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Global Standard for Responsible Supply of Marine Ingredients

Fishery Assessment Methodology and Template Report V2.0

Fishery Under Assessment	**Boarfish *Capros aper*, Northeast Atlantic (UK, Ireland)**
Date	**June 2019**
Assessor	**Jim Daly**

Application details and summary of the assessment outcome				
Name: Pelagia (IE)				
Address: Donegal Road, Killybegs				
Country:		**Zip:**		
Tel. No.:		**Fax. No.:**		
Email address:		**Applicant Code**		
Key Contact: Geraldine Fox		**Title: Quality Manager**		
Certification Body Details				
Name of Certification Body:		**Quality Manager**		
Assessor Name	**Peer Reviewer**	**Assessment Days**	**Initial/Surveillance/Re-approval**	**Whole fish/ By-product**
Jim Daly	Vito Romito	3	Surveillance	Whole fish
Assessment Period	2018			

Scope Details	
Management Authority (Country/State)	UK & Ireland
Main Species	Boarfish *Capros aper*
Fishery Location	Northeast Atlantic
Gear Type(s)	Midwater trawl
Outcome of Assessment	
Overall Outcome	PASS
Clauses Failed	NONE
Peer Review Evaluation	APPROVE
Recommendation	PASS

Assessment Determination
In 2010, an interim management plan was proposed by Ireland for boarfish in ICES Divisions VI, VII and VIII (Celtic Seas, English Channel and Bay of Biscay). A precautionary closed season (Ireland only) operates between the 15th March and the 31st August as mackerel and boarfish are caught in mixed aggregations at these times. In 2015 the Pelagic Advisory Council submitted a revised draft management strategy for North-east Atlantic boarfish. The EU has requested ICES to evaluate this plan which includes a number of measures to minimise bycatch of other species. The recently implemented EU landing obligation has been in place in the assessment area for pelagic and industrial fisheries since January 2015, banning the discarding of regulated species including boarfish. The main goal is to eliminate discards across all European Union fisheries with species subject to catch limits. The fishery targets dense shoals and uses typical pelagic pair trawl nets with mesh sizes ranging from 32-54 mm. Preliminary information suggests that only the smallest boarfish escape this gear. In 2018 fewer than five Irish flagged vessels (pelagic trawlers) targeted the fishery. ICES has conducted annual stock assessments for Subareas VI, VII and VIII (Celtic Seas, English Channel and Bay of Biscay) and has provided management advice for this fishery since 2011. Assessments and advice are supported by a combination of fishery-dependent and fishery-independent data collection, and by more general research on other fisheries and regional ecosystems relevant to the boarfish stock. No formal stock assessment was undertaken in 2018. The assessment model (2017) combines information from available surveys (six bottom trawl surveys, one acoustic) and has been used to provide Category 3 advice (stocks for which survey based assessments indicate trends or other indicators of stock size such as reliable fishery-dependant indices; e.g. LPUE, CPUE and mean length in the catch are used to provide stock metrics, such as mortality, recruitment and biomass) for boarfish since 2014. ICES provides advice for this stock following their standard procedures for DLS (Data Limited Stocks) and conforming to the proposed strategy from the Pelagic AC (ICES 2015, 2017a). The relative stock biomass was stable until 2009, then increased in 2010–2012 before declining rapidly in 2013 and 2014. Since 2014, relative biomasses have been stable but lower than previously. The 2018 estimate is 45,000t lower than that observed in 2017 (230,000t in 2017, 185,000t in 2018). The low estimate in 2016 (70,000t) appears to have been an outlier. Containment issues in 2016 were addressed and the annual survey has since been conducted from South to North since 2017. Although the 2017 advice stands for both 2018 and 2019, reference points were calculated based on the 2018 assessment. In 2018, FMSY was estimated to be equal to 0.185 while the $MSY_{Btrigger}$ value available from stock assessment model was estimated at 165, 420 tons. This has been proposed by ICES as a conservative basis for $MSY_{Btrigger}$. Throughout the history of the fishery, estimates of stock biomass have remained above $MSY_{Btrigger}$. Fishing mortality (F) was greater than FMSY in 2009, 2010 and 2014, but has decreased since. In 2018 the stock is in the green area of the Kobe plot (ICES 2018). The assessment provides an estimate of the status of the biological stock relative to a reference point or proxy.

The ecological role and significance of boarfish in the NE Atlantic is largely unknown. However, in the south-east North Atlantic (Portuguese waters) they are considered to have an important position in the marine food web. Despite the obvious potential for these species to feed on fish eggs and larvae; in Portuguese waters they were not considered predators of commercial fishes. The Celtic Sea herring stock is currently very close to its limit reference point. Although it passes assessment under Clause C, unless the stock improves this may be an issue in future assessments. Boarfish (*Capros aper*) is approved by the assessment team for the production of fishmeal and fish oil under the IFFO-RS v 2.0 by-products standard for whole fish.
Peer Review Comments
The fishery is managed under the overarching requirements of the EU Common Fisheries Policy. There is a well-structured management system to cover the area and fishery under assessment in the North Atlantic. Surveillance control and enforcement activities appear to be sufficient to ensure compliance with current regulation, including also inspections from the EU of each Member State to ensure CFP rules are properly applied. Survey and catch data are used for stock assessment purposes. The latest stock assessment shows the stock to be above biomass reference points (BMSYtrigger) and below the FMSY reference point. Impacts on ETP species and habitats appear to be quite small. Although the role of the species in the ecosystem is unclear, there is some information potentially indicating that the fishery does not appear to have significant effects on the ecosystem and food webs. Herring and mackerel, caught as bycatch in this fishery, are subject to stock assessments that use relevant commercial catch and survey data. Neither these stocks appear to be below biomass limit levels. The Peer Reviewer agrees with the Assessor that Boarfish (*Capros aper*) should be approved for the production of fishmeal and fish oil under the IFFO-RS v 2.0 by-products standard for whole fish.
Notes for On-site Auditor

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

General Results

General Clause	Outcome (Pass/Fail)
M1 - Management Framework	PASS
M2 - Surveillance, Control and Enforcement	PASS
F1 - Impacts on ETP Species	PASS
F2 - Impacts on Habitats	PASS
F3 - Ecosystem Impacts	PASS

Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A	Boarfish *Capros aper*	95%	A1	PASS
			A2	PASS
			A3	PASS
			A4	PASS
Category B				
Category C	Mackerel *Scomber scombrus*, Herring *Clupea harengus*	<5%	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
Boarfish	*Capros aper*	North east Atlantic (ICES subareas 4,6,7,8 & 9)	95%	Species specific management regime	A
Mackerel	*Scomber scombrus*	Subareas 6,7,8 (fishery mainly occurs in division 7.b, 7.g, 7.h, 7.j)	<5%	Species specific management regime	C
Herring	*Clupea harengus*	Subareas 6,7,8(fishery mainly occurs in	<5%	Species specific management regime	C

		division 7.b, 7.g, 7.h, 7.j)			

MANAGEMENT

The two clauses in this section relate to the general management regime applied to the fishery under assessment. A fishery must meet all the minimum requirements in every clause before it can be recommended for approval.

M1	**Management Framework – Minimum Requirements**		
	M1.1	There is an organisation responsible for managing the fishery	PASS
	M1.2	There is an organisation responsible for collecting data and assessing the fishery	PASS
	M1.3	Fishery management organisations are publically committed to sustainability	PASS
	M1.4	Fishery management organisations are legally empowered to take management actions	PASS
	M1.5	There is a consultation process through which fishery stakeholders are engaged in decision-making	PASS
	M1.6	The decision-making process is transparent, with processes and results publically available	PASS
		Clause outcome:	**PASS**

Evidence
M1.1-M1.3
Europe:

The CFP is periodically reviewed and reformed. The most recent CFP reform process was completed in 2013 and came into effect on the 1st January 2014. Key changes include:

- The introduction of an objective to ensure high long-term fishing yields for all stocks by 2015 where possible, and at the latest by 2020 (i.e. movement towards an MSY-based approach).
- The gradual (2015-2019) introduction on a fishery-by-fishery basis of a landing obligation which effectively bans discarding in all fisheries.
- An overhaul of the management structure, including increased regionalisation and more extensive stakeholder consultation.

