

5.3.62 Sole (*Solea solea*) in divisions 7.h–k (Celtic Sea South, southwest of Ireland)

ICES stock advice

ICES advises that when the precautionary approach is applied, catches in 2017 should be no more than 223 tonnes.

Since this stock is only partially under the EU landing obligation, ICES is not in a position to advise on landings corresponding to the advised catch.

Stock development over time

This is a trend-based assessment. The spawning-stock biomass (SSB) shows an increasing trend since 2005. Fishing mortality (F) shows a slowly decreasing trend since 2000. Recruitment is estimated to have been above average in the last two years.

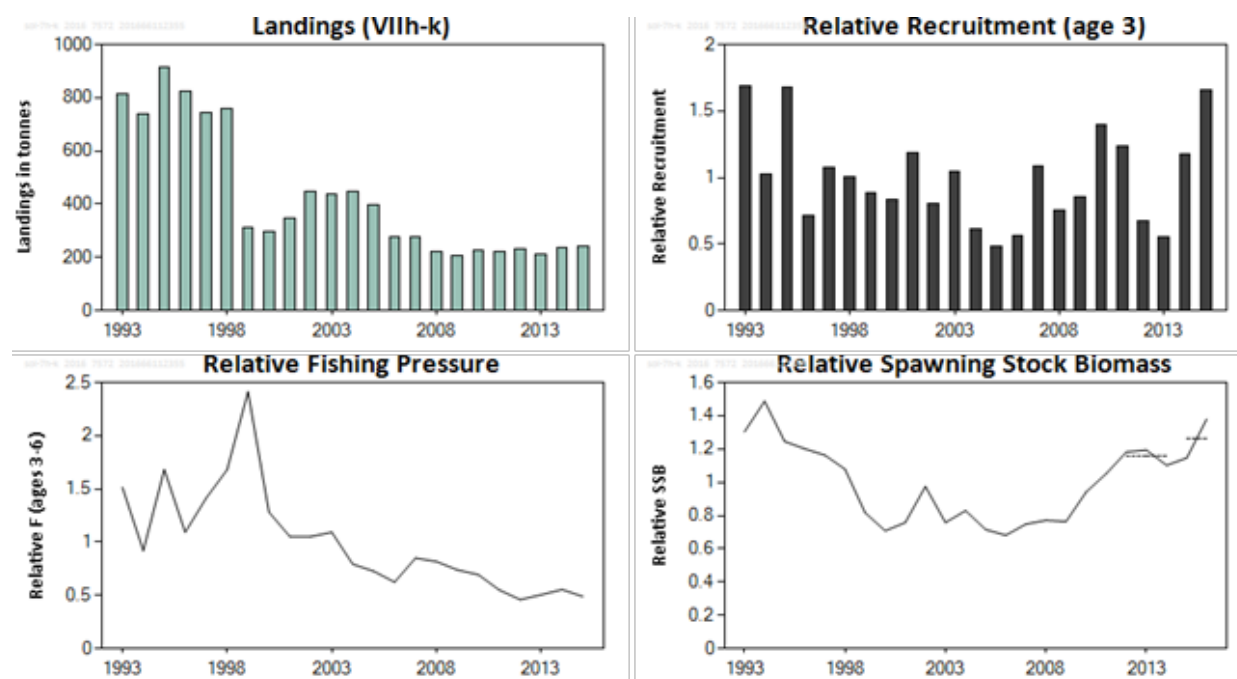


Figure 5.3.62.1 Sole in divisions 7.h–k. Summary of the stock assessment, based on divisions 7.j and 7.k. The landings are for the full assessment area (divisions 7.h–k). Recruitment, F, and SSB values are relative to the average of the time-series. Dashed lines denote the average of relative SSB of the respective year ranges.

Stock and exploitation status

Table 5.3.62.1 Sole in divisions 7.h–k. State of the stock and fishery relative to reference points.

		Fishing pressure			Stock size		
		2013	2014	2015	2014	2015	2016
Maximum sustainable yield	F_{MSY}	?	?	?	MSY	?	?
Precautionary approach	F_{pa}	?	?	?	$B_{trigger}$?	?
Management plan	F_{lim}	-	-	-	B_{pa}, B_{lim}	?	?
	F_{MGT}	-	-	-	SSB_{MGT}	-	-
Qualitative evaluation	-	✓	✓	✓	-	→	↗
				Undefined			Undefined
				Undefined			Undefined
				Not applicable			Not applicable
				Near lowest relative F and increasing stock size			Increasing

Catch options

The ICES framework for category 3 stocks was applied (ICES, 2012). The relative SSB estimated by the assessment model is used as the index of stock development. The advice is based on a comparison of the two latest index values (index A) with the three preceding values (index B), multiplied by the recent advised catch.

