

### 9.3.2 Black scabbardfish (*Aphanopus carbo*) in subareas 1, 2, 4, 6–8, 10, and 14, and in divisions 3.a, 5.a–b, 9.a, and 12.b (Northeast Atlantic)

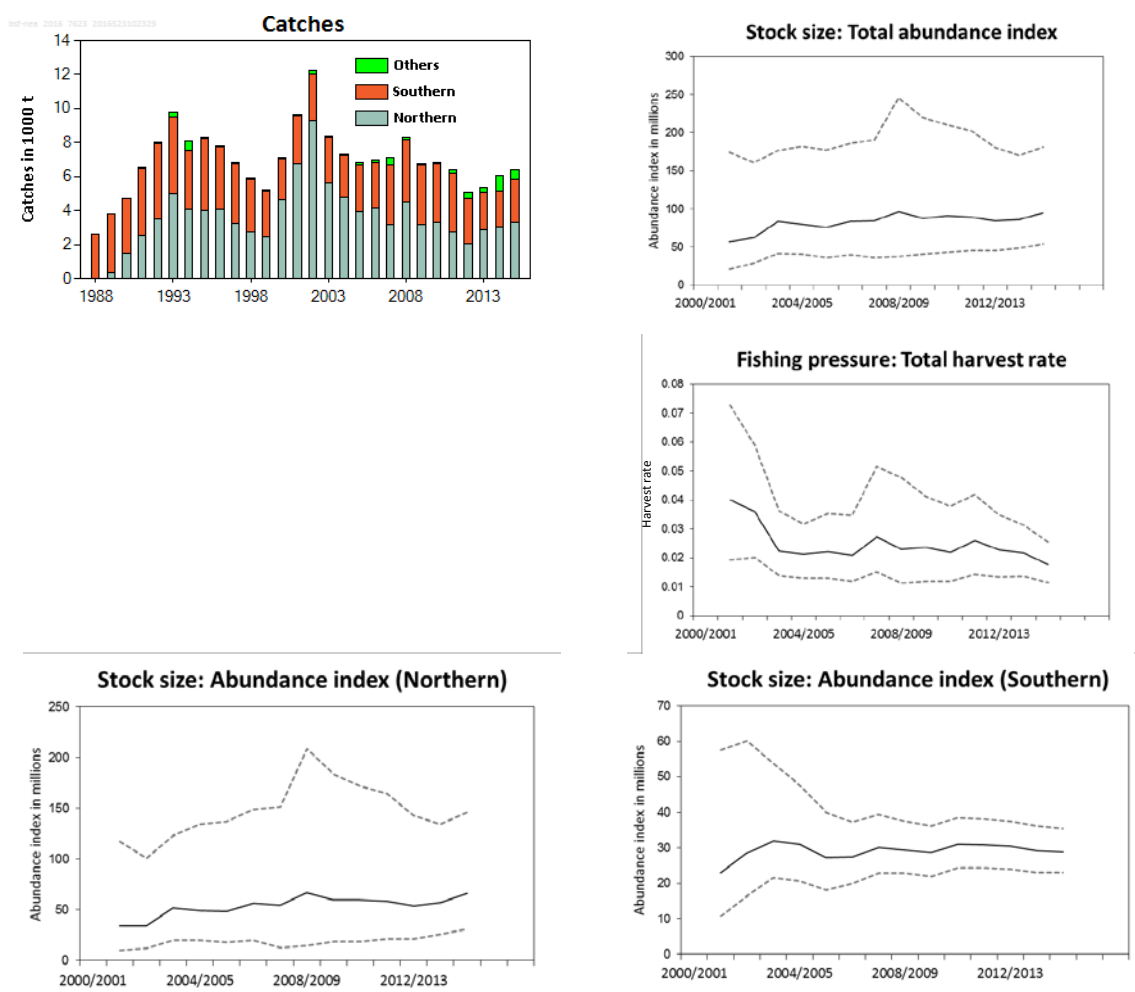
#### ICES stock advice

ICES advises that when the precautionary approach is applied, catches should be no more than 5894 tonnes in each of the years 2017 and 2018. All catches are assumed to be landed.

Distributed by area this corresponds to annual catches of no more than 2802 tonnes in subareas 6 and 7 and divisions 5.b and 12.b, annual catches of no more than 2726 tonnes in Subarea 8 and Division 9.a, and annual catches of no more than 366 tonnes in subareas 1, 2, 4, and 10 and divisions 3.a and 5.a.

