

## UK request on updated advice for whiting (*Merlangius merlangus*) in Division 7.a (Irish Sea)

### ICES advice on fishing opportunities

Please note: The present advice replaces the advice given in June 2017 for catches in 2019.<sup>1</sup>

ICES advises that when the MSY approach is applied, there should be zero catches in 2019.

### Stock development over time

The present stock size is extremely low. Spawning-stock biomass (SSB) has been declining since the start of the time-series and has been well below  $B_{lim}$  since the mid-1990s. Recruitment has been low since the early 1990s. Fishing pressure (F) has declined since 2015 but remains above  $F_{MSY}$  and  $F_{lim}$  in 2017.



**Figure 1** Whiting in Division 7.a. Summary of stock assessment, Recruitment, F, and SSB have uncertainty boundaries ( $1 \times$  standard deviation) in the plot. The predicted recruitment value is not shaded.

### Stock and exploitation status

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

<sup>1</sup> The UK request is found in Annex 1.

**Table 1** Whiting in Division 7.a. State of the stock and fishery relative to reference points.

	Fishing pressure			Stock size						
	2015	2016	2017	2016	2017	2018				
Maximum sustainable yield	$F_{MSY}$	✗	✗	✗	Above	MSY $B_{trigger}$	✗	✗	✗	Below trigger
Precautionary approach	$F_{pa}$ , $F_{lim}$	✗	✗	✗	Harvested unsustainably	$B_{pa}$ , $B_{lim}$	✗	✗	✗	Reduced reproductive capacity
Management plan	$F_{MGT}$	—	—	—	Not applicable	$B_{MGT}$	—	—	—	Not applicable

### Catch scenarios

**Table 2** Whiting in Division 7.a. The basis for the catch scenarios.

Variable	Value	Notes
F ages 1–3 (2018)	0.60	$F_{sq} = F_{average}$ (2015–2017)
SSB (2019)	1757 tonnes	Fishing at $F_{sq}$
$R_{age 0}$ (2018 and 2019)	120 641 thousands	Geometric mean (2000–2017)
Catch (2018)	1461 tonnes	Fishing at $F_{sq}$
Wanted catch (2018)	219 tonnes	Average discard pattern (2015–2017)
Unwanted catch (2018)	1242 tonnes	Average discard pattern (2015–2017)

**Table 3** Whiting in Division 7.a. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2019)	Wanted catch (2019)	Unwanted catch (2019)	F total (2019)	F Wanted catch (2019)	F Unwanted catch (2019)	SSB (2020)	% SSB change *	% TAC change **	% Advice change ^^
ICES advice basis										
MSY approach	0	0	0	0	0	0	2989	+70	-100	
Other scenarios										
$F_{MSY} = F_{pa}$	585	96	490	0.22	0.0106	0.21	2404	+37	+20	
$F = 0$	0	0	0	0	0	0	2989	+70	-100	
$F_{lim}$	928	150	778	0.37	0.0178	0.35	2073	+18	+88	
$SSB_{2020} = B_{lim}^{\wedge}$										
$SSB_{2020} = B_{pa} = MSY B_{trigger}^{\wedge}$										
$F = F_{2018}$	1385	221	1164	0.60	0.03	0.58	1649	-6.1	+176	

\* SSB 2020 relative to SSB 2019.

\*\* Landings in 2019 relative to TAC in 2018 (80 tonnes).

$\wedge$  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 2020, even with zero catch.

$\wedge\wedge$  Advice value for 2019 relative to advice value for 2018. This is not provided because the advice value in 2018 was zero.

There has been no change in the perception of stock status and, therefore, there is no change in advice.

### Basis of the advice

**Table 4** Whiting in Division 7.a. The basis of the advice.

Advice basis	MSY approach
Management plan	ICES is not aware of any agreed precautionary management plan for whiting in this area.

### Quality of the assessment

The assessment includes information from the commercial fishery, including both landings and discards, and takes into account selectivity changes that occurred in 1995. The introduction of technical measures since 2014 has likely changed fishery selectivity further. Data from more years will be required before any potential change in selectivity pattern can be reliably estimated. Therefore, these changes are not explicitly taken into account in the assessment model and are a potential source of bias. The apparent decline in fishing mortality in recent years could be an indication of improved

selectivity. However, similar variations in fishing mortality have been observed in the past and it is unclear if the low F will continue. The update assessment is very consistent with last year’s assessment and indicates that fishing mortality has declined significantly, but the stock size remains extremely low.

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

Observed discards in 2017 (667 tonnes) were considerably lower than those predicted in the previous assessment (1440 tonnes), conducted in 2017. It is predicted that discards in 2018 would amount to 1262 tonnes, using the average pattern over the last three years. Discards could be lower if there have been improvements in selectivity in 2018.



