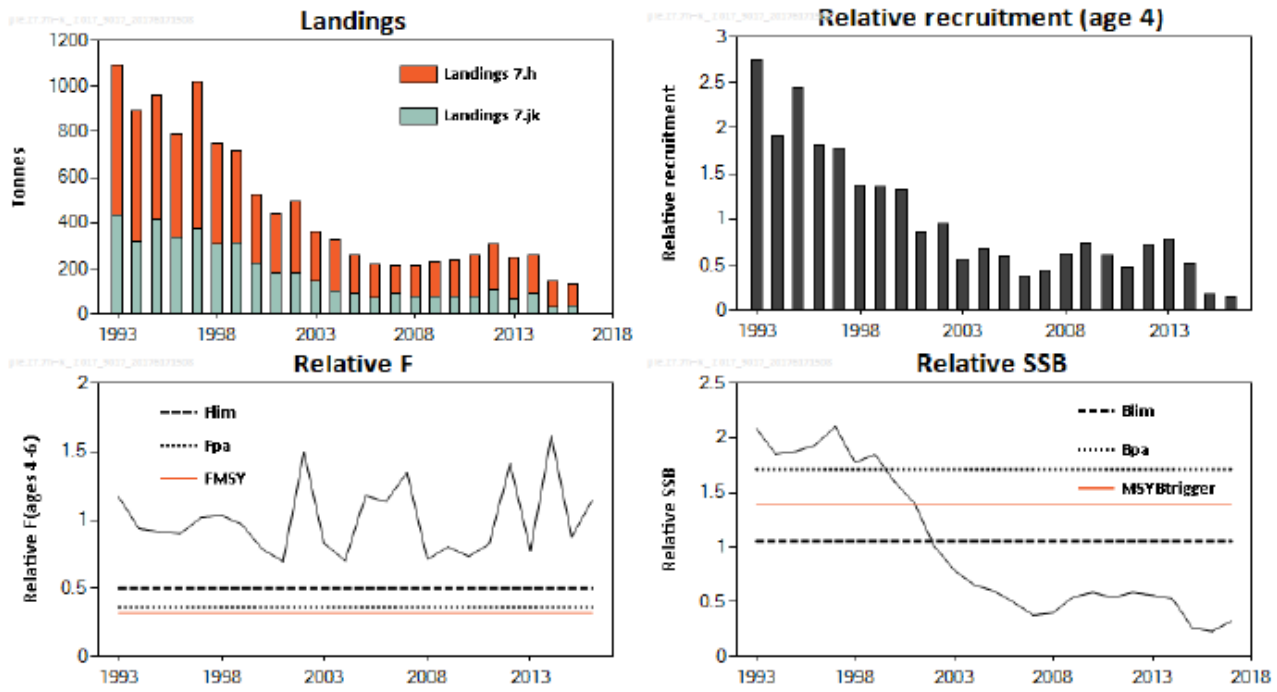


Figure 7. Plaice in divisions 7.h–k. Summary of the stock assessment. The landings are for the full stock area (divisions 7.h–k), only landings from 7.jk are used in the assessment. Recruitment, F and SSB values are relative to the average of the time-series. Source: ICES 2017f.

Subarea 4 (North Sea) and Subdivision 20 (Skagerrak)
The stock assessment is an age structure analytical assessment that uses catches in the model and forecast. Input data includes commercial catch, ages and length frequencies from port and observer sampling and six survey indices. Discards are included in the assessment, the data series covers the majority of the fleet.

Reference points are defined for the stock. The spawning-stock biomass is well above MSY Btrigger, and has markedly increased in the past ten years. Recruitment has been around the long-term average since the mid-1990s. Since 2009, fishing mortality has been estimated at around Fmsy (figure 8) (ICES, 2017g).

As fishery removals are considered in the stock assessment process and the stock has a biomass above the limit reference point the subarea 4 and subdivision 20 stock passes clause C.