UK:
Fisheries management in England and Wales is the responsibility of the Marine Management Organisation (MMO), an executive non-departmental public body sponsored by the UK Government's Department for Environment, Food and Rural Affairs (DEFRA). The MMO was created by the Marine and Coastal Access Act 2009, and is responsible for data collection, planning, licensing, control and enforcement. The MMO's publically stated aim is to license, regulate and plan marine activities in the seas around England so that they are carried out in a sustainable way. Fisheries management is devolved in Scotland and Northern Ireland, where the responsible agencies are Marine Scotland and the Environment, Marine and Fisheries Group of the Department of Agriculture, Environment and Rural Affairs (DAERA), respectively. Each of these bodies is similarly responsible for planning, licensing and enforcement in their respective jurisdictions and promoting sustainable, well managed fisheries. Scientific information and advice is provided by the Centre for Environment, Fisheries and Aquaculture Science

Republic of Ireland:

Marine fisheries in the Republic of Ireland are managed by a number of Divisions within the Department of Agriculture, Food and the Marine (DAFM). The Department is responsible for, amongst other things, sea fisheries administration, seafood policy and development, harbour management, environmental assessment, and fisheries research.

Regulation is the responsibility of the Sea Fisheries Protection Agency (SFPA), created under the Sea-Fisheries and Maritime Jurisdiction Act 2006. The primary provider of scientific information and advice at the national level is the Marine Institute. Annual assessment of the abundance of spawning aggregation of boarfish (Western European Shelf Pelagic Acoustic Survey, WESPAS) is undertaken by the Marine Institute's Fisheries Ecosystems Advisory Services (FEAS) since 2011.

International science

Science-based fishery management advice at the international level is provided by the International Council for the Exploration of the Sea (ICES). Its website declares that it is a global organization that develops science and advice to support the sustainable use of the oceans. ICES is a network of more than 1,600 scientists from 200 institutes linked by an intergovernmental agreement (the ICES Convention) to add value to national research efforts. Scientists working through ICES gather information about the marine ecosystem. Besides filling gaps in existing knowledge, this information is developed into unbiased, non-political fishery management advice. The 20 member countries that fund and support ICES use this advice to help them manage the North Atlantic Ocean and adjacent seas. ICES provides annual stock assessment and management advice in relation to the Northeast Atlantic boarfish fishery.

Pelagic Advisory Council (AC)

The Pelagic AC is one of seven currently active advisory councils created as part of the CFP in 2002, and is partially funded by the EU. The purpose of the Pelagic AC is to provide advice on the management of European pelagic fish stocks on behalf of the fisheries sector and other stakeholders. It has been involved throughout the development of the fishery in recent years, and amongst other activities created the proposed management plan (2015) currently under consideration by ICES.

Stock assessment and Catch Advice

The scientific basis for ICES advice is developed by expert groups. These expert groups produce annual advice on fisheries under their remit. For those stocks where sufficient data are available, this consists of a stock assessment leading to a forecast of catch options for the year ahead. For stocks where the data do not make such an analysis possible, other approaches are used, such as analysis of trends in abundance estimates or catches. The expert group is open to observers from competent authorities.

Decision making

Each year the Commission proposes the TACs to be applied the following year to most commercial stocks in EU waters except for the Mediterranean Sea.

The proposed amounts are based on biological advice and economic analysis from advisory bodies such as ICES and STECF (Science, Technical and Economic Committee for Fisheries). Under this process, ICES working groups produce annual assessment for the stocks under their remit, which are reviewed and approved by ICES ACOM before being submitted to the Commission (Directorate General for Maritime Affairs and Fisheries, DG Mare). The advice is reviewed regularly by STECF.

Each December, on the basis of the Commission proposals, the Council (composed of the Fisheries Ministers of each Member State) makes a final decision on these TACs. Once fixed, the amounts for each stock are divided up among Member States according to pre-agreed shares (based on the 'relative stability' key), the so-called quotas.

TAC's and quotas are enacted through the annual Fishing Opportunities Regulation (e.g. Council Regulation (EU) 2019/124). Member States manage the national quotas and allocate them among the fishing industry, as a right to fish and land a certain amount of fish within the calendar year.

The consultation process for stakeholder input into the development of the Commission's proposals for 2019 is shown below:

Table 1: Process flow for development of Commission proposals R2

When	What
July – September	Public consultation on the Communication
May/June/October	Stock advice from ICES
26 September	Seminar on the state of the stocks with stakeholders Adoption of TAC proposals for the Baltic Sea
October	Council on TACs for the Baltic Sea
November	Adoption of TAC proposals for the Atlantic/North Sea/Black Sea
December	Council on TACs for the Atlantic/North Sea/Black Sea

M1.4:

The reformed CFP has shifted to more de-centralised governance on the basis of multiannual plans at sea basin level and delegated acts reflecting this regionalisation. Regionalisation gives Member States the possibility to cooperate on a regional basis and agree on Joint Recommendations for achieving the objectives of environmental legislation or for shaping specific discard plans.

The UK and Ireland are Member States of the European Union, and therefore in Community waters implement the Common Fisheries Policy (CFP). In force since 1983, the reformed CFP aims to reconcile resource conservation with the preservation of income and jobs in coastal zones that offer few alternatives in terms of production or employment. It therefore covers not just resources but also markets and structures.

With regard to resource management, CFP regulations comprise:

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

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

Boarfish fall under the remit of the Pelagic AC which has proposed a long term management plan in 2012 and revisions in 2015 and 2016. The 2015 revision has been assessed by ICES at the request of the EU. The

proposed management plan and correspondence between the Pelagic AC and the EU including advice received from ICES are readily available through the Pelagic AC website.

M1.5-M1.6:
Stock assessment advice is based on findings of expert groups. Advice is prepared, finalized and adopted by the ICES Advisory Committee (ACOM). ICES has implemented a benchmarking process in which methods, including the data series to be used by the expert groups in addressing advice requests, are developed.

Results from benchmarks are subjected to a peer-review process (ICES 2016). The expert group responsible for boarfish is the Working Group on Widely Distributed Stocks, WGWIDE (ICES 2017a). ICES stock assessment and catch advice is publically available on their website.
R1-R15

References

Standard clauses 1.3.1.1, 1.3.1.2

M2	**Surveillance, Control and Enforcement - Minimum Requirements**		
	M2.1	There is an organisation responsible for monitoring compliance with fishery laws and regulations	PASS
	M2.2	There is a framework of sanctions which are applied when laws and regulations are discovered to have been broken	PASS
	M2.3	There is no substantial evidence of widespread non-compliance in the fishery, and no substantial evidence of IUU fishing	PASS
	M2.4	Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS.	PASS
		Clause outcome:	**PASS**

Evidence
M2.1:
In practice, CFP control as carried out by the Member States' control authorities can be broken down into three broad areas: conservation, structures, and markets.

- Conservation measures cover issues such as quota management or the implementation of technical measures (e.g. mesh sizes). Inspections are used to ensure that the fishing gear on board vessels meets official norms and that the information entered in log-books.

- Structural policy plays a key role in the search for a balance between the fishing capacity of Member States, the fishing effort actually deployed, and the available fish resources. Checks are therefore necessary to establish that allocated days-at-sea have not been exceeded.

- Finally, national inspections are not limited to the catching sector, but also include all operations from landing and marketing to storage and transportation. Operators must, at all times, be in possession of proper documentation detailing the origin, nature, quantity and quality of fish involved in transactions, so that it can be cross-checked with data in log-books and from other sources, such as fish auctions.

As with the application of sanctions, bodies responsible for control and enforcement in the individual states are the MMO in England and Wales; Marine Scotland in Scotland; the Fisheries and Environment Division in Northern Ireland; and the SFPA in the Republic of Ireland.

The European Fisheries Control Agency (EFCA) is a European Union agency. Their mission is to promote the highest common standards for control, inspection and surveillance under the CFP. EFCA's primary role is to organise coordination and cooperation between national control and inspection activities so that the rules of the CFP are respected and applied effectively.

R7-R11

M2.2:
To ensure that fishing rules are applied in the same way in all member countries, and to harmonise the way infringements are sanctioned, the EU has established a list of serious infringements of the rules of the common fisheries policy. EU countries must include in their legislation effective, proportionate and dissuasive sanctions, and ensure that the rules are respected.

As from 1 January 2012, EU countries are required to have introduced a points system for serious infringements. Under the scheme, national authorities will:

- Assess alleged infringements involving vessels registered under its flag, using standard EU definitions;
- Impose a pre-set number of penalty points on vessels involved in serious infringements (points are recorded in the national registry of fisheries offences);
- Suspend the vessel's licence for 2, 4, 8 or 12 months when a pre-set number of points have been accumulated in a 3-year period.

