

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

ICES stock advice

ICES advises that when the precautionary approach is applied, catches should be no more than 4506 tonnes in each of the years 2021 and 2022.

Distributed by area, this corresponds to annual catches of no more than 2143 tonnes in subareas 6 and 7 and divisions 5.b and 12.b, annual catches of no more than 2084 tonnes in Subarea 8 and Division 9.a, and annual catches of no more than 280 tonnes in subareas 1, 2, 4, and 10 and divisions 3.a and 5.a.

Note: This advice sheet is abbreviated due to the Covid-19 disruption. The previous advice issued for 2019 and 2020 is attached as Annex 1.

Stock development over time

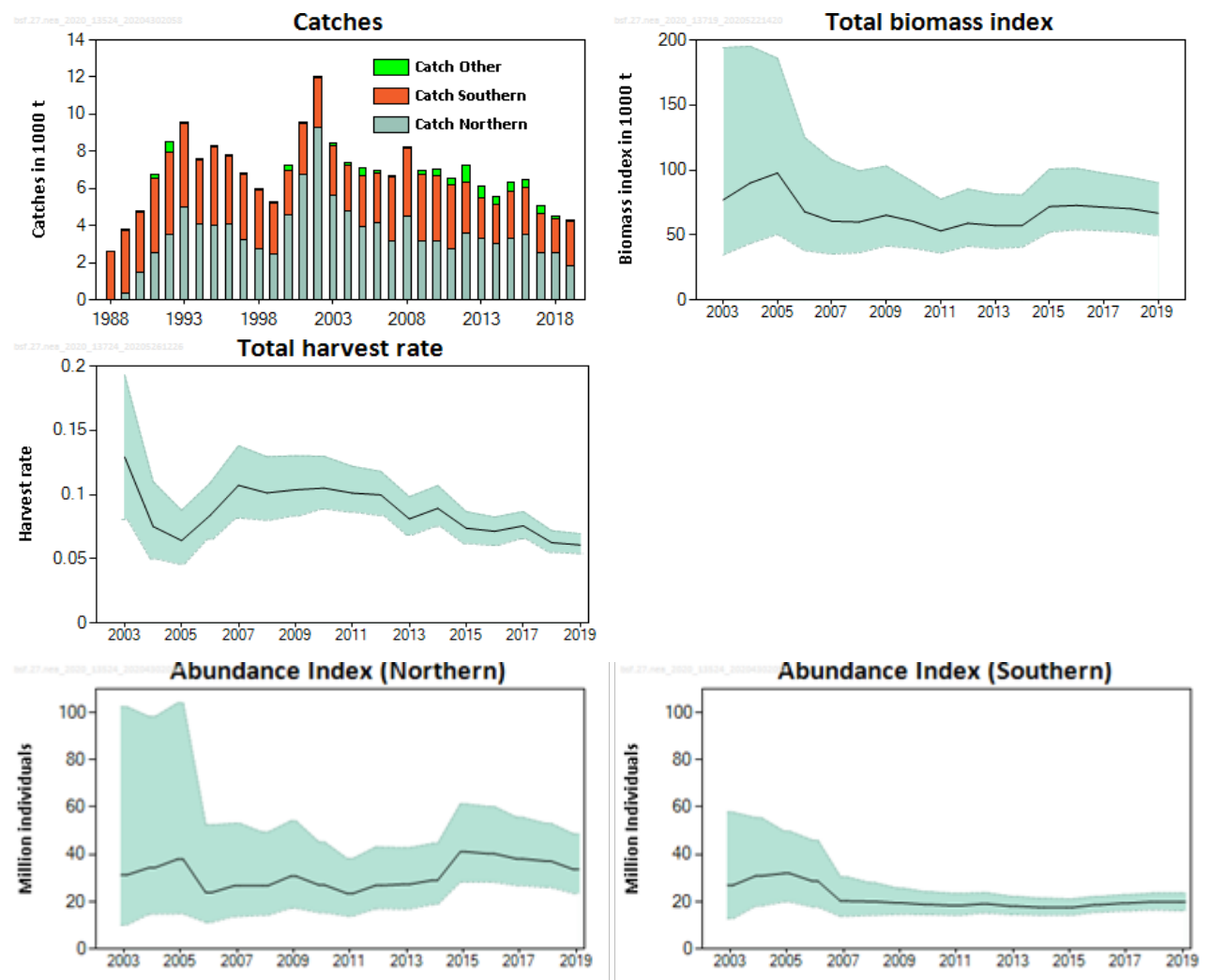


Figure 1 Black scabbardfish in the Northeast Atlantic. Top left: ICES estimates of catches (in thousand tonnes) in the northern part (subareas 6 and 7 and divisions 5.b and 12.b), southern part (Subarea 8 and Division 9.a), and the adjacent areas (labelled as “other”). Top right: Total biomass index (in thousand tonnes). Middle: Estimated harvest rates (in biomass) 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). Shaded areas represent the 2.5 and 97.5 percentiles.

