ICES Advice on fishing opportunities, catch, and effort
Northeast Atlantic and Arctic Ocean ecoregions
Published 11 June 2019
Version 2: 15 July 2019
Version 3: 10 October 2019

ICES
CIEM

International Council for
the Exploration of the Sea
Conseil International pour
l'Exploration de la Mer

Ling (*Molva molva*) in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a (Northeast Atlantic and Arctic Ocean)

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, catches should be no more than 18 516 tonnes in each of the years 2020 and 2021.

Stock development over time

Landings since 2000 have been at a lower level than they have previously been. Landings have been slightly increasing since 2011, with higher discards in the last three years. A standardized catch per unit effort (CPUE) index based on data from the Norwegian longline fleet shows an increasing trend since 2004, with a decline in 2018.
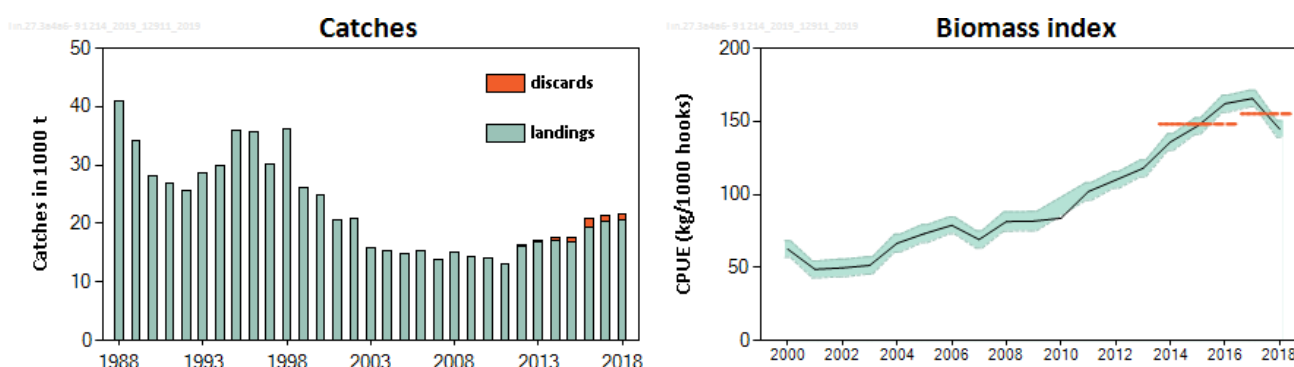

Figure 1 Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. Catches (left) and standardized biomass index from the Norwegian longline fleet targeting ling for all areas combined (kg per 1000 hooks; right). The dashed red lines indicate the average of the biomass index for 2014 to 2016 and for 2017 to 2018. The shaded areas on the biomass index plot represent 95% confidence intervals.

Stock and exploitation status

ICES assesses that fishing pressure on the stock is below $F_{MSY\ proxy}$; no reference points for stock size have been defined for this stock.

Table 1 Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. State of the stock and fishery relative to reference points. The status evaluation is based on the reference point proxy for F_{MSY} using the length-based indicator method (ICES, 2019).

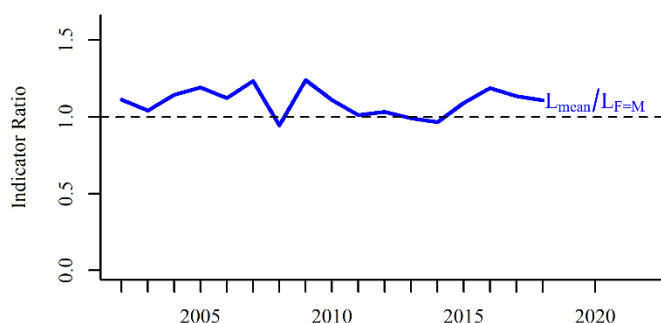|		Fishing pressure				Stock size			
		2016	2017	2018			2016	2017	2018
Maximum sustainable yield	F_{MSY} proxy	✅	✅	✅ Below	MSY $B_{trigger}$		❓	❓	❓ Undefined
Precautionary approach	F_{pa}, F_{lim}	✅	✅	✅ Below possible reference points	B_{pa}, B_{lim}		❓	❓	❓ Undefined
Management plan	F_{MGT}	—	—	— Not applicable	B_{MGT}		—	—	— Not applicable
Qualitative evaluation	-	❓	❓	❓ Unknown	-		↗	→	↘ Decreasing

Figure 2   Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. Index ratio of the average length relative to the expected length when fishing mortality equals natural mortality ($L_{mean}/L_{F=M}$) from the length-based indicator method used for the evaluation of the exploitation status (ICES 2019). The exploitation status is below the $F_{MSY\ proxy}$ when the index ratio value is higher than 1.