Points are attributed to the fishing licence that is linked to a vessel, so they will stay with the vessel even when sold on to a new owner. Monitoring the number of cases detected and the nature and the level of the sanctions imposed is a key part of the Commission's task of ensuring a level playing field for all EU fishers.

Infringements of CFP rules are dealt with by the Member State concerned. In England and Wales the MMO is the competent authority with responsibility of enforcement of sanctions and penalties with respect to the prosecution of fishery rules. In Scotland Marine Scotland; in Northern Ireland the Environment, Marine and Fisheries Group and in the Republic of Ireland the SFPA are the competent authorities for fisheries and seafood control.

R7-R11

M2.3:
Council Regulation (EC) No 1005/2008 established a Community system to prevent, deter and eliminate illegal, unreported and unregulated (IUU) fishing. Through EU Fishery Policy and Regulations, Member States must apply effective, proportionate and dissuasive sanctions against natural or legal persons engaged in IUU activities. A maximum sanction of at least five times the value of the fishery products obtained is provided for with regard to the committing of the said infringement.

In the event of a repeated infringement within a five-year period, the Member States shall impose a maximum sanction of at least eight times the value of the fishery products obtained by committing the serious infringement.

To ensure that the rules of the CFP are followed in practice, the policy also includes a control system with the necessary tools to enforce them. This system is designed to:

- Ensure that only the allowed quantities of fish are caught
- Collect the necessary data for managing fishing opportunities
- Clarify the roles of EU countries and the Commission
- Ensure the rules are applied to all fishers in the same way, with harmonised sanctions across the EU
- Ensure that fisheries products can be traced back and checked throughout the supply chain, from net to plate

The system was laid down in the Control Regulation (Council Regulation (EC) No 1224/2009) which entered into force on 1 January 2010. Europe-wide coordination of control and enforcement activities is provided by the European Fisheries Control Agency (EFCA), which aims to ensure the uniform and effective application of the rules of the CFP by the Member States.

R17-R18

M2.4:

The first joint deployment plan (JDP) of 2018 facilitated by EFCA in Western waters involved national inspectors from Denmark, Estonia, France, Germany, Ireland, Latvia, Lithuania, the Netherlands, Poland and United Kingdom in EU waters of sub-areas V, VI and VII.

The Coordination Centre in Charge (CCIC) moved from Marine Scotland Edinburgh to EFCA HQ in Vigo and then back again during the period of the plan (Jan-Mar 2018).

During the reporting period 235,265 tonnes of catches of JDP pelagic species were inspected at landing. In total, there were no infringements reported out of 392 inspections carried out.

The breakdown by species as follows:

Table 2a: Summary (tonnes) of species inspected on land during 2018 (Jan-Mar) Joint Deployment **R18b**

JDP species (alpha3-code)	Tonnes
▪ Boarfish (BOR)	487
▪ Herring (HER)	1,807
▪ Horse-mackerel (JAX)	24,930
▪ Mackerel (MAC)	63,466
▪ Blue whiting (WHB)	144,575

As regards activities at sea, 24,450 tonnes of catches of JDP pelagic species were monitored. There were 5 infringements reported out of 57 inspections carried out at sea. The breakdown by species is as follows:

Table 2b: Summary (tonnes) of species inspected at sea during 2018 (Jan-Mar) Joint Deployment **R18b**

JDP species (alpha3-code)	Tonnes
▪ Boarfish (BOR)	10
▪ Herring (HER)	1,798
▪ Horse-mackerel (JAX)	9,031
▪ Mackerel (MAC)	7,025
▪ Sardines (PIL)	14
▪ Blue whiting (WHB)	6,572

There is no substantial evidence of widespread non-compliance, and no substantial evidence of IUU fishing. Compliance with laws and regulations is actively monitored, through a regime which may include at-sea and portside inspections, observer programmes, and VMS.

R18b

References

Standard clause 1.3.1.3

CATEGORY A SPECIES

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

Species Name	**Boarfish *Capros aper***	
A1	**Data Collection - Minimum Requirements**	
A1.1	Landings data are collected such that the fishery-wide removals of this species are known.	PASS
A1.2	Sufficient additional information is collected to enable an indication of stock status to be estimated.	PASS
	Clause outcome:	**PASS**

Evidence

A1.1-A1.2:

The fishery targets dense shoals of boarfish and uses typical pelagic pair trawl nets with mesh sizes ranging from of 32 to 54 mm. Preliminary information suggests that only the smallest boarfish escape this gear (ICES, 2016).

Commercial catch data is gathered comprising international landings and discard data. The time series of data extends from 2001 to the present. (ICES, 2018). Catch data are considered to be complete, including discards from other fisheries from 2003 onwards. Discarding from bycatch fisheries prior to 2003 is likely to have been small in comparison with subsequent catches. (ICES, 2018).

Sampling of commercial catches in the early years of the fishery (2006–2009) was sparse as there was no dedicated sampling programme in place. A sampling programme was initiated in 2010; good coverage of the landings has been achieved since then.

Length-frequency data are available for catches since 2007, and are converted into catch number-at-age data using a standard Age Length Key (ALK), which itself was constructed from 814 aged fish from Irish, Danish and Scottish caught samples from 2012. Irish sampling comprises only samples from Irish registered vessels.

In addition to landings and discard data, biomass estimates are made based on bottom trawl and acoustic survey indices and information gathered on biological characteristics of the stock to enable an indication of stock status to be determined. Acoustic surveys are now undertaken during daylight hours as shoals were observed to break up at night and therefore not present a reliable signal. Other characteristics considered include age at maturity and maximum age, length and age at 50% maturity, spawning strategy and fecundity.

The assessment is informed by data from 6 bottom trawl surveys and combined acoustic surveys
The trawls surveys are:

- EVHOE, French Celtic Sea and Biscay Survey, (Q4) 1997-present;
- IGFS, Irish Groundfish Survey, (Q4) 2003-present;
- WCSGFS, the West of Scotland Groundfish Survey, (Q1 and Q4), 1986-present;
- SPPGFS, Spanish Porcupine Bank Survey, (Q3), 2001-present;
- SPNGFS, Spanish North Coast Survey, (Q3/4), 1991-present;
- ECSGFS, CEFAS English Celtic Sea Groundfish Survey, (Q4), 1982-2003.

The Boarfish Acoustic Survey (BFAS) series was initiated in July 2011 and undertaken by the Marine Institute. It is run in conjunction with the Malin Shelf Herring Acoustic Survey (MSHAS), extending the coverage of that survey to the south and thereby increasing the range of continuous coverage from approximately 58.5°N to 47.5°N. From 2016 these surveys are collectively known as the Western European Shelf Pelagic Acoustic Survey (WESPAS).

R12-R13a,b

References

Standard clause 1.3.2.1.1

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

Evidence

A2.1

ICES has conducted annual stock assessments for Subareas VI, VII and VIII (Celtic Seas, English Channel and Bay of Biscay) and provided management advice for this fishery since 2011. Assessments and advice are

supported by a combination of fishery-dependent and fishery-independent data collection, and by more general research on the other fisheries and regional ecosystems relevant to the boarfish stock.

No formal assessment was undertaken by ICES in 2018. **Table 3** shows the basis of the ICES assessment for 2017 and advice given for boarfish in Subareas VI-VIII:

Table 3: Boarfish in areas VI-VIII Basis of the assessment and advice **R14a**

ICES stock data category	3 (ICES, 2016).
Assessment type	Relative abundance based on a Bayesian Schaefer surplus production model (ICES, 2017).
Input data	Commercial catches (international landings and discards). Combined acoustic surveys – MSHAS & BFAS, Q2 (2011–2015) and WESPAS, Q2 (2016); and six bottom-trawl survey indices – EVHOE, Q4; IGFS, Q4; WCSGFS, Q1 and Q4 (up to 2009); SPPGFS, Q3; SPNGFS, Q3/Q4; and ECSGFS, Q4.
Discards and bycatch	Discards from non-directed fisheries since 2003 have been included in the assessment.
Indicators	Distribution, abundance from PELACUS Q1/Q2 surveys, abundance from PELGAS survey, IBTS survey time-series, and commercial catch curve estimates of mortality.
Other information	None.
Working group	Working Group on Widely Distributed Stocks (WGWIDE)

ICES advised that when the precautionary approach is applied, catches should be no more than 21, 830 tonnes in each of the years 2018 and 2019.

