

ECOREGION Celtic Sea and West of Scotland + North Sea
STOCK European sea bass in Divisions IVbc, VIIa, and VIId–h (Irish Sea, Celtic Sea, English Channel, and southern North Sea)

Advice for 2014

Based on ICES approach to data-limited stocks, ICES advises that commercial landings should be no more than 2707 tonnes in 2014. Discards are known to take place but the data are insufficient to estimate a discard proportion that could be applied to give catch advice. Also, recreational catches cannot be quantified. Therefore total catches cannot be calculated.

Stock status

F (Fishing Mortality)	
2010–2012	
Qualitative evaluation	⊗ Above possible reference points
SSB (Spawning Stock Biomass)	
2008–2012	
Qualitative evaluation	↘ Decreasing

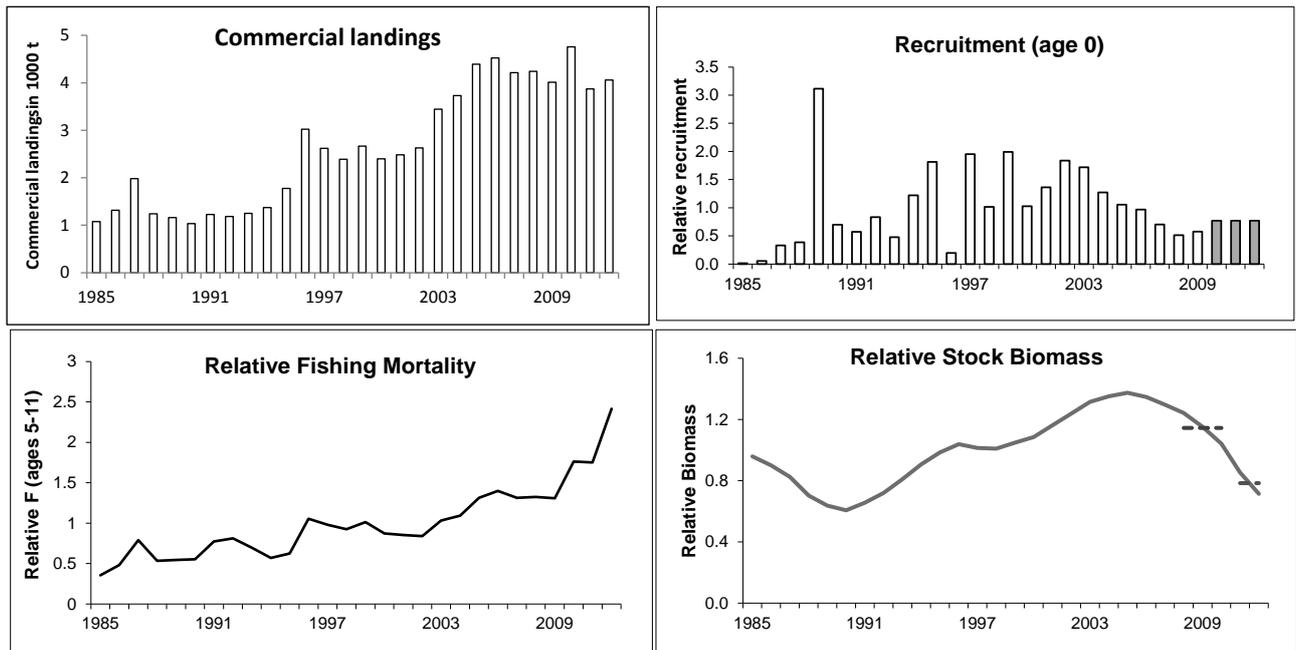
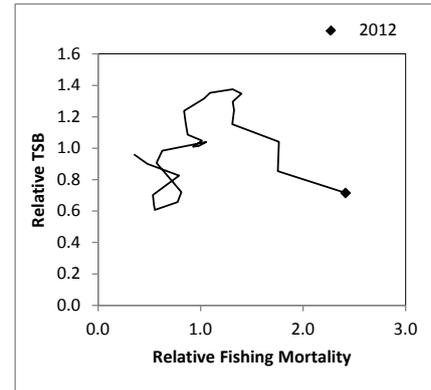


Figure 5.4.32.1 European sea bass in Divisions IVbc, VIIa, and VIId–h. Summary of stock assessment: landings in thousand tonnes; recruitment, fishing mortality, and biomass relative to the average of the time-series. Predicted recruitment values are shaded. Bottom right: Total stock biomass (TSB), dashed lines indicate the average TSB for the respective year range. Top right: relative TSB/relative F for the time-series used in the assessment.

