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## IFFO RS

Global Standard for Responsible Supply  
of Marine Ingredients

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# Global Standard for Responsible Supply of Marine Ingredients

## Fishery Assessment Methodology and Template Report V2.0



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<b>Fishery Under Assessment</b>	<b>Monkfish (Anglerfish)</b> <b>(<i>Lophius piscatorius</i> /<i>L. budegassa</i>)</b> <b>ICES IVa-c, VIa, VIIa,b,d-h,j</b>
<b>Date</b>	<b>July 2019</b>
<b>Assessor</b>	<b>Jim Daly</b>

<b>Application details and summary of the assessment outcome</b>				
<b>Name:</b> Bioceval				
<b>Address:</b>				
<b>Country:</b> France		<b>Zip:</b>		
<b>Tel. No.:</b>		<b>Fax. No.:</b>		
<b>Email address:</b>		<b>Applicant Code</b>		
<b>Key Contact:</b>		<b>Title:</b>		
<b>Certification Body Details</b>				
<b>Name of Certification Body:</b>		SAI Global Ltd		
<b>Assessor Name</b>	<b>Peer Reviewer</b>	<b>Assessment Days</b>	<b>Initial/Surveillance /Re-approval</b>	<b>Whole fish/ By-product</b>
Jim Daly	Conor Donnelly	0.5	Initial	By-product
<b>Assessment Period</b>	2018			

<b>Scope Details</b>	
<b>Management Authority (Country/State)</b>	EU/France
<b>Main Species</b>	Monkfish (Anglerfish)
<b>Fishery Location</b>	North East Atlantic (ICES IVa-c, VIa, VIIa,b,d-h,j)
<b>Gear Type(s)</b>	Demersal trawls, Gill and Tangle Nets; Nephrops trawl.
<b>Outcome of Assessment</b>	
<b>Overall Outcome</b>	Pass
<b>Clauses Failed</b>	None
<b>Peer Review Evaluation</b>	Pass
<b>Recommendation</b>	Approve

## Assessment Determination

Monkfish (Anglerfish) are a long-lived, late-maturing, slow-growing species with fluctuating levels of recruitment that may make them susceptible to overfishing. They are heavily targeted by bottom trawl fisheries in the North Atlantic where overfishing and habitat destruction has been documented.

Two species are assessed separately but advised as a single stock as the EU issues a single TAC covering both species. ICES advice is based on the data-limited approach (ICES 2012).

ICES considers several different units of anglerfish for assessment and management purposes:

- Anglerfish in Division IIIa (Kattegat and Skagerrak), Subarea IV (North Sea), and Subarea VI (West of Scotland and Rockall) (*Lophius piscatorius* and *L. budegassa*) **(covered by this assessment)**.
- Anglerfish (*L. piscatorius*) and blackbellied angler (*L. budegassa*) in Divisions VIIb-k and VIIa,b,d (Southern Celtic Sea and Bay of Biscay) **(covered by this assessment)**.
- Anglerfish and blackbellied angler in Divisions VIIc and IXa (Cantabrian Sea and Atlantic Iberian waters, **not covered by this assessment**).

One TAC area covers Subarea IV and Division II a (EC); the second covers Division V.b (EC) and subareas VI, XII and XIV. There is no TAC for Division III a. As a result of this mismatch between assessment areas and TAC areas, there is a potential for catches to exceed advice. Discard levels were higher in 2013, 2016, and in 2017 owing to incoming high recruitment in these years. 2017 quota restrictions in both the demersal whitefish and *Nephrops* fisheries have also resulted in discarding of marketable anglerfish.

Management of *Lophius budegassa* and *L. piscatorius* (Divisions VII b-k, VIII .a-b, and VIII d) under a combined species TAC prevents effective control of the single-species exploitation rates and could lead to the overexploitation of either species. ICES is not aware of any currently agreed precautionary management plans for anglerfish (*L. budegassa*) in this assessment area.

Anglerfish (*L.piscatorius*, *L.budegassa* European stock) are listed by IUCN as species of least concern and are not listed on current CITES appendices (both sites accessed 10.07.19.).

