

Horse mackerel (*Trachurus trachurus*) in divisions 3.a, 4.b–c, and 7.d (Skagerrak and Kattegat, southern and central North Sea, eastern English Channel)

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, catches should be no more than 8969 tonnes in each of the years 2022 and 2023.

Stock development over time

Fishing pressure on the stock is above the F_{MSY} proxy (Figure 2); no reference points for stock size have been defined for this stock.

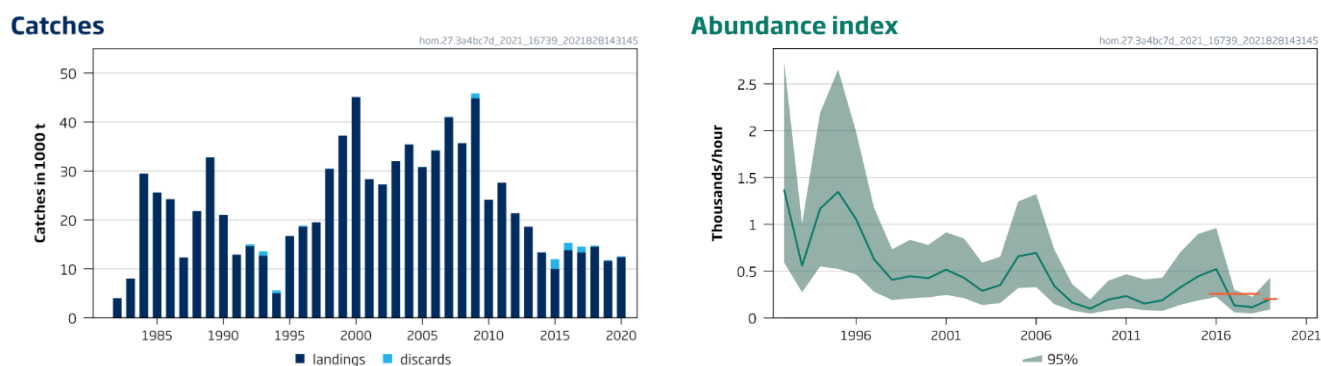


Figure 1 Horse mackerel in divisions 3.a, 4.b–c, and 7.d. Summary of the stock assessment. ICES landings and discards in quarters 1 and 2 from divisions 3.a and 4.a and in all quarters from divisions 4.b–c and 7.d. Discard estimates are only available for some years. Index of abundance of fish ≥ 20 cm length. The horizontal orange lines indicate the average of the most recent two years (with 2020 not available) and the previous three years.

Catch scenarios

The ICES framework for category 3 stocks was applied (ICES, 2012). The NS-IBTS (divisions 4.b–c, Q3 [G2829]) and FR-CGFS (division 7.d, Q4 [G3425]) were used to derive the index of stock development. The advice is based on the ratio of the mean of the last two index values (index A, with 2020 treated as missing) and the mean of the three preceding values (index B) multiplied by the recent advised catch.

The index is estimated to have decreased by more than 20% and thus the uncertainty cap was applied.

The precautionary buffer was last applied in 2017, and has therefore been considered this year. Fishing pressure is above the F_{MSY} proxy.; therefore, the precautionary buffer was applied.

Discarding rate is estimated to be 1.65 % of total catch.

Table 1 Horse mackerel in divisions 3.a, 4.b–c, and 7.d. The basis for the catch scenarios.

Index A (2019–2020; 2020 not available)		201 ind./hour
Index B (2016–2018)		256 ind./hour
Ratio (A/B)		0.79
Uncertainty cap	Applied	0.8
Advised catch for 2020–2021		14 014 tonnes
Discard rate (average 2018–2020)		0.0165
Precautionary buffer	Applied	0.8
Catch advice **		8 969 tonnes
Projected landings corresponding to advice ***		8 821 tonnes
% advice change ^		-36 %

* The values in the table are rounded. Calculations were done with unrounded inputs, and computed values may not match exactly when calculated using the rounded values in the table.

** [(advice for 2020 and 2021 × uncertainty cap) × precautionary buffer].

*** [Catch advice × (1 – discard rate)].

^ Advice value for 2022 relative to advice value for 2021.

The catch advice has been reduced because of the decline in the abundance index and the application of the precautionary buffer.

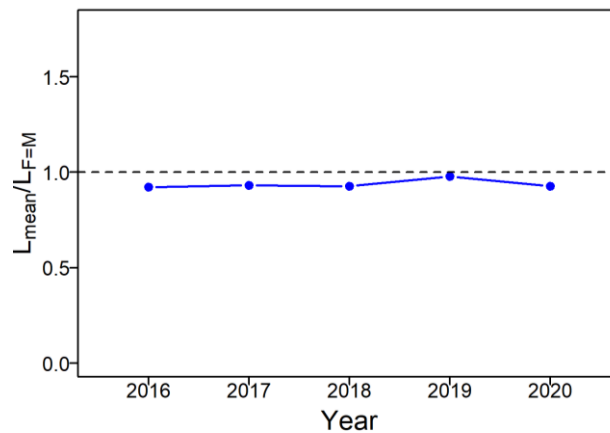


Figure 2 Horse mackerel in divisions 3.a, 4.b–c, and 7.d. The indicator ratio $L_{mean}/L_{F=M}$ from the length-based indicator method (ICES, 2018) is used for the evaluation of the exploitation status. The exploitation status is above the F_{MSY} proxy when the index ratio value is less than 1, which is indicated by the dashed line.

