

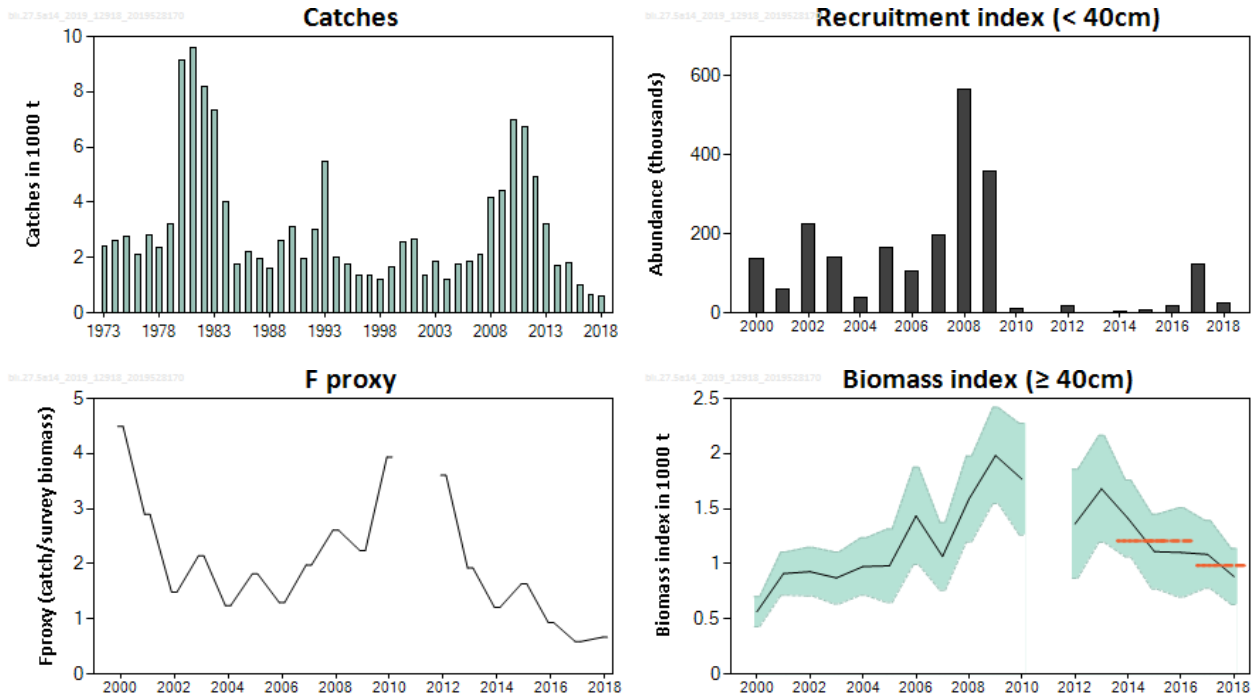
## Blue ling (*Molva dypterygia*) in Subarea 14 and Division 5.a (East Greenland and Iceland grounds)

### ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, catches in 2020 should be no more than 483 tonnes. All catches are assumed to be landed.

### Stock development over time

The biomass index has declined since its peak in 2009 and the recruitment has been low since 2010.



**Figure 1** Blue ling in Subarea 14 and Division 5.a. Catches in thousand tonnes (top left). Recruitment index (top right) in abundance of < 40 cm fish.  $F_{proxy}$  (bottom left) based on catch/survey biomass. Biomass index ( $\geq 40$  cm; bottom right) from the Icelandic autumn survey in Division 5.a (IS-SMH). The dashed orange lines indicate the average of the biomass index for 2014 to 2016 and for 2017 to 2018. The shaded areas on the biomass index plot represent 95% confidence intervals.

### Stock and exploitation status

ICES cannot assess the stock and exploitation status relative to MSY and PA reference points because the reference points are undefined.

**Table 1** Blue ling in Subarea 14 and Division 5.a. State of the stock and fishery relative to reference points. The status evaluation is based on reference point proxies (ICES, 2016).