The relative stock biomass was stable until 2009, then increased in 2010–2012 before declining rapidly in 2013 and 2014. Since 2014, relative biomasses have been stable but lower than previously.

The 2018 estimate of biomass is 45,000t lower than observed in 2017 (230,000t in 2017, 185,000t in 2018). The low estimate in 2016 (70,000t, **Figure 1)** appears to be an outlier. Containment issues in 2016 were addressed and the survey has been conducted from south to north since 2017. The changes were implemented to increase the precision of the survey overall. Approximately 45% of the stock was observed in the southern survey area (Celtic Sea, including Celtic Sea Deep and NW Bank areas). Boarfish were found further north than in previous years:

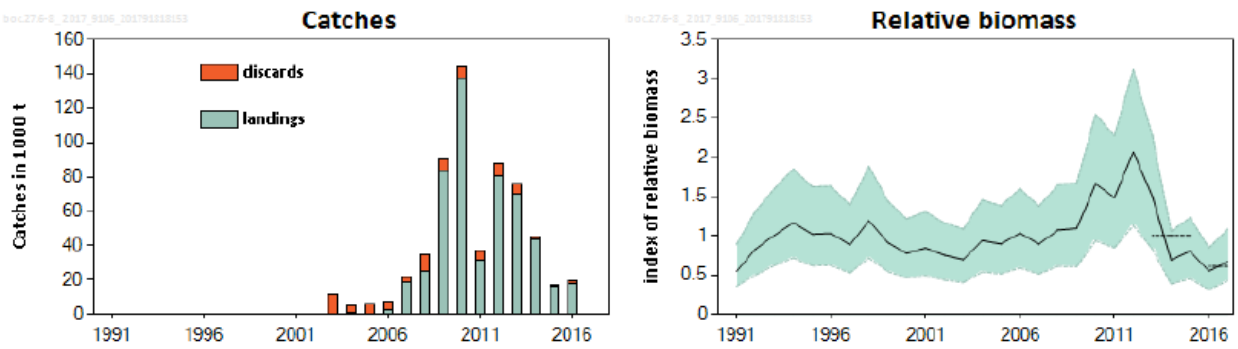

Figure 1: Boarfish in subareas 6–8. Summary of the assessment. Confidence intervals (95%) are included in the biomass plot and the dashed lines indicate the average values for 2013–2015 and 2016–2017**. R14a**

Quality of the assessment:

The assessment model (2017) combines information from the available surveys (six bottom trawl surveys, one acoustic) and has been used to provide Category 3 advice (stocks for which survey based assessments indicate trends or other indicators of stock size such as reliable fishery-dependant indices; e.g. LPUE, CPUE and mean length in the catch are used to provide stock metrics, such as mortality, recruitment and biomass) for boarfish since 2014.

The Schaefer surplus production model provides an index of total stock biomass (TSB), which is used as the index of stock development. The advice is based on a comparison of the two latest index values, index A (2016–2017), with the three preceding values, index B (2013–2015), multiplied by the recent advised catch.

The index is estimated to have decreased by more than 20% in the period 2013–2017 and thus the uncertainty cap was applied in the calculation of the catch advice. As the precautionary buffer has been applied in 2016 it is not applied this year. Discarding is known to take place and the discard ratio has been estimated, based on 2016 estimates: **Table 4**

Table 4: Boarfish in subareas VI–VIII.
For stocks in ICES data categories 3–6, only one catch option is provided.* **R14a**

Index A (2016, 2017)		0.61
Index B (2013, 2014, 2015)		0.99
Index ratio (A/B)		0.62
Uncertainty cap	Applied	0.8
Advised catch for 2017		27 288 t
Discard ratio (2016)		6.6%
Precautionary buffer	Not applied	-
Catch advice**		21 830 t
Wanted catch corresponding to the catch advice***		20 380 t

* The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.
** (advised catch for 2017) × cap.
*** (catch advice) × (1 – discard ratio).

Stock assessment advice is based on findings of expert groups. Advice is prepared, finalized and adopted by the ICES Advisory Committee (ACOM). ICES has implemented a benchmark process in which methods, including the data series to be used by the expert groups in addressing advice requests, are developed. Results from benchmarking exercises are subjected to a peer-review process (ICES 2016). The expert group responsible for boarfish is the Working Group on Widely Distributed Stocks, WGWIDE (ICES 2017a). ICES stock assessment and catch advice is publically available on their website.

In 2014 the Bayesian state space surplus production model was again fit using the catch data, delta-log normal estimated IBTS survey indices, and the acoustic survey estimates. However, the inclusion of the low 2014 acoustic biomass estimate changed the perception on the stock, which raised concerns over the sensitivity and process error of the model. The stock was moved from a Category 1 assessment to a Category 3 with results of the surplus production model being used to calculate an index for the data limited stock approach.

Since 2014, the procedure used to run the model did not change. Only the length of the time series used increase yearly.. Further model development work is undertaken since 2015 but did not lead to any change so far.

ICES provides advice for this stock following their standard procedures for DLS (Data Limited Stocks). This conforms to the proposed strategy that arose from the Pelagic AC meeting (ICES, 2017a).

The overall biomass index is influenced by the acoustic survey and there is high uncertainty in the estimates. The acoustic survey, though not including the stock at the transect edges for some years, is considered reliable. In 2017, the survey was re-designed to improve the coverage of the stock. In line with this, the current assessment shows a higher estimate of stock biomass in 2016 than was estimated in last year's assessment.

Understanding of stock dynamics is limited. The substantial changes (decreases) in the overall biomass index in recent years cannot be explained through observed catches and assumed low natural mortality; the reason for this decrease is not understood.

Bottom-trawl survey indices are considered indicative of trends in their respective areas. The commercial catch data are considered to be complete, including discards from other fisheries from 2003 onwards. Discarding from bycatch fisheries prior to 2003 is likely to have been small in comparison with subsequent catches. In 2017 there were no reference points defined for this stock.

A2.2

Although the 2017 advice stands for both 2018 and 2019, references were calculated based on the 2018 assessment. In 2018, FMSY is estimated to be equal to 0.185 while the MSYBtrigger value available from stock assessment model is 165, 420 t (parameter K / 4). This is proposed as a conservative basis for MSY Btrigger.

Since 2017, these reference points may be used in the advice. Throughout the history of the fishery, estimates of stock biomass have remained above MSYBtrigger. Fishing mortality (F) was greater than FMSY in 2009, 2010 and 2014, but has decreased since. In 2018, the stock is in the green area of the Kobe plot (**Figure 2**):

