

Seabass (*Dicentrarchus labrax*) in divisions 4.b–c, 7.a, and 7.d–h (central and southern North Sea, Irish Sea, English Channel, Bristol Channel, and Celtic Sea)

ICES stock advice

ICES advises that when the precautionary approach is applied, there should be zero catch (commercial and recreational) in 2018.

Stock development over time

Spawning-stock biomass (SSB) peaked in 2010 and has been declining since then. It is now below B_{lim} . Fishing mortality (F) shows an increasing trend over the time-series. Recruitment was very poor during the years 2010–2012, whereas the 2013 and 2014 estimates show average recruitment.

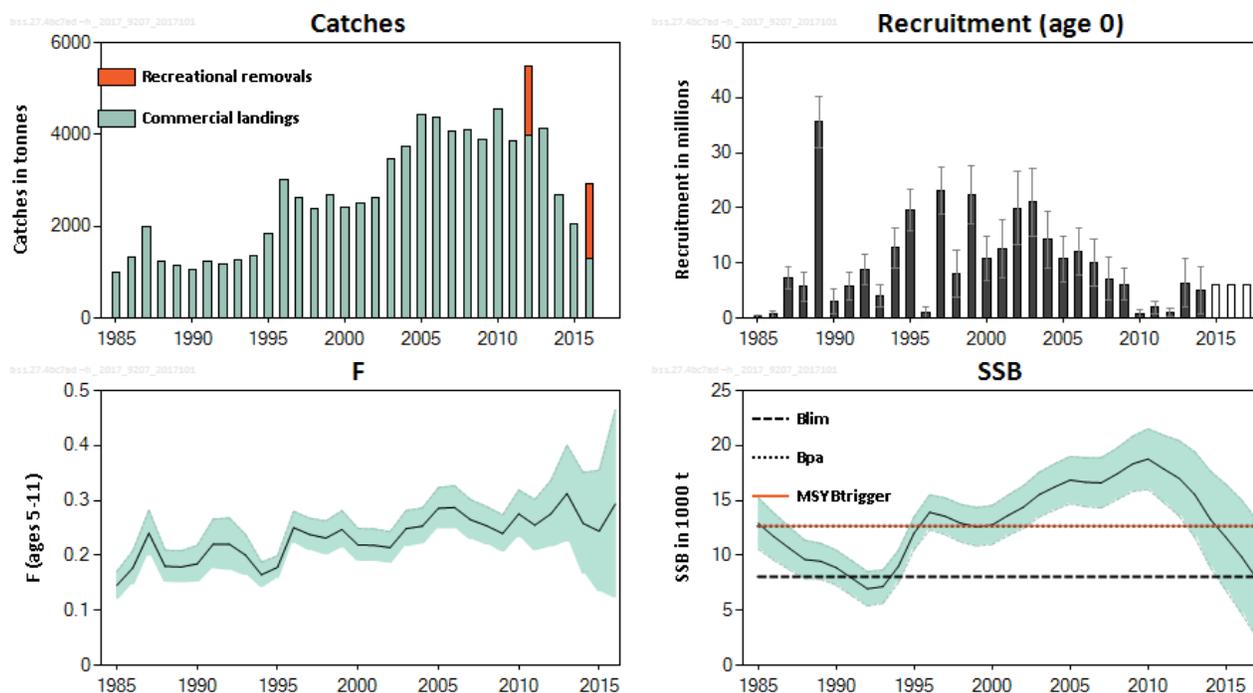


Figure 1 Seabass in divisions 4.b–c, 7.a, and 7.d–h. Summary of the stock assessment (weights in thousand tonnes). Total landings (commercial landings and estimated recreational removals, available for 2012 and 2016, taking mortality of released fish into account). Fishing mortality is shown for the combined commercial and recreational fisheries. Predicted recruitment values are not shaded. Recruitment, F, and SSB are shown with 95% confidence intervals.

Stock and exploitation status

Table 1 Seabass in divisions 4.b–c, 7.a, and 7.d–h. 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}	?	?	?	Undefined	MSY			
						$B_{Trigger}$	✗	✗	✗ Below trigger
Precautionary Approach	F_{pa} F_{lim}	?	?	?	Undefined	B_{pa} B_{lim}	○	○	✗ Reduced reproductive capacity
Management plan	F_{MGT}	–	–	–	Not applicable	B_{MGT}	–	–	– Not applicable
Qualitative evaluation	-	✗	✗	✗	Above possible reference points	-	–	–	– Not applicable

Catch options

Table 2 Seabass in divisions 4.b–c, 7.a, and 7.d–h. The basis for the catch options.