For Anglerfish in Subareas IIIa, IV and VI ICES cannot assess the stock and exploitation status relative to the maximum sustainable yield (MSY) and precautionary approach (PA) reference points because reference points are undefined. The comparative lack of robust scientific information on the status of the population means that the stock cannot be considered, in its most recent stock assessment, to have a biomass above limit reference point (or proxy), or that removals by the fishery under assessment are considered by scientific authorities to be negligible.

This population was assessed using the risk-based Productivity, Susceptibility Analysis (PSA) as per IFFO-RS v 2.0 procedures for Category D species. The population has passed this risk-based assessment with a medium compliance rating (**Table D1**).

For Anglerfish in Divisions VII b-k, VIII a-b, and VIII d fishery removals of the species in the fishery under assessment are included in the stock assessment process. The stock size index has been relatively stable since 2009. In the most recent year available (2016) the index showed an increase in biomass. Fishing pressure has decreased in recent years and is now below FMSY. Fishing mortality is below the MSY proxy reference point value of 1.

As it is not possible to determine if this stock is considered, in its most recent stock assessment, to have biomass above the limit reference point (or proxy), a risk-assessment style approach must be taken. The population has passed this risk-based assessment with a medium compliance rating.

Monkfish/Anglerfish (*Lophius piscatorius* / *L. budegassa*) is approved by the assessment team for the production of fishmeal and fish oil under the IFFO-RS v 2.0 by-products standard.

### Peer Review Comments

Agree with outcome and recommendation

### Notes for On-site Auditor

## Species-Specific Results

Category	Species	% landings	Outcome (Pass/Fail)	
Category A			A1	
			A2	
			A3	
			A4	
Category B				
Category C	Monkfish (Anglerfish) Subareas IIIa, IV and VI	N/A	FAIL	
Category C	Monkfish (Anglerfish) VII b-k, VIII a-b, and VIII d	N/A	PASS	
Category D	Monkfish (Anglerfish) Subareas IIIa, IV and VI	N/A	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]

## 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
Monkfish/Anglerfish	<i>(Lophius piscatorius / L. budegassa)</i>	North East Atlantic	N/A	EU/FRA	C

### **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.

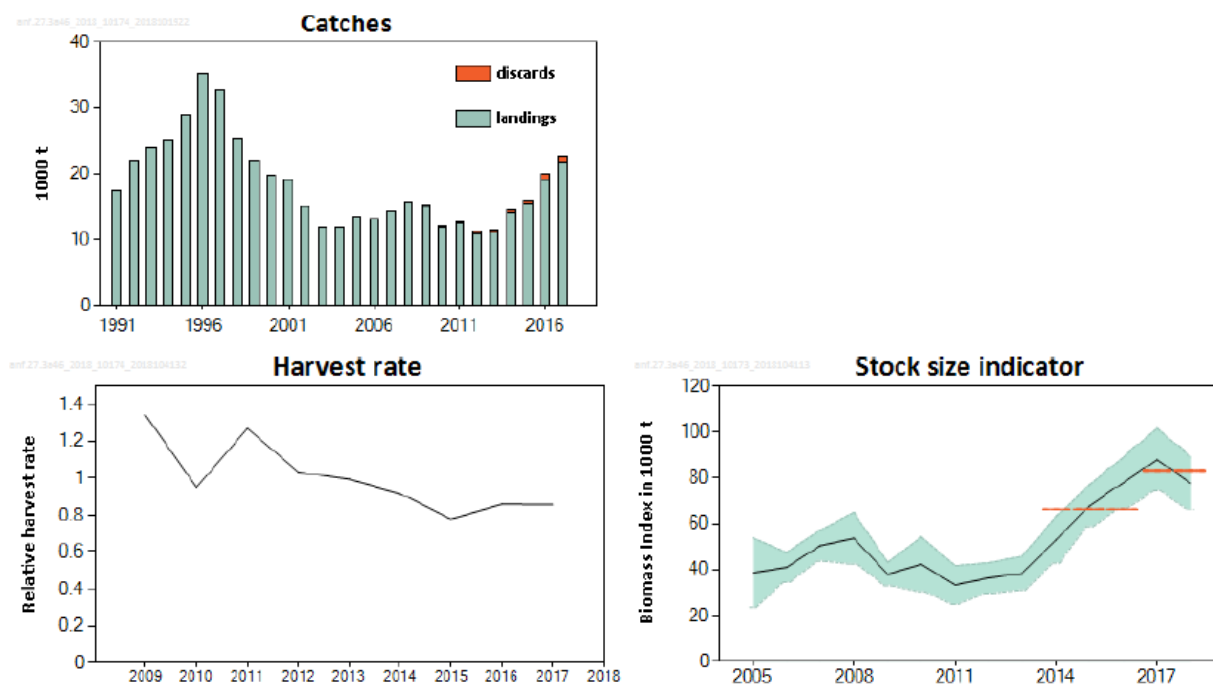
Clause C1 should be completed for **each** Category C species. If there are no Category C species in the fishery under assessment, this section can be deleted. A Category C species does not meet the minimum requirements of clause C1 should be re-assessed as a Category D species.