Basis of the advice

Table 2 Horse mackerel in divisions 3.a, 4.b–c, and 7.d. The basis of the advice.

Advice basis	Precautionary approach
Management plan	There is no management plan for horse mackerel in this area. ICES evaluated a proposed harvest control rule for a multiannual plan for horse mackerel in the North Sea (ICES, 2014). None of the options were considered as being in accordance with the precautionary approach.

Quality of the assessment

The FR-CGFS survey could not visit sampling stations in the northern part of the eastern English Channel in 2020 (30% of all stations); therefore, no reliable abundance index value for 2020 could be produced.

Issues relevant for the advice

Discarding in the target pelagic fisheries is considered negligible. Since 2015, discard information from some bottom-trawl fisheries that do not target horse mackerel, is available and discard estimates range between 1.6% and 16.7%. The average discard rate over 2018–2020 is 1.65%. However, discard information is considered to be incomplete, and discard estimates from earlier years have not been submitted to ICES.

Reference points

Table 3 North Sea horse mackerel in divisions 3.a, 4.b–c, and 7.d. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY B _{trigger}	Not defined		
	F _{MSY proxy}	$\frac{L_{mean}}{L_{F=M}} = 1^*$	Length-based indicator (LBI; ICES, 2018). Expected mean length of catch above L _c when F = M, assuming M/K = 1.5.	ICES (2021a)
Precautionary approach	B _{lim}	Not defined		
	B _{pa}	Not defined		
	F _{lim}	Not defined		
	F _{pa}	Not defined		
Management plan	SSB _{mgt}	Not defined		
	F _{mgt}	Not defined		

* No reference points are defined for this stock in terms of absolute values. The LBI-estimated values of the ratio $L_{mean}/L_{F=M}$ are used to estimate exploitation status relative to the proxy MSY reference point.

Basis of the assessment

Table 4 Horse mackerel in divisions 3.a, 4.b–c, and 7.d. Basis of the assessment and advice.

ICES stock data category	3 (ICES, 2021b)
Assessment type	Survey trends based assessment
Input data	Commercial catch, NS-IBTS (G2829) and FR-CGFS (G3425) data
Discards and bycatch	Included in the advice (on average 1.65% of total catch in 2018–2020)
Indicators	Length-based indicators
Other information	This stock has been benchmarked in 2017 (ICES, 2017)
Working group	Working Group on Widely Distributed Stocks (WGWIDE)

History of the advice, catch, and management

Table 5 Horse mackerel in divisions 3.a, 4.b–c, and 7.d. ICES advice and catch. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice ***	Agreed TAC *	ICES catch **
1987	Not assessed	-	30000	12336
1988	No advice	-	50000	21806
1989	No advice	-	45000	32788
1990	No advice	-	40000	21023
1991	No advice	-	45000	12913
1992	No advice	-	55000	15043
1993	No advice	-	60000	13617
1994	No advice	-	60000	5629
1995	No advice	-	60000	16756
1996	No advice	-	60000	18843
1997	No advice	-	60000	19540
1998	Develop and implement management plan	-	60000	30500
1999	Develop and implement management plan	-	60000	37224
2000	Develop and implement management plan	-	51000	45133
2001	No increase in catch	-	51000	28331
2002	No increase in catch from 1982–1997 average	< 18000	58000	27264
2003	No increase in catch from 1982–1997 average	< 18000	50000	32028
2004	No increase in catch from 1982–1997	< 18000	42000	35435
2005	No increase in catch from 1982–1997	< 18000	43000	30911
2006	No increase in catch from 1982–1997	< 18000	43000	34318
2007	No increase in catch from 1982–1997	< 18000	43000	41242
2008	No increase in catch from 1982–1997	< 18000	39000	35704
2009	Same advice as last year	< 18000	39000	46919
2010	Same advice as last year	< 18000	47000	24151
2011	No advice	-	40000	27619
2012	Reduce catches	-	44000	21378
2013	Reduce catches by 20%	< 25500	38000	18645
2014	Same advice as last year	< 25500	32000	13388
2015	Significant reduction in catches	< 15200	15200	12002
2016	Same advice value as in 2015	≤ 15200	15200	15341
2017	Precautionary approach	≤ 18247	18247	14579
2018	Precautionary approach	≤ 17517	15179	14773
2019	Precautionary approach (same advice as for 2018)	≤ 17517	15179	11803
2020	Precautionary approach	≤ 14014	13763	12587
2021	Precautionary approach (same advice as for 2020)	≤ 14014	14014	
2022	Precautionary approach	≤ 8969		
2023	Precautionary approach (same advice as for 2022)	≤ 8969		

* Until 2010 the TAC is for Division 2.a and Subarea 4 (EU waters only). From 2010 onwards the TAC is for divisions 3.a , 4.b–c, and 7.d (EU waters only).