Stock and exploitation status

Table 1 Black scabbardfish in the Northeast Atlantic. State of the stock and the fishery relative to reference points.

		Fishing pressure			Stock size					
		2017	2018	2019	2017	2018	2019			
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	B_{MGT}	—	—	—	Not applicable
Qualitative evaluation	-	↗	↘	→	Stable	-	→	→	→	Stable

Catch scenarios

The precautionary buffer has never been applied previously. It was applied this year as the stock size is not increasing, while there is evidence of decreasing fishing effort (ICES, 2020).

Table 2 Black scabbardfish in the Northeast Atlantic. The basis for the catch scenarios*.

Minimum slope of the two component slopes		-0.048
Uncertainty cap	Not applied	-
Recent advised catch for 2019–2020 issued in 2018		5914 tonnes
Discard rate		Negligible
Precautionary buffer	Applied	0.8
Catch advice **		4506 tonnes
% advice change ***		-24%

* The figures in the table are rounded. Calculations were carried out with unrounded inputs and computed values may not match precisely when calculated using the rounded figures in the table.

** [Recent advised catch for 2019–2020] × [1 + Minimum slope] × [Precautionary buffer].

*** Advice value for 2021 and 2022 relative to the advice value for 2019 and 2020.

The advised catch has decreased by more than 20% because of decreasing abundance of the northern component and the application of the precautionary buffer.

Issues relevant for the advice

The advised catch is split among areas, based on the catch distribution in 2013 (ICES, 2014).

This stock is classified as Category 4 in the NEAFC categorization of deep-sea species/stocks, which implies that fisheries are primarily restricted to coastal state exclusive economic zones (EEZs). Therefore, management measures are not taken by NEAFC unless complementary to coastal state conservation and management measures (NEAFC, 2016).

History of the advice, catch, and management

Table 3 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 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 Subarea 8 and Division 9.a	EU TAC in subareas 5–7 and 12	EU TAC in 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	-	-	3100	4000*	5661	2665
2004	Biennial	-	-	3100	4000*	4768	2503
2005	Significant effort reduction	-	-	3100	4000*	3923	2772
2006	Biennial	-	-	3100	4000*	4127	2726
2007	Constrain catches to the level before the expansion period (1990–1996)	3500	-	3000	4000	3192	3481
2008	Biennial	3500	-	3000	4000	4532	3647
2009	Constrain catches to the 50% level before the expansion period (1993–1997)	2000	2800	2700	3600	3160	3620
2010	Biennial	2000	2800	2400	3300	3202	3470
2011	Same advice as previously	2000	2800	2400	3300	2733	3494
2012	No new advice, same as 2011	2000	2800	2200	3300	3592	2711
2013	No more than 20% (in Division Vb, Subareas VI and VII, and Division XIIb) or 5% (in Subareas VIII and IX) catch increase	4700	3700	3100	3700	3332	2140
2014	No new advice, same as 2013	4700	3700	4000	3700	3048	2118
2015	Same catch as in 2013	2802	2726	3649	3700	3291	2532
2016	No new advice, same as 2015	2802	2726	3357	3700	3545	2476
2017	Precautionary approach (same value as advised catches for 2016)	≤ 2802	≤ 2726	2954	3330	2709	2151
2018	Precautionary approach (same value as advised catches for 2016)	≤ 2802	≤ 2726	2600	2997	2545	1801
2019	Precautionary approach (5914 tonnes**)	≤ 2812	≤ 2735	2470	2832	1839	2409
2020	Precautionary approach (same value as advised catches for 2019)	≤ 2812	≤ 2735	2470	2832		
2021	Precautionary approach (4506 tonnes**)	≤ 2143	≤ 2084				
2022	Precautionary approach (same value as advised catches for 2021)	≤ 2143	≤ 2084				

* Subarea 8 not included.

** Total advice for entire assessed stock.

Table 4 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 tonnes.

Year	ICES advice	Predicted catch corresp. to advice	EU TAC in subareas 1–4	ICES landings in other areas*
2003	<i>Status quo</i> exploitation level	-	30	39
2004	Biennial	-	30	135
2005	Fishery should not be allowed to expand, unless proven to be sustainable	-	30	0.169
2006	Biennial	-	30	58
2007	Fishery should not be allowed to expand, unless proven to be sustainable	-	15	3
2008	Biennial	-	15	75
2009	Fishery should not be allowed to expand, unless proven to be sustainable	-	12	181
2010	Biennial	-	12	336
2011	Fishery should not be allowed to expand, and a reduction in catches should be considered	-	12	336
2012	No new advice, same as 2011		9	867
2013	Fisheries should not be allowed to expand until they can be shown to be sustainable		9	581
2014	No new advice, same as 2013		9	398
2015	Should be maintained at same level as in 2013	366	9	508
2016	No new advice, same as 2015	366	9	441
2017	Precautionary approach (same advised catches value as given for 2016)	≤ 366	9	364
2018	Precautionary approach (same advised catches value as given for 2016)	≤ 366	9	170
2019	Precautionary approach (5914 tonnes**)	≤ 367	-	69
2020	Precautionary approach (same value as advised catches for 2019)	≤ 367	-	
2021	Precautionary approach (4506 tonnes**)	≤ 280		
2022	Precautionary approach (same value as advised catches for 2021)	≤ 280		