Fishing mortality is increasing, and an exploratory evaluation indicates that F is above a possible F_{MSY} proxy. The total biomass has been declining since 2005. Total biomass, assumed as the best stock size indicator in the last two years (2011–2012), was 32% lower than the total biomass in the three previous years (2008–2010).

Management plans

No specific management objectives are known to ICES. There is no TAC for this species.

Biology

Sea bass grow slowly, do not mature until 4–7 years of age, and have been recorded up to 28 years of age. Juvenile bass up to three years of age occupy nursery areas in estuaries whilst adults undertake seasonal migrations from inshore habitats to offshore spawning sites where they are targeted by pelagic trawlers. After spawning, sea bass tend to return to the same coastal sites each year. The combination of slow growth, late maturity, spawning aggregation, and strong site fidelity increases the vulnerability of sea bass to overexploitation and localized depletion. A new stock definition is considered in 2013; however, it is not clear if sea bass in Divisions IVbc, VIIa, and VIII-d–h constitutes a separate stock. It is possible that sea bass in the area has a connection with sea bass in Division VIIj.

Environmental influence on the stock

Ocean warming in recent decades has likely led to the more northerly distribution of sea bass, which are now found further north into the North Sea. Above-average sea temperatures are expected to be favourable for survival of young bass in estuarine nursery areas, which may explain the increased frequency of strong year classes from the mid-1990s to the early 2000s. The increase in sea temperature may also have been responsible for adult sea bass remaining for a longer period of the year in the near-shore areas of the English Channel and Celtic Sea. More recent years have been characterized by colder winters, which may explain the apparent decline in recruitment.

The fisheries

Sea bass are targeted by pelagic pair trawlers on offshore spawning grounds during December to April, and are taken as seasonal target or bycatch by a large fleet of inshore vessels using a variety of gears. Discarding is low, except for some small-mesh trawl fleets operating inshore near nursery areas. Sea bass is an important marine recreational angling species in the UK, Ireland, France, and the Netherlands. A moratorium on commercial fishing for this species by Irish vessels has been in effect since 1990; as a result, unavoidable catches of Irish commercial vessels are discarded.

Catch distribution	Commercial landings (2012) = 4060 t (UK and France: 24% bottom trawlers; 29% pelagic pair trawlers; 14% fixed/drift nets; 12% lines; 7% other gears. Other countries: 14% all gears).
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Quality considerations

Recent surveys indicate that recreational fishery harvests could amount to 20% of total fishery removals of sea bass, but there are no data on long-term trends in such catches and no procedure to include the recent data in the assessment. Stock structure in Subareas IV, VII, and VIII remains poorly defined and further studies are needed using tagging, genetics, and other population/individual markers. Historical sampling of fishery catches is of variable quality, and data should be collected representatively across the fleets taking sea bass. Time-series of relative abundance indices are needed for both the adult and pre-recruit components of the stock. Pre-recruit survey series included in the assessment were terminated in 2009 and 2011. More up-to-date estimates of maturity across the full stock range are needed.

The basis for the advice is an analytical assessment, presented for this stock this year for the first time. The assessment is considered to be appropriate to describe stock status trends.

The methods applied to derive quantitative advice for data-limited stocks are expected to evolve as they are further developed and validated. The harvest control rules are expected to stabilize stock size, but they may not be suitable if the stock size is low and/or overfished.

Scientific basis

Assessment type	Trends-based age and length analytical assessment (Stock Synthesis 3; NOAA Toolbox).
Stock data category	Category 3.2.0.
Input data	Commercial landings (international landings, ages and length frequencies from catch sampling); three pre-recruit survey indices (UK Solent spring and autumn surveys; Thames trawl survey); growth and maturity data (sampling of commercial catches and surveys); natural mortality (inferred from life history parameters and maximum observed ages).
Discards and bycatch	A low rate of discarding is observed in most sea bass fisheries. Discards were not included in the assessment but are available for monitoring (UK and France).
Indicators	None.
Other information	This stock was benchmarked in 2012 (ICES, 2012).
Working group report	WGCSE (ICES, 2013).

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Reference points

No reference points are defined for this stock.

Outlook for 2014

There are no estimates of recruitment since 2009 and no catch projections are available. If the reduction in recruitment observed up to 2009 continues and fishing mortality remains high, a continued decline in biomass is expected although the rate of decline cannot be accurately projected.

ICES approach to data-limited stocks

For data-limited stocks for which a biomass estimates are available, ICES uses as harvest control rule an index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock the total biomass is estimated to have decreased by more than 20% between the periods 2008–2010 (average of the three years) and 2011–2012 (average of the two years). This implies a decrease in commercial landings of least 20% compared to the average landings of the last three years, corresponding to commercial landings of no more than 3383 t.