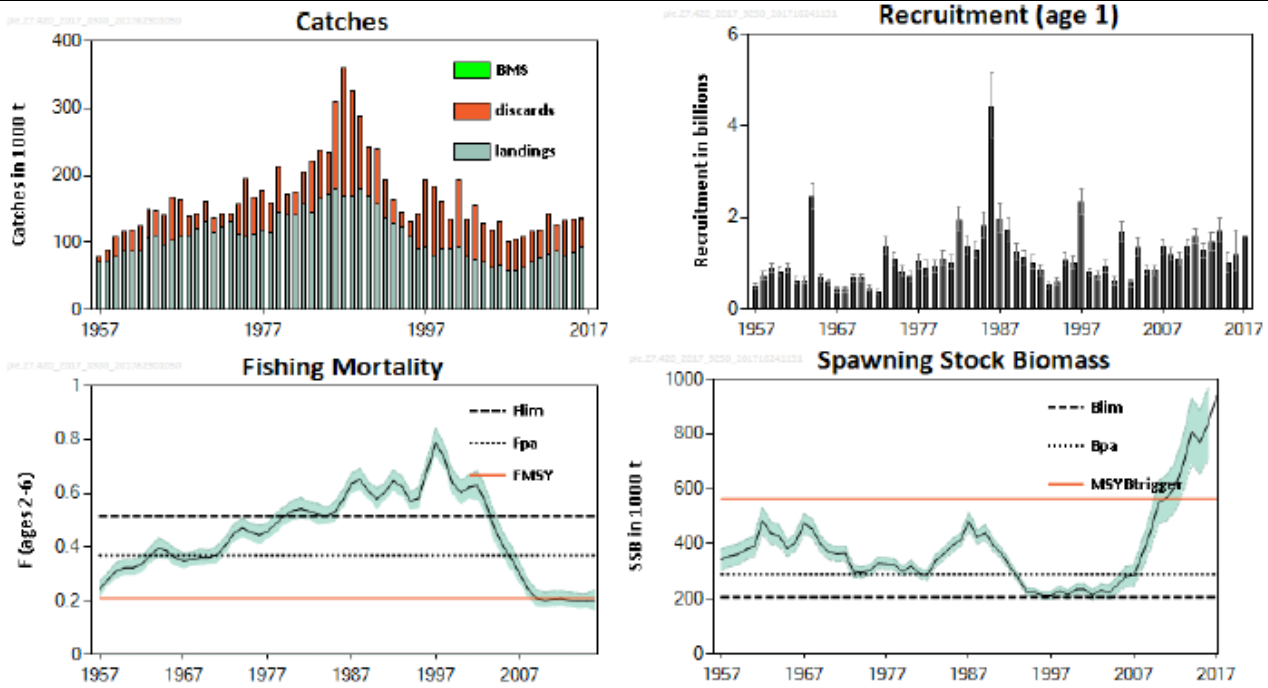


Figure 8. Plaice in Subarea 4 and Subdivision 20. Summary of the stock assessment. Shaded areas (F, SSB) and error bars (R) indicate ±2 standard errors (approximately 95% confidence intervals). Source: ICES, 2017g.

Division 6.a

Although this stock has a TAC it is assessed under clause D because of the lack of other key elements of a species specific management regime in particular a stock assessment.

References

ICES, 2017a. ICES Advice on fishing opportunities, catch, and effort Celtic Seas Ecoregion. Plaice (*Pleuronectes platessa*) in Division 7.a (Irish Sea). Published 30 June 2017. Version 2: 05 July 2017. DOI: 10.17895/ices.pub.3198
http://ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/ple.27.7a.pdf

ICES, 2017b. ICES Advice on fishing opportunities, catch, and effort Celtic Seas and Oceanic Northeast Atlantic ecoregions Plaice (*Pleuronectes platessa*) in divisions 7.b–c (West of Ireland). Published 30 June 2017. DOI: 10.17895/ices.pub.3199.
http://ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/ple.27.7bc.pdf

ICES, 2017c. ICES Advice on fishing opportunities, catch, and effort Greater North Sea Ecoregion. Plaice (*Pleuronectes platessa*) in Division 7.d (eastern English Channel). Published 30 June 2017. Version 2: 05 July 2017, Version 3: 08 August 2017. DOI: 10.17895/ices.pub.3200.
http://ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/ple.27.7d.pdf

ICES, 2017d. ICES Advice on fishing opportunities, catch, and effort Celtic Seas and Greater North Sea ecoregions. Plaice (*Pleuronectes platessa*) in Division 7.e (western English Channel). Published 30 June 2017. DOI: 10.17895/ices.pub.3201.
http://ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/ple.27.7e.pdf

ICES, 2017e. ICES Advice on fishing opportunities, catch, and effort Celtic Seas Ecoregion† Plaice (*Pleuronectes platessa*) in divisions 7.f and 7.g (Bristol Channel, Celtic Sea). Published 30 June 2017. Version 2: 05 July 2017. DOI: 10.17895/ices.pub.3202.