#### Stock development over time

The stock abundance has been stable since 2002. Harvest rates indicate a decrease in exploitation in recent years.



**Figure 9.3.2.1** Black scabbardfish in the Northeast Atlantic. Top left: ICES estimates of catches (in thousand tonnes) in the northern part (subareas 6 and 7 and divisions 5.b and 12.b), southern part (Subarea 8 and Division 9.a), and the adjacent areas (labelled as “others”). Top right: Abundance index (in millions). Middle: estimated harvest rates for the total assessed area (subareas 6–8 and divisions 5.a, 9.a, and 12.b). Bottom: Abundance index in the northern part of the assessed area (left; subareas 6 and 7 and divisions 5.a and 12.b) and in the southern part (right; Subarea 8 and Division 9.a). Depicted ranges represent the 2.5 and 97.5 percentiles.

### Stock and exploitation status

**Table 9.3.2.1** Black scabbardfish in the Northeast Atlantic. State of the stock and fishery relative to reference points.

		Fishing pressure				Stock size					
		2013	2014	2015				2013	2014	2015	
Maximum sustainable yield	$F_{MSY}$	?	?	?	Undefined	$MSY B_{trigger}$	?	?	?	Undefined	
Precautionary approach	$F_{pa}, F_{lim}$	?	?	?	Undefined	$B_{pa}, B_{lim}$	?	?	?	Undefined	
Management plan	$F_{MGT}$	-	-	-	Not applicable	$SSB_{MGT}$	-	-	-	Not applicable	
Qualitative evaluation		✓	✓	✓	Very low		↘	↘	↘	Stable	

### Catch options

The ICES framework for category 3 stocks was applied (ICES, 2012). The abundance indices from the northern and southern areas were used as indicators of stock development. Stock trends by area have been estimated by the slope from a linear regression of the abundance estimate at a given year (Y) versus abundance estimate at the previous year (Y-1) for the most recent five years. Catch advice will increase when the abundance trends for the two components are increasing. If either component is stable or decreasing, the advised catch for each of the two components is calculated by multiplying the recent advised catch by the lower value of the slopes.

The slope value for the northern component abundance index is 1.02 and the slope for the southern component abundance index is 1.00. The index is estimated to have changed by less than 20% and therefore the uncertainty cap was not applied. The exploitation of the stock is considered to be very low and therefore no additional precautionary buffer was applied. Discarding is negligible.

Therefore, the advice for this fishery in 2017 and 2018 is the same as the advice for 2015–2016, which implies an annual catch of no more than 5894 tonnes in each of the years. Based on the catch distribution in 2013 (ICES, 2014), this implies annual catches of no more than 2802 tonnes in subareas 6 and 7 and divisions 5.b and 12.b, annual catches of no more than 2726 tonnes in Subarea 8 and Division 9a, and annual catches of no more than 366 tonnes in the adjacent areas: subareas 1, 2, 4, and 10, and divisions 3.a and 5.a.

**Table 9.3.2.2** Black scabbardfish in the Northeast Atlantic. For stocks in ICES categories 3–6, one catch option is provided.

Minimum slope		1.00
Uncertainty cap	Not applied	-
Recent advised catch for 2015–2016		5894 t
Discard rate		Negligible
Precautionary buffer	Not applied	-
Catch advice *		5894 t

\* = Recent advised catch.

### Basis of the advice

**Table 9.3.2.3** Black scabbardfish in the Northeast Atlantic. The basis of the advice.

Advice basis	Precautionary approach.
Management plan	There is no management plan for black scabbardfish.

### Quality of the assessment

The assessment is more likely to improve with the addition of appropriate fisheries independent data that can inform annual recruitment in the northern region. Survey data are available from the Scottish and Icelandic surveys, but the temporal and spatial coverage of these surveys does not provide robust recruitment estimates.

Fishery and biological time-series data from the CECAF (Fishery Committee for the Eastern Central Atlantic) area are required to improve the overall perception of the stock status.

### Issues relevant for the advice

There is no information to present for this stock.

### Reference points

There are no reference points for this stock.