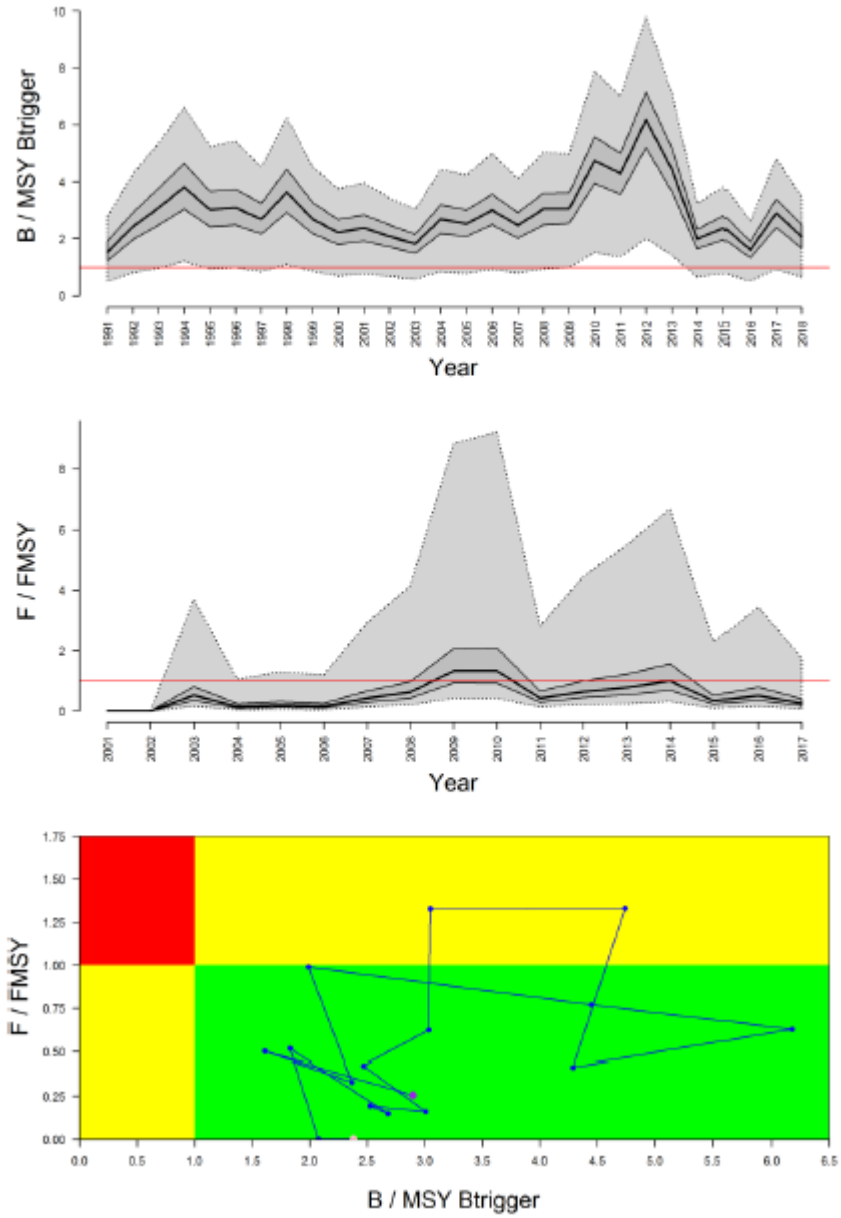

Figure 2: Boarfish in ICES Subareas XXVII, VI-VIII. Ratios 'B / MSYBtrigger' and 'F / FMSY' through time and corresponding Kobe plot. Confidence intervals (50 and 95%) are given for the first two panels, the third displays median estimates only with the pink point (F/FMSY=0; B/MSY Btrigger = 2.4) representing the first point of the time series and the purple point (F/FMSY=0.25; B/MSY Btrigger=2.9) the last. **R13b,**

A2.3:

On average approximately 22,800 tonnes of boarfish were caught and landed by Irish vessels using mainly pelagic trawls between 2014 and 2016, most of which were caught in 7.j and 7.h. Ireland dominates the international fishery, with Denmark, until 2019, the only other significant participant (landing on average approximately 3,000 tonnes between 2014 and 2016). Unofficial landings in 2018 amounted to 9,065 tons (source SFPA) while in 2017 provisional estimated landings of boarfish amounted to 19,315 tonnes including 1,284 tonnes of discards (ICES, 2017).

ICES advised (2017) that when the precautionary approach is applied, catches should be no more than 21, 830 tonnes in each of the years 2018 and 2019. In 2018 the assessment appears stable and supports the choice made for a 2 year advice. **R13a,b** **A2.4-A2.5** Stock assessment advice is based on findings of expert groups. Advice is prepared, finalized and adopted by the ICES Advisory Committee (ACOM). ICES has implemented a benchmark process in which methods, including the data series to be used by the expert groups in addressing advice requests, are developed. Results from benchmarking exercises are subjected to a peer-review process (ICES 2016). The expert group responsible for boarfish is the Working Group on Widely Distributed Stocks, WGWIDE (ICES 2017a). ICES stock assessment and catch advice is publically available on their website. **R12, R13a,b. R14**
References
Standard clause 1.3.2.2, 1.3.2.1.2, 1.3.2.1.4

A3	**Harvest Strategy - Minimum Requirements**		
	A3.1	There is a mechanism in place by which total fishing mortality of this species is restricted.	PASS
	A3.2	Total fishery removals of this species do not regularly exceed the level indicated or stated in the stock assessment. Where a specific quantity of removals is recommended, the actual removals may exceed this by up to 10% ONLY if the stock status is above the limit reference point or proxy.	PASS
	A3.3	Commercial fishery removals are prohibited when the stock has been estimated to be below the limit reference point or proxy (small quotas for research or non-target catch of the species in other fisheries are permissible).	PASS
		Clause outcome:	**PASS**

Evidence

A3.1-A3.2

Prior to 2011, there was no restriction on the total level of fishing permitted and the targeted boarfish fishery was effectively unregulated. As a result of increasing annual landings, a notional TAC was set for the first time in 2011, which considerably reduced total landings. In addition to the targeted boarfish quota, western and North Sea horse mackerel landings are permitted to contain up to 5% boarfish bycatch; this value is included in the ICES TAC calculation, subsequent ICES advice represents the quota recommendation for the targeted fishery only.

The landing obligation has applied to pelagic boarfish directed fisheries in Vb, VI-VII since 2015. Data from this obligation has been used to inform the TAC annually. Total landings have been lower than the combined TAC and bycatch quota in every year since these were first set (**Table 4**):

Table 5: Boarfish in subareas VI-VIII. ICES advice and catch. All weights are in tonnes. **R14b**

Year	ICES advice	Predicted catch corresp. to advice	TAC*	Maximum bycatch allowance**	ICES catch
2001	None	-	None	None	120
2002	None	-	None	None	91
2003	None	-	None	None	11387
2004	None	-	None	None	5151
2005	None	-	None	None	5959
2006	None	-	None	None	7137
2007	None	-	None	None	21576
2008	None	-	None	None	34751
2009	None	-	None	None	90370
2010	None	-	None	None	144047
2011	None	-	33000	9800	37096
2012	No increase in catches	82000	82000	9900	87355
2013	MSY approach	82000	82000	9500	75409
2014	MSY approach	133957	133957	7100	45231
2015	DLS approach	53296	53292	4800	17766
2016	Precautionary approach	≤ 42637	42637	6000	19315
2017	Precautionary approach –36% relative to previous advice)	≤ 27288	27288	5104	
2018	Precautionary approach	≤ 21830			
2019	Precautionary approach (same advice as for 2018)	≤ 21830			

* EU and international waters of subareas 6, 7, and 8.

** The maximum permitted bycatch (5%) of boarfish allowed; to be subtracted from the EU quotas for western and for North Sea horse mackerel. The 5% applies to boarfish, whiting, and/or mackerel (EU, 2016).

R2, R14,b, R15

A3.3:

In 2010, an interim management plan was proposed by Ireland and in August 2012 the Pelagic RAC (PELRAC) proposed a long term management plan for boarfish. A revised management plan was proposed by the Pelagic Regional Advisory Council (now known as the Pelagic AC) in 2015. ICES were consulted on the revised plan and advised that the harvest rules in the plan coincide with ICES rules, but with additional precaution, concluding that the draft management strategy was precautionary.

ICES provides advice for this stock following their standard procedures for DLS (Data Limited Stocks) and this conforms to the proposed strategy from the Pelagic AC (ICES, 2017a). The closed season, in the interim and revised management plans, has been enacted in legislation in Ireland, though not in other countries.

A further revised draft management plan was proposed in 2016, providing the following additional text:

"Where the TAC is reduced to zero the 25% limit shall not apply to reopening the fishery. Instead ICES advice will be followed." (Source Pelagic AC, 2016). It is not clear if ICES provided advice on this.

R14b; R19a-c; R20

Standard clause 1.3.2.1.3

A4	**Stock Status - Minimum Requirements**		
	A4.1	The stock is at or above the target reference point, OR IF NOT: The stock is above the limit reference point or proxy and there is evidence that a fall below the limit reference point would result in fishery closure OR IF NOT: The stock is estimated to be below the limit reference point or proxy, but fishery removals are prohibited.	PASS
		Clause outcome:	**PASS**

Evidence

A4.1:

Although the 2017 advice stands for both 2018 and 2019, references were calculated based on the 2018 assessment. In 2018, FMSY is estimated to be equal to 0.185 while the MSYBtrigger value available from stock assessment model is 165, 420 t (parameter K / 4). This is proposed as a conservative basis for MSY Btrigger.

Since 2017, these reference points may be used in the advice. Throughout the history of the fishery, estimates of stock biomass have remained above MSYBtrigger. Fishing mortality (F) was greater than FMSY in 2009, 2010 and 2014, but has decreased since. In 2018, the stock is in the green area of the Kobe plot.