Catch scenarios

The ICES framework for category 3 stocks was applied (ICES, 2012). The standardized cpue series from the Norwegian longline fleet was used as an index for the 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 (2018–2019) advised catch. The index is estimated to have increased by less than 20%, so the uncertainty cap was not applied. Fishing mortality is below the proxy of the MSY reference points. The precautionary buffer has never been applied for this stock. The stock size relative to candidate reference points is unknown, but the stock has been increasing since 2004. Therefore, the precautionary buffer was not applied. The average discard rate in the last three years was 5.9%.

Table 2   Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. The basis for the catch scenarios ^.

Index A (2017–2018)		155
Index B (2014–2016)		148
Index ratio (A/B)		1.05
Uncertainty cap	Not applied	-
Advised catch for (2018–2019)		17 695 tonnes
Discard rate		5.9%
Precautionary buffer	Not applied	-
Catch advice*		18 516 tonnes
Landings corresponding to the catch advice**		17 424 tonnes
% Advice change ***		5%

^ 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.
* [recent advised catch] × [Index ratio].
** [advised catch] × [1 – discard rate].
*** Advice value for 2020 and 2021 relative to advice value for 2018 and 2019.

The advice has increased because of an increase in the survey index ratio.

Basis of the advice

Table 3   Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. The basis of the advice.

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

Quality of the assessment

The advice is based on a standardized cpue series from the Norwegian longline fleet, which shows an increasing trend. This increasing trend is similar across smaller areas (subareas 4.a, 6.a, and 6.b) included in the index (ICES 2019).

In 2019, catches from Greenlandic fisheries logbooks in Subarea 14 were included in total catch estimates.

Issues relevant for the advice [†]

This stock is classified as Category 4 in the <u>NEAFC categorization of deep-sea species/stocks</u> 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.

Previous advice considered discarding to be negligible. The discard rate has been increasing and reached 8.3% of the catches in 2016. In 2018, the discard rate had declined to 4.7%.

The advice is for an increase in catch, which is suitable for subareas 4 and 6. There are, however, different biomass trends in Subarea 7 compared to subareas 4 and 6 (Figure 3). While the advice is provided for a wide area, management should be aware of potentially different trends in stock development in different areas.
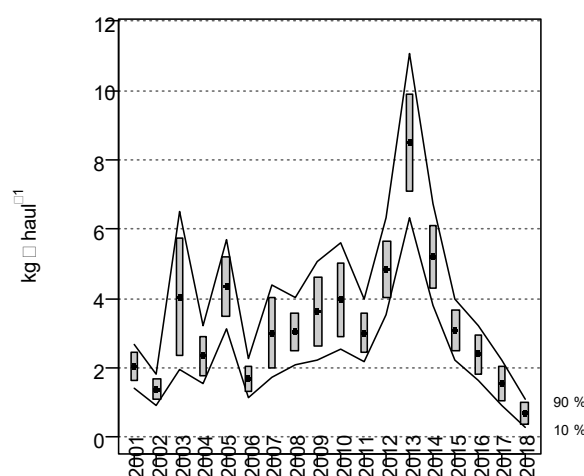

Figure 3   Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. Estimated biomass index based on the Spanish Porcupine Bank survey (divisions 7.c and 7.k) for the years 2001–2018. Boxes mark the parametric based standard error of the stratified index. Lines mark bootstrap confidence intervals (α = 0.80, bootstrap iterations = 1000).

Reference points

Table 4   Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger\ proxy}$	Not defined	-	
	$F_{MSY\ proxy}$	83 cm (2018)	Expected mean length of catch above L_{mean} when $F = M$.	ICES (2019)
Precautionary approach	B_{lim}	Not defined		
	B_{pa}	Not defined		
	F_{lim}	Not defined		
	F_{pa}	Not defined		
Management plan	SSB_{mgt}	Not defined		
	F_{mgt}	Not defined		

[†] Version 3: NEAFC categorisation of deep-sea stocks added to section.

Basis of the assessment

Table 5   Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. Basis of the assessment and advice.

ICES stock data category	3 (ICES, 2018).
Assessment type	CPUE trends-based assessment (ICES, 2019).
Input data	Standardized cpue series from the Norwegian longline reference fleet.
Discards and bycatch	Discards are estimated at 5.9% of the catch over the last three years.
Indicators	Length-based indicator.
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 advice, catch, and management

Table 6   Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. ICES advice and official landings. All weights are in tonnes.

