

Cod (*Gadus morhua*) in divisions 7.e–k (western English Channel and southern Celtic Seas)

ICES advice on fishing opportunities

ICES advises that when the MSY approach and precautionary considerations are applied, there should be zero catch in 2023.

ICES notes the existence of a precautionary management plan, developed and adopted by one of the relevant management authorities for this stock.

Stock development over time

Fishing pressure on the stock is above F_{MSY} and between F_{pa} and F_{lim} , and spawning-stock size is below MSY $B_{trigger}$, B_{pa} , and B_{lim} .

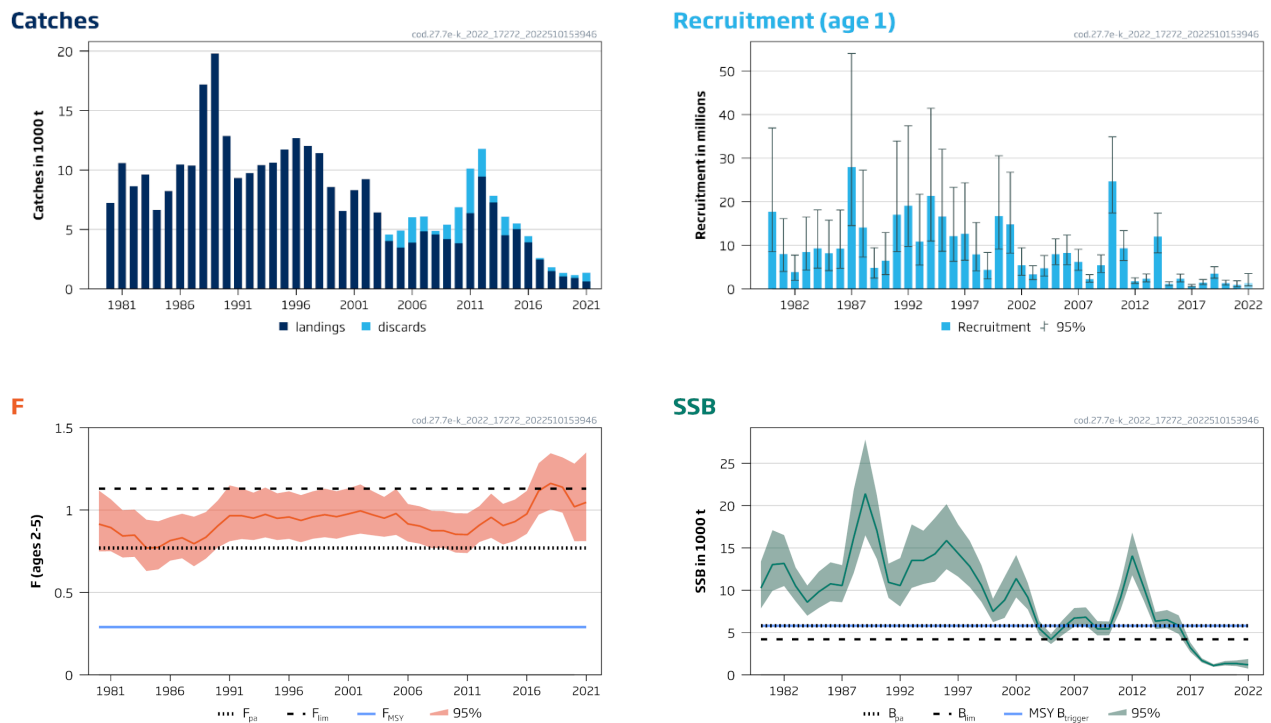


Figure 1 Cod in divisions 7.e–k. Summary of the stock assessment. Discard estimates are available from 2004. The assumed recruitment value for 2022 is shaded in a lighter colour.

Catch scenarios

Table 1 Cod in divisions 7.e–k. Assumptions made for the interim year and in the forecast.

