

5.3.1 Anglerfish (*Lophius piscatorius* and *L. budegassa*) in Subareas IV and VI and Division IIIa (North Sea, Rockall and West of Scotland, Skagerrak and Kattegat)

ICES stock advice

ICES advises that when the precautionary approach is applied, catches in 2016 should be no more than 18 435 tonnes. If discard rates do not change from the average of the last three years (2012–2014), this implies landings of no more than 17 642 tonnes.

Stock development over time

The stock size indicator shows an increase in the last two years (2014–2015).

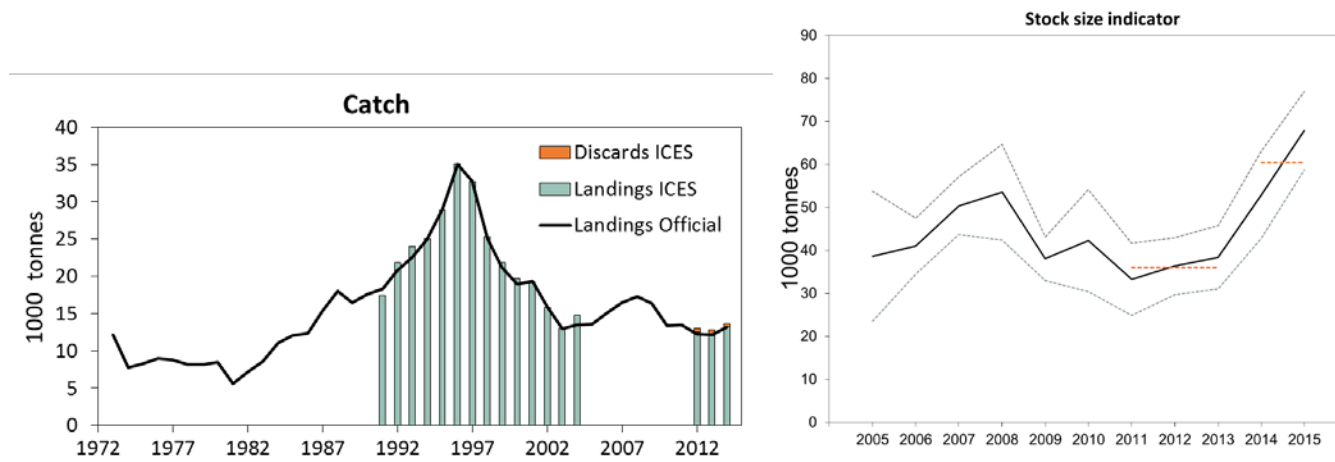


Figure 5.3.1.1 Anglerfish in Subareas IV and VI and Division IIIa. Left: Official and ICES landings, and ICES discards (thousand tonnes). Right: Stock biomass (thousand tonnes) from SCO-IV-VI-AMISS-Q2. The dashed horizontal lines indicate the average of the respective year range. Grey lines mark the 95% confidence interval.

Stock and exploitation status

Table 5.3.1.1 Anglerfish in Subareas IV and VI and Division IIIa. State of the stock and fishery relative to reference points.

		Fishing pressure			Stock size		
		2012	2013	2014	2013	2014	2015
Maximum sustainable yield	F_{MSY}	?	?	?	?	?	Undefined
Precautionary approach	F_{pa} , F_{lim}	?	?	?	?	?	Undefined
Management plan	F_{MGT}	-	-	-	-	-	Not applicable
Qualitative evaluation	-	?	?	?	↗	↗	↗ Increasing

Catch options

The ICES framework for category 3 stocks was applied (ICES, 2012). The SCO-IV-VI-AMISS-Q2 survey was 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 more than 20% and thus the uncertainty cap was applied. The stock status relative to candidate reference points is unknown. The index ratio has increased by more than 50%; therefore, no additional precautionary buffer was applied.

The discard rate is 4.3% of the total catch.

Table 5.3.1.2 Anglerfish in Subareas IV and VI and Division IIIa. For stocks in ICES data categories 3–6, one catch option is possible.

Index A (2014, 2015)		60400 t
Index B (2011, 2012, 2013)		35991 t
Index ratio (A/B)		1.678
Uncertainty cap	Applied	1.2
Recent advised landings for 2015		14702 t
Discard rate (average 2012–2014)		0.043
Precautionary buffer	Not applied	-
Catch advice*		18435 t
Landings corresponding to the catch advice		17642 t

* $[(\text{recent advised landings}) \times (\text{uncertainty cap})] / (1 - \text{discard rate})$.

Basis of the advice

Table 5.3.1.3 Anglerfish in Subareas IV and VI and Division IIIa. The basis of the advice.