R14b

References

Standard clause 1.3.2.1.4

CATEGORY B SPECIES

Category B species are those which make up greater than 5% of landings in the applicant raw material, but which are not subject to a species-specific research and management regime sufficient to pass all Category A clauses. If there are no Category B species in the fishery under assessment, this section can be deleted.

Category B species are assessed using a risk-based approach. The following process should be completed once for each Category B species.

If there are estimates of biomass (B), fishing mortality (F), and reference points

It is possible for a Category B species to have some biomass and fishing mortality data available. When sufficient information is present, the assessment team should use the following risk matrix to determine whether the species should be recommended for approval.

Table B(a) - F, B and reference points are available

Biomass is above MSY/target reference point	Pass	Pass	Pass	Fail	Fail
Biomass is below MSY/target reference point, but above limit reference point	Pass, but re-assess when fishery removals resume	Pass	Fail	Fail	Fail
Biomass is below limit reference point (stock is overfished)	Pass, but re-assess when fishery removals resume	Fail	Fail	Fail	Fail
Biomass is significantly below limit reference point (Recruitment impaired)	Fail	Fail	Fail	Fail	Fail
	Fishery removals are prohibited	**Fishing mortality is below MSY or target reference point**	**Fishing mortality is around MSY or target reference point, or below the long-term average**	**Fishing mortality is above the MSY or target reference point, or around the long-term average**	**Fishing mortality is above the limit reference point or above the long-term average (Stock is subject to overfishing)**

If the biomass / fishing pressure risk assessment is not possible

Initially, the resilience of each Category B species to fishing pressure should be estimated using the American Fisheries Society procedure described in Musick, J.A. (1999). This approach is used as the resilience values for many species and stocks have been estimated by FishBase, and are already available online. For details of the approach, please refer to Appendix A. Determining the resilience provides a basis for estimating the risk that fishing may pose to the long-term sustainability of the stock. Table B(b) should be used to determine whether the species should be recommended for approval.

Table B(b) - No reference points available. B = current biomass; Bav = long-term average biomass; F = current fishing mortality; Fav = long-term average fishing mortality.

$B > B_{av}$ and $F < F_{av}$	Pass	Pass	Pass	Fail
$B > B_{av}$ and F or F_{av} unknown	Pass	Pass	Fail	Fail
$B = B_{av}$ and $F < F_{av}$	Pass	Pass	Fail	Fail
$B = B_{av}$ and F or F_{av} unknown	Pass	Fail	Fail	Fail

B > B_{av} and F > F_{av}	Pass	Fail	Fail	Fail
B < B_{av}	Fail	Fail	Fail	Fail
B unknown	Fail	Fail	Fail	Fail
Resilience	**High**	**Medium**	**Low**	**Very Low**

Assessment Results

Species Name		
B1	Species Name	
	Table used (Ba, Bb)	
	Outcome	
Evidence		
References		
Standard clauses 1.3.2.1		

CATEGORY C SPECIES

In a whole fish assessment, Category C species are those which make up less than 5% of landings, but which are subject to a species-specific management regime. In most cases this will be because they are a commercial target in a fishery other than the one under assessment. In a by-product assessment, Category C species are those which are subject to a species-specific management regime, and are usually targeted species in fisheries for human consumption.

Clause C1 should be completed for **each** Category C species. If there are no Category C species in the fishery under assessment, this section can be deleted. A Category C species does not meet the minimum requirements of clause C1 should be re-assessed as a Category D species.

Species Name		**Mackerel** *Scomber scombrus*	
C1	**Category C Stock Status - Minimum Requirements**		
	C1.1	Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2	The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
		Clause outcome:	**PASS**

Evidence

C1.1 – C1.2:

The boarfish fishery is generally free from bycatch from September to February. From March onwards a bycatch of mackerel is found in the catches. Information on the bycatch of other species in the boarfish fishery is sparse, though thought to be minimal. Mackerel stocks in subareas I-VIII and XIV, encompassing the boarfish fishery, are assessed by ICES. Mackerel is an ICES category 1 stock; an age-based analytical model using catch data forms the basis of its assessment.

The most recent information on mackerel biomass and fishing mortality can be seen in **Figure 3.** Catch data, coded wire tagging data (1980–2006) and RFID tagging data (2014–2017), and three survey indices: SSB index from the triennial egg survey (1992–2016), abundance indices from the IBTS survey (combined Q1 and Q4; age 0, 1998–2017), and from the IESSNS survey (ages 3–11, 2010, 2012–2018) were used in the 2018 assessment. Catches prior to 2000 are given a very low weight in the assessment. Natural mortality (0.15 for all ages and years) is based on tagging studies from the early 1980s.

The spawning-stock biomass (SSB) is estimated to have increased in the late 2000s, reaching a maximum in 2014. It has declined since, but has remained above MSY Btrigger since 2008. The fishing mortality (F) has declined from high levels in the mid-2000s, but remains above FMSY. There has been a succession of large year classes since the early 2000s, with year classes since 2012 estimated to be above average:

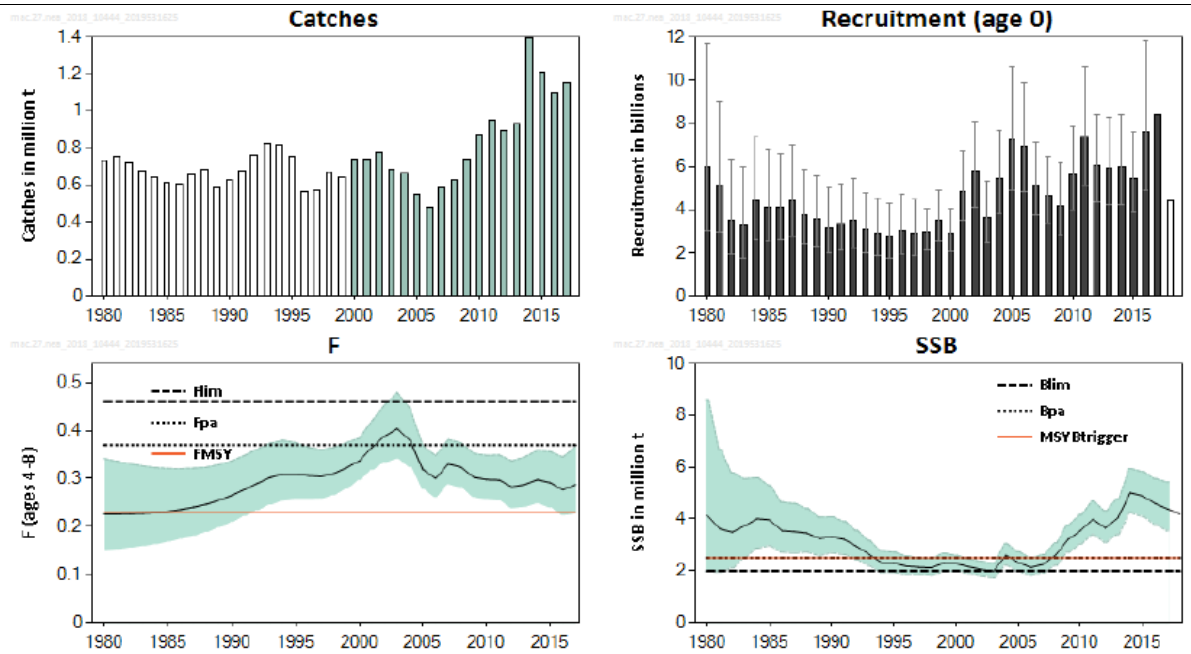

Figure 3: Mackerel in subareas I-VIII and XIV and in Division IX a. Summary of the stock assessment. The catches prior to 2000 are unshaded because of the considerable underreporting that is suspected to have taken place in those years. The recruitment value for 2017 is estimated using the recruitment survey and a model (RCT3), and the recruitment value for 2018 is the geometric mean of the recruitments from 1990 to 2016. Confidence intervals (95%) are included in the recruitment, fishing mortality, and spawning-stock biomass plots. **R21**

The Pelagic AC has proposed a revised draft management plan for boarfish which includes a number of measures to minimise by-catch of other species:

- A closed season from 31st March to 31st August to mitigate the risk of herring and mackerel bycatch.
- A closed season inside the Irish 12-mile limit, south of 52°30 from 12th February to 31st October to prevent catches of Celtic Sea herring.
- If catches of other species covered by a TAC total more than 5% of the total catch in the fishery, by day and by ICES statistical rectangle, then the boarfish fishery must cease in that rectangle for 5 consecutive days.

