

Megrim (*Lepidorhombus whiffiagonis*) in divisions 8.c and 9.a (Cantabrian Sea and Atlantic Iberian waters)

ICES advice on fishing opportunities

ICES advises that when the EU multiannual plan (MAP) for Western Waters and adjacent waters is applied, catches in 2022 that correspond to the F ranges in the MAP are between 371 tonnes and 672 tonnes. According to the MAP, catches higher than those corresponding to F_{MSY} (553 tonnes) can only be taken under conditions specified in the MAP, whilst the entire range is considered precautionary when applying the ICES advice rule.

Management of catches of the two megrim species, *Lepidorhombus whiffiagonis* and *L. boscii*, under a combined species TAC prevents effective control of the single-species exploitation rates, and could lead to the overexploitation of either species.

Stock development over time

ICES assesses that fishing pressure on the stock is below F_{MSY} ; spawning stock size is above MSY $B_{trigger}$, B_{pa} , and B_{lim} .



Figure 1* Megrim in divisions 8.c and 9.a. Summary of the stock assessment. The assumed recruitment value is shaded in a lighter colour.

* Version 2: The previously published version of the advice did not include SSB_{2021} . The value, SSB_{2021} , has therefore been added to this figure.

Catch scenarios

Table 1 Megrim in divisions 8.c and 9.a. Assumptions made for the interim year and in the forecast.

Variable	Value	Notes
F (2021)	0.199	F_{sq} = Average F (2018–2020).
SSB (2022)	2661	Short-term forecast (STF) fishing at status quo (F_{sq}); tonnes.
$R_{age\ 1}$ (2021–2022)	3633	Geometric mean 1998–2018; thousands.
Total catch (2021)	569	STF using F_{sq} ; tonnes.
Projected landings (2021)	542	STF assuming average landings ratio at age 2016–2020; tonnes.
Projected discards (2021)	27	STF assuming average landings ratio at age 2016–2020; tonnes.

Table 2 Megrim in divisions 8.c and 9.a. Annual catch scenarios. All weights are in tonnes. Note: The % change in TAC is not computed because the TAC is for the two species (*Lepidorhombus whiffiagonis* and *L. boscii*) combined.

Basis	Total catch (2022)	Projected landings (2022)	Projected discards (2022)	F_{total} (2022)	$F_{projected\ landings}$ (2022)	$F_{projected\ discards}$ (2022)	SSB (2023)	% SSB change *	% advice change **
ICES advice basis									
EU MAP [^] : F_{MSY}	553	535	18	0.191	0.168	0.023	2449	–8.0	18.2
$F = MAP\ F_{MSY\ lower}$	371	359	12	0.122	0.107	0.015	2662	0	18.9
$F = MAP\ F_{MSY\ upper}$	672	650	22	0.24	0.21	0.03	2309	–13.2	17.7
Other scenarios									
MSY approach = F_{MSY}	553	535	18	0.191	0.168	0.023	2449	–8.0	18.2
$F = 0$	0	0	0	0	0	0	3099	16.5	–100
F_{pa} without $MSY_{B_{trigger}}$	672	650	22	0.24	0.21	0.03	2309	–13.2	44
F_{pa} with $MSY_{B_{trigger}}$	1016	980	35	0.40	0.35	0.05	1909	–28	117
F_{lim}	1142	1102	40	0.45	0.39	0.06	1761	–34	144
$SSB(2023) = B_{lim}$	2047	1976	71	0.81	0.71	0.10	700	–74	337
$SSB(2023) = B_{pa}$	1808	1746	63	0.71	0.63	0.09	980	–63	286
$SSB(2023) = MSY\ B_{trigger}$	1808	1746	63	0.71	0.63	0.09	980	–63	286
$SSB_{2023} = SSB_{2022}$	268	260	9	0.09	0.08	0.01	2782	4.6	–43
$F = F_{2021}$	573	554	19	0.20	0.17	0.02	2425	–8.9	22

* SSB 2023 relative to SSB 2022.

