Whiting (*Merlangius merlangus*) in Division 7.a (Irish Sea)

ICES advice on fishing opportunities

ICES advises that when the MSY approach and precautionary considerations are applied, there should be zero catches in 2022 and 2023.

Stock development over time

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

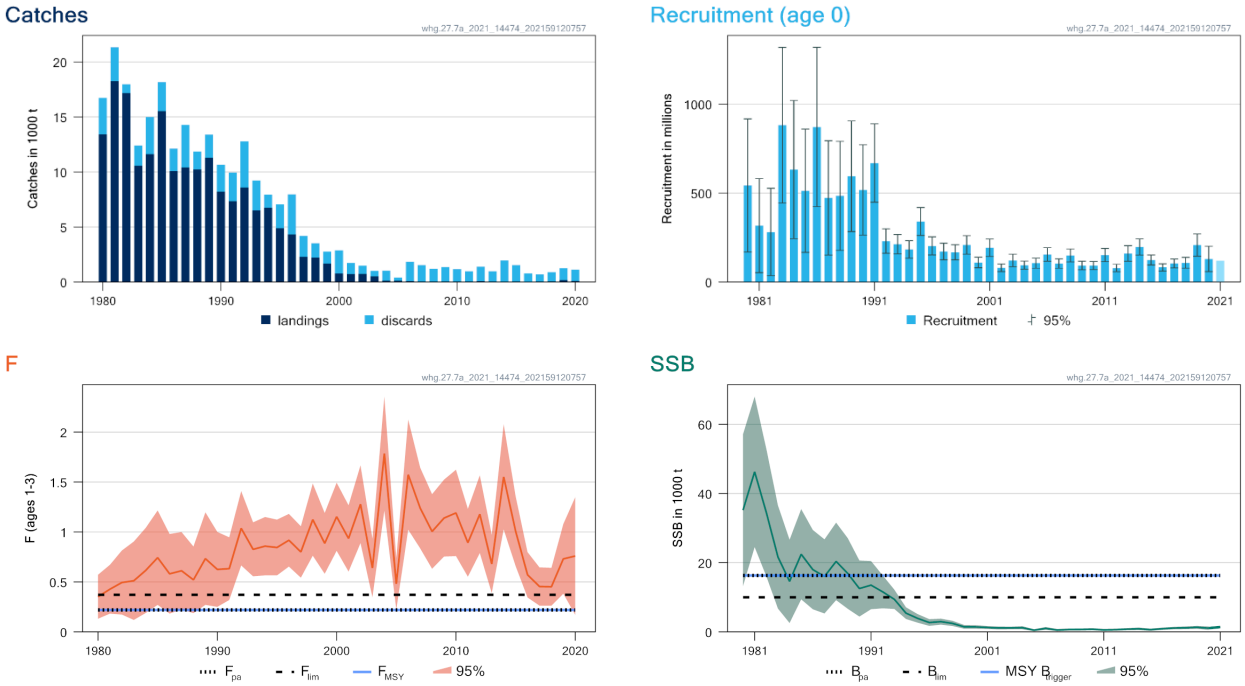

Figure 1 Whiting in Division 7.a. Summary of the stock assessment. The assumed recruitment value for 2021 is shaded in a lighter colour.

Catch scenarios

Table 1 Whiting in Division 7.a. Assumptions made for the interim year and in the forecast.

Variable	Value	Notes
$F_{ages\ 1–3}$ (2021)	0.647	$F_{sq} = F_{average\ (2018–2020)}$
SSB_{2022}	1326	Short-term forecast; in tonnes
$R_{age\ 0}$ (2021–2022)	119 971	Geometric mean (2000–2019); in thousands
Catch (2021)	1309	Fishing at F_{sq}; in tonnes
Projected landings (2021)	207	Using average discard rates (2018–2020); in tonnes
Projected discards (2021)	1102	Using average discard rates (2018–2020); in tonnes

Table 2 Whiting in Division 7.a. Annual catch scenarios. All weights are in tonnes.