Variable	Value	Notes
$F_{ages\ 2-5}$ (2022)	1.069	$F_{sq} = F_{average}$ (2019–2021).
SSB (2023)	1053	Short-term forecast; in tonnes
Recruitment _{age 1} (2022–2023)	1305	Median from resampled (2015–2021); in thousands
Total catch (2022)	1174	Short-term forecast, in tonnes

Table 2[†] Cod in divisions 7.e-k. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2023)	F _{total} (2023)	SSB (2024)	% SSB change*
ICES advice basis				
MSY approach: F = 0	0	0	2754	162
Other scenarios				
F _{MSY} × SSB ₂₀₂₃ /MSY B _{trigger}	80	0.050	2632	150
EU MAP**: F _{MSY lower} × SSB ₂₀₂₃ /MSY B _{trigger}	48	0.029	2682	155
EU MAP**: F _{MSY upper} × SSB ₂₀₂₃ /MSY B _{trigger}	113	0.070	2583	145
F=F _{MSY}	424	0.29	2120	101
F = 0	0	0	2754	162
F=F _{lim}	1194	1.13	1014	-3.7
F = F _{pa}	928	0.77	1385	32
SSB ₂₀₂₄ = B _{lim} ***				
SSB ₂₀₂₄ = B _{pa} = MSY B _{trigger} ***				
F = F ₂₀₂₂	1154	1.069	1069	1.5
SSB ₂₀₂₄ =SSB ₂₀₂₃	1210	1.156	992	-5.7
F=F _{MSY upper}	933	0.410	1904	81
F=F _{MSY lower}	262	0.170	2360	124

* SSB₂₀₂₄ relative to SSB₂₀₂₃.

** EU multiannual plan (MAP) for the Western Waters (EU, 2019).

***The B_{lim}, B_{pa}, and MSY B_{trigger} options were left blank because none of them can be achieved in 2024, even with zero catch in 2023.

The advice for 2023 is the same as the previous advice because there is no change in the perception of the stock.

Basis of the advice

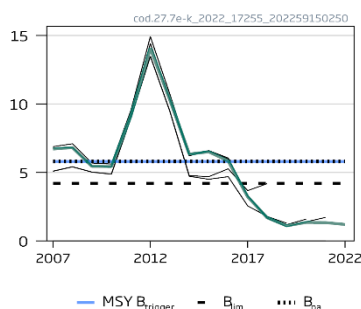
Table 3 Cod in divisions 7.e-k. The basis of the advice.

Advice basis	MSY approach
Management plan	ICES is aware of the multiannual management plan (MAP) which has been adopted by the EU for this stock (EU, 2019) and which ICES considers to be precautionary. There is no agreed shared management plan with UK for this stock, and ICES provides advice according to ICES MSY approach. Catch scenarios consistent with the MAP F _{MSY} ranges are provided.

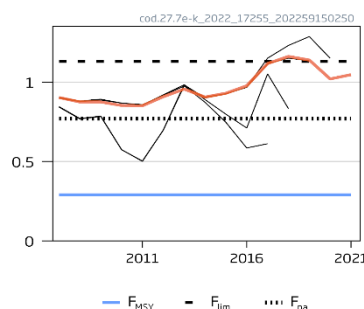
Quality of the assessment

The estimate of fishing mortality is highly sensitive to the additional annual data; this is due to the low stock size.

SSB (1000 t)



F (ages 2-5)



Rec (age 1; Millions)

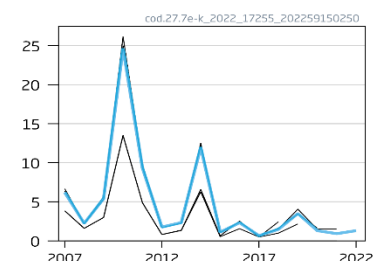


Figure 2 Cod in divisions 7.e-k. Historical assessment results (final-year SSB estimate and recruitment assumption included). The assessment was benchmarked in 2020 (ICES, 2020). The reference points were revised in 2020 (following a benchmark), and only assessment results from the last three years should be compared to the reference points indicated.