The closed season has been enacted in legislation in Ireland, though not in other countries. Aside from this it is not clear whether any of the proposed measures have been implemented (either by regulation or voluntarily. **R21**

References

Standard clauses 1.3.2.2

Species Name	Herring *Clupea harengus*	
C1	**Category C Stock Status - Minimum Requirements**	
	C1.1 Fishery removals of the species in the fishery under assessment are included in the stock assessment process, OR are considered by scientific authorities to be negligible.	PASS
	C1.2 The species is considered, in its most recent stock assessment, to have a biomass above the limit reference point (or proxy), OR removals by the fishery under assessment are considered by scientific authorities to be negligible.	PASS
	Clause outcome:	**PASS**

Evidence

C1.1-C1.2

ICES provides advice on this stock; herring in divisions VII.a South of 52o30' North, VII.g-h and VII j-k (Irish Sea, Celtic Sea and southwest of Ireland). Celtic sea herring is an ICES category 1 stock, an age-based analytical model using catch data forms the basis of its assessment (ICES, 2018).

Input data includes commercial catches (weights, ages, and length frequencies from catch sampling); acoustic survey index (CSHAS) (excluding 2017); annual weights in the stock; fixed maturity ogive and a natural mortality assumed constant.

The spawning-stock biomass (SSB) has been decreasing significantly since its peak in 2011, and is now below MSY Btrigger at Blim. The fishing mortality (F) has increased since 2008 and has been above FMSY since 2015. Recruitment has been below average since 2013:

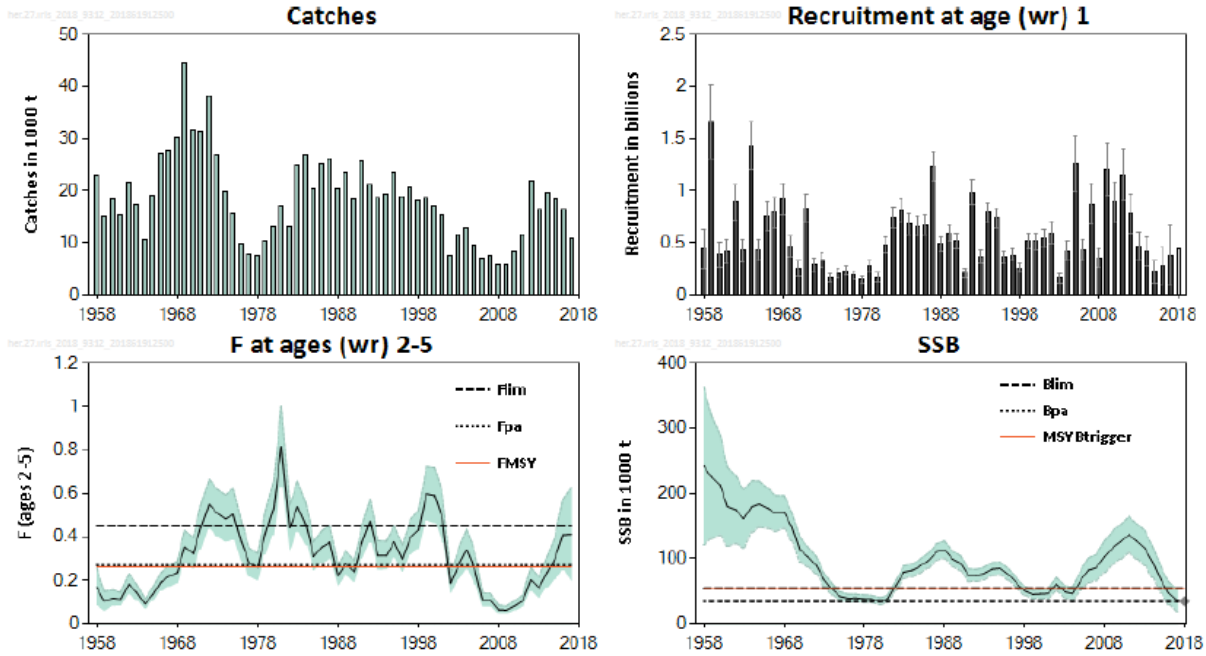

Figure 4: Herring in divisions 7.a South of 52°30'N, 7.g–h, and 7.j–k. Summary of the stock assessment. The assumed recruitment is unshaded and the forecast SSB value is designated by a grey diamond. The shaded areas on the F and SSB plots represent 95% confidence intervals**. R22**

Catches of herring since 2012 have been below ICES advice in all but one years, 2015. ICES assesses that fishing pressure on the stock is above FMSY and Fpa and below Flim. The spawning stock size is below MSY Btrigger and Bpa, and above Blim.

R22

References

Standard clauses 1.3.2.2

FURTHER IMPACTS

The three clauses in this section relate to impacts the fishery may have in other areas. A fishery must meet the minimum requirements of all three clauses before it can be recommended for approval.

F1	**Impacts on ETP Species - Minimum Requirements**		
	F1.1	Interactions with ETP species are recorded.	PASS
	F1.2	There is no substantial evidence that the fishery has a significant negative effect on ETP species.	PASS
	F1.3	If the fishery is known to interact with ETP species, measures are in place to minimise mortality.	PASS
		Clause outcome:	**PASS**

Evidence:

F1.1-F1.3:

Several studies have reported the interaction of dolphins with midwater/pelagic trawl fisheries in the NE Atlantic, a European Commission study group considered monitoring for cetacean by-catch to be a priority issue in other pelagic fisheries. Overall information on the impact of this fishery on ETP species is limited, partially due to the fishery's comparatively recent development. Marine mammals and seabirds in EU waters are currently protected by a set of directives and conventions (e.g. Bern Convention and the Birds and Habitats Directive) and multilateral international agreements.

BIM (Irish Sea Fisheries Board) reported that from 2005 to 2011, 703 days of observations were carried out in a range of Irish pelagic trawl fisheries through independent observer programmes, technical trials, fisheries surveys and the data collection framework. No cetacean bycatch occurred during the independent observer work while four common dolphins were observed as bycatch as part of a fishery survey conducted in 2006.

The latest available information (BIM data) is for 2015, when a total of 26 trips comprising 134 days at sea and 136 hauls were observed in pelagic trawl fisheries. These observations were all carried out as part of the Data Collection Framework (DCF) monitoring and surveys. Three common dolphins were reported as bycatch in a single haul of a midwater otter trawl fishery targeting herring in the Celtic Sea in October.

A total of 7 common dolphins were observed from a total of 1,319 days at sea observed since monitoring under EC 812/2004 commenced in 2005. Of these, a total of 219 days were carried out as part of dedicated independent observer programmes from 2010 to 2012 in a range of pelagic trawl fisheries where no cetacean bycatch was observed.

BIM concludes that results to date suggest that the risk of bycatch of cetaceans and other protected species in Irish pelagic trawl fisheries is low. As such, it is unlikely the fishery has significant negative effects on ETP species.

R23-R25

References

Standard clause 1.3.3.1

F2	Impacts on Habitats - Minimum Requirements		
	F2.1	Potential habitat interactions are considered in the management decision-making process.	PASS
	F2.2	There is no substantial evidence that the fishery has a significant negative impact on physical habitats.	PASS
	F2.3	If the fishery is known to interact with physical habitats, there are measures in place to minimise and mitigate negative impacts.	PASS
		Clause outcome:	**PASS**

Evidence

F2.1-F2.3

The fishery is conducted only with pelagic trawl; as most fishing for widely distributed and migratory stocks is pelagic in nature, there is little or no effect on the benthic community. There is relatively little bycatch of non-target species in these fisheries, which operate with pelagic trawl gear, purse seine nets and hand lines. Cetacean bycatch has been noted in some fisheries off the Azores.

Midwater trawling is generally considered to have virtually no impact on the benthic environment, although some interactions have been reported.

R23-R25

References

Standard clause 1.3.3.2

F3	Ecosystem Impacts - Minimum Requirements		
	F3.1	The broader ecosystem within which the fishery occurs is considered during the management decision-making process.	PASS
	F3.2	There is no substantial evidence that the fishery has a significant negative impact on the marine ecosystem.	PASS
	F3.3	If one or more of the species identified during species categorisation plays a key role in the marine ecosystem, additional precaution is included in recommendations relating to the total permissible fishery removals.	PASS
		Clause outcome:	**PASS**

Evidence

F3.1-F3.3:

The ecological role and significance of boarfish in the NE Atlantic is largely unknown. However, in the south-east North Atlantic, in Portuguese waters, they are considered to have an important position in the marine food web. Despite the obvious potential for these species to feed on fish eggs and larvae in Portuguese waters they were not considered predators of commercial fishes and thus their increase in abundance was unlikely to affect recruitment of commercial fish species.