** Advice values for 2022 relative to the corresponding 2021 values (MAP advice of 468, 312, and 571 tonnes, respectively; other values are relative to F_{MSY}).

[^] The EU multiannual plan (MAP; EU, 2019).

The advice for 2022 is 18% higher than the advice for 2021 mainly because the realised recruitment is higher than the estimated recruitment for the intermediate year.

Basis of the advice

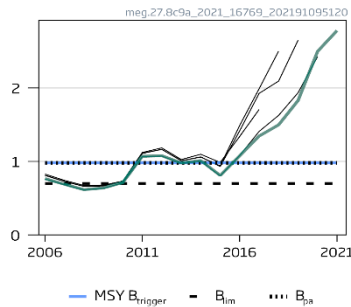
Table 3 Megrim in divisions 8.c and 9.a. The basis of the advice.

Advice basis	Management plan approach
Management plan	The EU multiannual plan (MAP) for stocks in the Western Waters and adjacent waters applies to this stock. The plan specifies conditions for setting fishing opportunities depending on stock status and making use of the F_{MSY} range for the stock.
	In accordance with the MAP, catches higher than those corresponding to F_{MSY} can only be taken providing SSB is greater than $MSY_{B_{trigger}}$, and one of the following conditions is met: <ul style="list-style-type: none"> a) if it is necessary for the achievement of objectives of mixed fisheries; b) if it is necessary to avoid serious harm to a stock caused by intra- or inter-species stock dynamics; c) in order to limit variations in fishing opportunities between consecutive years to not more than 20%.
	ICES considers that the F_{MSY} range for this stock used in the MAP is precautionary. Full details of the plan are described in Regulation 2019/472 (EU, 2019).

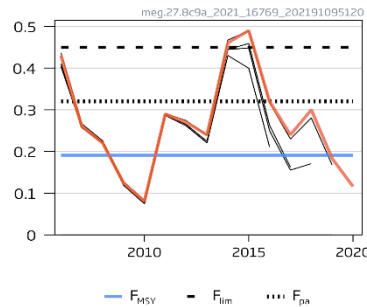
Quality of the assessment

The collection of data from the commercial fishery during 2020 was impacted by COVID-19 restrictions to a varying degree across member states. For this stock, the diagnostics for the assessment were deemed acceptable and sensitivity analyses conducted indicated that the impact on the perception of the stock status and advice was minimal.

SSB (1000 t)



F



Rec (age 1; Millions)

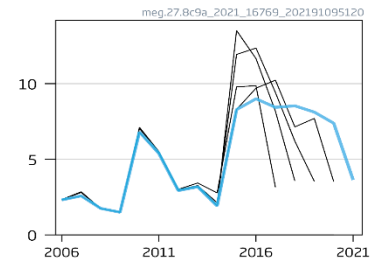


Figure 2[†] Megrim in divisions 8.c and 9.a. Historical assessment results. Final-year geometric mean recruitment included.

Assumed recruitment in the intermediate year have been lower than the realised recruitment in recent years.

Issues relevant for the advice

The two megrim species (*L. whiffiagonis* and *L. boscii*) are not totally separated in the landings statistics, and species-specific landings are estimated by ICES. A single TAC covers both. ICES considers that management of the catches of the two megrim species under a combined TAC prevents effective control of single-species exploitation rates, and could lead to the overexploitation of either species. Mixed-fisheries advice for the two megrim species will be provided in the Iberian waters fisheries overview later in the year.

[†] Version 2: The previously published version of the advice did not include SSB₂₀₂₁. The value, SSB₂₀₂₁, has therefore been added to this figure.