Additionally, considering that the stock is considered overexploited, ICES advises that commercial landings should decrease by a further 20% as a precautionary buffer. This results in commercial landings of no more than 2707 t in 2014. Discards are known to take place but the data are insufficient to estimate a discard proportion that could be applied to give catch advice. Also, recreational catches cannot be quantified. Therefore total catches cannot be calculated.

Additional considerations*Management considerations*

A combination of continued high fishing mortality and continued below-average recruitment will lead to a continuing decline in spawning-stock biomass and progressive loss of older fish, and cause increasing dependence of egg production on younger and less fecund fish. A reduction in fishing mortality on sea bass is needed to prevent SSB declining to such an extent that the stock's ability to produce strong recruitment in more favourable environmental conditions is impaired.

ICES recommends that tailored measures for target and bycatch fisheries should be implemented. Any consideration of catch limitation (output control) would need to take into account that sea bass are a bycatch in mixed fisheries to a varying extent, depending on gear and country. A bycatch provision should be part of any management measure. This would allow for incidental unavoidable bycatches to be landed. Catch limitations that incite discarding should be avoided. Discarding is mainly an issue at present with otter trawlers using 80–90 mm mesh in or near areas where juvenile bass are most abundant, for example in coastal waters of the eastern Channel. However, even without discards included in the assessment, the length at 50% fishing selection in the overall fisheries is below the age at first maturity. Improvements to fishery selectivity are needed to allow more fish to spawn at least once before capture. This would require changes to gear designs and spatial management approaches that do not incite discarding.

Management of sea bass fisheries needs to take into account the distinctive characteristics, economic value, and objectives of the different fisheries that share the resource. Sea bass is of high social and economic value to the large inshore artisanal fleets and to sea angling and other recreational fishing that contribute substantially to local economies. Data from France indicate that the first-sale value of the lower quality, high-volume catches of sea bass caught by pelagic trawlers targeting offshore spawning fish during December to March has been up to three times lower per kg than for smaller-volume sales of higher quality fish for other métiers fishing inshore (Drogou *et al.*, 2011).

As sea bass is at present a non-TAC species, there is potential for displacement of fishing effort from other species with limiting quotas. The effort of the French pelagic fisheries for sea bass during winter and spring can shift between the Bay of Biscay and the English Channel, and there is evidence for such a shift to the Channel in recent years. These developments are likely to have increased the fishing mortality on sea bass in Subarea VII.

Biology

The stock structure of sea bass is currently uncertain, although the populations around southern Ireland and in the Bay of Biscay are treated as separate from sea bass populations in the eastern Celtic Sea, English Channel, and North Sea. The sea bass at the north Brittany coast may mix with the population in the Bay of Biscay.

Mature sea bass aggregate offshore to spawn, which occurs from February to May in the English Channel and eastern Celtic Sea. The larvae drift inshore to nursery areas in creeks, estuaries, and shallow bays where they remain for at least two years. Three-year-old fish migrate to over-wintering areas in deeper water, returning to large estuaries in summer. Older bass are more wide-ranging, and mature individuals undertake annual migrations between inshore feeding areas and offshore spawning sites. Tagging studies show that sea bass are often recaptured close to where they were released, despite mixing on offshore spawning grounds, indicating strong association with particular coastal sites.

Quality considerations

Recreational catches are substantial but not included in the stock assessment due to the very short series of estimates. Surveys in France in 2009–2010 estimated that the recreational fishery (angling and non-angling gears) in Subarea VII caught 1270 t of sea bass, of which 330 t was released. In comparison, commercial fisheries in France landed around 3400 t in 2010. A survey in the Netherlands in 2010 estimated 130 t of recreational landings. UK recreational catch estimates for 2012 will be available late 2013.

The historical fishery catch data are subject to several biases. From 1999 to 2010, French landings data from the ICES commercial landings database are replaced by more accurate figures from a separate analysis of logbook and auction data. From 2011 onwards, the official and scientific French landings use the same analysis of logbook, auction, and VMS data. Official French landings figures prior to 1999 have had to be redistributed between ICES areas according to the average spatial pattern observed from 1999 onwards. Historical landings data of small-scale national fisheries not supplying EU logbooks are known to be inaccurate, particularly in earlier years. Discard rates are considered low in most sea bass fisheries. Estimates of discards are available only from the early 2000s, but do not cover all fisheries, are imprecise, and are not included in the assessment.