[†] Version 2: F_{MSY lower} and F_{MSY upper} options added to table 2.

Issues relevant for the advice

ICES provides zero-catch advice for this stock in 2023 because the median SSB remains below B_{lim} by 2024 under all catch scenarios.

The assumed recruitment in 2022 and 2023 used in the forecast constitutes a significant part (70%) of the projected SSB in 2024 (45% and 25%, respectively).

There was an observed change in fishing behaviour in 2021 with increased levels of discarding of fish above MCRS which may be due to restrictive TACs and delay in total TAC attribution. The discard rate in 2021 was 54% compared to an average of 20% for the previous 3 years. As a result of this large change, recent discard ratio is not considered a plausible assumption to split the catch forecast. Therefore, ICES does not provide separate landings and discards estimates for 2023.

Landings are adjusted to include those reported from rectangles 33E2 and 33E3 in Division 7.a because they are considered part of this stock. The 2021 reallocation (52 tonnes) accounts for 8.3% of ICES estimated division 7.b–k landings and 28% of the Irish Sea (Division 7.a) landings. This should be taken into consideration when setting TACs for the two management areas (divisions 7.a and 7.e–k) as a portion of the catch taken under the Division 7.a TAC is considered to be part of the divisions 7.e–k stock.

Mixed-fisheries considerations

Cod in divisions 7.e–k is caught as part of a mixed fishery and almost all fisheries operating with demersal gears catch cod (ICES, 2021).

Reference points

Table 4 Cod in divisions 7.e–k. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	5800	B_{pa} ; in tonnes	ICES (2020)
	F_{MSY}	0.29	Segmented regression with B_{lim} (EqSim).	ICES (2020)
Precautionary approach	B_{lim}	4200	B_{loss} , lowest observed SSB from which there has been some recovery (2005) rounded value; in tonnes	ICES (2020)
	B_{pa}	5800	$B_{lim} \times 1.4$; in tonnes	ICES (2020)
	F_{lim}	1.13	Segmented regression with B_{lim} (EqSim)	ICES (2020)
	F_{pa}	0.77	F_{P05} ; the F that leads to SSB $\geq B_{lim}$ with 95% probability	ICES (2020)
Management plan (MAP)*	MAP MSY $B_{trigger}$	5800	MSY $B_{trigger}$; in tonnes	EU (2019), ICES (2020)
	MAP B_{lim}	4200	B_{lim} ; in tonnes	EU (2019), ICES (2020)
	MAP F_{MSY}	0.29	F_{MSY}	EU (2019), ICES (2020)
	MAP range F_{lower}	0.17	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY	EU (2019), ICES (2020)
	MAP range F_{upper}	0.41	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY	EU (2019), ICES (2020)

* EU multiannual plan (MAP) for the Western Waters (EU, 2019).

Basis of the assessment

Table 5 Cod in divisions 7.e–k. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2022a)
Assessment type	Age-based stochastic analytical assessment (SAM; ICES, 2022b)
Input data	Commercial landings, ages, and length frequencies from sampling by métier; one combined VAST-modelled survey index (combined IGFS-WIBTS-Q4 [G7212] and EVHOE-WIBTS-Q4 [G9527]); one commercial index (FR-OTDEF Q2+3+4 trawlers in divisions 7.e–k); fixed maturity ogive derived from UK-WCGFS survey Q1 data; age-dependent natural mortalities (Lorenzen, 1996)
Discards and bycatch	Included in the assessment. Observer-based estimates from 2004; discards and bycatch prior to that (between 1980 and 2003) are model estimated. No discards proportion was provide in the 2022 advice.
Indicators	None
Other information	Benchmarked at WKCELTIC 2020 (ICES, 2020)
Working group	Working Group for the Celtic Seas Ecoregion (WGCSE)

History of the advice, catch, and management

Table 6 Cod in divisions 7.e–k. ICES advice and official landings and ICES catch estimates. All weights are in tonnes.

