

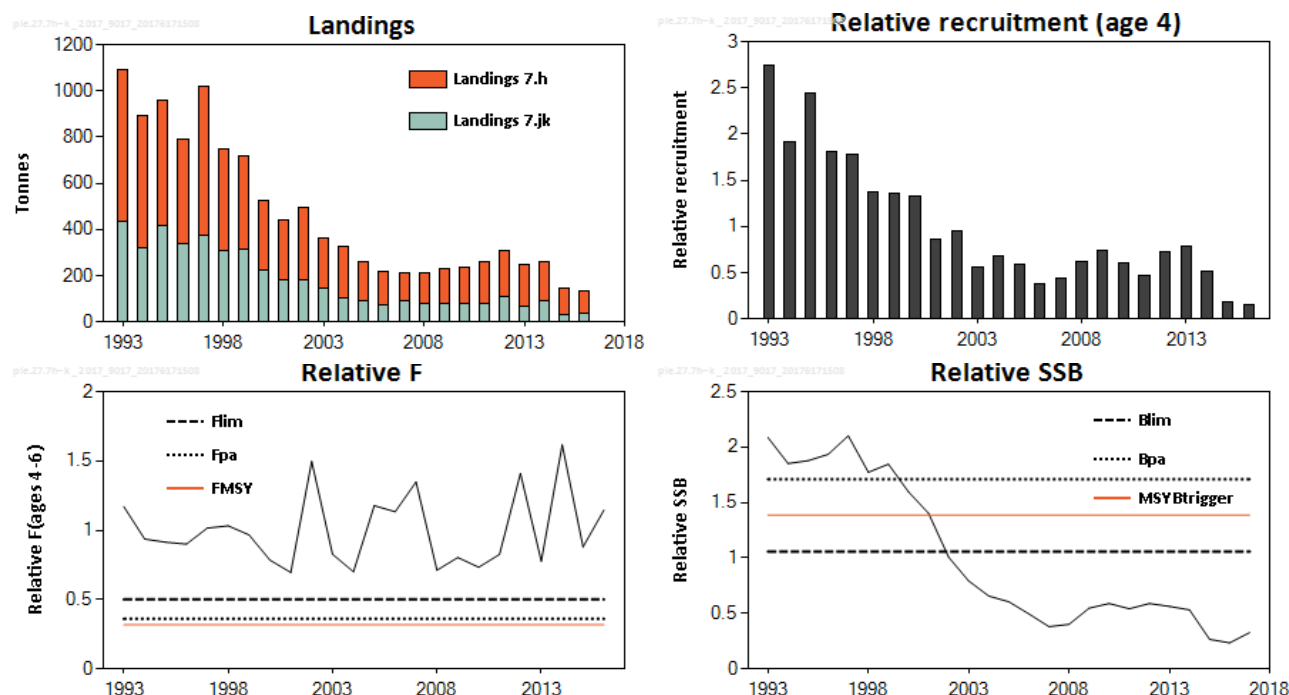
## Plaice (*Pleuronectes platessa*) in divisions 7.h–k (Celtic Sea South, southwest of Ireland)

### ICES stock advice

ICES advises that when the precautionary approach is applied, there should be zero catches in 2018.

### Stock development over time

The assessment is indicative of trends only. Spawning-stock biomass (SSB) has decreased significantly since the 1990s and has been below  $B_{lim}$  since 2002. Fishing mortality (F) is highly variable but shows no long-term trend. Recruitment at age 4 decreased until 2003 and has been at a low level since then.



**Figure 1** Plaice in divisions 7.h–k. Summary of the stock assessment. The landings are for the full stock area (divisions 7.h–k), only landings from 7.jk are used in the assessment. Recruitment, F and SSB values are relative to the average of the time-series.

### Stock and exploitation status

**Table 1** Plaice in divisions 7.h–k. State of the stock and fishery relative to reference points.

		Fishing pressure				Stock size			
		2014	2015	2016		2015	2016	2017	
Maximum sustainable yield	$F_{MSY}$ proxy	✗	✗	✗	Above proxy	✗	✗	✗	Below proxy
Precautionary approach	$F_{pa}$ , $F_{lim}$	✗	✗	✗	Harvested unsustainably	✗	✗	✗	Reduced reproductive capacity
Management plan	$F_{MGT}$	—	—	—	Not applicable	—	—	—	Not applicable

### Catch options

The ICES framework for category 3 stocks was applied previously (ICES, 2012). An assessment model for the divisions 7.j–k part of the stock was used as the index of stock development. Relative reference points were estimated in this year's

assessment. Given that SSB is estimated to be well below  $B_{lim}$  and is likely to remain so in 2018, the advice is for zero catch for 2018.

### Basis of the advice

**Table 3** Plaice in divisions 7.h–k. The basis of the advice.

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

### Quality of the assessment

The advice is based on an assessment accepted for trends, used as an indicator of stock size. This is because discards are significant but not fully quantified. They are not included in the assessment. The available landings-at-age data do not cover the Division 7.h component of the area and fishery.