### Basis of the assessment

**Table 9.3.2.4** Black scabbardfish in the Northeast Atlantic. The basis of the assessment.

ICES stock data category	3 ( <a href="#">ICES, 2016a</a> )
Assessment type	Trends-based assessment (ICES, 2016b)
Input data	Commercial catches (international landings and length frequencies from catch sampling), commercial indices (cpue from French trawlers and cpue from Portuguese longliners).
Discards and bycatch	Considered negligible
Indicators	None
Other information	Last benchmarked in 2014 (ICES, 2014).
Working group	Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources ( <a href="#">WGDEEP</a> )

### Information from stakeholders

Cpue data used in the assessment are haul-by-haul data provided by French trawlers.

### History of the advice, catch, and management

**Table 9.3.2.5** Black scabbardfish in the Northeast Atlantic. History of ICES advice, the agreed TAC, and ICES landings in subareas 6–9 and in divisions 5.b and 12.b. Weights are in thousand tonnes.

Year	ICES advice	Predicted catch corresp. to advice in Division 5.b, subareas 6–7, and Division 12.b	Predicted catch corresp. to advice in subareas 8 and 9.a	EU TAC subareas 5–7 and 12	EU TAC Subareas 8–10	ICES landings in Division 5.b, subareas 6–7, and Division 12.b	ICES landings in subareas 8 and 9
2003	Significant effort reduction	-	-	3.1	4*	5.7	2.7
2004	Biennial	-	-	3.1	4*	4.8	2.6
2005	Significant effort reduction	-	-	3.1	4*	4.0	2.5
2006	Biennial	-	-	3.1	4*	8.3	2.7
2007	Constrain catches to the level before the expansion period (1990–1996)	3.5	-	3.0	4	5.7	2.7
2008	Biennial	3.5	-	3.0	4	5.6	3.5
2009	Constrain catches to the 50% level before the expansion period (1993–1997)	2.0	2.8	2.7	3.6	4.3	3.6
2010	Biennial	2.0	2.8	2.4	3.3	3.9	3.6
2011	Same advice as previously	2.0	2.8	2.4	3.3	3.0	3.5
2012	No new advice, same as 2011		2.8	2.2	3.3	2.2	3.5
2013	No more than 20% (in Division Vb, Subareas VI and VII, and Division XIIb) or 5% (in Subareas VIII and IX) catch increase	4.7	3.7	3.1	3.7	2.8	2.7
2014	No new advice, same as 2013	4.7	3.7	4.0	3.7	3.048	2.128
2015	Same catch as in 2013	2.802	2.726	3.649	3.7	3.326	2.538
2016	No new advice, same as 2015	2.802	2.726	3.357	3.7		
2017	Precautionary approach (same value as advised catches for 2016)	≤ 2.802	≤ 2.726				
2018	Precautionary approach (same value as advised catches for 2016)	≤ 2.802	≤ 2.726				

\* Subarea 8 not included.

**Table 9.3.2.6** Black scabbardfish in the Northeast Atlantic. History of ICES advice, the agreed TAC, and ICES landings in subareas 1, 2, 4, 10, and 14 and in divisions 3.a and 5.a (adjacent areas). Weights are in thousand tonnes.

Year	ICES advice	Predicted catch corresp. to advice	EU TAC subareas 1– 4	ICES landings in other areas*
2003	<i>Status quo</i> exploitation level	-	0.03	0.039
2004	Biennial	-	0.03	0.135
2005	Fishery should not be allowed to expand, unless proven to be sustainable	-	0.03	0.169
2006	Biennial	-	0.03	0.058
2007	Fishery should not be allowed to expand, unless proven to be sustainable	-	0.015	0.003
2008	Biennial	-	0.015	0.075
2009	Fishery should not be allowed to expand, unless proven to be sustainable	-	0.012	0.1812**
2010	Biennial	-	0.012	0.3362**
2011	Fishery should not be allowed to expand, and a reduction in catches should be considered	-	0.012	0.3365**
2012	No new advice, same as 2011		0.009	0.8668**
2013	Fisheries should not be allowed to expand until they can be shown to be sustainable		0.009	0.5810
2014	No new advice, same as 2013		0.009	0.3981
2015	should be maintained at same level as in 2013	0.366	0.009	0.5084
2016	No new advice, same as 2015	0.366	0.009	
2017	Precautionary approach (same advised catches value as given for 2016)	≤0.366		
2018	Precautionary approach (same advised catches value as given for 2016)	≤0.366		

\* Subareas 1–4, 10, and 14, and Division 5.a.