Species Name		Monkfish (Anglerfish) ( <i>Lophius piscatorius</i> / <i>L. budegassa</i> )	
C1	Category C Stock Status - Minimum Requirements		
	C1.1	Monkfish (Anglerfish) Subareas IIIa, IV and VI:  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	Monkfish (Anglerfish) Subareas IIIa, IV and VI:  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.	FAIL
	C1.1	Monkfish (Anglerfish) VII b-k, VIII a-b, and VIII d: 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	Monkfish (Anglerfish) VII b-k, VIII a-b, and VIII d : 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.	FAIL
Clause outcome:			FAIL
Evidence			
C1.1:			
ICES Advice: Anglerfish ( <i>Lophius budegassa</i> , <i>Lophius piscatorius</i> ) in Subareas IIIa, IV and VI (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat):			
The ICES framework for Category 3 stocks was applied (ICES, 2012). The SCO-IV-VI-AMISS-Q2 survey was used as the index of stock development. The advice is based on a comparison of the two latest index values (Index A) with the three preceding values (index B), multiplied by the recent advised catch. The index is estimated to have increased by more than 20% and thus the uncertainty cap was applied. The stock status relative to candidate reference points is unknown.			
The precautionary buffer has not previously been applied for this stock, and with the increasing trend in the stock size indicator since 2011, the precautionary buffer was not applied this year either. Discard rate in 2017 was 3.4% of the total catch. Management advice by ICES is based on the precautionary approach. ICES is not aware of any agreed precautionary management plan for anglerfish in this area.			
Fishery removals of the species in the fishery under assessment are included in the stock assessment process, <b>the species passes Clause C1.1.</b>			

## C1.2:

### ICES Advice: Anglerfish (*Lophius budegassa*, *Lophius piscatorius*) in Subareas III a, IV and VI (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat):

The stock size indicator increased between 2011–2017 and decreased in 2018 from the historical high. The harvest rate has been relatively stable since 2014 (**Figure 1**):



**Figure 1.** Anglerfish in subareas IV and VI and Division III a. Summary of the stock assessment. Top: ICES landings and discards (thousand tonnes). Bottom left: Relative harvest rate (total catch/stock size indicator; normalized to the average harvest rate). Bottom right: Stock biomass (thousands tonnes) from SCO-IV-VI-AMISS-Q2. The dashed horizontal lines indicate the average of the most recent two years and the previous three years. The shaded area represents the 95% confidence interval. **R1**

ICES cannot assess the stock and exploitation status relative to the maximum sustainable yield (MSY) and precautionary approach (PA) reference points because reference points are undefined.

The ICES framework for category 3 stocks was applied (ICES, 2012). The SCO-IV-VI-AMISS-Q2 survey was used as the index of stock development. The advice is based on a comparison of the two latest index values (index A) with the three preceding values (index B), multiplied by the recent advised catch.

