

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

ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches should be no more than 13 317 tonnes in each of the years 2024 and 2025. If discard rates do not change from the average of the last three years (2020–2022), this implies landings of no more than 12 785 tonnes.

ICES advice on conservation aspects

ICES has not identified any conservation aspects.

Stock development over time

Fishing pressure on the stock is above F_{MSY} proxy; no reference points for stock size have been defined for this stock.

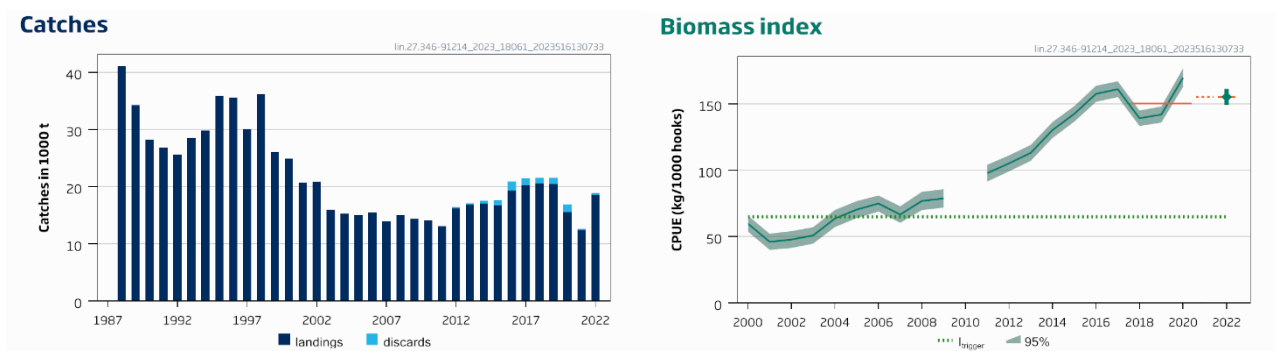


Figure 1 Ling (*Molva molva*) in subareas 3, 4, 6–9, 12, and 14. Left: Catches. Right: Standardized biomass index from the Norwegian longline reference fleet (kg per 1 000 hooks). The horizontal orange lines indicate the value of the most recent year (index for 2021 not representative) and the previous three years.

Conservation status

ICES is not aware of any information on stock/species-specific conservation status.

Catch scenarios

ICES framework for category 3 stocks was applied (rfb rule, method 2.1, ICES, 2022). The standardized CPUE series from the Norwegian longline fleet was used as an indicator of stock development. The advice is based on the recent advised catches (2023), multiplied by the last index value (index A for year 2022) and the mean of the three preceding values (index B for year 2018–2020), a ratio of observed mean length in the catch relative to the target mean length, a biomass safeguard, and a precautionary multiplier. The index value for year 2021 was not used because the Norwegian longline fleet could not fish its regular fishing grounds in that year. The stability clause was not applied, because the change from the previous advice was between +20% or –30%. The discard rate (mean 2020–2022) was 4%.

Table 1 Ling in subareas 3, 4, 6–9, 12, and 14. The basis for the catch scenarios. Catches are in tonnes.*

Previous catch advice A_y (2023)	15 092 tonnes	
Stock biomass trend		
Index A (2022)	155 kg per 1 000 hooks	
Index B (2018, 2019, 2020)	150 kg per 1 000 hooks	
r: Index ratio (A/B)	1.03	
Fishing pressure proxy		
Mean catch length ($L_{\text{mean}} = L_{2022}$)	79 cm	
MSY proxy length ($L_{F=M}$)	87 cm	
f: multiplier for relative mean length in catches ($L_{\text{mean}}/L_{F=M}$)	0.90	
Biomass safeguard		
Last index value (I_{2022})	155 kg per 1 000 hooks	
Index trigger value ($I_{\text{trigger}} = I_{\text{loss}} \times 1.4$)	65 kg per 1 000 hooks	
b: multiplier for index relative to trigger $\min\{I_{2022}/I_{\text{trigger}}, 1\}$	1	
Precautionary multiplier to maintain biomass above B_{lim} with 95% probability		
m: multiplier (generic multiplier based on life history)	0.95	
Stability clause (+20%/-30% compared to A_y , only applied if $b \geq 1$)	Not applied	
Discard rate ^{^^}	4.0%	
Catch advice for 2024 and 2025 ^{**}	13 317 tonnes	
Projected landings corresponding to advice ^{***}	12 785 tonnes	
% advice change [^]	-12%	

* 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.