\*\* Values revised in 2016.

### History of catch and landings

**Table 9.3.2.7** Black scabbardfish in the Northeast Atlantic. Catch distribution by fleet in 2015 as estimated by ICES.

Total catch (2015) *	Landings			Discards
6355 t	Trawl fisheries (Northern part)	Longline fisheries (Southern part)	Trawl and longline fisheries (other areas)	Negligible
	3316 t (52%)	2533 t (40%)	508 t* (8%)	

\* Catches are likely to include *A. intermedius*, but the proportion is not quantified.

**Table 9.3.2.8** Black scabbardfish in the Northeast Atlantic. History of ICES estimated landings (in tonnes) in subareas 6, 7, and 12 and in Division 5.b presented by each country participating in the fishery.

Year	Faroes	France	UK (E,W,S)	Spain	Germany	Ireland	Netherlands *	Lithuania*	Estonia *	Poland*	Russia	Iceland	Total
1988	0	0	0	0	0	0	0	0	0	0	0		0
1989	46	308	0	0	0	0	0	0	0	0	0		354
1990	12	1449	0	0	0	0	0	0	0	0	0		1461
1991	1	2536	0	0	0	0	0	0	0	0	0		2537
1992	7	3540	0	0	0	0	0	0	0	0	0		3547
1993	1315	3511	0	0	150	8	0	0	0	0	0		4984
1994	893	3102	2	0	91	3	0	0	0	0	0		4091
1995	550	3437	18	0	3	0	0	0	0	0	0		4008
1996	244	3775	37	41	2	0	0	0	0	0	0		4099
1997	123	2806	237	99	0	0	0	0	0	0	0		3265
1998	56	2416	149	136	0	0	0	0	0	0	0		2757
1999	13	2109	198	109	0	1	11	0	0	0	0		2440
2000	117	3745	426	327	0	59	7	0	0	0	0		4681
2001	406	5007	729	116	0	68	0	3	225	0	226		6779
2002	1362	4626	1080	1125	0	1050	23	9	0	2	0		9277
2003	1497	3423	104	446	0	160	2	13	7	3	7		5663
2004	859	3093	197	230	0	293	0	86	5	0	5		4768
2005	593	2881	101	239	0	79	0	5	12	0	11		3920
2006	758	2214	65	1009	0	72	0	1	5	0	3		4127
2007	754	2299	53	9	0	69	0	0	7	0	0		3192
2008	1747	2687	26	53	0	0	14	0	0	0	5		4532
2009	1165	1795	81	103	0	0	0	0	0	0	0		3144
2010	916	2002	104	290	0	0	0	0	0	0	0		3312
2011	493	2121	1	113	0	0	0	0	0	0	0		2728
2012	130	1752	34	117	0	0	0	0	0	0	0		2034
2013	583	2155	57	109	0	0	0	0	0	0	0		2904
2014	730	2055	110	149	0	0	3	0	0	0	0		3048
2015	730	2197	159	224	0	0	5	0	0	0	0		3316

\* Official landings.

**Table 9.3.2.9** Black scabbardfish in the Northeast Atlantic. History of ICES estimated landings (in tonnes) in Subarea 8 and in Division 9.a, presented by each country participating in the fishery.

Year	France	Spain	Portugal	Total
1988	0	0	2602	2602
1989	0	0	3473	3473
1990	0	0	3274	3274
1991	1	0	3978	3979
1992	9	0	4389	4398
1993	11	0	4513	4524
1994	5	0	3429	3434
1995	0	0	4272	4272
1996	0	3	3686	3689
1997	1	1	3553	3555
1998	2	4	3147	3153
1999	11	0	2741	2753
2000	35	1	2371	2407
2001	28	1	2744	2773
2002	35	1	2692	2728
2003	34	1	2630	2665
2004	39	1	2463	2503
2005	25	1	2746	2772
2006	52	0	2674	2726
2007	28	1	3453	3481
2008	45	1	3602	3647
2009	19	1	3601	3620
2010	17	0	3453	3470
2011	18	0	3476	3494
2012	14	30	2668	2711
2013	7	3	2130	2140
2014	9	0	2109	2118
2015	5	0	2528	2533

**Table 9.3.2.10** Black scabbardfish in the Northeast Atlantic. History of ICES estimated landings (in tonnes) in subareas 2, 4, 10, and 14, and in Division 5.a, presented by each country participating in the fishery.