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*	% TAC change**	% advice change^^
ICES advice basis										
MSY approach	0	0	0	0	0	0	2334	76	–100	-
Other scenarios										
$F_{MSY} = F_{pa}$	498	109	390	0.22	0.030	0.189	1884	42	–31	-
F = 0	0	0	0	0	0	0	2334	76	–100	-
$F_{MSY\ lower}$	368	81	288	0.158	0.022	0.136	2000	51	–49	-
$F_{MSY\ upper}$	498	109	390	0.22	0.030	0.189	1884	42	–31	-
$F_{MSY} \times SSB_{2022}/MSY\ B_{trigger}$	44	10	34	0.0178	0.0024	0.0154	2294	73	–94	-
$F_{MSY\ lower} \times SSB_{2022}/MSY\ B_{trigger}$	32	7	25	0.0128	0.00177	0.0111	2305	74	–96	-
$F_{MSY\ upper} \times SSB_{2022}/MSY\ B_{trigger}$	44	10	34	0.0178	0.0024	0.0154	2294	73	–94	-
F_{lim}	794	172	622	0.37	0.051	0.32	1625	23	10.1	-
$SSB_{2023} = B_{lim}$^										-
$SSB_{2023} = B_{pa} = MSY\ B_{trigger}$^										-
$SSB_{2023} = SSB_{2022}$	1149	245	904	0.58	0.080	0.50	1326	0.00	59	-
$SSB_{2023} = SSB_{2022} * 1.2$	834	180	654	0.39	0.054	0.34	1591	20.0	15.7	-
$F = F_{2021}$	1254	267	987	0.65	0.089	0.56	1240	−6.5	74	-

* SSB 2023 relative to SSB 2022.

** Total catch in 2022 relative to TAC 2021 (721 tonnes)

^ The B_{lim}, B_{pa}, and MSY $B_{trigger}$ options were left blank because B_{lim}, B_{pa}, and MSY $B_{trigger}$ cannot be achieved in 2023, even with zero catch.

^^ This is not provided as catch advice for 2020 and 2021 was 0.

The advice for 2022 and 2023 is the same as for 2020 and 2021 because the SSB is estimated to remain below B_{lim} (10 000 tonnes) with any catch scenario.

Basis of the advice

Table 3 Whiting in Division 7.a. The basis of the advice.

Advice basis	MSY approach
Management plan	The EU multiannual plan (MAP) for stocks in Western Waters and adjacent waters (EU, 2019) takes into account bycatch of this species. There is no agreed shared management plan with UK for this stock, and ICES provides advice according to ICES MSY approach and precautionary considerations.

Quality of the assessment

The assessment is consistent from year to year, and the stock size remains extremely low.

The majority of catches have been discarded for the last couple of decades. Despite recent increased sampling levels, discard information remains very imprecise. This has contributed to the highly fluctuating fishing pressure estimates in recent years.

As a result of COVID-19 restrictions, the NIMIK net survey did not take place, and discard estimates in 2020 are based on incomplete sampling of the fisheries. Sensitivity analyses shown that these have had minimal impact on the perception of the stock status.

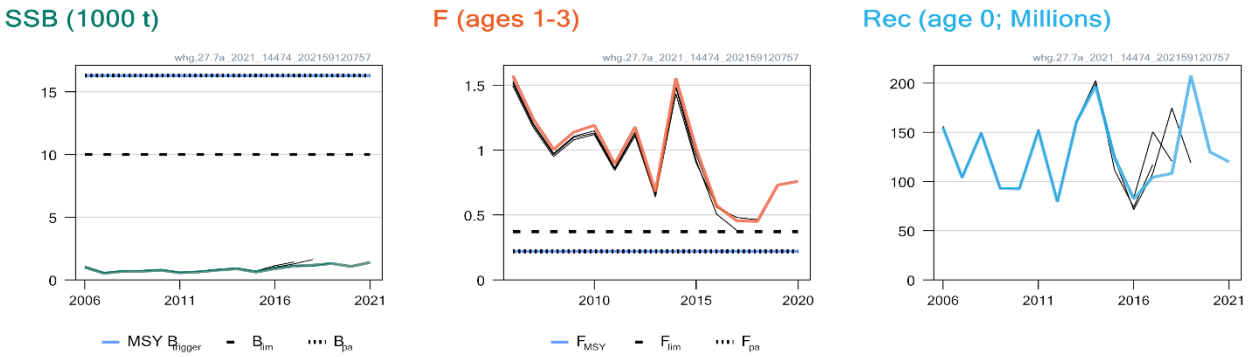

Figure 2 Whiting in Division 7.a. Historical assessment results (the final-year SSB estimate and recruitment assumption included).