The index is estimated to have increased by less than 20% and thus the uncertainty cap was not applied. The fishing mortality has had a declining trend since 2000 and stock size has had an increasing trend during that period; therefore, no additional precautionary buffer was applied. Discards are negligible.

Table 5.3.15.2 Sole in divisions 7.h-k. For stocks in ICES data categories 3, one catch option is provided.

Index A (2015–2016)		1.26
Index B (2012–2014)		1.16
Index ratio (A/B)		1.09
Uncertainty cap	Not applied	-
Recent advised catches for 2016		205 tonnes
Discard rate		Negligible
Precautionary buffer	Not applied	-
Catch advice*		223 tonnes

* [Recent advised catch] × [index ratio].

Basis of the advice

Table 5.3.62.3 Sole in divisions 7.h–k. The basis of the advice.

Advice basis	Precautionary approach
Management plan	There is no management plan for sole in this area.

Quality of the assessment

The advice is based on an assessment accepted for trends because the available landings-at-age data do not cover the whole area and fishery. Furthermore, there is a lack of reliable information on younger ages, no fishery-independent information on abundance, and a tendency for the assessment to underestimate stock size and overestimate fishing mortality.

The estimates from the assessment (carried out for the divisions 7.j and 7.k components) are used as an indicator of stock size. However, the advice does take into account the landings from Division 7.h.

Issues relevant for the advice

The catches are taken in mixed fisheries and should be managed as such. The TAC is currently not restrictive, but for some countries the quota appears to have become restrictive.

The broad age structure in the catches indicates low overall mortality rate for sole in divisions 7.j–k (Figure 5.3.62.2).