		Fishing pressure			Stock size					
		2016	2017	2018	2016	2017	2018			
Maximum sustainable yield	$F_{MSY}$	?	?	?	Undefined	$MSY B_{trigger}$	?	?	?	Undefined
Precautionary approach	$F_{pa} F_{lim}$	?	?	?	Undefined	$B_{pa} B_{lim}$	?	?	?	Undefined
Management plan	$F_{MGT}$	—	—	—	Not applicable	$B_{MGT}$	—	—	—	Not applicable
Qualitative evaluation	-	↘	↘	↗	Increasing	-	→	→	↘	Decreasing

## Catch scenarios

The ICES framework for category 3 stocks was applied (ICES, 2012). The advice in 2018 was based on the  $F_{\text{proxy}}$  approach. In light of the continued low recruitment, the  $F_{\text{proxy}}$  approach was no longer considered applicable for the assessment and the change in survey trends approach was used instead. The Icelandic autumn trawl survey (IS-SMH) was used as the index for the stock development. The advice is based on the ratio of the mean of the last two index values (index A) and the mean of the three preceding values (index B), multiplied by the mean catches in the last three years. The index is estimated to have decreased by 20%, thus the uncertainty cap was not applied. The stock status relative to candidate reference points is unknown, and the precautionary buffer was applied. Discarding is considered negligible.

**Table 2** Blue ling in Subarea 14 and Division 5.a. The basis for the catch scenarios <sup>^</sup>.

Index A (2017–2018)		987
Index B (2014–2016)		1226
Index ratio (A/B)		0.8
Uncertainty cap	Not applied	-
Average catches 2016–2018		755
Discard rate		Negligible
Precautionary buffer	Applied	0.8
Catch advice *		483
% Advice change **		-68%

<sup>^</sup> The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

\* [Average catches 2016–2018] × [index ratio] × [precautionary buffer].

\*\* Advice value for 2020 relative to advice value for 2019.

The advised catch has decreased by 68% from last year, resulting from a change in the methodology used for advice and from the application of the precautionary buffer.

## Basis of the advice

**Table 3** Blue ling in Subarea 14 and Division 5.a. The basis of the advice.

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

## Quality of the assessment

The Icelandic autumn survey (IS-SMH) covers the full depth range and most of the geographical distribution of the stock and the fisheries. The uncertainty of the survey estimates is small.

The application of the  $F_{\text{proxy}}$  approach used previously did not take into account the ongoing low recruitment, and is no longer considered precautionary. The approach using the change in survey trends was therefore applied to calculate the advice.

## Issues relevant for the advice <sup>†</sup>

This stock is classified as Category 4 in the [NEAFC categorization of deep-sea species/stocks](#) which implies that fisheries are primarily restricted to Coastal State exclusive economic zones (EEZs) and therefore management measures are not taken by NEAFC unless complementary to coastal state conservation and management measures.

The recruitment has been low in the Icelandic survey since 2010. The low recruitment occurred in years with a high adult biomass and is believed to result from environmental conditions.

<sup>†</sup> Version 2: NEAFC categorisation of deep-sea stocks added to section.

As for many other species, blue ling is susceptible to sequential depletion of spawning aggregations. Two spawning areas were depleted prior to 1993. Maintaining the current closed areas may provide protection for the spawning aggregations.

### Reference points

No reference points are defined for this stock.

### Basis of the assessment

**Table 5** Blue ling in Subarea 14 and Division 5.a. Basis of the assessment and advice.

ICES stock data category	3 (ICES, 2018).
Assessment type	Survey trends-based assessment (ICES, 2019).
Input data	Catch data from Division 5.a and Subarea 14 and the Icelandic autumn survey (IS-SMH).
Discards and bycatch	Discarding is considered negligible.
Indicators	$F_{proxy}$ and recruitment index from the Icelandic autumn survey (IS-SMH).
Other information	None.
Working group	Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP).

### Information from stakeholders

There is no additional available information.