Issues relevant for the advice

The assessment and the advice are for Division 7.a, excluding the rectangles 33E2 and 33E3 in the Irish Sea. Landings have been adjusted since 2003 to exclude those taken from the southern rectangles (33E2 and 33E3) in the Irish Sea, as the rectangles are not believed to be part of this stock (Table 6) but rather of the stock in divisions 7.b–c and e–k (western English Channel and southern Celtic Seas). Thus, the assessment and the advice exclude these two southern rectangles for the present stock, but include them in the assessment and advice for whiting in divisions 7.b–c and e–k. This should be considered when setting TACs for the two management areas for whiting in divisions 7.a and 7.b–c and e–k. This amounts to an average of 39% of total Irish Sea landings being re-allocated over the past five years and accounts for a minimal percentage of official landings of whiting in 7.b–c and e–k.

The majority of whiting caught are discards in the *Nephrops* fishery and are below the minimum conservation reference size (MCRS). The introduction of further highly selective gears to reduce finfish catch and discards in the *Nephrops* fishery appears to have reduced whiting catches in the last three years. Discards remain high relative to the landings.

Reference points

Table 4 Whiting in Division 7.a. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	16 300	B_{pa}; in tonnes.	ICES (2017)
	F_{MSY}	0.22	Median point estimates of EqSim with a combined stock–recruitment relationship	ICES (2017)
	$F_{MSY\ lower}$	0.158	Median point estimates of EqSim with a combined stock–recruitment relationship	ICES (2017)
	$F_{MSY\ upper}$	0.22	F_{pa}	ICES (2017, 2021a)
Precautionary approach	B_{lim}	10 000	SSB below which recruitment is impaired; in tonnes	ICES (2017)
	B_{pa}	16 300	$B_{lim} \times \exp(1.645 \times \sigma)$; $\sigma = 0.297$; in tonnes.	ICES (2017)
	F_{lim}	0.37	F with 50% probability of SSB < B_{lim}	ICES (2017)
	F_{pa}	0.22	F_{P05}; the F that leads to SSB ≥ Blim with 95% probability	ICES (2017, 2021a)
Management plan	SSB_{mgt}	Not applicable		
	F_{mgt}	Not applicable		

Basis of the assessment

Table 5 Whiting in Division 7.a. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2021b)
Assessment type	ASAP (Age-Structured Assessment Programme; NOAA toolbox) that uses catches in the model and in the forecast. (ICES, 2021a)
Input data	Commercial catches (weights, ages and length frequencies from catch sampling); survey indices (NIGFS-WIBTS-Q1 [G7144], NIGFS-WIBTS-Q4 [G7655], NI MIK [I9826]); fixed maturity ogive; Lorenzen's natural mortality (Lorenzen, 1996).
Discards and bycatch	Included in the assessment for the full time-series
Indicators	None
Other information	This stock was benchmarked in 2017 (ICES, 2017)
Working group	Working Group for the Celtic Seas Ecoregion (WGCSE)

History of the advice, catch, and management

Table 6 Whiting in Division 7.a. ICES advice and official landings and estimated landings in rectangles 33E2 & 33E3. All weights are in tonnes.