The index is estimated to have increased by more than 20% and thus the uncertainty cap was applied. The stock status relative to candidate reference points is unknown. The precautionary buffer has not previously been applied for this stock, and with the increasing trend in the stock size indicator since 2011, the precautionary buffer was not applied this year either. Discard rate in 2017 was 3.4% of the total catch.

The SCO-AMISS-IV-VI-Q2 survey does not cover divisions III a, IV b, and IV c, which collectively account for 9% of the landings. It is uncertain to what extent the lack of coverage of these areas

affects the quality of the assessment. Methods for setting proxy reference points, according to the ICES technical guidelines for stocks in categories 3 and 4, remain unsuitable for this stock owing to its life history characteristics and uncertainties surrounding the historical catch data.

However the comparative lack of robust scientific information (no reference points) on the status of the population in Divisions III a, IV b, and IV c, means that the stock cannot be considered, in its most recent stock assessment, to have a biomass above limit reference point (or proxy), or that removals by the fishery under assessment are considered by scientific authorities to be negligible.

**The stock therefore fails Clause C1.2.**

A risk-assessment style approach must be taken. The fishery was assessed using the risk-based Productivity, Susceptibility Analysis (PSA) as per IFFO-RS v 2.0 procedures for Category D species. The species has passed this risk-based assessment (**Table D1**).

**ICES Advice: Black-bellied anglerfish (*Lophius budegassa*) in Divisions VII b-k, VIII a-b, and VIII d (west and southwest of Ireland, Bay of Biscay):**

**C 1.1:**

ICES framework for category 3 stocks was applied (ICES, 2012). The combined IE-IGFS-WIBTS-Q4 and FR-EVHOE-WIBTS-Q4 biomass index was used as the index of stock development. The advice is based on a comparison of the two latest index values (index A) with the three preceding values (index B), multiplied by the recent advised landings and divided by (1 –discard rate). The index is estimated to have increased by less than 20% and thus the uncertainty cap was not applied.

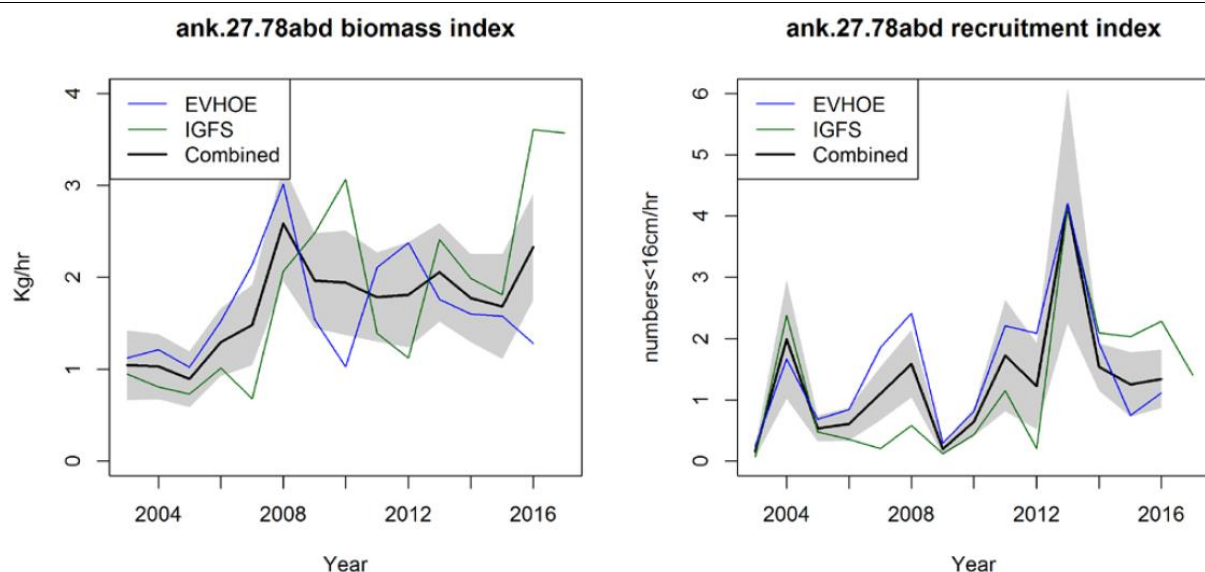
The combined IE-IGFS-WIBTS-Q4 and FR-EVHOE-WIBTS-Q4 surveys cover a large part of the stock distribution and most of the depth range of the stock (< 500 m). However, catch rates are low, leading to notable uncertainty around the index. The FR-EVHOE-WIBTS-Q4 survey was not completed in 2017 due to a vessel breakdown; therefore, the advice is based on the most recent data available (2012-2016).