### History of the advice, catch, and management

**Table 6** Blue ling in Subarea 14 and Division 5.a. ICES advice and catches. All weights are in tonnes.

Year	ICES advice*	Catch corresponding to advice	Icelandic TAC for Division 5.a**	ICES catches
2003	No direct fisheries	-	-	1874
2004	Biennial	-	-	1214
2005	No direct fisheries	-	-	1785
2006	Biennial	-	-	1865
2007	No direct fisheries	-	-	2112
2008	Biennial	-	-	4152
2009	No direct fisheries	-	-	4439
2010	Biennial	-	-	6960
2011	No direct fishery and minimum bycatch	-	-	6719
2012	No new advice, same as 2011	-	-	4913
2013	$F_{proxy}$ target	3100	-	3234
2014	No new advice, same as 2013	3100	2400	1706
2015	$F_{proxy}$ target	3085	3100	1820
2016	$F_{proxy}$ target	2548	2550	1031
2017	Precautionary approach	$\leq 2032$	2040	641
2018	Precautionary approach	$\leq 1956$	1956	592
2019	Precautionary approach	$\leq 1520$	1520	
2020	Precautionary approach	$\leq 483$		

\* Prior to 2007, advice for blue ling was provided for the Northeast Atlantic (not split into different assessment units).

\*\* Icelandic national fishing year ending 31 August.

### History of the catch and landings

There are no catches in the NEAFC regulatory area.

**Table 7** Blue ling in Subarea 14 and Division 5.a. Catch distribution by fleet in 2018 as estimated by ICES.

Catch (2018)	Landings			Discards
	Longline 26%	Trawl 73%	Other 1%	
592 tonnes	592 tonnes			Discarding is negligible

**Table 8** Blue ling in Subarea 14 and Division 5.a. History of official commercial catch in Division 5.a by country participating in the fishery (in tonnes). There are no catches in the NEAFC regulatory area.

Year	Faroes	Germany	Iceland	Norway	UK	Total
1973	74	1678	548	6	61	2367
1974	34	1959	331	140	32	2496
1975	69	1418	434	366	89	2376
1976	29	1222	624	135	28	2038
1977	39	1253	700	317	0	2309
1978	38	0	1237	156	0	1431
1979	85	0	2019	98	0	2202
1980	183	0	8133	83	0	8399
1981	220	0	7952	229	0	8401
1982	224	0	5945	64	0	6233
1983	1195	0	5117	402	0	6714
1984	353	0	3122	31	0	3506
1985	59	0	1407	7	0	1473
1986	69	0	1774	8	0	1851
1987	75	0	1693	8	0	1776
1988	271	0	1093	7	0	1371
1989	403	0	2124	5	0	2532
1990	1029	0	1992	0	0	3021
1991	241	0	1582	0	0	1823
1992	321	0	2584	0	0	2905
1993	40	0	2193	0	0	2233
1994	89	1	1542	0	0	1632
1995	113	3	1519	0	0	1635
1996	36	3	1284	0	0	1323
1997	25	0	1319	0	0	1344
1998	59	9	1086	0	0	1154
1999	31	8	1525	8	11	1583
2000	0	7	1605	25	8	1645
2001	95	12	752	49	23	931
2002	28	4	1256	74	10	1372
2003	16	16	1098	6	24	1160
2004	38	9	1083	49	20	1199
2005	24	25	1497	20	26	1592
2006	63	22	1734	27	9	1855
2007	78	0	1999	4	10	2091
2008	88	0	3653	21	0	3762
2009	178	0	4132	5	0	4315
2010	515	0	6377	13	0	6905
2011	797	0	5903	2	0	6702
2012	312	0	4207	2	0	4521
2013	435	0	2769	2	0	3206
2014	71	0	1588	30	0	1689
2015	10	0	1734	4	0	1748
2016	6	0	925	84	0	1015
2017	4	0	618	0	0	622
2018*	28	0	513	0	0	541

\* Preliminary.

**Table 9** Blue ling in Subarea 14 and Division 5.a. History of official commercial catch in Subarea 14 by country in tonnes. There are no catches in the NEAFC regulatory area.