Year	ICES advice	Landings corresponding to advice	Catch corresponding to advice	Agreed TAC*	ICES landings ^{^^^}	ICES discards
1987	Reduce F	< 6400**			10390	
1988	No increase in F; TAC	7000**			17196	
1989	No increase in F; TAC	8600**			19804	
1990	No increase in F; TAC	9200**			12878	
1991	TAC; SSB mean	4500**			9336	
1992	Appropriate to reduce F	-			9747	
1993	20% reduction in F	6500**		17500	10416	
1994	20% reduction in F	5600**		17000	10620	
1995	20% reduction in F	4700***		17000	11710	
1996	20% reduction in F	4700***		20000	12681	
1997	20% reduction in F	7400***		20000	12028	
1998	10% reduction in F	8800^		20000	11418	
1999	Reduce F below F_{pa}	9200^		19000	8580	
2000	Reduce F below F_{pa}	< 7600^^		16000	6539	
2001	40% reduction in F	< 4300^^		10500	8316	
2002	45% reduction in F	< 5300^^		8700	9239	
2003	60% reduction in F	< 3800^^		n/a	6425	
2004	90% reduction in F or management plan	< 700		n/a	4027	543
2005	17% reduction in F	< 5200		6200	3478	1426
2006	No increase in effort (should have been “reduce effort”)	Cannot be estimated		5580	3902	2118
2007	Zero catch	0		4743	4842	1248
2008	Zero catch	0		4316	4577	306
2009	50% reduction in F	< 2600		4023	4187	1229
2010	Substantial catch reduction	-		4023	3831	3040
2011	Catch and effort reduction	-		5379	6376	3749
2012	MSY framework	< 10000		10059	9443	2341
2013	MSY framework	< 10200		10200	7273	562
2014	MSY approach	< 6848		6848	4512	1569
2015	MSY approach	< 4024		5072	5028	483
2016	MSY approach	≤ 3569		4565	3924	525
2017	MSY approach	≤ 1447		2830	2471	134
2018	MSY approach	≤ 3076	≤ 3428	3076	1496	316
2019	MSY approach		0	1610	1051	300
2020	MSY approach		0	805	922	231
2021	MSY approach and precautionary considerations		0	805	627	733
2022	MSY approach and precautionary considerations		0	644		

Year	ICES advice	Landings corresponding to advice	Catch corresponding to advice	Agreed TAC*	ICES landings ^{^^^}	ICES discards
2023	MSY approach and precautionary considerations		0			

* TAC covers subareas 7 (except Division 7.a) and 8. From 2009 onwards, the TAC covers divisions 7.b–c and 7.e–k, subareas 8–10, and EU waters of CECAF Division 34.1.1 (with a separate TAC established for Division 7.d).

** For the division 7.f–g stock component.

*** For the division 7.f–h stock component.

^ For the division 7.e–h stock component.

^^ For the division 7.e–k stock component.

^^^ Landings have been adjusted to include those taken or reported in rectangles 33E2 and 33E3 since 2004.

History of the catch and landings

Table 7 Cod in divisions 7.e–k. Catch distribution by fleet in 2021, as estimated by ICES.

Catch	Landings				Discards			
	Otter trawls	Seine nets	Beam trawls	Other gears	Otter trawls	Seine nets	Beam trawls	Other gears
	70%	8%	11%	11%	90%	1%	2%	7%
1360 tonnes	627 tonnes				733 tonnes			

Table 8 Cod in divisions 7.e–k. History of official commercial landings, presented by country and discard estimates. All weights are in tonnes.