Fishery removals of the species in the fishery under assessment are included in the stock assessment process: **the species passes Clause C 1.1.**

**C 1.2:**

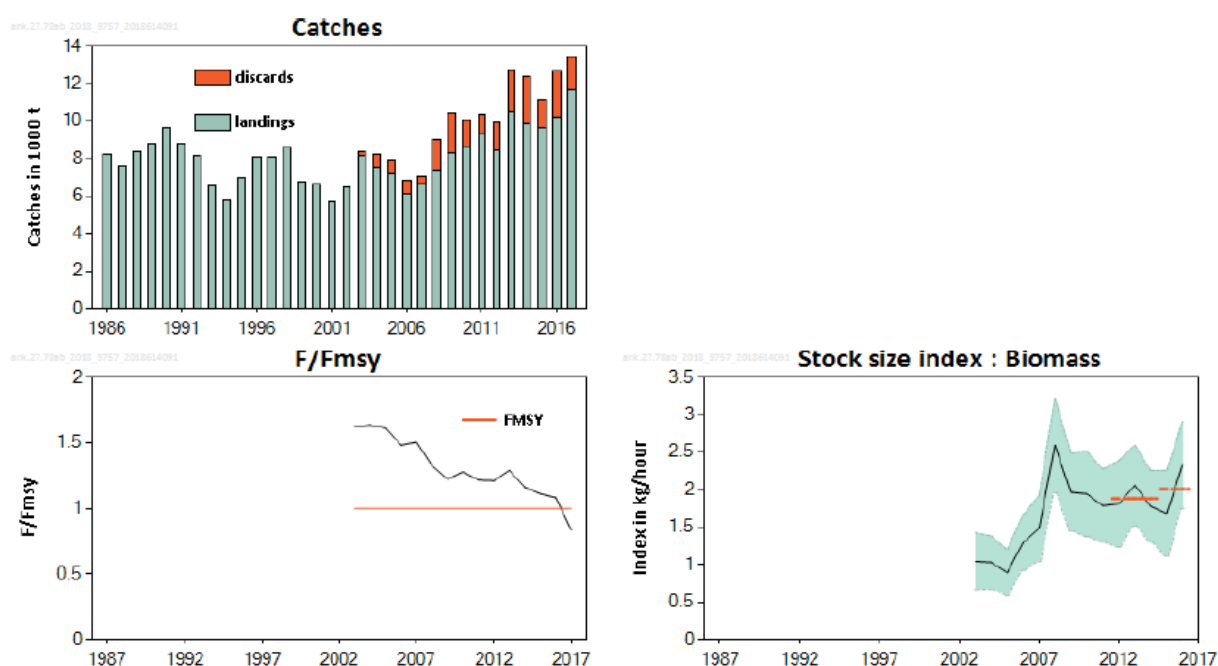
Although stock size is unknown and uncertainty around the biomass is large, some additional information suggests that the stock size may have increased in recent years (**Figure 2**):





**Figure 2** Black-bellied anglerfish in Subarea VII and Divisions VIII a-b and Vied. Biomass and recruitment indices of the IE-IGFS-WIBTS-Q4 and FR-EVHOE-WIBTS-Q4 surveys and the combined index with 95% confidence intervals **R4**

The stock size index has been relatively stable since 2009. In the most recent year available (2016) the index showed an increase in biomass. Fishing pressure has decreased in recent years and is now below FMSY **Figure 3:**



**Figure 3:** Black-bellied anglerfish in Subarea VII and Divisions VIII a-b and VIII.d. Summary of the stock assessment. ICES estimated landings and discards (no discard data available prior to 2003). The stock biomass index is calculated from the combined IE-IGFS-WIBTS-Q4 and FR-EVHOE-WIBTS-Q4 surveys. This index was not available for 2017 because the French survey did not take place in that year. **R4**

Fishing mortality is below the MSY proxy reference point value of 1.  $F_{MSY\text{ proxy}}$  Relative value ( $F/F_{MSY}$ ) from YPR and mean length-based  $Z$ . No reference points are defined for this stock in terms of absolute values (ICES 2018).