Reference points

Table 4 Megrim in divisions 8.c and 9.a. Reference points, values, and their technical basis. All weights are in tonnes.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	980	B_{pa}	ICES (2016)
	F_{MSY}	0.191	Stochastic simulations based on a segmented regression	ICES (2016)
Precautionary approach	B_{lim}	700	B_{loss}	ICES (2017)
	B_{pa}	980	$B_{pa} = B_{lim} \times \exp(\sigma \times 1.645)$; $\sigma = 0.2$	ICES (2017)
	F_{lim}	0.45	Based on a segmented regression simulation of recruitment, with B_{lim} as the breakpoint and no error	ICES (2017)
	F_{pa}	0.40	$F_{p,05}$ with AR: the F that provides a 95% probability for SSB to be above B_{lim} .	ICES (2017, 2021a)
Management plan	SSB _{mgt}	Not applicable		
	F_{mgt}	Not applicable		
	MAP MSY $B_{trigger}$	980	MSY $B_{trigger}$	ICES (2016; EU, 2019)
	MAP B_{lim}	700	B_{lim}	ICES (2017; EU, 2019)
	MAP F_{MSY}	0.191	F_{MSY}	ICES (2016; EU, 2019)
	MAP range F_{lower}	0.122	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY.	ICES (2016; EU, 2019)
	MAP range F_{upper}	0.24	Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY.	ICES (2016; EU, 2019)

Basis of the assessment

Table 5 Megrim in divisions 8.c and 9.a. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2021a)
Assessment type	Age-based assessment (XSA; ICES, 2021b) that uses catches in the model and in the forecast.
Input data	Commercial catches (international landings, ages, and length frequencies from catch sampling); one survey index, the Spanish North Coast Bottom Trawl Survey (SP-NSGFS-Q4 [G2784]), from 1988 to 2020 but excluding 2003 and 2013; two commercial indices (SP-LCGOTBDEF (1986–2020) and SP-AVSOTBDEF (1986–2020); constant maturity ogive (Anon., 1998); assumed natural mortality of 0.2.
Discards and bycatch	Included in the assessment for all data series from the majority of the fleet.
Indicators	None
Other information	Last benchmarked in 2014 (ICES, 2014).
Working group	Working Group for the Bay of Biscay and Iberian Waters Ecoregion (WGBIE)

History of the advice, catch, and management

Table 6 Megrim in divisions 8.c and 9.a. ICES advice and official landings. All weights are in tonnes.

Year	ICES advice	Landings corresponding to advice for combined <i>Lepidorhombus</i> species * ** ^	Catches corresponding to advice <i>L. whiffi.</i> ** ^	Agreed TAC * ***	ICES landings (combined <i>Lepidorhombus</i> species) *	ICES landings <i>L. whiffi.</i>	Discards
1987	Not dealt with			13000	2185	497	40
1988	Not dealt with			13000	3040	817	42
1989	Not dealt with			13000	3343	714	47
1990	Not dealt with			13000	2922	977	45
1991	No advice			14300	2296	614	41
1992	No advice			14300	2432	516	42
1993	<i>L. boscii</i> no gain in increasing F, <i>L. whiffi.</i> safe biological limits			8000	1767	383	38

Year	ICES advice	Landings corresponding to advice for combined <i>Lepidorhombus</i> species * ** ^	Catches corresponding to advice <i>L. whiffi.</i> ** ^	Agreed TAC * ***	ICES landings (combined <i>Lepidorhombus</i> species) *	ICES landings <i>L. whiffi.</i>	Discards
1994	No gains in increasing F			6000	1882	479	13
1995	Concern about low SSB			6000	1870	218	40
1996	Mixed fishing aspects			6000	1426	329	44
1997	Reduce F by at least 50%			6000	1252	356	52
1998	Reduce F by at least 50%	900		6000	1569	446	36
1999	Reduce F by at least 50%	1000		6000	1468	343	43
2000	Reduce F by at least 20%	≤ 1500		5000	1294	253	35
2001	No increase in F	1610		5000	1105	175	19
2002	No increase in F	1550		4000	837	117	19
2003	No increase in F	1550		2400	1009	134	15
2004	No increase in F	1380		1336	1155	149	11
2005	No increase in F	1090		1336	1130	147	19
2006	No increase in F	1200		1269	1302	210	16
2007	No increase in F	1440		1440	1259	155	0.4
2008	No increase in F	1430		1430	1113	133	11
2009	Same advice as last year	1430		1430	1218	84	11
2010	Reduce F to $F_{0.1}$	900		1287	1381	83	5
2011	MSY framework	< 890	< 110	1094	1430	302	69
2012	MSY framework	< 860	< 100	1214	1214	262	31
2013	MSY framework	< 890	< 110	1214	1163	231	18
2014	MSY approach	< 2257	< 300	2257	1531	377	23
2015	MSY approach	< 1013	< 192	1377	1424	276	21
2016	MSY approach	≤ 1259	≤ 186	1363	1322	235	63
2017	MSY approach		≤ 211	1159	1173	247	41
2018	MSY approach		≤ 292	1387	1129	315	37
2019	MSY approach		≤ 431	1872	981	239	51
2020	Management plan ^^		534 (range 357–648) #	2322	1026 ^^^	315 ^^^	5 ^^^
2021	Management plan ^^		468 (range 312–571) #	2158			
2022	Management plan ^^		553 (range 371–672) #				