Year	Belgium	France	Ireland	UK	Others	Total	Discard estimates	Landings taken or reported in rectangles 33E2 and 33E3*
1971	n/a	n/a	n/a	n/a	n/a	5782	n/a	n/a
1972	n/a	n/a	n/a	n/a	n/a	4737	n/a	n/a
1973	n/a	n/a	n/a	n/a	n/a	4015	n/a	n/a
1974	n/a	n/a	n/a	n/a	n/a	2898	n/a	n/a
1975	n/a	n/a	n/a	n/a	n/a	3993	n/a	n/a
1976	n/a	n/a	n/a	n/a	n/a	4818	n/a	n/a
1977	n/a	n/a	n/a	n/a	n/a	3059	n/a	n/a
1978	n/a	n/a	n/a	n/a	n/a	3647	n/a	n/a
1979	n/a	n/a	n/a	n/a	n/a	4650	n/a	n/a
1980	n/a	n/a	n/a	n/a	n/a	7243	n/a	n/a
1981	n/a	n/a	n/a	n/a	n/a	10597	n/a	n/a
1982	n/a	n/a	n/a	n/a	n/a	8766	n/a	n/a
1983	n/a	n/a	n/a	n/a	n/a	9641	n/a	n/a
1984	n/a	n/a	n/a	n/a	n/a	6631	n/a	n/a
1985	n/a	n/a	n/a	n/a	n/a	8317	n/a	n/a
1986	n/a	n/a	n/a	n/a	n/a	10475	n/a	n/a
1987	n/a	n/a	n/a	n/a	n/a	10228	n/a	n/a
1988	554	13863	1480	1292	2	17191	n/a	n/a
1989	910	15801	1860	1223	15	19809	n/a	n/a
1990	621	9383	1241	1346	158	12749	n/a	n/a
1991	303	6260	1659	1094	20	9336	n/a	n/a
1992	195	7120	1212	1207	13	9747	n/a	n/a
1993	391	8317	766	945	6	10425	n/a	n/a
1994	398	7692	1616	906	8	10620	n/a	n/a
1995	400	8321	1946	1034	8	11709	n/a	n/a
1996	552	8981	1982	1166	0	12681	n/a	n/a
1997	694	8662	1513	1166	0	12035	n/a	n/a
1998	528	8096	1718	1089	0	11431	n/a	n/a
1999	326	5488	1883	897	0	8594	n/a	n/a
2000	208	4281	1302	744	0	6535	n/a	n/a
2001	347	6033	1091	838	0	8309	n/a	n/a
2002	555	7368	694	618	0	9235	n/a	n/a

Year	Belgium	France	Ireland	UK	Others	Total	Discard estimates	Landings taken or reported in rectangles 33E2 and 33E3*
2003	136	5222	517	346	0	6221	n/a	n/a
2004	153	2934	657	281	1	4027	543	108
2005	186	2127	855	309	1	3478	1426	54
2006	101	2431	995	371	3	3902	2118	103
2007	107	3113	1208	411	3	4842	1248	527
2008	65	2994	1222	295	1	4577	306	558
2009	48	3020	847	267	5	4187	1229	193
2010	52	2449	1030	296	3	3831	3040	143
2011	123	4808	1010	427	7	6376	3749	147
2012	290	6900	1539	706	8	9443	2341	85
2013	202	5051	1470	548	3	7273	562	76
2014	141	2715	1189	466	0	4512	1569	24
2015	121	3373	1109	422	3	5028	483	39
2016	97	2579	881	365	1	3924	525	40
2017	82	1578	623	188	0	2471	134	19
2018	49	611	706 †	130	0	1496†	316	20
2019	43	369	554 †	84	n/a	1051†	300	37
2020**	18	371	487	44	2	922	231	71
2021**	11	261	309	46	0	627	733	52

* Included in Ireland landings estimates. Landings in the southern part of Division 7.a (rectangles 33E2 and 33E3) are included in the assessment and are considered to be part of the stock.

** Preliminary official landings.

n/a = not available.

† Incomplete/missing as a result of part of the data being unavailable under data confidentiality clauses.

Summary of the assessment

Table 9 Cod in divisions 7.e–k. Assessment summary. Recruitments are in thousands, weights in tonnes.