The assessment is carried out on the landings in divisions 7.j–k but is also considered representative for Division 7.h. The advice is for divisions 7.h–k.

The apparent reduction in SSB since the early 2000s is mainly driven by a reduction in abundance of young fish in recent years and high fishing mortality. However, it is unclear whether this lack of young fish in the landings (and commercial tuning lpue index) is due to increased discarding or poor recruitment.

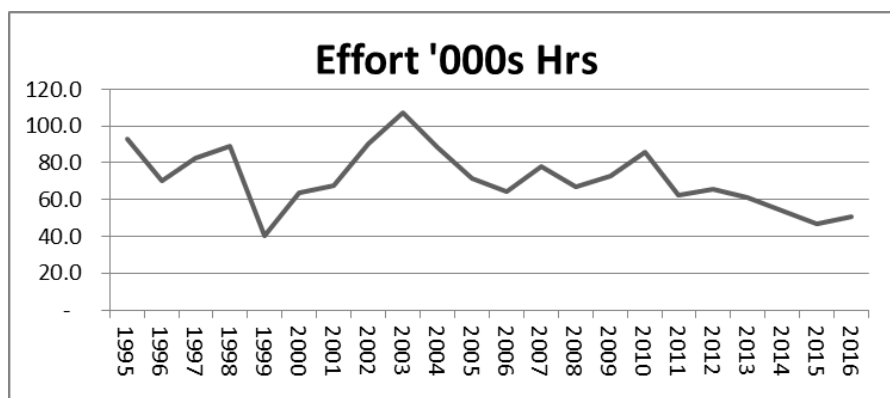
### Issues relevant for the advice

The catches are taken in a mixed fishery and should be managed as such.

Total otter trawl effort in Division 7.j has declined in recent years (Figure 2) and this has not resulted in a reduction of fishing mortality.

Management measures should focus on reducing catches of small plaice.

Because plaice is caught in distinct areas, restricting effort in areas where plaice are caught could also be effective.



**Figure 2** Plaice in divisions 7.h–k. Total Irish otter trawl effort in Division 7.j.

## Reference points

**Table 4** Plaice in divisions 7.h–k. Reference points, relative values, and their technical basis.

Framework	Reference point	Relative value*	Technical basis	Source
MSY approach	MSY $B_{trigger\_proxy}$	1.39	$B_{pa}$	ICES (2017)
	$F_{MSY\_proxy}$	0.32	Median point estimates of Eqsim with segmented	ICES (2017)
Precautionary approach	$B_{lim}$	1.06	Break point segmented regression S-R relationship	ICES (2017)
	$B_{pa}$	1.71	$B_{lim} \times \exp(1.645 \times \sigma)$ ; $\sigma = 0.20$	ICES (2017)
	$F_{lim}$	0.50	F with 50% probability of $SSB < B_{lim}$	ICES (2017)
	$F_{pa}$	0.36	$F_{lim} \times \exp(-1.645 \times \sigma)$ ; $\sigma = 0.20$	ICES (2017)
Management plan	$SSB_{mgt}$	Not applicable		
	$F_{mgt}$	Not applicable		

\* All values are relative to the average of the time-series in the stock assessment (see Table 9).

## Basis of the assessment

**Table 5** Plaice in divisions 7.h–k. Basis of assessment and advice.

ICES stock data category	3 ( <a href="#">ICES, 2016</a> )
Assessment type	Age-based analytical assessment (XSA) indicative of stock trends (ICES, 2017)
Input data	Commercial landings (international landings from divisions 7.j–k, Irish age compositions from landings sampling in 7j); commercial tuning index (IRL-VMS-OTB), maturity and natural mortality data are applied from divisions 7.f–g.
Discards and bycatch	Discards are known to take place but cannot be reliably quantified owing to limited sampling; therefore they are not included.
Indicators	None
Other information	None
Working group report	Working Group for the Celtic Seas Ecoregion ( <a href="#">WGCSE</a> )

## Information from stakeholders

There is no additional available information for this stock.