Termination of the UK juvenile bass surveys between 2009 and 2011 has meant there is no information available on recent year classes after 2009, and recent year classes up to 2009 are poorly estimated. Stock projections are therefore not possible, and the lack of survey data will progressively degrade the ability to detect recent changes in abundance unless other equivalent data series can be developed.

Regulations

The official minimum landing size is 36 cm ([EC regulation 850/98](#)). In addition, a variety of national restrictions on commercial and/or recreational sea bass fishing are also in place, including licensing, individual landings limitations, larger minimum landing size (MLS), seasonal/area closures, and weekly limits on individual vessel landings.

A moratorium on commercial fishing for sea bass by Irish vessels in Subareas VI and VII has been in place since 1990.

Data requirements

Time-series of relative abundance indices need to be developed throughout the range of the stock, for both the adult and pre-recruit components of the stock.

There is a need to ensure adequate and representative sampling coverage of fleets catching sea bass, including developing regional time-series of recreational fishery catch, effort, and catch composition.

Further studies using tagging, genetics, and other stock and individual markers are needed to more accurately define stock boundaries suitable for assessment and management purposes.

Studies are needed to estimate the survival of recreationally caught and released sea bass.

Comparison with previous assessment and advice

The advice last year was based on ICES approach to data-limited stocks, considering a combined stock for the whole ICES area. After a benchmark process last year (ICES, 2012), the combined stock was divided in four stocks. The present advice only concerns the European sea bass in Divisions IVbc, VIIa, and VIId–h.

This year there is additional information from an analytical assessment, and advice is based on the ICES approach to data-limited stocks using method 2.1.4.

Sources

Drogou, M., Biseau, A., Berthou, P., de Pontual, H., Habasque, J., and le Grand, C. 2011. Synthèse des informations disponibles sur le Bar: flottilles, captures, marché. Reflexions autour de mesures de gestion. <http://archimer.ifremer.fr/doc/00035/14577/11879.pdf>.

ICES. 2004. Report of the ICES Advisory Committee on Fishery Management and Advisory Committee on Ecosystems (Section 4.4.15, Atlantic sea bass), 2004. ICES Advice. Volume 1, Number 2. 1544 pp.

ICES. 2010. Report of the Study Group on Bycatch of Protected Species (SGBYC), 1–4 February 2010, Copenhagen, Denmark. ICES CM 2010/ACOM:25. 123 pp.

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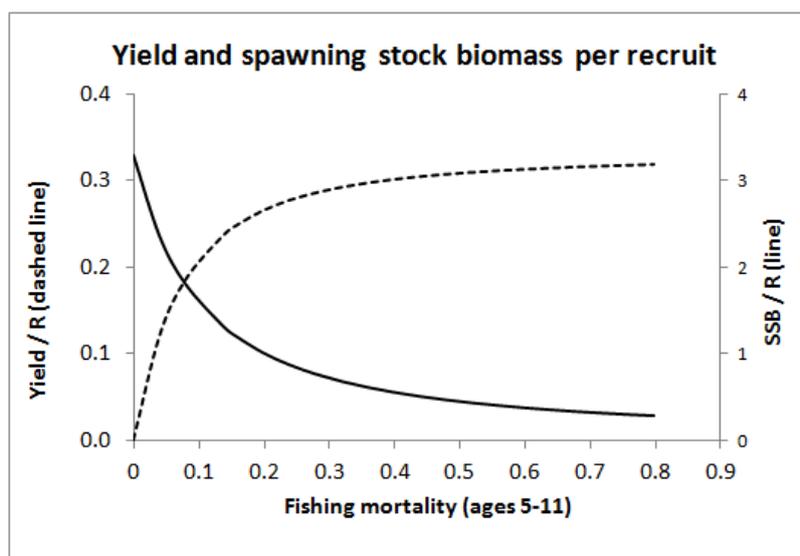


Figure 5.4.32.2 European sea bass in Divisions IVbc, VIIa, and VIId–h. Yield- and SSB–per-recruit analysis.

Table 5.4.32.1 European sea bass in Divisions IVbc, VIIa, and VIId–h. ICES advice, management, official landings, and ICES landings.