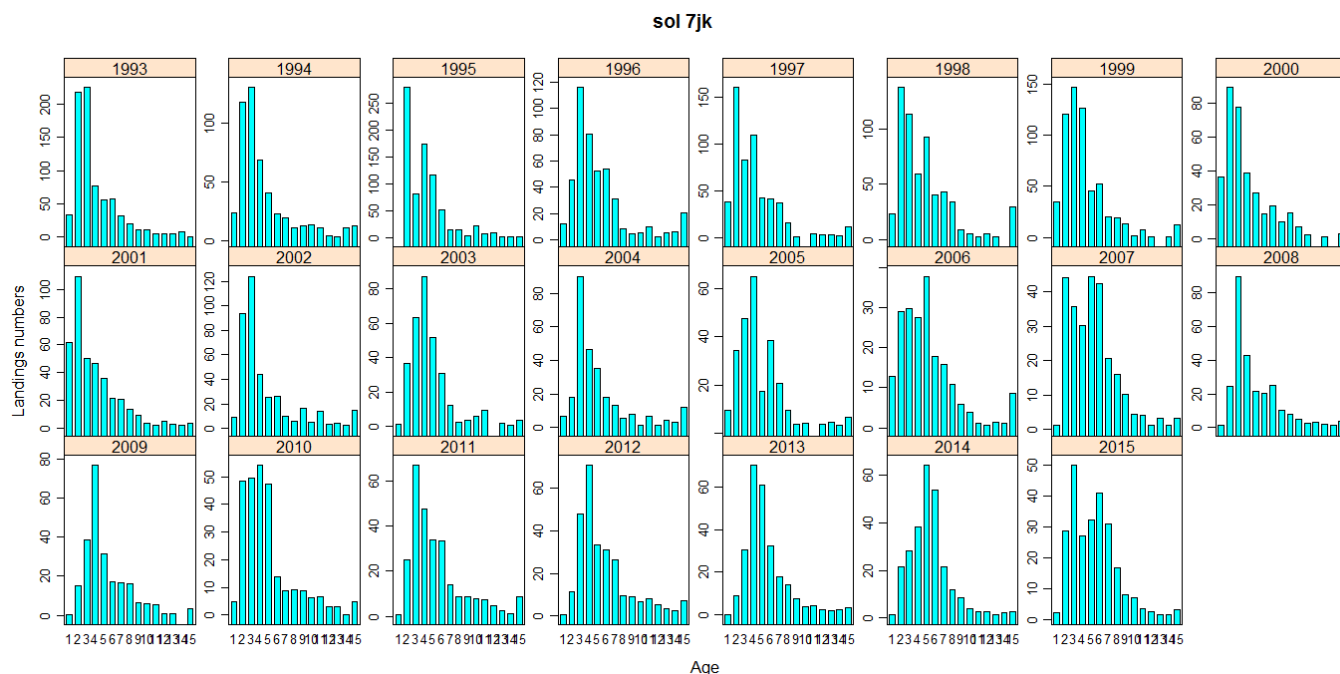


Figure 5.3.62.2 Sole in divisions 7.h–k. Age structure of sole in divisions 7.j and 7.k over time, used in the assessment.

Reference points

Table 5.3.62.4 Sole in divisions 7.h–k. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{\text{trigger proxy}}^*$	-	No proxy identified	ICES (2016a)
	$F_{\text{MSY proxy}}^*$	0.17	$F_{0.1}$ (ages 3–6), from age-based yield-per-recruit analysis using long-term averages	ICES (2016a)
Precautionary approach	B_{lim}	Not defined		
	B_{pa}	Not defined		
	F_{lim}	Not defined		
	F_{pa}	Not defined		
Management plan	SSB_{MGT}	Not Aplicable		
	F_{MGT}	Not applicable		

* The current assessment is indicative of trends only and therefore, assessment results cannot be compared directly to the F_{MSY} proxy reference point estimates.

Basis of the assessment

Table 5.3.62.5 Sole in divisions 7.h–k. The basis of the assessment.

ICES stock data category	3 (ICES, 2016b)
Assessment type	Age-based analytical assessment (XSA) indicative of stock trends (ICES, 2016c)
Input data	Commercial catches (international landings from Divisions 7.j and 7.k, Irish age composition from catch sampling); commercial tuning index (IRL-VMS-OTB); natural mortalities and maturity are assumed to be the same as for sole in divisions 7.f and 7.g.
Discards and bycatch	Discarding is considered negligible and is not included
Indicators	None
Other information	None
Working group report	Working Group for the Celtic Seas Ecoregion (WGCSE)

Information from stakeholders

There is no available information.

History of the advice, catch, and management

Table 5.3.62.6 Sole in divisions 7.h–k. History of ICES advice, the agreed TAC, and ICES estimates of landings. Weights are in tonnes.

Year	ICES advice	Predicted catch corresp. to advice	Agreed TAC	Official landings	ICES catch
1996	No advice	-	-	826	443
1997	No advice	-	-	742	564
1998	No advice	-	-	759	423
1999	No advice	-	-	406	381
2000	No advice	-	-	303	329
2001	No advice	-	650	352	325
2002	No advice	-	650	517	430
2003	Reduce TAC to recent landings	330	390	486	245
2004	Reduce TAC to recent average (2000–2002)	360	390	450	290
2005	Reduce TAC to recent average (2001–2003)	335	650	395	326
2006	Reduce TAC to recent average (2002–2004)	380	650	279	272
2007	Reduce TAC to recent average (2003–2005)	287	650	278	277
2008	Reduce TAC to recent average (2004–2006)	300	650	219	225
2009	Same advice as last year	300	553	208	208
2010	No advice	-	498	229	228
2011	No increase in catches	-	423	218	237
2012	No increase in catches	-	423	233	228
2013	Decrease catches by 8% (15% increase, followed by 20% PA reduction)	< 200	402	212	211
2014	Increase catches by 11%	< 252	382	239	243
2015	Average catch (2011–2013)	< 225	382	237	248
2016	Precautionary approach (decrease recent advised value by no more than 9%)	≤ 205	382		
2017	Precautionary approach (increase recent advised value by no more than 9%)	≤ 223			

History of catch and landings

Table 5.3.62.7 Sole in divisions 7.h–k. Catch distribution by fleet in 2015 as estimated by ICES.

Table 2: 2018-2019 Catch and Landings of <i>Merluccius</i> spp. in the Gulf of Mexico, by month in 2018 as estimated by ICCAT					
Catch		Landings			Discards
248 tonnes	Otter trawls	Beam trawls	Other gear types	Discarding is considered negligible	
	59%	38%	3%		
	248 tonnes				

Table 5.3.62.8 Sole in divisions 7.h–k. History of the official and ICES estimated landings by area for each country participating in the fishery. Weights are in tonnes.