Year	ICES advice *	Catch corresponding to advice	TAC EU Subarea 3	TAC EU Subarea 4 (EU waters)	TAC EU Subarea 4 (Norwegian waters)	TAC EU subareas 6, 7, 8, 9, 10, 12, and 14	TAC Faroe subareas 6, 7, 8, 9, 10, 12, and 14 (EU waters)	TAC Norway subareas 6, 7,8, 9, 10, 12, and 14 (EU waters)	ICES landings
2003	30% reduction on fishing effort	-	136	4 666		14 966	800	9 500	15 911
2004	Biennial	-	136	4 666		14 966	800	9 500	15 249
2005	Effort reduced by 30%	-	136	3 966	1 000	14 966	800	5 780	14 960
2006	Biennial	-	136	3 966	1 000	14 966	-	-	15 433
2007	Reduce about 30% in catches	10 000	119	3 173	1 000	11 976	250	5 780	13 928
2008	Biennial	10 000	100	2 856	850	10 776	250	5 638	15 064
2009	Constrain catches	10 000	100	2 856	850	10 776	250	5 638	14 346
2010	Biennial	10 000	92	2 428	0	7 003		6 140	14 107
2011	Constrain catches to 2003–2008 average, and a reduction in catches should be considered	15 000	92	2 428	NA	7 804	NA	6 360	13 078
2012	No new advice, same as 2011	15 000	92	2 428	NA	7 824	NA	6 340	16 213
2013	Reduce catches by 20%	10 800		2 428	850	8 024	330	6 140	16 773
2014	No new advice, same as 2013	10 800	87	1 942	950	7 300		5 500	17 014
2015	No new advice, same as 2013	10 800	87	2 428	950	8 464	200	5 500	16 757
2016	Precautionary approach	14 746	87	2 912	950	10 275	200	6 500	19 283
2017	Biennial	14 746	87	3 494	1 350	13 696	200	6 500	20 279
2018	Precautionary approach	≤ 17 695	87	3 843	1 350	12 696	200	7 500	20 688
2019	Precautionary approach	≤ 17 695	170‡	4 035	1 350	12 196	200	8 000	

‡ Version 2: Value corrected. The value previously presented (87 t) was the initial proposed TAC, but the final TAC was set at 170 t.

Year	ICES advice *	Catch corresponding to advice	TAC EU Subarea 3	TAC EU Subarea 4 (EU waters)	TAC EU Subarea 4 (Norwegian waters)	TAC EU subareas 6, 7, 8, 9, 10, 12, and 14	TAC Faroe subareas 6, 7, 8, 9, 10, 12, and 14 (EU waters)	TAC Norway subareas 6, 7,8, 9, 10, 12, and 14 (EU waters)	ICES landings
2020	Precautionary approach	≤ 18 516							
2021	Precautionary approach	≤ 18 516							

* Prior to 2007, the advice for ling was for the whole Northeast Atlantic area.

History of the catch and landings

There are no reported catches in the NEAFC regulatory area.

Table 7   Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. Catch distribution by fleet in 2018 as estimated by ICES.

Catch (2018)	Landings				Discards
21 700 tonnes	Longline 84%	Trawl 13%	Gillnets 2%	Other 1%	1012 tonnes
	20 688 tonnes				

Table 8   Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. History of official commercial landings are presented by area. All weights are in tonnes.