Year	ICES advice	Catch corresponding to advice	Agreed TAC	Official landings	ICES landings***	Landings taken or reported in 33E2 and 33E3***	Discards**	ICES catch
1987	Reduce F	16000	18170	11684	-		-	-
1988	No increase in F; enforce mesh regulations	12000	18170	11492	10245		1611	11856
1989	F = F_{high}; enforce mesh regulations	11000	18170	11328	11305		2103	13408
1990	No increase in F; TAC	8300*	15000	8183	8212		2444	10 656
1991	Increase SSB to SSB(89)	6400*	10000	7411	7348		2598	9946
1992	80% of F(90)	9700*	10000	7094	8588		4203	12791
1993	70% of F(91) ~ 6 500 t	6500	8500	5977	6523		2707	9230
1994	Within safe biological limits	-	9900	5637	6763		1173	7936
1995	No increase in F	8300*	8000	5465	4893		2151	7044
1996	No increase in F	9800*	9000	5581	4335		3631	7966
1997	No advice given	-	7500	4472	2277		1928	4205
1998	20% reduction in F	3800#	5000	3355	2229		1304	3533
1999	Reduce F below F_{pa}	3500#	4410	1989	1670		1092	2762
2000	Reduce F below F_{pa}	< 1600#	2640	1130	762		2118	2880
2001	Lowest possible F	~0	1390	1066	733		1012	1745
2002	Lowest possible F	~0	1000	714	747		740	1487
2003	Lowest possible F	~0	500	554	517	159	480	996
2004	Zero catch	0	514	204	133	51	905	1038
2005	Zero catch	0	514	164	125	33	272	397
2006	Lowest possible catch	0	437	85	64	22	1773	1837
2007	Lowest possible catch	0	371	197	35	161	1512	1547
2008	Lowest possible catch	0	278	84	37	44	1169	1206
2009	Same advice as last year	0	209	100	39	63	1321	1360
2010	Same advice as last year	0	157	121	30	91	1154	1184
2011	See scenarios	-	118	118	31	75	946	977
2012	Lowest possible catch and improve selectivity	0	89	86	60	43	1339	1399
2013	Lowest possible catch and improve selectivity	0	84	68	33	33	948	981
2014	Same advice as for 2013	0	80	73	23	50	1951	1974
2015	Same advice as for 2013	0	80	59	28	34	1521	1549
2016	Precautionary approach (minimize all catches)	0	80	50	15	40	765	780

Year	ICES advice	Catch corresponding to advice	Agreed TAC	Official landings	ICES landings***	Landings taken or reported in 33E2 and 33E3***	Discards**	ICES catch
2017	Precautionary approach	0	80	50	36	20	667	703
2018	MSY approach	0	80	63	46	18	853	899
2019	MSY approach (same advice as for 2018)	0	727	196	172	24	1089	1261
2020	MSY approach	0	1246^	102	88	14	1030	1118
2021	MSY approach	0	721					
2022	MSY approach	0						
2023	MSY approach	0						

* Not including discards from the *Nephrops* fishery.
** From the *Nephrops* fishery from 1987 to 2002.
*** Including estimates of misreporting in 1992–2002 and, since 2003, landings from statistical rectangles 33E2 and 33E3 reallocated to whiting landings in divisions 7.e–k.
^ TAC was increased mid 2019 from 727t to 1246t based on EU special request (ICES, 2019).
# Landings only, no discards included.

History of the catch and landings

Table 7 Whiting in Division 7.a. Catch distribution by fleet in 2020 as estimated by ICES.

Catch	Landings*			Discards	
1118 tonnes	Finfish-directed otter trawls	*Nephrops*-directed otter trawls	Other gears	*Nephrops*-directed otter trawls	Other gears
	94.5%	0.3%	5.2%	98%	2%
	88 tonnes			1030 tonnes	

*Landings from statistical rectangles 33E2 and 33E3 reallocated to whiting landings in divisions 7.e–k.

Table 8 Whiting in Division 7.a. History of official landings by country. All weights are in tonnes.