* For both megrim species combined.

** Advice was provided for landings until 2015, and for catches from 2016 onward.

*** For Division 8.c and subareas 9 and 10; EU waters of CECAF 34.1.1.

Catches corresponding to F_{MSY} , EU MAP range in brackets.

^ The advice for 2017 onward is for single species only.

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

^^^ Preliminary

History of the catch and landings

Table 7 Megrim in divisions 8.c and 9.a. Catch distribution by fleet in 2020 as estimated by ICES.

Catch (2020)	Landings		Discards
320 tonnes	98% bottom otter trawl	2% other gear types	5 tonnes
	315 tonnes		

Table 8 Megrim in divisions 8.c and 9.a. History of commercial catch and landings; both the official and ICES estimated values are presented by area for each country participating in the fishery. All weights are in tonnes.

Year	Official landings				ICES landings **	Discards	ICES catch **
	Spain			Portugal			
	Division 8.c	Division 9.a *	Total	Division 9.a			
1986	508	98	606	53	659	46	705
1987	404	46	450	47	497	40	537
1988	657	59	716	101	817	42	859
1989	533	45	578	136	714	47	761
1990	841	25	866	111	977	45	1022
1991	494	16	510	104	614	41	655
1992	474	5	479	37	516	42	558
1993	338	7	345	38	383	38	421
1994	440	8	448	31	479	13	492
1995	173	20	193	25	218	40	258
1996	283	21	305	24	329	44	373
1997	298	12	310	46	356	52	408
1998	372	8	380	66	446	36	482
1999	332	44	336	7	343	43	386
2000	238	5	243	10	253	35	288
2001	167	2	169	5	175	19	193
2002	112	3	115	3	117	19	137
2003	113	3	116	17	134	15	148
2004	142	1	144	5	149	11	159
2005	120	1	121	26	147	19	166
2006	173	2	175	35	210	16	226
2007	139	2	141	14	155	0.4	155
2008	114	2	116	17	133	11	144
2009	74	2	77	7	84	11	94
2010	66	8	74	10	83	5	88
2011	242	0	242	34	302	69	371
2012	151	11	161	18	262	31	293
2013	128	3	131	11	231	18	250
2014	225	5	231	30	377	23	399
2015	188	2	190	23	276	21	297
2016	171	1	172	15	235	63	298
2017	189	4	193	16	247	41	288
2018	227	8	234	7	315	37	352
2019	226	7	233	6	239	51	289
2020 [#]	278	26	305	10	315	5	320

* Division 9.a, excluding the Gulf of Cadiz until 2016.

** Unallocated/non-reported landings included.

[#] Preliminary.

Summary of the assessment

Table 9 Megrim in divisions 8.c and 9.a. Assessment summary. All weights are in tonnes and recruitment is in thousands.