Year	3	4a	4bc	6a	6b	7 (unspecified)	7a	7bc	7de	7f	7g–k	8	9	12	14	All areas
1988	331	11 223	379	14 556	1 765	5 057	211	865	779	444	4 415	1 028	0	0	3	41 056
1989	422	11 677	387	8 631	3 743	5 261	311	577	700	310	1 012	1 221	2	0	1	34 253
1990	543	10 027	455	6 730	1 505	4 575	169	678	799	233	1 077	1 372	1	3	9	28 175
1991	484	9 969	490	4 795	2 662	3 977	125	749	680	302	1 394	1 139	1	10	1	26 777
1992	549	10 763	842	4 588	1 891	2 552	105	1 286	519	137	1 593	802	0	0	17	25 644
1993	642	12 810	797	5 301	1 522	2 294	219	1 434	436	223	2 334	510	0	0	9	28 531
1994	469	11 496	323	6 730	2 540	2 185	284	1 595	451	400	3 254	85	0	5	6	29 823
1995	412	13 041	659	8 847	1 638		305	1 944	1 389	602	6 131	845		50	17	35 880
1996	402	12 705	569	8 577	1 124		210	2 201	1 477	399	6 850	1 041		2	0	35 557
1997	311	11 315	699	6 746	814		264	1 780	1 472	547	5 045	1 034		9	61	30 097
1998	214	13 631	627	7 362	1 394		198	1 034	1 500	561	7 814	1 797	1	2	6	36 142
1999	216	9 810	446	6 899	1 175		84	1 366	1 060	312	4 189	452		2	9	26 021
2000	228	9 246	384	6 909	1 879		73	1 182	846	218	3 578	339		7	26	24 916
2001	262	7 857	284	5 143	788		87	1 226	807	220	3 360	594		59	37	20 721
2002	263	9 152	309	4 127	533		119	964	891	453	3 526	467		8	23	20 755
2003	261	6 432	234	3 246	660		112	524	788	176	2 940	436		19	83	15 911
2004	236	6 306	241	2 769	1 064		97	640	801	161	2 427	492			19	15 249
2005	210	6 449	149	3 028	1 142		61	429	786	184	2 053	450		1	18	14 960
2006	188	6 719	144	2 573	1 411		88	668	687	130	2 407	398		1	19	15 433
2007	174	5 858	159	3 120	1 314		43	358	710	125	1 749	312		0	7	13 928
2008	175	7 259	200	2 950	1 513		15	259	569	187	1 541	345		0	20	15 064
2009	149	7 408	314	2 324	2 635		48	131	363	106	673	186		1	8	14 346
2010	142	6 398	201	3 031	2 687		44	253	294	69	848	134		0	6	14 107
2011	140	6 508	211	2 999	1 259		28	208	425	155	936	201		0	8	13 078
2012	145	7 018	192	3 655	1 390		14	1 013	436	167	1 520	552		0	111	16 213
2013	130	7 197	176	4 660	795		30	1 010	482	224	1 608	459		0	2	16 773
2014	120	7 749	141	4 761	774		29	532	605	334	1 557	395		0	17	17 014
2015	125	8 069	147	4 764	1 215		19	560	347	88	1 065	337		0	21	16 757
2016	152	9 739	150	5 659	1 088		24	570	293	114	1 172	287			35	19 283

Year	3	4a	4bc	6a	6b	7 (unspecified)	7a	7bc	7de	7f	7g–k	8	9	12	14	All areas
2017	138	11 222	143	6 306	793		24	315	203	48	881	199		0	7	20 279
2018*	178	11 620	156	6 677	755		10	266	173	43	622	183		0	5	20 688

* Preliminary.

Table 9 Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. Total discards (in tonnes) by country for the years 2012 to 2018.

Year	Denmark	Spain	Ireland	France	Sweden	UK (Scotland)	UK (England)	Total catches	Total discards	Discard rate (percentage of total catch)
2012		46	176					16 435	222	1.35
2013		101	160	29				17 063	290	1.70
2014		54	435	15				17 518	504	2.9
2015		0	0	131	4	704		17 596	839	4.8
2016		1	220	72		1 302	22	20 900	1 617	7.7
2017	1	10	105	71	2	959		21 427	1 148	5.4
2018	1		43	89		876	3	21 700	1 012	4.7

Summary of the assessment

Table 10 Ling in subareas 6–9, 12, and 14, and in divisions 3.a and 4.a. Combined cpue (kg per 1000 hooks) from all areas (Norwegian standardized CPUE; no survey was conducted in 2010). High and low refer to the 95% confidence bounds.

Year	Biomass index kg/1000 hooks	High	Low	Landings (tonnes)	Discards (tonnes)
1988				41 056	
1989				34 253	
1990				28 175	
1991				26 777	
1992				25 644	
1993				28 531	
1994				29 823	
1995				35 880	
1996				35 557	
1997				30 097	
1998				36 142	
1999				26 021	
2000	62.58	68.32	56.85	24 916	
2001	48.69	54.48	42.9	20 721	
2002	49.71	55.74	43.69	20 755	
2003	51.4	57.33	45.47	15 911	
2004	66.53	72.69	60.37	15 249	
2005	73.12	79.26	66.99	14 960	
2006	78.82	84.62	73.02	15 433	
2007	69.11	75.1	63.13	13 928	
2008	81.44	88	74.89	15 064	
2009	81.72	88.34	75.1	14 346	
2010				14 107	
2011	101.95	108.01	95.89	13 078	
2012	109.87	115.64	104.09	16 213	222
2013	117.81	123.59	112.02	16 773	290
2014	135.8	141.59	130	17 014	504
2015	146.79	152.44	141.15	16 757	839
2016	162.02	167.87	156.17	19 283	1 617
2017	165.54	171.29	159.8	20 279	1 148
2018	144.62	150.3	138.94	20 688	1 012

Sources and references

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