** Formula [$A_{y+1} = A_y \times r \times f \times b \times m$]

*** [Advised catch for 2024 and 2025] \times [1 – discard rate].

[^] Advice value for 2024 and 2025 relative to the advice value for 2022 and 2023 (15 092 tonnes).

^{^^} Discard rate is calculated based on data for the period 2020–2022.

The advice has decreased because of the use of a new assessment method (rfb rule).

Basis of the advice

Table 2 Ling in subareas 3, 4, 6–9, 12, and 14. The basis of the advice.

Advice basis	MSY 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 operating in subareas 4 and 6 (ICES, 2023). The index value for year 2021 was not used because the Norwegian longline fleet could not fish its regular fishing grounds in that year. Approximately three quarters of the landings come from subareas 4 and 6, where CPUE trends are similar. However, there are different trends in subareas 7 and 8 for this species (Figure 2). There is uncertainty as to whether ling in subareas 3, 4, 6–9, 12, and 14 comprise more than one stock.

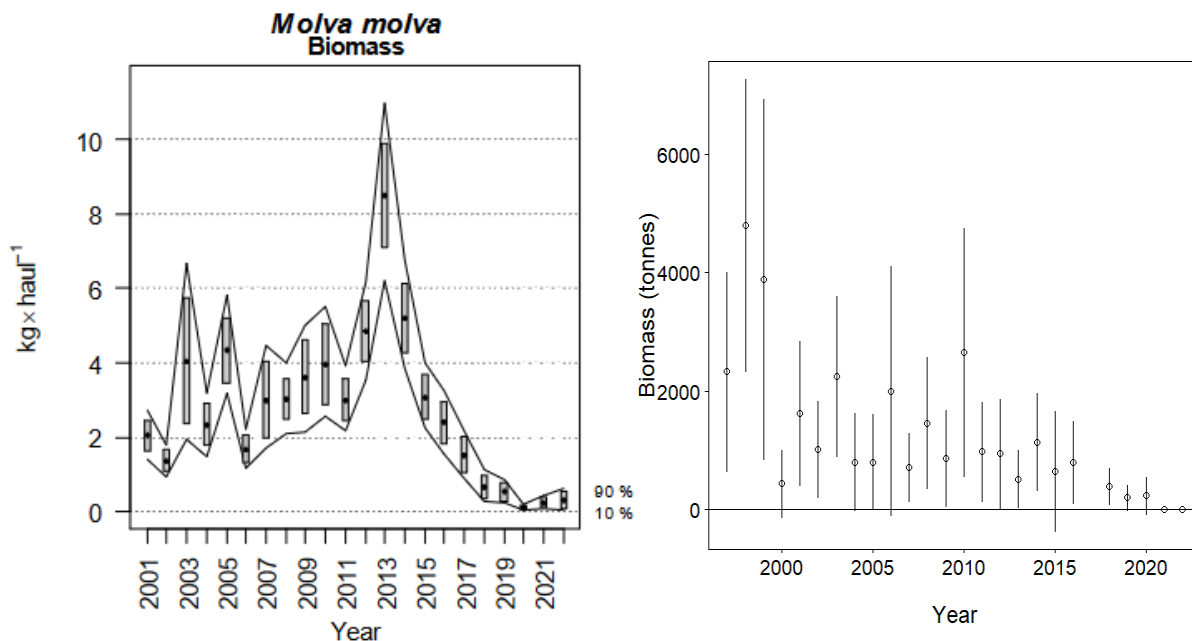


Figure 2 Ling in subareas 3, 4, 6–9, 12, and 14. Estimated biomass index for ling. Left: Divisions 7.c and 7.k, based on the Spanish Porcupine Bank survey (SP-PORC; G5768) for the years 2001–2022. Right: Divisions 7.g–k and 8.abd, based on the French Southern Atlantic bottom trawl survey (EVHOE; G9527) for the years 1997–2022.