** ICES catch includes catches from divisions 4.a and 3.a (quarters 1–2 only).

*** Total catch advice takes into account information on discarding from non-directed bottom-trawl fisheries, which first became available in 2016.

History of the catch and landings

Table 6 Horse mackerel in divisions 3.a, 4.b–c, and 7.d. Catch distribution by fleet in 2020 as estimated by ICES.

Catch (2020)	Landings				Discards
	Bottom trawl 3.5%	Pelagic trawl 39.4%	Seine 3.4%	Undefined gears 53.7%	
12587 tonnes	12386 tonnes				201 tonnes

Table 7 Horse mackerel in divisions 3.a, 4.b–c, and 7.d. History of commercial catch and landings; ICES estimated values are presented by area for each country participating in the fishery. All weights are in tonnes.

Year	Division 3.a	Division 4.a	Divisions 4.b–c	Division 7.d	Discards	Total
1982	2788*		-	1247		4035
1983	4420*		-	3600		8020
1984	25893*		-	3585		29478
1985	-		22897	2715		26750
1986	-		19496	4756		24648
1987	1138		9477	1721		11634
1988	396		18290	3120		23671
1989	436		25830	6522		33265
1990	2261		17437	1325		18762
1991	913		11400	600		12000
1992			13955	688	400	15043
1993			3895	8792	930	13617
1994			2496	2503	630	5689
1995	112		7948	8666	30	16756
1996	1657		7558	9416	212	18843
1997			14078	5452	10	19540
1998	3693		10530	16194	83	30500
1999			9335	27889		37224
2000	-	176	25934	19019	4	45133
2001	43	212	6686	21390	0	28331
2002	0	639	15303	11323	0	27264
2003	49	622	10309	21049	0	32028
2004	303	133	18544	16455	0	35435
2005	0	1331	13995	15522	62	30911
2006	185	2192	7996	23867	78	34318
2007	11	2051	9234	29808	139	41242
2008	27	910	2582	32185	0	35704
2009	21	314	20010	25537	1036	46919
2010	0	100	1969	22079	2	24151
2011	0	0	10435	17184	0	27619
2012	0	355	1559	19464	0	21378
2013	0	17	1453	17175	0	18645
2014	2	2	2604	10772	7	13388
2015	4	644	782	8568	2004	12002
2016	4	1629	1071	11110	1527	15341
2017		22	2557	10787	1213	14579
2018		1419	1413	11677	265	14773
2019	1	2571	1217	7829	185	11803
2020		2211	1098	9077	201	12587

*Divisions 3.a and 4.b–c combined.

Summary of the assessment

Table 8 Horse mackerel in divisions 3.a, 4.b–c, and 7.d. Abundance index of North Sea horse mackerel (in thousands/hour) obtained from the combination of the NS-IBTS in divisions 4.b–c in Q3 and the CGFS in Division 7.d in Q4. The High and Low columns represent the confidence intervals (95%) of the index.

Year	Low	Abundance index	High	Landings	Discards
1982				4035	
1983				8020	
1984				29478	
1985				25612	
1986				24252	
1987				12336	
1988				21806	
1989				32788	
1990				21023	
1991				12913	
1992	0.592	1.372	2.740	14643	400
1993	0.273	0.555	1.007	12687	930
1994	0.548	1.167	2.190	4999	630
1995	0.524	1.347	2.655	16726	30
1996	0.464	1.054	1.991	18631	212
1997	0.279	0.625	1.174	19530	10
1998	0.191	0.406	0.733	30417	83
1999	0.208	0.446	0.835	37224	
2000	0.218	0.424	0.779	45126	4
2001	0.246	0.516	0.914	28331	
2002	0.210	0.427	0.847	27264	
2003	0.137	0.289	0.590	32028	
2004	0.158	0.350	0.653	35435	
2005	0.318	0.657	1.244	30786	62
2006	0.329	0.694	1.322	34162	78
2007	0.147	0.342	0.733	40964	139
2008	0.078	0.164	0.361	35704	
2009	0.045	0.098	0.198	44847	1036
2010	0.080	0.195	0.397	24146	2
2011	0.106	0.233	0.467	27619	
2012	0.083	0.152	0.412	21378	
2013	0.074	0.188	0.428	18645	
2014	0.139	0.326	0.702	13373	7
2015	0.187	0.445	0.898	9998	2004
2016	0.223	0.521	0.960	13814	1527
2017	0.059	0.134	0.299	13366	1213
2018	0.048	0.113	0.225	14508	265
2019	0.090	0.201	0.429	11618	185
2020				12386	201

Sources and references

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

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