Year	Recruitment (age 1)	SSB	Landings	Discards	F (ages 2–4)
1986	9970	2250	659	46	0.39
1987	12965	1868	497	40	0.36
1988	11741	2139	817	42	0.51
1989	10692	2295	714	47	0.46
1990	13212	2449	977	45	0.47
1991	5983	1555	614	41	0.48
1992	11530	1451	516	42	0.45
1993	5454	1353	383	38	0.34
1994	2443	1189	479	13	0.43
1995	9609	950	218	40	0.29

Year	Recruitment (age 1)	SSB	Landings	Discards	F (ages 2–4)
1996	9298	1294	329	44	0.25
1997	7083	1308	356	52	0.28
1998	3903	1307	446	36	0.44
1999	2899	1077	343	43	0.40
2000	3790	1047	253	35	0.39
2001	3306	764	175	19	0.29
2002	2830	720	117	19	0.168
2003	2877	821	134	15	0.191
2004	3225	781	149	11	0.20
2005	2876	787	147	19	0.26
2006	2309	766	210	16	0.43
2007	2579	689	155	0	0.26
2008	1754	616	133	11	0.22
2009	1494	639	84	11	0.125
2010	6803	713	83	5	0.081
2011	5385	1070	302	69	0.29
2012	2928	1078	262	31	0.27
2013	3177	979	231	18	0.24
2014	1909	1012	377	23	0.46
2015	8285	809	276	21	0.49
2016	9003	1076	235	63	0.32
2017	8435	1346	247	41	0.24
2018	8533	1498	315	37	0.30
2019	8121	1830	239	51	0.183
2020	7387	2498	320	5	0.116
2021 [‡]	3633*	2782			

* Geometric mean (1998–2018).

Sources and references

Anon. 1998. Biological Studies of Demersal Fish to the European Commission. Annex III of the Final Report to the Commission of European Communities (BIOSDEF Study contract 95/038). 522 pp.

EU. 2019. Regulation (EU) 2019/472 of the European Parliament and of the Council of 19 March 2019 establishing a multiannual plan for stocks fished in the Western Waters and adjacent waters, and for fisheries exploiting those stocks, amending Regulations (EU) 2016/1139 and (EU) 2018/973, and repealing Council Regulations (EC) No 811/2004, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007 and (EC) No 1300/2008. Official Journal of the European Union, L 83. 17 pp. <http://data.europa.eu/eli/reg/2019/472/oj>.

ICES. 2014. Report of the Benchmark Workshop on Southern Megrin and Hake (WKSOUTH), 3–7 February 2014, ICES HQ, Copenhagen, Denmark. ICES CM 2014/ACOM:40. 236 pp. <https://doi.org/10.17895/ices.pub.5347>.

ICES. 2016. EU request to ICES to provide FMSY ranges for selected stocks in ICES subareas 5 to 10. In Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 5, Section 5.4.1. <https://doi.org/10.17895/ices.advice.5612>.

ICES. 2017. Report of the Working Group for the Bay of Biscay and Iberian waters Ecoregion (WGBIE), 4–11 May 2017, Cadiz, Spain. ICES CM 2017/ACOM:12. 552pp. <https://doi.org/10.17895/ices.pub.8205>.

ICES. 2021a. Advice on fishing opportunities. In Report of the ICES Advisory Committee, 2021. ICES Advice 2021, section 1.1.1. <https://doi.org/10.17895/ices.advice.7720>.

ICES. 2021b. Working Group for the Bay of Biscay and the Iberian Waters Ecoregion (WGBIE). ICES Scientific Reports. 3:48. <https://doi.org/10.17895/ices.pub.8212>.

[‡] Version 2: The previously published version of the advice did not include SSB₂₀₂₁. The value, SSB₂₀₂₁, has therefore been added to this table.

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

Recommended citation: ICES. 2021. Megrin (*Lepidorhombus whiffiagonis*) in divisions 8.c and 9.a (Cantabrian Sea and Atlantic Iberian waters). *In* Report of the ICES Advisory Committee, 2021. ICES Advice 2021, meg.27.8c9a, <https://doi.org/10.17895/ices.advice.7791>.