Variable	Value	Notes	Source
F ages 5–11 (2017)	0.293	F_{2016} . Commercial fishery $F = 0.133$; recreational fishery $F = 0.16$.	ICES (2017a)
SSB (2018)	6 414 t	Short-term forecast	ICES (2017a)
Rage 0 (2015, 2016 and 2017)	6 161 thousands	Geometric mean 1985–2014	ICES (2017a)
Total catch (2017)	Unknown		
Total landings (2017)	2 351 t	Commercial landings + recreational removals (including mortality of released fish)	ICES (2017a)
Discards (2017)	Unknown		

Table 3 Seabass in divisions 4.b–c, 7.a, and 7.d–h. Annual catch options. All weights are in tonnes.

Basis	Total landings* (2018)	Commercial landings (2018)	Recreational removals (2018)	Total F^^ (2018)	$F_{Commercial}$ landings^^ (2018)	$F_{Recreational}$ ^^ (2018)	SSB (2019)	% SSB change **
ICES advice basis								
Precautionary approach	0	0	0	0	0	0	7521	17.2
Other options								
$F = 0$	0	0	0	0	0	0	7521	17.2
$SSB(2019) = B_{lim}^{\wedge}$								
$SSB(2019) = B_{pa}^{\wedge}$								
$SSB(2019) = MSY B_{trigger}^{\wedge}$								
$F = F_{2017}$	2116	972	1144	0.293	0.133	0.160	5714	-10.9
$0.8 \times F_{2017}$	1737	797	939	0.235	0.107	0.128	6034	-5.9
$0.6 \times F_{2017}$	1337	614	723	0.176	0.080	0.096	6374	-0.6
$0.4 \times F_{2017}$	915	420	495	0.117	0.053	0.064	6734	5.0
$0.2 \times F_{2017}$	470	216	255	0.059	0.027	0.032	7116	10.9

* Includes commercial landings and recreational removals (taking mortality of released fish into account, estimated to be around 15%).

** SSB 2019 relative to SSB 2018.

^ 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 2019 even with zero catch in 2018.

^^ The split of total F into commercial and recreational in the short-term forecast is based on the proportion of observed commercial landings and estimated recreational removals in 2016, together with assumption that F is reduced in the same proportion in commercial and recreational fisheries. Other splits are possible.

Basis of the advice

Table 4 Seabass in divisions 4.b–c, 7.a, and 7.d–h. The basis of the advice.

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

Quality of the assessment

There are uncertainties in the assessment because of inaccuracies in the catch data, particularly in the recreational catches. The point estimates of 1501 and 1627 tonnes for the recreational removals (including post-release mortality, estimated to be 15%) in 2012 and 2016 respectively, are based on multiple surveys covering a range of years. Recreational removals for years 1985–2015 (excluding 2012) were included in the stock assessment using an assumption of the recreational F being the same as in 2012; recreational removals in 2016 are based on surveys in the UK and the Netherlands alongside extrapolation from French 2009–2011 data. These assumptions add uncertainty to the assessment. Fishery sampling rates over time have been variable for all countries.

The two survey data series for the eastern English Channel, which is only a small part of the total stock area, provide good estimation of recruitment. However, a change in vessel and survey design in the Channel Ground Fish Survey led to the discontinuation of this series in the assessment since 2015. As a consequence, there is a shortage of stock biomass indices for the assessment. The potential use of a landings per unit effort (LPUE) series from the French fisheries as a biomass index in the assessment is being investigated, but further work is necessary. The LPUE series indicates a declining trend in stock biomass since 2010.

There is a tendency for this assessment to show either a rescaling or retrospective pattern in SSB and F when new data is added. The revision observed in this year’s assessment compared with the assessment performed last year is mostly caused by a change in the observed length frequencies of seabass in the catch of some fleets.

Stock identity remains poorly understood and tagging studies are ongoing. Survival rates of sea bass discarded from commercial vessels are poorly known.