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

Quality of the assessment

Discard data are available for most of the fleets except the gillnet fishery, which is not adequately sampled. This fishery accounts for 20% of the landings. The SCO-AMISS-IV-VI survey does not cover Divisions IIIa, IVb, and IVc; collectively these areas account for approximately 13% of landings in the North Sea and Skagerrak. It is uncertain to what extent these affect the quality of the assessment.

Issues relevant for the advice

The dedicated survey for this stock indicated a strong 2013 year class that will be entering the fishery in 2016.

Reference points

No reference points are defined for this stock.

Basis of the assessment

Table 5.3.1.4 Anglerfish in Subareas IV and VI and Division IIIa. The basis of the assessment.

ICES stock data category	3.2.0 (ICES, 2015a).
Assessment type	Survey trends (ICES, 2015b).
Input data	International catch and dedicated anglerfish surveys in Subarea VI and Division IVa (Scotland/Ireland SCO-IV-VI-AMISS-Q2).
Discards and bycatch	Discard estimates are available from 2012.
Indicators	Length distribution from survey.
Other information	Last benchmarked in 2013 (WKROUND; ICES, 2013), which did not result in a revision of the assessment method.
Working group	Working Group for the Celtic Seas Ecoregion (WGCSE).

Information from stakeholders

Since 2014, there has been effort to improve coverage by the Scottish industry/science observer sampling scheme in Subareas IV and VI.

History of advice, catch, and management

Table 5.3.1.5 Anglerfish in Subareas IV and VI and Division IIIa. History of ICES advice, the agreed TAC, and ICES estimates of landings.

Year	ICES advice	Predicted landings corresp. to advice	Predicted catch corresp. to advice	Predicted catch corresp. to advice for Division IIIa and Subarea IV	Predicted catch corresp. to advice for Subarea VI	Agreed TAC*	Official landings	ICES landings
1990	Not assessed	-	-	-	-	8.6	17.6	16.6
1991	Not assessed	-	-	-	-	8.6	18.4	17.4
1992	Not assessed	-	-	-	-	8.6	20.8	21.9
1993	No long-term gain in increased F**	-	-	-	-	8.6	22.6	24.0
1994	No long-term gain in increased F**	-	-	-	-	8.6	25.0	25.1
1995	A precautionary TAC not exceeding recent catch levels**	-	-	-	-	8.6	28.9	28.9
1996	A precautionary TAC not exceeding recent catch levels**	-	-	-	-	8.6	35.0	35.1
1997	Reduction in fishing effort**	-	-	-	-	8.6	32.8	32.7
1998	Reduction in fishing effort**	-	-	-	-	30.7	25.1	25.3
1999	Reduce fishing effort, effective implementation of the TAC**	-	-	-	-	30.7	21.2	21.9
2000	40% reduction in catches	-	-	< 9.7	< 7.4	25.7	19.0	19.7
2001	2/3 of the catches in 1973–1990	-	-	5.7	4.3	20.5	19.3	19.2
2002	2/3 of the catches in 1973–1990	-	-	5.7	4.3	15.3	16.0	15.8
2003	Reduce F below F _{pa}	< 6.7***	-	-	-	10.2	13.0	13.0
2004	Reduce F below F _{pa}	< 8.8	-	-	-	10.2	13.5	14.7
2005	No effort increase	-	-	-	-	15.0	13.6	n.a.
2006	No effort increase	-	-	-	-	15.0	15.2	n.a.
2007	No effort increase	-	-	-	-	16.5	16.4	n.a.
2008	No effort increase	-	-	-	-	16.5	17.3	n.a.
2009	Same advice as last year	-	-	-	-	16.9	16.4	n.a.
2010	No effort increase	-	-	-	-	16.9	13.4	n.a.
2011	Decrease effort	-	-	-	-	15.1^	13.5	n.a.
2012	Reduce catch	-	-	-	-	14.344^	12.3.	12.5
2013	Decrease catches by 20%	-	-	-	-	13.627^	12.1	12.1
2014	Decrease catches by 20%	10.231	-	-	-	12.265^	13.2^^	13.3^^
2015	Increase landings by 20%	14.702	-	-	-	16.203^		
2016	Precautionary approach (increase recent advised catch by no more than 20%)		≤ 18.435	-	-			

Weights in thousand tonnes.

* TAC for Subarea IV and Division IIIa (EC) plus TAC for Division Vb (EC) and Subareas VI, XII, and XIV. Prior to 1998 TAC covered only Division Vb (EC) and Subareas VI, XII, and XIV.

** For Subarea VI.

*** Advice for Division IIIa, Subarea IV, and Division VIa.

^ An additional quota of 1500 tonnes is also available for EU vessels fishing in the Norwegian zone of Subarea IV.

^^ Preliminary.

n.a. = not available.

History of catch and landings

Table 5.3.1.6 Anglerfish in Subareas IV and VI and Division IIIa. Catch distribution by fleet in 2014 as estimated by ICES.