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

** Total advice for entire assessed stock.

Table 5 Black scabbardfish in the Northeast Atlantic. Landings inside and outside the NEAFC Regulatory Area (RA) as estimated by ICES. Landings are in tonnes. Differences in the total landings with other tables are caused by catches that are not allocated (inside or outside).

Year	Inside the NEAFC RA	Outside the NEAFC RA	Landings	Proportion of catch inside the NEAFC RA (%)
2014	234	5333	5567	4.2
2015	50	6281	6331	0.78
2016	7	6455	6462	0.108
2017	1	5045	5046	0.0198
2018	3	4513	4516	0.066
2019	0	4317	4317	0

Summary of the assessment

Table 6 Black scabbardfish in the Northeast Atlantic. Assessment summary. High and low refers to the 2.5 and 97.5 percentiles.

Year	Total harvest rate (biomass)			Catches				Total biomass index			Northern abundance			Southern abundance		
	Total harvest rate (biomass)	High	Low	Total	Northern	Southern	Other	Total biomass index	High	Low	Low	Northern abundance	High	Low	Southern abundance	High
1988				2602	0	2602	0									
1989				3830	354	3473	3									
1990				4805	1461	3274	71									
1991				6790	2537	3979	273									
1992				8534	3547	4398	589									
1993				9544	4984	4524	36									
1994				7574	4091	3434	48									
1995				8291	4008	4272	11									
1996				7806	4099	3689	18									
1997				6826	3265	3555	6									
1998				5959	2757	3153	49									
1999				5251	2440	2753	58									
2000				7214	4591	2407	217									
2001				9570	6779	2773	18									
2002				12044	9269	2728	47									
2003	0.129	0.193	0.081	8437	5661	2665	112	34652	76976	194019	10.088	31.276	102.467	12.796	26.968	57.795
2004	0.075	0.110	0.050	7407	4768	2503	136	43510	90013	195077	14.726	34.403	98.247	18.137	30.897	55.506
2005	0.064	0.088	0.046	7123	3923	2772	427	50492	97645	185878	14.862	37.964	104.035	19.877	31.978	49.789
2006	0.084	0.109	0.065	6955	4127	2726	102	37999	67883	124954	11.239	23.828	52.445	17.721	28.743	46.003
2007	0.107	0.138	0.082	6676	3192	3481	3	35309	60576	107792	13.717	26.714	53.099	13.735	20.283	30.569
2008	0.101	0.129	0.080	8255	4532	3647	75	36330	60006	99268	14.265	26.771	49.367	14.175	20.081	28.062
2009	0.104	0.130	0.083	6962	3160	3620	182	41620	65226	103030	17.202	30.752	54.077	14.617	19.432	25.721
2010	0.105	0.130	0.089	7010	3202	3470	338	39820	60440	90667	15.36	27.023	45.18	14.521	18.783	24.167
2011	0.101	0.122	0.086	6564	2733	3494	338	36074	53117	77470	13.857	23.442	38.216	14.169	18.302	23.425
2012	0.100	0.118	0.084	7219	3592	2711	916	41463	59015	85265	16.996	26.849	43.019	15.147	19.059	23.681

Year	Total harvest rate (biomass)			Catches				Total biomass index			Northern abundance			Southern abundance		
	Total harvest rate (biomass)	High	Low	Total	Northern	Southern	Other	Total biomass index	High	Low	Low	Northern abundance	High	Low	Southern abundance	High
2013	0.081	0.098	0.069	6094	3332	2140	622	39634	57276	81496	16.849	27.342	42.762	14.509	18.108	22.27
2014	0.089	0.107	0.075	5567	3048	2118	401	40672	57340	80866	18.767	29.024	44.573	14.213	17.593	21.451
2015	0.074	0.087	0.062	6331	3291	2532	508	52223	71874	100668	28.248	41.134	61.275	14.231	17.507	21.156
2016	0.071	0.082	0.060	6462	3545	2476	441	54077	72745	101264	28.242	40.307	60.198	15.492	18.675	22.192
2017	0.076	0.087	0.066	5046	2530	2151	364	53229	71389	97436	26.812	38.126	55.653	16.034	19.366	22.917
2018	0.063	0.072	0.055	4516	2545	1801	170	52164	70152	94259	26.032	37.168	53.146	16.464	19.924	23.543
2019	0.061	0.069	0.054	4317	1839	2409	69	49488	66799	90121	23.516	33.648	48.659	16.082	19.823	23.6

Sources and references

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