Year	Belgium	France	Ireland	Netherlands	UK (NI, E&W)	Spain	UK (Isle of Man)	UK (Scotland	UK	Landings taken or reported in rectangles 33E2 and 33E3 **	Total official landings
1988	90	1063	4394		5823		15	107			11492
1989	92	533	3871		6652		26	154			11328
1990	142	528	2000		5202		75	236			8183
1991	53	611	2200		4250		74	223			7411
1992	78	509	2100		4089		44	274			7094
1993	50	255	1440		3859		55	318			5977
1994	80	163	1418		3724		44	208			5637
1995	92	169	1840		3125		41	198			5465
1996	80	78	1773	17	3557		28	48			5581
1997	47	86	1119	14	3152		24	30			4472
1998	52	81	1260	7	1900		33	22			3355
1999	46	150	509	6	1229		5	44			1989
2000	30	59	353	1	670		2	15			1130
2001	27	25	482		506		1	25			1066
2002	22	33	347		284		1	27			714
2003	13	29	265		130	85	1	31			554
2004	11	8	96		82		1	6			204
2005	10	13	94		47			< 0.5			164
2006	4	4	55		22			< 0.5			85
2007	3	3	187		3		1	< 0.5			197
2008	2	2	68		11		1				84
2009	2		78		20						100
2010	5	3	97		16		< 0.5				121
2011	4	3	95		16		< 0.5				118

Year	Belgium	France	Ireland	Netherlands	UK (NI, E&W)	Spain	UK (Isle of Man)	UK (Scotland	UK	Landings taken or reported in rectangles 33E2 and 33E3 **	Total official landings
2012	5	1	58		10			1	11	32	86
2013	2	< 0.5	44				< 0.1	2	20	34	68
2014	2	< 0.5	60		11		< 0.1			49	73
2015	1	< 0.5	49		8					32	59
2016	1	< 0.5	44		5		< 0.1			40	50
2017	2	< 0.5	32		17		< 0.1	< 0.1		20	50
2018	1		44		19		< 0.5			18	63
2019*	4		129		63		< 0.1			24	196
2020*	5	< 0.1	56		42		< 0.1			14	102

* Preliminary official landings.

** Landings in the southern part of Division 7.a (statistical rectangles 33E2 and 33E3) are not included in the assessment and are considered to be part of the whiting stock in divisions 7.b–c and e–k.

Table 9 Whiting in Division 7.a. History of ICES estimates of landings and discards. All weights are in tonnes.

Year	Discards by country/fleet					ICES estimates of		
	Nephrops fishery^	IR-OTB fleet	UK (NI) *Nephrops* fishery	Belgium	UK (E&W) fleet	Discards	Landings	Catch
1988	1611					1611	10245	11856
1989	2103					2103	11305	13408
1990	2444					2444	8212	10656
1991	2598					2598	7348	9946
1992	4203					4203	8588	12791
1993	2707					2707	6523	9230
1994	1173					1173	6763	7936
1995	2151					2151	4893	7044
1996	3631					3631	4335	7966
1997	1928					1928	2277	4205
1998	1304					1304	2229	3533
1999	1092					1092	1670	2762
2000	2118					2118	762	2880
2001	1012					1012	733	1745
2002	740					740	747	1487
2003		480				480	517	996
2004		905				905	133	1038
2005		272				272	125	397
2006		1580	193			1773	64	1837
2007		725	787			1512	35	1547
2008		693	476			1169	37	1206
2009		688	633			1321	39	1360
2010		240	914			1154	30	1184
2011		330	616			946	31	977
2012		257	1065	17	1	1339	60	1399
2013		95	833	17	3	948	33	981
2014		263	1645	15	28	1951	23	1974
2015		438	1074	9	1	1521	28	1549
2016		173	589		3	765	15	780
2017		122	544		1	667	36	703
2018		98	754		< 0.5	853	46	899
2019		86	897	20	87	1089	172	1261
2020		102^^	906	22		1030	88	1118

^ Based on UK (N. Ireland) and Ireland data.

^^ Estimate based on three-year average (2017–2019)

Summary of the assessment

Table 10 Whiting in Division 7.a. Assessment summary. Weights are in tonnes. High and lows refer to 95% confidence intervals.