Year	France	Faroes	UK(Scotland)	UK (E,W,S)	Germany *	Iceland	Portugal	Ireland	Spain	Unallocated	Total
1988	0	0	0	0	0	0	0	0	0	0	0
1989	3	0	0	0	0	0	0	0	0	0	3
1990	71	0	0	0	0	0	0	0	0	0	71
1991	107	0	0	0	0	0	166	0	0	0	273
1992	219	370	0	0	0	0	0	0	0	0	589
1993	34	0	0	0	0	0	2	0	0	0	36
1994	45	0	0	0	3	1	0	0	0	0	49
1995	6	0	2	0	0	0	3	0	0	0	11
1996	6	11	1	0	0	0	0	0	0	0	18
1997	0	3	2	0	0	1	0	0	0	0	6
1998	2	33	9	0	0	0	5	0	0	0	49
1999	4	0	3	0	0	6	46	0	0	0	58
2000	2	0	3	0	0	10	112	0	90	0	217
2001	1	0	10	1	0	5	0	0	0	0	18
2002	0	2	24	0	0	13	0	0	8	0	47
2003	1	0	4	0	0	14	91	0	2	0	112
2004	5	111	0	0	0	19	2	0	0	0	136
2005	2	83	0	0	0	19	323	0	0	0	427
2006	13	10	1	0	0	23	55	0	0	0	102
2007	1	1	0	0	0	1	0	0	0	0	3
2008	0	75	0	0	0	0	0	0	0	0	75
2009	5	157	0	0	0	15	5	0	0	0	182
2010	16	53	0	0	0	109	49	0	111	0	338
2011	1	25	0	0	0	172	139	0	0	0	337
2012	0	4	0	0	0	365	458	0	39	49	916
2013	1	0	0	0	0	324	206	0	50	40	621
2014	10	30	0	0	0	358	0	0	0	0	398
2015	2	234	0	0	0	265	7	0	0	0	508

\* Official landings.

**Table 9.3.2.11** Black scabbardfish in the Northeast Atlantic. Landings inside and outside the NEAFC Regulatory Area (RA) as estimated by ICES. Landings in tonnes.

Year	Inside the NEAFC RA	Outside the NEAFC RA	Landings
2014	179	5375	5554
2015	292	6063	6355



## Summary of the assessment

**Table 9.3.2.12** Black scabbardfish in the Northeast Atlantic. Assessment summary.

Year	Total abundance index (numbers in millions)			Harvest rate	Northern part abundance index (numbers in millions)			Southern part abundance index (numbers in millions)		
	Percentiles				Percentiles			Percentiles		
	Estimate	97.5%	2.5%		Estimate	97.5%	2.5%	Estimate	97.5%	2.5%
2001/2002	56.848	174.712	20.991	0.0401	33.902	117.156	10.332	22.946	57.556	10.659
2002/2003	63.0118	160.786	28.875	0.0361	34.430	100.606	12.336	28.582	60.180	16.540
2003/2004	84.0048	176.969	41.813	0.0224	52.021	123.043	20.193	31.984	53.925	21.619
2004/2005	80.1858	182.3369	41.012	0.0214	49.146	134.593	20.251	31.038	47.743	20.761
2005/2006	76.103	177.3869	36.296	0.0221	48.892	137.282	18.121	27.211	40.104	18.175
2006/2007	84.0233	186.2249	40.077	0.0209	56.616	148.921	20.137	27.407	37.303	19.940
2007/2008	84.540	191.100	35.8476	0.0272	54.434	151.686	12.999	30.106	39.414	22.848
2008/2009	96.272	246.234	37.470	0.0229	66.754	208.716	14.649	29.518	37.518	22.821
2009/2010	88.158	219.861	40.926	0.0236	59.546	183.728	18.888	28.612	36.132	22.038
2010/2011	90.727	210.709	42.932	0.0220	59.667	172.202	18.514	31.060	38.507	24.417
2011/2012	89.241	202.735	45.55885	0.0260	58.308	164.626	21.098	30.933	38.110	24.460
2012/2013	84.593	180.328	45.4888	0.0229	54.127	142.803	21.393	30.466	37.525	24.095
2013/2014	86.515	170.720	48.868	0.0216	57.216	134.518	25.790	29.299	36.202	23.078

## Sources and references

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