Figure 2 Whiting in Division 7.a. Historical assessment results (final-year recruitment estimates included).

### Issues relevant for the advice

ICES was requested to update the advice for this stock, taking into account the most recent catch information. The majority of whiting caught are discards in the *Nephrops* fishery and are below the EU minimum landing size (MLS). 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 two years. Discards remain high relative to the landings. Given the continued high discards and low TAC, this stock could become a major “choke species” for the Division 7.a *Nephrops* fishery in the context of the EU landing obligation.

### Reference points

Table 5 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 t	$B_{pa}$	ICES (2017)
	$F_{MSY}$	0.22	Median point estimates of EqSim with a combined stock–recruitment relationship	ICES (2017)
Precautionary approach	$B_{lim}$	10 000 t	Below 10 000 tonnes recruitment is impaired.	ICES (2017)
	$B_{pa}$	16 300 t	$B_{lim} \times \exp(1.645 \times \sigma)$ ; $\sigma = 0.297$	ICES (2017)
	$F_{lim}$	0.37	F with 50% probability of $SSB < B_{lim}$	ICES (2017)
	$F_{pa}$	0.22	$F_{lim} \times \exp(-1.645 \times \sigma)$ ; $\sigma = 0.304$	ICES (2017)
Management plan	$SSB_{mgt}$	Not applicable		
	$F_{mgt}$	Not applicable		

## Basis of the assessment

**Table 6** Whiting in Division 7.a. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2018a).
Assessment type	ASAP (Age-Structured Assessment Programme; NOAA toolbox) that uses catches in the model and in the forecast.
Input data	Commercial catches (weights, ages and length frequencies from catch sampling); survey indices (NIGFS-WIBTS-Q1, NIGFS-WIBTS-Q4, NI MIK); 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)

## Information from stakeholders

No additional information is available.

## History of the advice, catch, and management

**Table 7** Whiting in Division 7.a. ICES advice and official landings. All weights are in tonnes.

Year	ICES advice	Catch corresp. 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 <sub>high</sub> ; 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 <sub>pa</sub>	3500#	4410	1989	1670		1092	2762
2000	Reduce F below F <sub>pa</sub>	< 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

Year	ICES advice	Catch corresp. to advice	Agreed TAC	Official landings	ICES landings***	Landings taken or reported in 33E2 and 33E3***	Discards **	ICES catch
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
2017	Precautionary approach	0	80	50	36	20	667	703
2018	MSY approach	0						
2019	MSY approach (same advice as for 2018)	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.

# Landings only, no discards included.

### History of the catch and landings

**Table 8** Whiting in Division 7.a. Catch distribution by fleet in 2017 as estimated by ICES.

Catch	Landings			Discards	
	Finfish-directed otter trawls	<i>Nephrops</i> -directed otter trawls	Other gears	<i>Nephrops</i> -directed otter trawls	Other gears
703 tonnes	61%	18%	21%	82%	18%
	36 tonnes			667 tonnes	

**Table 9** Whiting in Division 7.a. History of official landings as reported to ICES for each country participating in the fishery. All weights are in tonnes.

Year	Belgium	France	Ireland	Netherlands	UK (NI, Engl. & Wales)	Spain	UK (Isle of Man)	UK (Scotland)	UK	Landings taken or reported in rectangles 33E2 and 33E3 (belonging to the 7.b–c,e–k stock)**	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
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

\* Preliminary.

\*\* 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 7.e–k.

**Table 10** Whiting in Division 7.a. History of commercial catch, and landings, as reported to ICES expert group. All weights are in tonnes.

Year	Discards by country/fleet					ICES estimates of:		
	<i>Nephrops</i> fishery ^	IR-OTB fleet	UK (NI) <i>Nephrops</i> 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

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

\* Preliminary.

## Summary of the assessment

**Table 11** Whiting in Division 7.a. Assessment summary. Weights are in tonnes. High and lows refer to 1 × standard deviation.