Total catch (2014)	Landings								Discards
13698 tonnes	60% demersal trawls	26% gillnets	9% <i>Nephrops</i> trawl	5% other gears or not specified	58% demersal trawls	20% gillnets	2% <i>Nephrops</i> trawls	20% other gears or not specified	415 tonnes
	8955 tonnes in Division IIIa and Subarea IV				4329 tonnes in Subarea VI				
	13284 tonnes								

Table 5.3.1.7 Anglerfish in Subareas IV and VI and Division IIIa. Official landings by ICES area and ICES estimates of landings and discards.

Year	IIIa	IVa	IVb	IVc	VIa	VIb	IV	VI	Total (IIIa, IV, VI)	ICES landings	ICES discards
1973	140	2085	575	41	9221	127	2701	9348	12189		
1974	202	2737	1171	39	3217	435	3947	3652	7801		
1975	291	2887	1864	59	3122	76	4810	3198	8299		
1976	641	3624	1252	49	3383	72	4925	3455	9021		
1977	643	3264	1278	54	3457	78	4596	3535	8774		
1978	509	3111	1260	72	3117	103	4443	3220	8172		
1979	687	2972	1578	112	2745	29	4662	2774	8123		
1980	652	3450	1374	175	2634	200	4999	2834	8485		
1981	549	2472	752	132	1387	331	3356	1718	5623		
1982	529	2214	654	99	3154	454	2967	3608	7104		
1983	506	2465	1540	181	3417	433	4186	3850	8542		
1984	568	3874	1803	188	3935	707	5865	4642	11075		
1985	578	4569	1798	77	4043	1013	6444	5056	12078		
1986	524	5594	1762	47	3090	1326	7403	4416	12343		
1987	589	7705	1768	66	3955	1294	9539	5249	15377		
1988	347	7737	2061	95	6003	1730	9893	7733	17973		
1989	334	7868	2121	86	5729	313	10075	6042	16451		
1990	570	8387	2177	34	5615	822	10598	6437	17605		
1991	595	9235	2522	26	5061	923	11783	5984	18362	17441	
1992	938	10209	3053	39	5479	1089	13301	6568	20807	21872	
1993	843	12309	3144	66	5553	681	15519	6234	22596	23971	
1994	811	14505	3445	210	5273	777	18160	6050	25021	25057	
1995	823	17891	2627	402	6354	830	20920	7184	28927	28913	
1996	702	25176	1847	304	6408	602	27327	7010	35039	35100	
1997	776	23425	2172	160	5330	899	25757	6229	32762	32728	
1998	626	16860	2088	78	4506	900	19026	5406	25058	25293	
1999	660	13344	1517	24	4284	1401	14885	5685	21230	21854	
2000	602	12338	1617	31	3311	1074	13986	4385	18973	19682	
2001	621	12861	1832	21	2660	1309	14714	3969	19304	19157	
2002	667	11048	1244	21	2280	718	12313	2998	15978	15834	
2003	478	8523	847	20	2493	643	9390	3136	13004	13017	
2004	519	8987	851	15	2453	671	9853	3124	13496	14729	
2005	458	8424	688	5	3019	958	9117	3977	13552		
2006	423	10338	685	3	2785	916	11026	3701	15150		

Year	IIIa	IVa	IVb	IVc	VIa	VIb	IV	VI	Total (IIIa, IV, VI)	ICES landings	ICES discards
2007	433	10632	749	4	3352	1260	11385	4612	16430		
2008	486	11038	769	5	3373	1630	11812	5003	17300		
2009	479	10096	653	8	3029	2119	10757	5148	16384		
2010	434	8117	614	11	2797	1423	8742	4220	13396		
2011	406	7751	766	9	2724	1878	8526	4602	13534		
2012	422	6460	714	3	2834	1831	7177	4665	12264	12499	498
2013	408	6392	546	4	2666	2124	6942	4790	12140	12054	787
2014	480	7609	821	27	2539	1727	8457	4266	13203	13283	416

Summary of the assessment

Table 5.3.1.8 Anglerfish in Subareas IV and VI and Division IIIa. Assessment summary (weights in tonnes).