Issues relevant for the advice

The index used for advice is suitable for subareas 4 and 6. These subareas, however, show different biomass trends compared to subareas 7 and 8 (Figure 2). While the advice is provided for a wide area, management should be aware of different trends in stock development in different subareas.

Since 2008, the total catch has been higher than the advised catch, except in 2020. The sum of TACs has been higher than the advised catch, and TACs do not cover the whole stock, as Norwegian catches in Norwegian waters are not TAC-regulated. The fishing pressure proxy reflects this long-term overexploitation.

This stock is classified as Category 4 in the NEAFC categorization of deep-sea species/stocks. This implies that fisheries are primarily restricted to coastal state exclusive economic zones (EEZs); therefore, management measures are not taken by NEAFC unless complementary to coastal state conservation and management measures (NEAFC, 2016).

Reference points

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

Framework	Reference point	Value	Technical basis	Source
MSY approach	I_{trigger}	65	$I_{\text{loss}} \times 1.4$; in kg per 1 000 hooks. I_{loss} is defined as the lowest observed CPUE from the time series.	ICES (2023b)
	$F_{\text{MSY proxy}}$	$L_{\text{mean}}/L_{F=M} = 1$	Relative value from LBI analysis, assuming $M/k = 1.5$. $L_{F=M}$ is based on L_c (length at 50% of modal abundance).	ICES (2023b)

Basis of the assessment

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

ICES stock data category	3 (ICES, 2023a)
Assessment type	CPUE trends-based assessment (ICES, 2023b)
Input data	Total international commercial catches. Standardized CPUE series from the Norwegian longline reference fleet targeting ling and operating in subareas 4 and 6. Growth parameters: $L_{inf} = 148.81$ cm; $k = 0.11$ years ⁻¹ . Length frequencies (2022) (ICES, 2023b).
Discards and bycatch	Discards are estimated at 4.0% of the catch over the period 2020–2022
Indicators	None
Other information	Survey indicators in subareas 7 and 8
Working group	Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP)

History of advice, catch, and management

Table 5 Ling in subareas 3, 4, 6–9, 12, and 14. ICES advice and catch (discard information only included from 2012), TACs, quotas, and official landings. All weights are in tonnes.

Year	ICES advice*	Catch corresponding to advice	EU TAC Subarea 3	EU TAC Subarea 4 (EU waters)	EU quota in Norwegian waters of Subarea 4	TAC in subareas 6,7,8,9,10, 12, and 14**	Total TAC	ICES catch
2003	30% reduction on fishing effort	-	136	4 666		25 266	30 068	15 913
2004	Biennial	-	136	4 666		25 266	30 068	15 253
2005	Effort reduced by 30%	-	136	3 966	1 000	22 566	27 668	14 960
2006	Biennial	-	136	3 966	1 000	22 066	27 168	15 433
2007	Reduce about 30% in catches	10 000	109	3 173	1 000	18 003	22 285	13 930
2008	Biennial	10 000	100	2 856	849	16 664	20 469	15 033
2009	Constrain catches	10 000	100	2 854	850	16 662	20 466	14 346
2010	Biennial	10 000	92	2 428	850	14 164	17 534	14 107
2011	Constrain catches to 2003–2008 average, and a reduction in catches should be considered	15 000	92	2 428	850	14 164	17 534	13 079
2012	No new advice, same as 2011	15 000	92	2 428	850	14 164	17 534	16 440
2013	Reduce catches by 20%	10 800	87	2 428	945	14 164	17 624	17 063
2014	No new advice, same as 2013	10 800	87	2 428	950	14 164	17 629	17 518
2015	No new advice, same as 2013	10 800	87	2 428	1 100	14 164	17 779	17 596
2016	Precautionary approach	14 746	87	2 912	950	16 997	20 946	20 901
2017	Biennial	14 746	87	3 494	1 350	20 396	25 327	21 444
2018	Precautionary approach	≤ 17 695	87	3 843	1 350	20 396	25 676	21 566
2019	Precautionary approach	≤ 17 695	170	4 035	1 350	20 396	25 951	21 561
2020	Precautionary approach	≤ 18 516	179	4 237	1 350	20 396	26 162	15 552