Year	ICES Advice	Predicted catch corresp. to advice ¹	Agreed TAC	Official landings	ICES landings
2000	-	-	none	2.1	2.4
2001	-	-	none	2.2	2.5
2002	No increase in effort or F	-	none	2.4	2.6
2003	No increase in effort or F	-	none	2.9	3.4
2004	No increase in effort or F	-	none	3.0	3.7
2005	-	-	none	3.2	4.4
2006	-	-	none	3.4	4.5
2007	-	-	none	3.5	4.2
2008	-	-	none	3.0	4.2
2009	-	-	none	4.3	4.0
2010	-	-	none	4.9	4.8
2011	-	-	none	3.9	3.9
2012	No increase in catch	-	none	3.9	4.1
2013	20% Reduction in catches (last 3 years' average)	< 6.0			
2014	36% reduction in commercial landings (20% reduction, followed by 20% precautionary reduction)	<2.707			

Weights in thousand tonnes.

¹ Advice prior to 2014 was given for sea bass in the Northeast Atlantic.

Table 5.4.32.2

European sea bass in Divisions IVbc, VIIa, and VIId–h. Official landings by area/country and ICES estimates of landings (t).

	Belgium	Denmark	France ¹	UK	Netherlands	Channel Is.	Total	ICES landings ²
1985	0	0	620	105	0	18	743	1076
1986	0	0	841	124	0	15	980	1315
1987	0	0	1226	123	0	14	1363	1979
1988	0	18	714	173	8	12	925	1238
1989	0	2	675	191	2	48	918	1161
1990	0	0	609	189	0	25	823	1033
1991	0	0	726	239	0	16	981	1225
1992	0	0	721	148	0	36	905	1184
1993	0	1	718	230	0	45	994	1251
1994	0	0	593	535	0	49	1177	1370
1995	0	1	801	707	0	69	1578	1777
1996	0	1	1703	562	8	56	2330	3023
1997	0	1	1429	560	1	74	2065	2620
1998	0	2	1363	487	48	79	1979	2388
1999	0	1	0	684	32	108	825	2665
2000	0	5	1522	406	60	130	2123	2397
2001	0	2	1619	458	77	80	2236	2482
2002	0	1	1580	627	96	73	2377	2628
2003	154	1	1903	586	163	84	2891	3445
2004	159	1	1883	617	191	159	3010	3730
2005	206	1	1937	512	327	220	3203	4392
2006	211	2	2116	574	308	193	3404	4522
2007	178	1	2074	713	376	160	3502	4213
2008	188	0	1506	791	380	143	3008	4244
2009	173	0	2905	697	395	103	4273	4013
2010	215	4	3441	736	399	144	4939	4758
2011	152	2	2526	795	395	0	3870	3870
2012	149	3	2492	885	372	46	3946	4060

Source: Official catch statistics 1950–2010 dataset 2011 and 1992–2011 dataset 2013, ICES, Copenhagen.

¹ Landings for 2000–2010 supplied by Ifremer.

² Includes adjustments to pre-2000 French statistics in line with ratio of Ifremer to official figures in later years.

Table 5.4.32.3

European sea bass in Divisions IVbc, VIIa, and VIII-d. Assessment summary. Recruitment, SSB, TSB, and F are relative to the time-series mean. Recruitment from 2010 to 2012 are based on the long-term geometric mean.

Year	Recruits (age 0)	SSB	TSB	F(5-11)	Landings (tonnes)
1985	0.013	1.276	0.959	0.356	1076
1986	0.053	1.131	0.901	0.481	1315
1987	0.329	1.031	0.825	0.790	1979
1988	0.386	0.909	0.703	0.534	1238
1989	3.114	0.857	0.637	0.546	1161
1990	0.698	0.773	0.607	0.554	1033
1991	0.574	0.676	0.657	0.775	1225
1992	0.834	0.562	0.720	0.813	1184
1993	0.479	0.593	0.810	0.696	1251
1994	1.219	0.759	0.906	0.569	1370
1995	1.813	0.963	0.985	0.626	1777
1996	0.198	1.093	1.039	1.055	3023
1997	1.951	1.032	1.014	0.981	2620
1998	1.013	0.974	1.010	0.926	2388
1999	1.990	0.982	1.049	1.014	2665
2000	1.025	0.989	1.086	0.874	2397
2001	1.364	1.050	1.163	0.855	2482
2002	1.836	1.117	1.238	0.839	2628
2003	1.719	1.216	1.315	1.034	3445
2004	1.273	1.259	1.352	1.093	3730
2005	1.054	1.269	1.376	1.313	4392
2006	0.968	1.219	1.347	1.399	4522
2007	0.701	1.183	1.296	1.312	4213
2008	0.512	1.187	1.243	1.326	4244
2009	0.576	1.160	1.153	1.309	4013
2010	(0.770)	1.098	1.041	1.764	4758
2011	(0.770)	0.907	0.854	1.753	3870
2012	(0.770)	0.738	0.714	2.415	4060