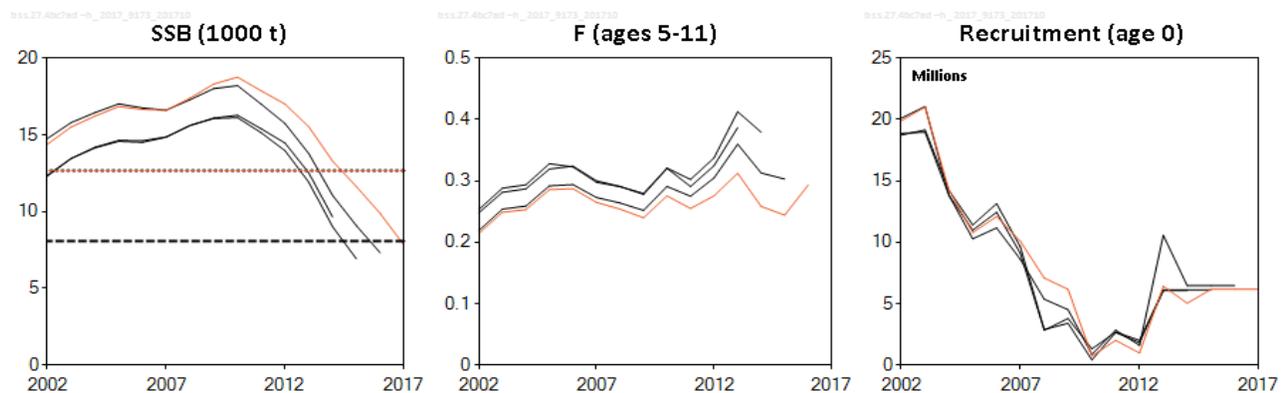


Figure 2 Seabass in divisions 4.b–c, 7.a, and 7.d–h. Historical assessment results.

Issues relevant for the advice

The emergency measures introduced in 2015 reduced pelagic trawl catches of seabass and also bycatch of seabass in other fisheries. The ICES estimates of recreational removals for 2012 and 2016 are similar, suggesting that they have remained fairly constant despite the management measures. This could be the result of any combination of the following: change in survey methods, error associated with the estimates, methods used to estimate French catches in 2016 from 2012, changes in availability of fish for recreational fishers, or interannual variability in catch or catch per unit effort (CPUE) of recreational fishers. Recreational removals survey data from all countries is needed in order to improve these estimates, and a continuous time-series of data would be needed to improve the stock assessment model. Given the estimated decline in the stock, this constant recreational removal resulted in an increase in the recreational F in 2016.

A benchmark process was initiated for seabass in 2017 and should be completed before ICES provides advice for this stock in 2018.

Reference points

Table 5 Seabass in divisions 4.b–c, 7.a, and 7.d–h. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	12 673 t	B_{pa}	ICES (2016a)
	F_{MSY}	Not defined		
Precautionary approach	B_{lim}	8 075 t	B_{loss} from the IBPBass 2016 assessment	ICES (2016b)
	B_{pa}	12 673 t	$B_{lim} \times \exp(1.645 \times \sigma)$; $\sigma = 0.274$	ICES (2016a)
	F_{lim}	Not defined		
	F_{pa}	Not defined		
Management plan	SSB_{mgt}	Not applicable		
	F_{mgt}	Not applicable		

Basis of the assessment

Table 6 Seabass in divisions 4.b–c, 7.a, and 7.d–h. Basis of assessment and advice.

ICES stock data category	1 (ICES, 2016c).
Assessment type	Age- and length-based analytical assessment (Stock Synthesis 3; NOAA Toolbox) that uses landings in the model and in the forecast.
Input data	Commercial landings (international landings, ages and length frequencies from catch sampling); one recruit survey (UK Solent autumn survey, 1986–2016 excluding 2010 and 2012); one bottom trawl survey (Channel Groundfish Survey, 1988–2014); growth and maturity data from sampling of commercial catches and surveys; natural mortality (inferred from life history parameters and maximum observed ages); recreational removals estimated for 2012 and 2016 inferred from recreational fishery surveys since 2009 (ICES, 2017b).
Discards and bycatch	Discarding in commercial fisheries is known to take place but cannot be fully quantified (in the order of 5% in weight).
Indicators	Landings per unit effort (LPUE) in the French fishery
Other information	This stock was benchmarked in 2012, 2014, and 2016 (ICES, 2012, 2014, 2016b). A benchmark in 2017 is in progress.
Working group	Working Group for the Celtic Seas Ecoregion (WGCSE)

Information from stakeholders

There is no additional available information for this stock.

History of the advice, catch, and management

Table 7 Seabass in divisions 4.b–c, 7.a, and 7.d–h. ICES advice and official landings. All weights are in thousand tonnes.