Year	Recruitment			SSB			Discards	Landings	Total catch	F (ages 1–3)		
	Low	Value	High	Low	Value	High				Low	Value	High
1980	168490	542928	917366	13218	35180	57141	3314	13422	16737	0.131	0.35	0.57
1981	52851	317099	581346	24494	46274	68053	3064	18267	21331	0.182	0.43	0.67
1982	35434	281120	526806	16095	34550	53005	801	17167	17969	0.173	0.49	0.82
1983	443941	881413	1318885	6733	21664	36595	1829	10577	12405	0.119	0.51	0.9
1984	243210	632132	1021055	2555	14604	26652	3380	11619	14999	0.189	0.62	1.04
1985	166706	513038	859370	9388	22445	35502	2644	15525	18169	0.27	0.74	1.22
1986	423823	871624	1319425	6525	17993	29461	2066	10063	12129	0.182	0.58	0.98
1987	151282	472840	794397	5305	16029	26753	3859	10411	14270	0.22	0.61	1.00
1988	177772	484433	791095	9154	20374	31593	1611	10245	11856	0.187	0.52	0.85
1989	283336	594310	905284	6652	16876	27099	2103	11305	13408	0.27	0.73	1.2
1990	263693	517611	771529	4409	12524	20640	2444	8212	10656	0.25	0.63	1.00
1991	448286	668786	889286	6538	13511	20485	2598	7348	9946	0.32	0.63	0.95
1992	161624	230093	298562	6794	11566	16338	4203	8588	12791	0.66	1.04	1.41
1993	158147	212460	266774	6613	9414	12215	2707	6523	9230	0.56	0.83	1.1
1994	134069	183093	232116	3715	5414	7114	1173	6763	7936	0.57	0.86	1.15
1995	261323	339894	418464	2654	3900	5146	2151	4893	7044	0.57	0.84	1.12
1996	152113	203161	254209	1718	2701	3685	3631	4335	7966	0.65	0.92	1.18
1997	124742	171419	218097	2081	2954	3827	1928	2277	4205	0.54	0.8	1.06
1998	124734	167329	209924	1679	2443	3207	1304	2229	3533	0.76	1.12	1.49
1999	156442	208488	260533	888	1448	2007	1092	1670	2762	0.58	0.89	1.19
2000	79900	109709	139519	893	1421	1949	2118	762	2880	0.81	1.15	1.49
2001	143599	192756	241912	832	1256	1681	1012	733	1745	0.6	0.94	1.27
2002	58612	79853	101093	695	1120	1546	740	747	1487	0.89	1.28	1.67
2003	85934	121161	156388	751	1128	1506	480	517	996	0.34	0.64	0.93
2004	71500	94481	117462	737	1198	1659	905	133	1038	1.21	1.78	2.4
2005	77313	105994	134674	242	488	735	272	125	397	0.22	0.48	0.74
2006	116654	154757	192859	574	997	1419	1773	64	1837	1.02	1.57	2.1
2007	77315	103910	130505	249	530	811	1512	35	1547	0.84	1.24	1.64
2008	112698	149069	185441	400	673	947	1169	37	1206	0.63	1.01	1.38
2009	68614	92879	117144	400	686	972	1321	39	1360	0.75	1.14	1.52
2010	69308	92454	115599	481	770	1059	1154	30	1184	0.76	1.19	1.62
2011	114206	151434	188663	309	562	816	946	31	977	0.55	0.89	1.23
2012	58166	79035	99903	371	635	899	1339	60	1399	0.79	1.18	1.57
2013	116673	160728	204783	476	777	1078	948	33	981	0.39	0.68	0.97
2014	151592	197009	242426	517	880	1244	1951	23	1974	1.02	1.55	2.1
2015	95736	123897	152059	316	623	930	1521	28	1549	0.66	1.01	1.36
2016	61717	82217	102716	576	895	1213	765	15	780	0.34	0.57	0.8
2017	78939	104346	129754	741	1097	1453	668	36	704	0.26	0.45	0.65
2018	77946	108122	138299	778	1172	1566	853	46	899	0.26	0.45	0.64
2019	144729	207690	270651	864	1300	1736	1089	172	1261	0.38	0.73	1.08
2020	58842	129971	201099	573	1073	1574	1030	88	1118	0.169	0.76	1.35
2021		119971*			1393							

* Geometric mean (GM) recruitment 2000–2019.

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Download the stock assessment data and figures.

Recommended citation: ICES. 2021. Whiting (*Merlangius merlangus*) in Division 7.a (Irish Sea). *In* Report of the ICES Advisory Committee, 2021. ICES Advice 2021, whg.27.7a, https://doi.org/10.17895/ices.advice.7887.