Since 2011, there is a provision on bycatch of boarfish (and also whiting, haddock and mackerel) in the Western and North Sea horse mackerel fishery, which dictates that bycatch of these 4 species combined is to be deducted (up to a defined amount) from EU quotas for western and for North Sea horse mackerel. The bycatch quota was defined at 7,128 tonnes in 2014, 4,785 tonnes in 2015, and 6,203 tonnes in 2016 (ICES 2016). The targeted boarfish fishery is thought to be highly selective, with almost no bycatch from September to February. From March onward there can be some bycatch of mackerel, but fishing generally ceases if bycatch rates are above a certain amount.

In 2019 the boarfish fishery was targeted for directed fishing by a small number of Irish-flagged RSW (Refrigerated Sea Water) vessels. Unofficial landing figures from the targeted fishery in 2018 estimated landings of 9, 065 tons.

Boarfish appear an unlikely target of predation given their array of strong dorsal and anal fin spines and covering of ctenoid scales. However, there is evidence to suggest that they may be an important component of some species' diets. Most studies have focused in the Azores and few have mentioned the NE Atlantic, probably due to the relatively low abundance in the region until recent years.

It is unknown whether boarfish represent a significant component of the diet of other species in the assessment area.
Given their large abundance in NE Atlantic shelf waters in recent years it is likely that they would have been recorded more frequently if they were a significant and important prey item. Boarfish are an important component of the diet a number of sea birds in the Azores, most notably the common tern and Cory's shearwater.

ICES stock assessments include full consideration of all the available ecosystem information, both in general terms and when specifically considering the boarfish stock. The ecological role and significance of boarfish in the Northeast Atlantic is largely unknown.

ICES also consider potential environmental impacts on the boarfish stock; for example, the increased abundance of the species in the 1990s and 2000s is thought to have been caused by higher than usual water temperature during the spawning season (ICES 2016a).
R12; R23-R25

References

R1: EU Common Fisheries Policy overview: http://ec.europa.eu/fisheries/cfp/index_en.htm
R2: EU Common Fisheries Policy reform: http://ec.europa.eu/fisheries/reform/index_en.htm
R3: EU Common Fisheries Policy: what are fishing opportunities? How are they set?: https://ec.europa.eu/fisheries/questions-answers-commission-sets-outs-principles-2018-fishing-opportunities_en
R4: EU COMMUNICATION FROM THE COMMISSION on the State of Play of the Common Fisheries Policy and Consultation on the Fishing Opportunities for 2019 http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017DC0368&from=EN
R5: Council Regulation (EU) 2019/129 of 23 January 2018 fixing for 2018 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters, and amending Regulation (EU) 2017/127 http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32018R0120
R6 : ICES, "Who we are": http://www.ices.dk/explore-us/who-we-are/Pages/Who-we-are.aspx
R7 : UK Marine Management Organisation, About: https://www.gov.uk/government/organisations/marine-management-organisation/about
R8: Marine Scotland, about: https://beta.gov.scot/about/how-government-is run/directorates/marine-scotland
R9: Northern Ireland Department of Agriculture, Environment and Rural Affairs; Environment, Marine and Fisheries Group: https://www.daera-ni.gov.uk/about-daera; https://www.daera-ni.gov.uk/topics/fisheries
R10: Republic of Ireland Department of Agriculture, Food and the Marine, fisheries information: https://www.agriculture.gov.ie/seafood/
R11: SFPA, about: http://www.sfpa.ie/AboutUs/AboutSFPA.aspx

R12: EU request for ICES to evaluate the management strategy for boarfish (*Capros aper*) in Subareas VI–VIII (Celtic Seas and the English Channel Bay of Biscay). *In* Report of the ICES Advisory Committee, 2015. ICES Advice 2015, Book 9, Section 9.2.3.4. 2 pp.
R13: ICES 2016 Advice basis. *In* Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 1, Section 1.2.
http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/Introduction_to_advice_2016.pdf
R14a: ICES 2017 ICES Advice on fishing opportunities, catch, and effort Bay of Biscay and the Iberian Coast, Celtic Seas, Greater North Sea, and Oceanic Northeast Atlantic Ecoregions. Boarfish (*Capros aper*) in subareas 6–8 (Celtic Seas, English Channel, and Bay of Biscay). 5pp
http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2017/2017/boc.27.6-8.pdf
R14b: ICES Stock Annex (2018): Boarfish (*Capros aper*) in Subareas VI-VIII (Celtic Seas, English Channel, and Bay of Biscay 72pp
http://www.ices.dk/sites/pub/Publication%20Reports/Stock%20Annexes/2018/boc.27.4-8_SA.pdf
R15: WGWIDE, about: http://www.ices.dk/community/groups/Pages/WGWIDE.aspx
R16: European Commission Q&A: https://ec.europa.eu/fisheries/questions-answers-commission-sets-outs-principles-2018-fishing-opportunities_en
R17: Council Regulation (EU) 2019/124 of 30 January 2019 fixing for 2019 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32019R0124
R18: Council Regulation (EC) No 1005/2008 of 29 September 2008 establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing, amending Regulations (EEC) No 2847/93, (EC) No 1936/2001 and (EC) No 601/2004 and repealing Regulations (EC) No 1093/94 and (EC) No 1447/1999 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008R1005&qid=1560445444953&from=EN
R19a: EFCA: European Fisheries Control Agency: www.efca.europa.eu
R19b: EFCA NWW Joint Deployment Plan 2018 Q1:
https://www.efca.europa.eu/sites/default/files/atoms/files/2018%20-%20NORTH%20WW%20CAMPAIGN%20-%203M%20WEB%20REP.pdf
R20a-c:
a. ICES 2016a. ICES WGWIDE Report, 2016a. 56pp Chapter 3 Boarfish (*Capros aper*) in subareas 6-8 (Celtic Seas, English Channel and Bay of Biscay).
http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2016/WGWIDE/05%20WGWIDE%20report%20-%20Sec%2003%20Boarfish%20in%20subareas%206–8.pdf
b. ICES 2016. ICES WGWIDE Report, 2016b. Stock Annex: 64pp
http://www.ices.dk/sites/pub/Publication%20Reports/Stock%20Annexes/2016/boc-nea_SA.pdf
c. ICES Stock Annex: Sept 2018 (72pp): Boarfish (*Capros aper*) in Subareas 6–8 (Celtic Seas, English Channel, and Bay of Biscay
http://www.ices.dk/sites/pub/Publication%20Reports/Stock%20Annexes/2018/boc.27.4-8_SA.pdf
R21: Pelagic Advisory Council: Draft Management Strategy for Boarfish in the Northeast Atlantic 3pp
https://pelagic-ac.org/media/pdf/Revised%20draft%20Management%20Strategy%20for%20Boarfish%20March%202016.pdf
R22: Norway special request for revised 2019 advice on mackerel (*Scomber scombrus*) in subareas I-VIII and XIV and in Division IXa (the Northeast Atlantic and adjacent waters)
http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2019/Special_Requests/no.2019.09.pdf
R23: Herring (Clupea harengus) in divisions 7.a South of 52°30'N, 7.g–h, and 7.j–k (Irish Sea, Celtic Sea, and southwest of Ireland)http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/her.27.irls.pdf
R24: Marine Institute Stock Book (2011) pdf 502pp

https://oar.marine.ie/handle/10793/669 **R25:** ICES WGWIDE REPORT 2016 56pp Boarfish (*Capros aper*) in subareas 6–8 (Celtic Seas, English Channel, and Bay of Biscay) http://www.ices.dk/sites/pub/Publication%20Reports/Expert%20Group%20Report/acom/2016/WGWIDE/05%20WGWIDE%20report%20-%20Sec%2003%20Boarfish%20in%20subareas%206–8.pdf **R26**: BIM website, accessed June 2019. http://www.bim.ie/our-work/projects/monitoring,interactions,between,irish,fisheries,and,protected,species/
Standard clause 1.3.3.3

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.

Comments on this proposition are welcomed along with any other feedback on the proposed approach.