Year	Division 7.h					Division 7.j				Division 7.k			7.h	7.j and 7.k	7.h, 7.j, and 7.k	7.h, 7.j, and 7.k
	Bel.	Fra.	Ire.	NL	UK	Bel.	Fra.	Ire.	UK	Fra.	Ire.	UK	Total	Total	Total	ICES Estimates
1993		43			206		1	237	8				249	246	495	
1994		42	8		172			176	2				222	178	400	
1995		44	11		186		1	232	6	2			241	241	482	
1996		48	20	70	147		2	162	1		1		285	166	451	443
1997		56	16		111		2	187	1			1	183	191	374	564
1998		65	13	7	109		8	208	2	1			194	219	413	423
1999	5		8	1	96	96		199	1				110	200	310	381
2000		72	8	10	95	8	4	103		2			185	109	294	329
2001	6	86	11		111	7	11	113		2	1		214	127	341	325
2002	85	85	9		124	69	8	120		15	1		303	144	447	430
2003	122	113	23		78	48	20	82					336	102	438	245
2004	155	95	33		79	2	7	78					362	85	447	290
2005	90	86	28		112		7	69			1		316	77	393	326
2006	36	81	14	1	86	0	11	49	1	0	0	0	218	61	279	272
2007	31	69	4	0	91	0	9	73	0	0	1	0	195	83	278	277
2008	10	49	3	0	80	0	8	69	0	0	0	0	142	77	219	225
2009	11	70	0	0	58	0	9	60	0	0	0	0	139	69	208	208
2010	20	73	3	0	51	0	14	68	0	0	0	0	147	82	229	228
2011	10	70	1	0	54	0	23	63	0	1	0	0	135	87	222	237
2012	18	74	2	0	46	0	11	83	0	0	0	0	140	94	234	228
2013	4	69	1	0	47	0	7	84	0	0	0	0	121	91	212	211
2014	42	56	3	0	53	0	5	78	0	0	0	0	154	83	237	243
2015*	40	70	3	0	53	0	4	74	0	0	0	0	166	78	244	248

* Preliminary.

Summary of the assessment

Table 5.3.62.9 Sole in divisions 7.h–k. Summary of the stock assessment; landings (in tonnes); assessment results are from divisions 7.j and 7.k. Recruitment, SSB, and F are relative to the mean of the time-series.

Year	Relative recruitment Age 3	Relative SSB	Landings (7.h., 7.j and 7.k) tonnes	Landings (7.j and 7.k) tonnes*	Relative fishing mortality Ages 3–6
1993	1.691	1.303	812	246	1.516
1994	1.029	1.487	738	178	0.92
1995	1.676	1.245	915	241	1.68
1996	0.712	1.201	826	166	1.093
1997	1.074	1.163	742	191	1.413
1998	1.003	1.078	759	219	1.68
1999	0.882	0.817	310	200	2.412
2000	0.833	0.708	295	109	1.282
2001	1.187	0.758	345	127	1.052
2002	0.801	0.975	447	144	1.052
2003	1.048	0.758	438	102	1.093
2004	0.616	0.829	448	85	0.793
2005	0.479	0.716	395	77	0.727
2006	0.567	0.681	279	61	0.625
2007	1.089	0.748	278	83	0.85
2008	0.758	0.771	219	77	0.818
2009	0.856	0.764	208	69	0.74
2010	1.398	0.942	229	82	0.694
2011	1.238	1.052	222	87	0.551
2012	0.675	1.182	234	94	0.46
2013	0.556	1.194	212	91	0.505
2014	1.174	1.101	239	83	0.555
2015	1.659	1.146	244	78	0.489
2016		1.380			

* Used in the assessment.

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.

ICES. 2016a. EU request to provide a framework for the classification of stock status relative to MSY proxies for selected category 3 and category 4 stocks in ICES subareas 5 to 10. *In* Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 5, Section 5.4.2.

ICES. 2016b. Advice basis. *In* Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 1, Section 1.2.

ICES. 2016b. Report of the Working Group for the Celtic Seas Ecoregion (WGCSE), 4–13 May 2016, ICES Headquarters, Copenhagen, Denmark. ICES CM 2016/ACOM:13.