Year	Faroes	Germany	Greenland	Iceland	Norway	Russia	Spain	UK	Denmark	Total
1973	0	50	0	10	0	0	0	0	0	60
1974	0	90	0	6	0	0	0	0	0	96
1975	0	285	0	90	3	0	0	0	0	378
1976	0	65	0	21	0	0	0	13	0	99
1977	0	491	0	0	0	0	0	6	0	497
1978	0	933	0	0	4	0	0	0	0	937
1979	0	1026	0	0	0	0	0	0	0	1026
1980	0	746	0	0	0	0	0	0	0	746
1981	0	1206	0	0	0	0	0	0	0	1206
1982	0	1946	0	0	0	0	0	0	0	1946
1983	0	621	0	0	0	0	0	0	0	621
1984	0	537	0	0	0	0	0	0	0	537
1985	0	315	0	0	0	0	0	0	0	315
1986	214	149	0	0	0	0	0	0	0	363
1987	0	199	0	0	0	0	0	0	0	199
1988	21	218	3	0	0	0	0	0	0	242
1989	13	58	0	0	0	0	0	0	0	71
1990	0	64	5	0	0	0	0	10	0	79
1991	0	105	5	0	0	0	0	45	0	155
1992	0	27	2	0	50	0	0	32	0	111
1993	0	16	0	3124	103	0	0	22	0	3265
1994	1	15	0	300	11	0	0	57	0	384
1995	0	5	0	117	0	0	0	19	0	141
1996	0	12	0	0	0	0	0	2	0	14
1997	1	1	0	0	0	0	0	2	0	4
1998	48	1	0	0	1	0	0	6	0	56
1999	0	0	0	0	1	0	66	7	0	74
2000	0	1	2	4	0	0	889	2	0	898
2001	1	0	1	11	61	0	1631	6	0	1711
2002	0	0	0	11	1	0	0	0	0	12
2003	0	0	3	0	36	0	670	5	0	714
2004	0	0	7	0	1	0	0	7	0	15
2005	2	0	6	0	1	0	176	8	0	193
2006	0	0	6	0	3	1	0	0	0	10
2007	19	0	1	0	1	0	0	0	0	21
2008	1	0	5	0	2	0	381	0	1	390
2009	1	0	5	0	3	0	111	4	0	124
2010	1	0	8	0	9	0	34	0	3	55
2011	0	0	8	0	2	0	0	1	6	17
2012	0	0	13	367	9	0	0	0	3	392
2013	0	0	16	0	0	0	0	3	9	28
2014	0	0	14	0	3	0	0	0	0	17
2015	0	0	66	0	1	0	0	0	5	72
2016	0	0	9	0	0	0	0	0	7	16
2017	0	0	12	0	4	0	0	0	3	19
2018*	0	0	34	0	12	0	0	0	5	51

\* Preliminary.

## Summary of the assessment

**Table 10** Blue ling in Subarea 14 and Division 5.a. Assessment summary. The index is from the Icelandic autumn survey (IS-SMH). Weights are in tonnes. High and low refer to 95% confidence bounds.

Year	Recruitment (thousands)	Biomass index (tonnes)	High	Low	Total catch (tonnes)	F <sub>proxy</sub>
2000	139	592	665	520	2543	4.49
2001	60	971	1079	863	2642	2.90
2002	226	975	1090	861	1384	1.49
2003	142	933	1054	812	1874	2.15
2004	38	1036	1171	901	1214	1.25
2005	164	1016	1181	851	1785	1.82
2006	107	1470	1695	1245	1865	1.30
2007	196	1108	1264	952	2112	1.98
2008	565	1666	1876	1456	4152	2.61
2009	360	2037	2242	1831	4439	2.24
2010	12	1807	2057	1558	6960	3.94
2011*					6719	
2012	17	1386	1637	1135	4913	3.61
2013	0	1699	1915	1483	3234	1.92
2014	3	1433	1608	1259	1706	1.21
2015	8	1128	1288	968	1820	1.64
2016	19	1118	1320	916	1031	0.93
2017	123	1088	1245	930	641	0.59
2018	26	885	1014	755	592	0.67

\* No survey in 2011.

## Sources and references

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