Year	ICES advice	Predicted catch corresp. to advice*	Agreed TAC	Official commercial landings	ICES commercial landings	ICES recreational removals
2000	-	-	none	2100	2407	
2001	-	-	none	2200	2500	
2002	No increase in effort or F	-	none	2400	2622	
2003	No increase in effort or F	-	none	2900	3459	
2004	No increase in effort or F	-	none	3000	3731	
2005	-	-	none	3200	4430	
2006	-	-	none	3400	4377	
2007	-	-	none	3500	4064	
2008	-	-	none	3000	4107	
2009	-	-	none	4300	3889	
2010	-	-	none	4900	4562	
2011	-	-	none	3900	3858	
2012	No increase in catch	-	none	3900	3987	1501
2013	20% reduction in catches (last 3 years' average)	< 6000**	none	4100	4137	
2014	36% reduction in commercial landings (20% reduction, followed by 20% precautionary reduction)	< 2707**	none	2800	2682	
2015	MSY approach	< 1155***	none	2100	2066	
2016	MSY approach	≤ 541***	none	1295	1295	1627
2017	Precautionary approach	0	none			
2018	Precautionary approach	0				

* Advice prior to 2014 was given for sea bass in the Northeast Atlantic.

** Commercial landings.

*** Total landings (commercial and recreational landings).

History of the catch and landings

Table 8 Seabass in divisions 4.b–c, 7.a, and 7.d–h. Catch distribution by fleet in 2016 as estimated by ICES.

Catch	Commercial landings UK and France					Commercial landings other countries	Commercial discards	Recreational removals
	pelagic pair trawlers	bottom trawlers	fixed/drift nets	Lines	other gears			
Unknown	2%	25%	24%	28%	6%	all gears 15%	Unknown (in the order of 5% in weight)	1627 tonnes
1295 tonnes								

Table 9 Seabass in divisions 4.b-c, 7.a, and 7.d-h. History of commercial landings; both the official and ICES estimated values are presented for each country participating in the fishery. All weights are in tonnes.

Year	Belgium	Denmark	Germany	France*	UK	Netherlands	Channel Is.	Total	Total ICES
1985	0	0	0	620	105	0	18	743	994
1986	0	0	0	841	124	0	15	980	1319
1987	0	0	0	1226	123	0	14	1363	1980
1988	0	18	0	714	173	8	12	925	1239
1989	0	2	0	675	192	2	48	919	1161
1990	0	0	0	609	189	0	25	824	1063
1991	0	0	0	726	239	0	16	982	1227
1992	0	0	0	721	148	0	36	906	1186
1993	0	1	0	718	230	0	45	994	1255
1994	0	1	0	593	535	0	49	1178	1371
1995	0	1	0	801	708	0	69	1579	1835
1996	0	1	0	1703	563	8	56	2331	3022
1997	0	1	0	1429	561	1	74	2066	2620
1998	0	2	0	1363	488	48	79	1980	2390
1999	0	1	0	NA	685	32	108	826	2670
2000	0	5	0	1522	407	60	130	2124	2407
2001	0	2	0	1619	458	77	80	2236	2500
2002	0	1	0	1580	627	96	73	2377	2622
2003	154	1	0	1903	586	163	84	2891	3459
2004	159	1	0	1883	617	191	159	3010	3731
2005	206	1	0	1937	512	327	220	3203	4430
2006	211	2	0	2033	574	308	162	3290	4377
2007	178	1	0	1975	713	376	142	3385	4064
2008	188	0	0	1420	791	380	123	2902	4107
2009	173	0	0	2732	697	395	91	4088	3889
2010	215	4	0	3294	736	399	120	4768	4562
2011	152	2	0	2566	793	395	90	3998	3858
2012	154	3	0	2399	892	376	55	3879	3987
2013	145	5	2	2786	803	370	37	4148	4137
2014	146	1	0	1309	1038	253	37	2784	2682
2015	40	0	0	1110	683	207	26	2066	2066
2016**	23	0	0	547	550	151	23	1295	1295

* Landings since 2000 are ICES estimates.

** Preliminary.

Summary of the assessment

Table 10 Seabass in divisions 4.b-c, 7.a, and 7.d-h. Assessment summary. Weights are in tonnes. High and low refers to 95% confidence intervals.