Since 2002 fishing mortality has decreased while catches have increased. Stock size is unknown but showing a light increase in 2016. Following ICES (2016a) - since the stock size is unknown, the fishing mortality only reduced below  $F_{MSY}$  in the last year, and it is not a bycatch species - the precautionary buffer was applied to the advice. The discard rate is 15% of the total catch (average of the last three years).

As it is not possible to determine if the stock is considered, in its most recent stock assessment, to have biomass above the limit reference point (or proxy), a risk-assessment style approach must be taken (**Table D1**). As *L. piscatorius* has been assessed as having more 'sensitive' productivity attributes than *L. budegassa* the former was selected for the Productivity-Susceptibility Analysis. The species has passed this risk-based assessment.

## 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.

*Standard clauses 1.3.2.2*

<b>D1</b>	<b>Species Name:</b>	<b>Monkfish (Anglerfish)</b> <b>(<i>Lophius piscatorius</i>*)</b>	
	<b>Productivity Attribute</b>	<b>Value</b>	<b>Score</b>
	Average age at maturity (years)	10	3
	Average maximum age (years)	24	2
	Fecundity (eggs/spawning)	1,000,000	1
	Average maximum size (cm)	112	2
	Average size at maturity (cm)	35-60	2
	Reproductive strategy	Egg scatterers	1
	Mean trophic level	4.5	3
	<b>Average Productivity Score</b>		<b>2</b>
	<b>Susceptibility Attribute</b>	<b>Value</b>	<b>Score</b>
	Overlap of adult species range with fishery	Worldwide distribution	1
	Distribution	Not used	
	Habitat	Bathymedersal	1
	Depth range	Not used	
	Selectivity	Up to 4m in length	3
	Post-capture mortality	Most dead	3
	<b>Average Susceptibility Score</b>		<b>2</b>
	<b>PSA Risk Rating (From Table D3)</b>		<b>PASS</b>
	<b>Compliance rating</b>		<b>Medium</b>
	<b>References</b>		
	* <i>L. piscatorius</i> selected for analysis as productivity attributes more sensitive for this species than <i>L. budegassa</i>		
	<i>Standard clauses 1.3.2.2</i>		

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

## References

**R1** ICES Advice (Oct 2018) Anglerfish (*Lophius budegassa*, *Lophius piscatorius*) in Subareas IV, VI and Division III.a (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat)

<http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/anf.27.3a46.pdf>

**R2** ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES CM 2012/ACOM 68. 42 pp.

**R3** ICES. 2018a. Report of the Benchmark Workshop on Anglerfish Stocks in the ICES Area (WKANGLER), 12-16 February 2018, Copenhagen, Denmark. ICES CM 2018/ACOM:31. 180 pp.

**R4** ICES Advice (June 2018) Black-bellied anglerfish (*Lophius budegassa*) in Divisions VIIb-k, VIII a-b, and VIII d (west and southwest of Ireland, Bay of Biscay)

<http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2018/2018/ank.27.78abd.pdf>

**R5** North Western Waters Multi-annual Plan Proposal: (March 2018)

Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing a multiannual plan for fish stocks in the Western Waters and adjacent waters, and for fisheries exploiting those stocks, amending Regulation (EU) 2016/1139 establishing a multiannual plan for the Baltic Sea, and repealing Regulations (EC) No 811/2004 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018PC0149&from=EN>

**R6** Fishbase Anglerfish: accessed 08.07.19

<http://www.fishbase.org/Summary/SpeciesSummary.php?ID=716&AT=anglerfish>

*Standard clauses 1.3.2.2*