Year	Recruitment age 1			SSB			Landings	Discards	F ages 2–5		
	Low	Value	High	Low	Value	High			Low	Value	High
1980	8502	17720	36932	7843	10247	13387	7241		0.75	0.92	1.12
1981	3988	8019	16127	9933	13034	17105	10595		0.75	0.89	1.07
1982	1949	3889	7760	10494	13167	16521	8639		0.71	0.84	1.00
1983	4312	8433	16495	8677	10489	12681	9635		0.72	0.85	1.00
1984	4767	9296	18131	6982	8588	10565	6642		0.63	0.77	0.94
1985	4205	8141	15762	7912	9830	12213	8241		0.64	0.77	0.93
1986	4695	9219	18101	8700	10758	13301	10475		0.69	0.82	0.96
1987	14496	27983	54019	8582	10551	12972	10390		0.71	0.83	0.98
1988	7264	14070	27253	12026	16219	21873	17196		0.66	0.80	0.96
1989	2454	4807	9419	16488	21417	27820	19804		0.71	0.84	0.99
1990	3257	6490	12932	13673	17023	21193	12878		0.77	0.90	1.06
1991	8528	17005	33908	9097	10934	13143	9336		0.81	0.97	1.15
1992	9725	19077	37422	8075	10555	13797	9747		0.82	0.97	1.13
1993	5449	10876	21710	10277	13519	17783	10416		0.82	0.95	1.11
1994	10979	21331	41447	10730	13521	17038	10620		0.83	0.97	1.14
1995	8616	16618	32050	11018	14295	18546	11710		0.82	0.95	1.10
1996	6327	12144	23307	12485	15874	20184	12681		0.83	0.96	1.11
1997	6588	12659	24326	11592	14352	17770	12028		0.81	0.94	1.09
1998	4120	7921	15232	10363	12818	15855	11418		0.83	0.96	1.11
1999	2287	4374	8365	8628	10582	12978	8580		0.84	0.97	1.13
2000	9099	16676	30560	6228	7486	8999	6539		0.83	0.96	1.12
2001	8194	14810	26768	6725	8824	11577	8316		0.84	0.98	1.13
2002	3108	5412	9426	9147	11384	14167	9239		0.86	1.00	1.16
2003	2123	3354	5296	7727	9163	10867	6425		0.85	0.97	1.12
2004	2937	4741	7653	4694	5463	6358	4027	543	0.84	0.95	1.08
2005	5530	7966	11477	3640	4190	4823	3478	1426	0.85	0.98	1.13
2006	5536	8275	12371	4708	5522	6477	3902	2118	0.81	0.92	1.04
2007	4238	6203	9079	5695	6708	7900	4842	1248	0.80	0.90	1.02
2008	1541	2242	3262	5818	6814	7981	4577	306	0.77	0.88	1.00
2009	3739	5403	7808	4656	5438	6350	4187	1229	0.77	0.88	0.99
2010	17401	24640	34892	4675	5431	6310	3831	3040	0.74	0.85	0.98
2011	6505	9323	13361	7692	9140	10861	6376	3749	0.74	0.85	0.98
2012	1229	1771	2551	11764	14076	16842	9443	2341	0.81	0.91	1.02
2013	1599	2337	3414	8747	10315	12165	7273	562	0.83	0.96	1.10
2014	8271	11992	17387	5420	6343	7423	4512	1569	0.79	0.91	1.04
2015	759	1111	1627	5510	6499	7666	5028	483	0.81	0.93	1.06
2016	1586	2320	3394	4832	5834	7043	3924	525	0.86	0.98	1.12
2017	447	666	992	2705	3224	3843	2471	134	0.97	1.12	1.28
2018	1000	1472	2168	1450	1689	1966	1496	316	1.00	1.16	1.35
2019	2423	3502	5062	940	1097	1279	1051	300	0.98	1.14	1.32
2020	856	1305	1990	1105	1346	1640	922	231	0.81	1.02	1.28
2021	464	923	1837	1036	1334	1716	627	733	0.81	1.05	1.35
2022	666	1305*	3502	732	1196	1879					

*Median resampled (2015–2021).

Sources and references

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[Download the stock assessment data and figures.](#)

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