Year	Recruitment age 0 thousands	High	Low	SSB	High	Low	Catch	Discards	F ages 1–3	High	Low
1980	635583	842603	428563	32747	43502	21992	16737	3314	0.37	0.49	0.25
1981	322580	459190	185970	43221	53843	32599	21331	3064	0.44	0.57	0.31
1982	285058	411668	158448	34695	43980	25409	17969	801	0.49	0.65	0.33
1983	881216	1104116	658316	22038	29651	14424	12405	1829	0.50	0.69	0.31
1984	631289	829119	433459	15027	21223	8832	14999	3380	0.61	0.83	0.39
1985	513950	690540	337360	22763	29453	16073	18169	2644	0.74	0.98	0.50
1986	871029	1099039	643019	18198	24057	12338	12129	2066	0.58	0.78	0.38
1987	474740	639090	310390	16203	21669	10736	14270	3859	0.61	0.81	0.41
1988	487541	644781	330301	20486	26203	14770	11856	1611	0.52	0.69	0.35
1989	599804	759804	439804	17007	22220	11794	13408	2103	0.73	0.97	0.49
1990	520805	650975	390635	12682	16839	8525	10656	2444	0.62	0.81	0.43
1991	679362	793272	565452	13748	17343	10152	9946	2598	0.62	0.78	0.47
1992	229491	264378	194604	11813	14279	9347	12791	4203	1.02	1.20	0.83
1993	215426	243511	187341	9793	11285	8301	9230	2707	0.81	0.95	0.67
1994	185475	210872	160078	5633	6547	4719	7936	1173	0.84	0.98	0.69
1995	343135	383746	302524	4071	4740	3401	7044	2151	0.82	0.96	0.68
1996	205043	231409	178677	2835	3365	2305	7966	3631	0.90	1.03	0.76
1997	172747	196821	148673	3073	3539	2607	4205	1928	0.78	0.91	0.65
1998	168672	190645	146699	2546	2954	2138	3533	1304	1.09	1.28	0.91
1999	210135	236984	183286	1526	1828	1224	2762	1092	0.86	1.02	0.71
2000	110194	125530	94858	1489	1773	1206	2880	2118	1.13	1.30	0.95
2001	193993	219327	168659	1314	1542	1087	1745	1012	0.91	1.08	0.74
2002	80592	91561	69623	1171	1398	944	1487	740	1.25	1.45	1.05
2003	121764	139931	103597	1181	1384	978	996	480	0.62	0.76	0.47
2004	95777	107725	83829	1257	1504	1010	1038	905	1.72	2.0	1.43
2005	106876	121691	92061	529	668	390	397	272	0.45	0.58	0.33
2006	156085	175735	136435	1062	1293	831	1837	1773	1.53	1.81	1.25
2007	104653	118353	90953	568	722	413	1547	1512	1.20	1.41	1.00
2008	150101	168825	131377	713	862	564	1206	1169	0.97	1.16	0.79
2009	93580	106072	81088	726	881	571	1360	1321	1.11	1.30	0.91
2010	93291	105245	81337	811	968	655	1184	1154	1.15	1.37	0.93
2011	152851	172053	133649	602	742	463	977	946	0.86	1.03	0.69
2012	80106	90937	69275	674	818	530	1399	1339	1.14	1.33	0.94
2013	161750	184426	139074	826	990	661	981	948	0.65	0.80	0.51
2014	202481	226473	178489	936	1134	738	1974	1951	1.48	1.75	1.21
2015	126822	143352	110292	680	854	506	1549	1521	0.92	1.10	0.74
2016	83311	97668	68954	1020	1224	815	780	765	0.51	0.63	0.38
2017	150472	185896	115048	1276	1545	1006	704	668	0.38	0.49	0.27
2018	120641*			1628							

\* GM recruitment 2000–2017.

## Sources and references

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## Annex 1

UK sent ICES the following request on 8 October 2018:

*ICES most recent advice for the stock of whiting in the Irish Sea (Division 7a) was published on the 30th June 2017, giving a catch advice applicable for 2018 and 2019. The advice provides a discard estimate of 1259 t for 2017, based on the average discard pattern for 2014–2016. The advice has not been reissued in 2018.*

*The North West Waters group in their joint recommendation have identified that all fleets in the Irish Sea targeting Nephrops are to use approved highly selective gears, listed below. Selective gears have been increasingly used in the Irish Sea since 2014. From the 1st January all fleets in the area are expected to using a highly selective gear. See additional information for further details.*

*In an attempt to better reflect the recent selectivity change ICES are asked to review the 2017 catch / discard data and identify the difference between the actual and forecast discards estimate in 2017. ICES is requested to update the assessment and forecast for 2019 taking account of the estimates of discards in 2017.*

*The fisheries data for 2018 are not available yet, thus it is understood that ICES will apply the recent average discard pattern in the forecast, as predictions about changes in selectivity in the fishery are not done until there is observations in the data to support such a change. In the forecast the assumed catch in 2018 will be calculated using a recent average fishing mortality and discard pattern (2015–2017). It is understood that ICES are not be in a position use a different selectivity assumption in the forecast or to partition the discard estimate for 2018 into individual national fleets.*