## History of the advice, catch, and management

**Table 6** Plaice in divisions 7.h–k. ICES advice and official landings. All weights are in thousand tonnes.

Year	ICES advice	Predicted landings corresp. to advice	Agreed TAC	Official landings	ICES landings
1993	-	-	-	672	655
1994	-	-	-	578	577
1995	-	-	-	667	542
1996	-	-	-	560	453
1997	-	-	-	551	645
1998	-	-	-	454	444
1999	-	-	-	385	406
2000	-	-	-	337	299
2001	-	-	1215	313	261
2002	-	-	1080	316	313
2003	Reduce TAC to recent average (1998–2000)	450	582	237	217
2004	Reduce TAC to recent average (2000–2002)	320	466	232	221
2005	Reduce TAC to recent average (2001–2003)	271	466	170	164
2006	Reduce TAC to recent average (2002–2004)	245	396	143	147
2007	Reduce TAC to recent average (2003–2005)	196	337	142	120
2008	Reduce TAC to recent average (2004–2006)	177	303	122	135
2009	Same advice as last year	177	256	148	148
2010	Reduce TAC	-	218	156	155
2011	See scenarios	-	185	179	178
2012	Reduce catches	-	176	199	196
2013	Decrease catches by 36% (20% decrease, followed by 20% PA	< 100	141	141	182
2014	Decrease landings by 4% (20% increase, followed by 20% PA	< 135	135	148	169
2015	The same landings advice as for 2014	< 135	135	107	114
2016	Precautionary approach (same advised value as for 2015)	≤ 135	135	100	99
2017	Precautionary approach (36% reduction in advised landings)	≤ 86	128		
2018	Precautionary approach	0			

## History of the catch and landings

**Table 7** Plaice in divisions 7.h–k. Catch distribution by fleet in 2016 as estimated by ICES.

Catch (2016)	Landings			Discards
Unknown	Otter trawl 71%	Beam trawl 22%	Other gears 7%	Discards in Division 7.h are unknown. Discards in divisions 7.jk are in the order of 30% of the catch for otter trawls (average 2007–2016).
	99 tonnes			

**Table 8** Plaice in divisions 7.h–k. History of commercial 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	divisions 7.j–k					Division 7.h					7.j–k	7.h	divisions 7.h–k	
	BEL	FRA	IRL	UK	OTH	BEL	FRA	IRL	UK	OTH	Total	Total	Official	ICES est.
1993	0	8	383	46	0	0	56	0	179	0	437	235	672	655
1994	0	6	251	60	0	0	42	20	199	0	317	261	578	577
1995	0	12	317	90	0	0	48	4	196	0	419	248	667	542
1996	0	3	295	38	0	0	45	10	117	52	336	224	560	453
1997	0	6	337	32	0	0	63	7	106	0	375	176	551	645
1998	0	8	282	16	0	0	41	4	90	13	306	148	454	444
1999	42	0	296	15	0	3	0	3	67	1	311	74	385	406
2000	4	16	195	9	5	0	38	5	67	2	225	112	337	299
2001	0	16	157	6	3	27	34	3	67	0	182	131	313	261
2002	14	21	155	5	2	55	24	0	54	0	183	133	316	313
2003	4	7	125	9	6	16	25	2	47	0	147	90	237	217
2004	0	5	87	6	6	67	27	4	30	0	104	128	232	221
2005	0	4	88	2	0	32	16	2	26	0	94	76	170	164
2006	1	6	63	1	1	22	31	2	17	0	71	72	143	147
2007	2	9	72	2	11	7	21	0	18	2	94	48	142	120
2008	3	5	72	1	1	25	7	0	11	0	79	43	122	135
2009	4	7	71	2	0	1	37	0	30	0	80	68	148	148
2010	5	11	66	1	0	0	44	0	34	0	78	78	156	155
2011	6	11	67	2	0	4	47	6	42	0	80	99	179	178
2012	7	17	93	0	0	2	45	6	36	0	110	89	199	196
2013	0	14	51	0	0	0	35	1	40	0	65	76	141	182
2014	0	11	78	0	0	4	41	4	15	0	89	64	153	169
2015*	0	10	24	0	0	5	50	2	17	0	34	74	108	114
2016*	0	7	30	0	0	7	39	2	15	0	37	63	100	99

\* Preliminary.

## Summary of the assessment

**Table 9** Plaice in divisions 7.h–k. Assessment summary. Weights are in tonnes.

Year	Relative recruitment age 4	Relative SSB	Landings used in assessment (7.j–k)	Total landings in 7.h–k	Relative F Ages 4–6
1993	2.736	2.086	437	655	1.17
1994	1.911	1.851	317	577	0.94
1995	2.438	1.877	419	542	0.91
1996	1.813	1.935	336	453	0.90
1997	1.786	2.102	375	645	1.02
1998	1.379	1.773	306	444	1.03
1999	1.357	1.846	311	406	0.97
2000	1.330	1.596	225	299	0.78
2001	0.863	1.403	182	261	0.70
2002	0.946	1.006	183	313	1.50
2003	0.562	0.793	147	217	0.83
2004	0.682	0.657	104	221	0.70
2005	0.595	0.605	94	164	1.18
2006	0.381	0.495	71	147	1.13
2007	0.433	0.381	94	120	1.35
2008	0.622	0.402	79	135	0.71
2009	0.735	0.548	80	148	0.80
2010	0.603	0.589	78	155	0.73
2011	0.471	0.542	80	178	0.83
2012	0.727	0.589	112	196	1.41
2013	0.784	0.563	65	182	0.78
2014	0.513	0.532	89	169	1.62
2015	0.181	0.266	33	114	0.88
2016	0.151	0.235	37	99	1.15
2017		0.329			

## Sources and references

ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES CM 2012/ACOM:68. 42 pp.

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