Year	Recruitment Age 0 thousands	High	Low	SSB	High	Low	Commercial landings	Recreational removals*	F Ages 5- 11	High	Low
1985	336	656	17	12923	15260	10586	994	1052	0.146	0.171	0.12
1986	667	1270	65	11718	13859	9577	1318	963	0.177	0.209	0.146
1987	7302	9302	5302	10654	12597	8712	1979	901	0.24	0.282	0.198
1988	5730	8317	3142	9629	11373	7886	1239	883	0.18	0.21	0.151
1989	35611	40296	30927	9477	11102	7851	1161	836	0.179	0.208	0.15
1990	3070	5412	729	8895	10488	7301	1064	735	0.185	0.218	0.151
1991	5921	8427	3415	7939	9526	6353	1226	640	0.221	0.266	0.175
1992	8789	11493	6085	6973	8531	5415	1186	621	0.22	0.268	0.173
1993	4069	6161	1978	7163	8679	5646	1256	766	0.201	0.239	0.163
1994	12726	16273	9180	9019	10476	7563	1370	1090	0.165	0.188	0.142
1995	19541	23295	15787	12034	13510	10558	1835	1293	0.179	0.2	0.158
1996	1002	1947	57	13924	15515	12332	3022	1289	0.251	0.28	0.221
1997	23064	27338	18790	13559	15228	11889	2620	1210	0.238	0.268	0.208
1998	8025	12291	3759	12923	14639	11206	2390	1151	0.232	0.263	0.201
1999	22301	27598	17004	12619	14364	10873	2670	1177	0.247	0.282	0.213
2000	10866	14962	6771	12771	14536	11007	2407	1259	0.219	0.249	0.189
2001	12580	17910	7251	13629	15467	11790	2500	1314	0.218	0.248	0.189
2002	19908	26567	13249	14392	16332	12453	2622	1415	0.214	0.243	0.186
2003	21024	27137	14911	15518	17550	13486	3459	1504	0.249	0.282	0.216
2004	14253	19332	9173	16228	18330	14126	3731	1581	0.253	0.286	0.22
2005	10794	14918	6670	16850	19002	14698	4430	1586	0.286	0.323	0.248
2006	12097	16311	7882	16660	18880	14440	4377	1559	0.287	0.327	0.248
2007	10083	14381	5785	16609	18890	14328	4064	1618	0.265	0.302	0.228
2008	7091	10982	3200	17406	19757	15054	4107	1723	0.254	0.289	0.219
2009	6169	9022	3315	18317	20822	15812	3889	1768	0.24	0.274	0.206
2010	735	1478	0	18770	21519	16022	4562	1713	0.276	0.319	0.232
2011	2003	3099	907	17875	20928	14822	3858	1617	0.255	0.302	0.208
2012	977	1664	291	17007	20439	13575	3987	1501	0.276	0.337	0.215
2013	6424	10845	2003	15528	19415	11640	4137	1320	0.313	0.401	0.224
2014	5033	9279	787	13285	17662	8908	2682	1132	0.258	0.351	0.166
2015	6161			11633	16463	6802	2066	957	0.244	0.355	0.134
2016	6161			9880	15038	4721	1295	1627	0.293	0.464	0.122
2017	6161			7820	13166	2474					

*The values in 2012 and 2016 are based on multiple surveys covering a range of years. Values for other years were obtained from an assumption of the recreational F being the same as in 2012.

Sources and references

- ICES. 2012. Report of the Inter-Benchmark Protocol on New Species (Turbot and Sea Bass; IBPNew 2012), 1–5 October 2012, Copenhagen, Denmark. ICES CM 2012/ACOM:45. 239 pp.
- ICES. 2014. Report of the Inter-Benchmark Protocol for Sea Bass in the Irish Sea, Celtic Sea, English Channel, and Southern North Sea (IBP–Bass). By correspondence. ICES CM 2014/ACOM:45. 218 pp.
- ICES. 2016a. Report of the Working Group for the Celtic Seas Ecoregion (WGCSE), 4–13 May 2016, ICES Headquarters, Copenhagen, Denmark. ICES CM 2016/ACOM:13. 1314 pp.
- ICES. 2016b. Report of the Second Inter-Benchmark Protocol for Sea Bass in the Irish Sea, Celtic Sea, English Channel, and Southern North Sea (IBP–Bass2). By correspondence. ICES CM 2016/ ACOM: 31. 191 pp.
- ICES. 2016c. Advice basis. *In* Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 1, Section 1.2.
- ICES. 2017a. Report of the Working Group for the Celtic Seas Ecoregion (WGCSE), 9–18 May 2017, ICES Headquarters, Copenhagen, Denmark. ICES CM 2017/ACOM.
- ICES. 2017b. Report of the Working Group on Recreational Fisheries Surveys (WGRFS), 12–16 June 2017, Azores, Portugal. ICES CM 2017/SSGIEOM:20.