Year	Official landings	ICES landings	ICES discards	Survey index	Survey index, High	Survey index, Low
1973	12189					
1974	7801					
1975	8299					
1976	9021					
1977	8774					
1978	8172					
1979	8123					
1980	8485					
1981	5623					
1982	7104					
1983	8542					
1984	11075					
1985	12078					
1986	12343					
1987	15377					
1988	17973					
1989	16451					
1990	17605					
1991	18362	17441				
1992	20807	21879				
1993	22596	23966				
1994	25021	25049				
1995	28927	28897				
1996	35039	35102				
1997	32762	40258				
1998	25058	30293				
1999	21230	25026				
2000	18973	22185				
2001	19304	21238				
2002	15978	17868				
2003	13004	14141				
2004	13496	15551				
2005	13552			38617	23479	53755
2006	15150			40985	34478	47492
2007	16430			50392	43676	57108
2008	17300			53546	42421	64671
2009	16384			3806	32987	43133
2010	13396			42279	30429	54129
2011	13534			33254	24846	41662
2012	12264	12499	498	36325	29704	42946
2013	12140	12054	787	38395	3102	4577
2014	13203	13283	415	52884	42769	62999
2015				67915	58782	77047

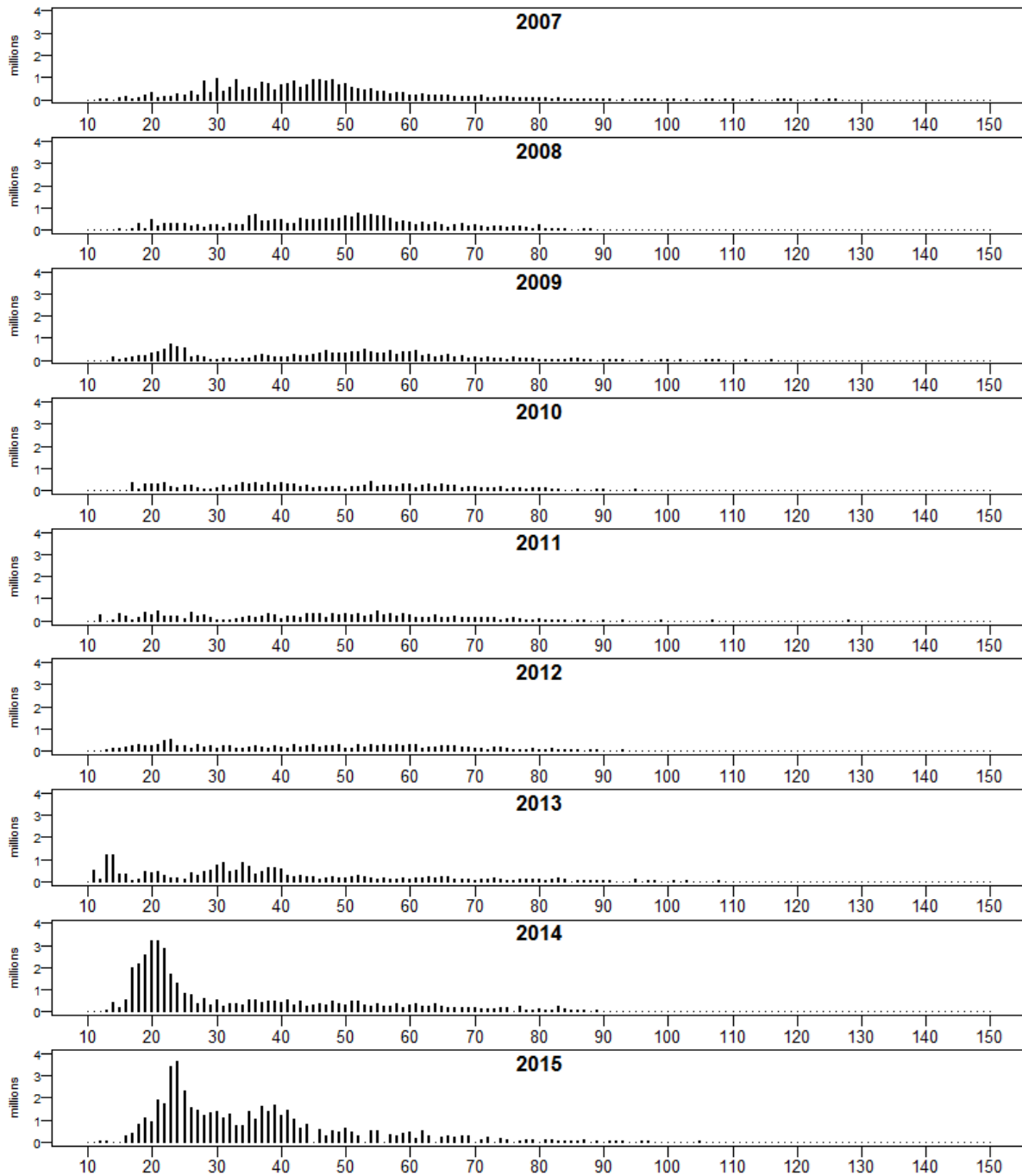


Figure 5.3.1.2 Anglerfish in Subareas IV and VI and Division IIIa. Estimates of total numbers (millions) at-length (cm) from survey (SCO-IV-VI-AMISS-Q2) covering Subareas IV and VI (2007–2015).

Sources and references

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