http://ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/ple.27.7fg.pdf

ICES, 2017f. ICES Advice on fishing opportunities, catch, and effort Celtic Seas and Oceanic Northeast Atlantic ecoregions. Plaice (*Pleuronectes platessa*) in divisions 7.h–k (Celtic Sea South, southwest of Ireland). Published 30 June 2017. DOI: 10.17895/ices.pub.3203.
http://ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/ple.27.7h-k.pdf

ICES, 2017g. ICES Advice on fishing opportunities, catch, and effort Greater North Sea Ecoregion. Plaice (*Pleuronectes platessa*) in Subarea 4 (North Sea) and Subdivision 20 (Skagerrak). Published 14 November 2017. DOI: 10.17895/ices.pub.3529.
http://ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/ple.27.420.pdf

ICES, 2013. Stock Annex: Plaice (*Pleuronectes platessa*) in divisions 7.b–c (West of Ireland).
http://ices.dk/sites/pub/Publication%20Reports/Stock%20Annexes/2015/ple-7b-c_SA.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.

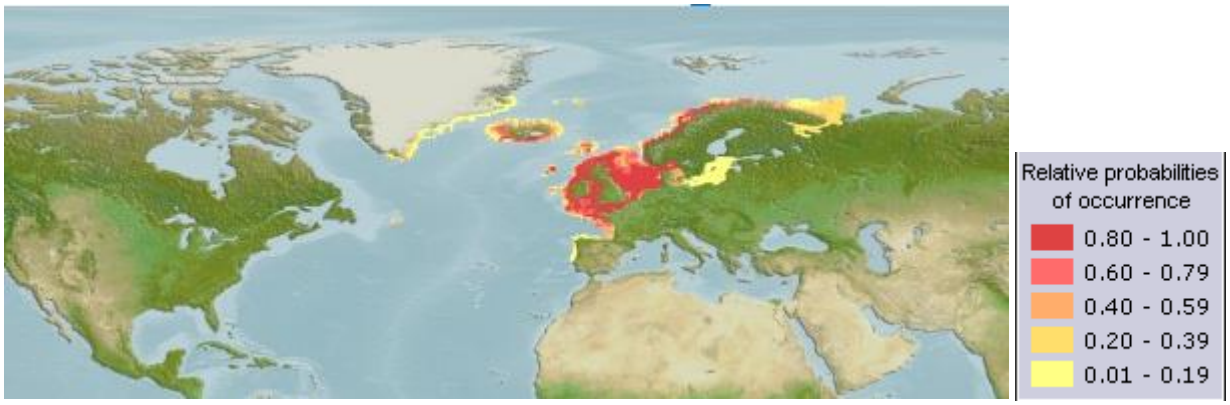
Productivity and susceptibility ratings are calculated using a process derived from the APFIC document "Regional Guidelines for the Management of Tropical Trawl Fisheries, which in turn was derived from papers by Patrick *et al* (2009) and Hobday *et al* (2007). Table D1 should be completed for each 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:	Plaice *Pleuronectes platessa*	
	Productivity Attribute	**Value**	**Score**
	Average age at maturity (years)	2.8	2
	Average maximum age (years)	20	2
	Fecundity (eggs/spawning)	50,000-500,000	1
	Average maximum size (cm)	40.0	1
	Average size at maturity (cm)	30.8	2
	Reproductive strategy	Open water / substratum egg scatterers	1
	Mean trophic level	3.2	2
		Average Productivity Score	**1.57**
	Susceptibility Attribute	**Value**	**Score**
	Overlap of adult species range with fishery	>50%	3
	Distribution	Not scored when overlap scored	
	Habitat	Demersal	3
	Depth range	0-200m, usually 10-50m	3
	Selectivity	Up to 4m length	3
	Post-capture mortality	Most dead or retained	3
		Average Susceptibility Score	**3**
		PSA Risk Rating (From Table D3)	**Pass**
		Compliance rating	**Medium**

References

Overlap attribute:



Reviewed distribution maps for *Pleuronectes platessa* (European plaice), with modelled year 2100 native range map based on IPCC A2 emissions scenario. www.aquamaps.org, version of Aug. 2016. Web. Accessed 24 Apr. 2018

Other attributes:
http://www.fishbase.org/summary/1342

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		
	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.	
	D4.2	There is no substantial evidence that the fishery has a significant negative impact on the species.	
		Outcome:	
Evidence			
References			
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_{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.