Year	ICES advice	Catch corresponding to advice	EU TAC Subarea 3	EU TAC Subarea 4 (EU waters)	EU quota in Norwegian waters of Subarea 4	TAC in subareas 6,7,8,9,10, 12 and 14	Total TAC	ICES catch
2021	Precautionary approach	≤ 18 516	175	3 813	900	18 356	23 244	12 365
2022	Precautionary approach	≤ 15 092	144	3 127	700	15 052	18 023	18 556
2023	Precautionary approach	≤ 15 092	144	2 577	500	12 371	15 592	
2024	MSY approach	≤ 13 317						
2025	MSY approach	≤ 13 317						

*Including EC waters of Division 2.a until 2007.

** 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).

History of the catch and landings

There are no reported catches in the NEAFC regulatory area.

Table 6 Ling in subareas 3, 4, 6–9, 12, and 14. Catch distribution by fleet in 2022 as estimated by ICES.

Catch	Landings				Discards
	Longline 53%	Trawl 36%	Gillnets 8%	Other 4%	
18 862 tonnes	18 556 tonnes				316 tonnes

Table 7 Ling in subareas 3, 4, 6–9, 12, and 14. History of official commercial landings are presented by subarea. All weights are in tonnes.

Year	Subarea						All areas
	3	4	6	7	8	9, 12, 14	
1988	331	11 602	16 321	11 771	1 028	3	41 056
1989	422	12 064	12 374	8 171	1 221	1	34 253
1990	543	10 482	8 235	7 531	1 372	12	28 175
1991	484	10 459	7 457	7 227	1 139	11	26 777
1992	549	11 605	6 479	6 192	802	17	25 644
1993	642	13 607	6 823	6 940	510	9	28 531
1994	469	11 819	9 270	8 169	85	11	29 823
1995	412	13 700	10 485	10 366	845	67	35 875
1996	402	13 274	9 701	11 135	1 041	2	35 555
1997	311	12 014	7 560	9 106	1 034	70	30 095
1998	241	14 269	8 756	11 105	1 797	10	36 178
1999	245	10 264	8 074	7 026	452	12	26 073
2000	228	9 631	8 788	5 897	339	34	24 917
2001	262	8 141	5 931	5 707	594	96	20 731
2002	263	9 461	4 660	5 960	467	31	20 843
2003	261	6 667	3 906	4 540	436	102	15 913
2004	236	6 547	3 833	4 126	492	19	15 253
2005	210	6 598	4 170	3 513	450	19	14 960
2006	188	6 863	3 984	3 980	398	20	15 433
2007	174	6 017	4 434	2 985	312	8	13 930
2008	175	7 459	4 463	2 571	345	20	15 033
2009	149	7 722	4 959	1 321	186	9	14 346
2010	142	6 599	5 718	1 508	134	6	14 107
2011	140	6 719	4 258	1 752	201	9	13 079
2012	145	7 210	5 045	3 150	552	116	16 218
2013	130	7 373	5 455	3 354	459	2	16 773

Year	Subarea						All areas
	3	4	6	7	8	9, 12, 14	
2014	120	7 890	5 535	3 057	395	17	17 014
2015	125	8 216	5 979	2 079	337	21	16 757
2016	152	9 890	6 747	2 173	287	35	19 284
2017	138	11 373	7 101	1 476	201	7	20 296
2018	177	11 710	7 384	1 095	183	5	20 554
2019	205	11 601	7 447	934	163	130	20 480
2020	179	8 917	5 641	652	162	1	15 552
2021	200	6 585	4 641	777	151	11	12 365
2022	212	11 683	5 928	596	133	4	18 556

Summary of the assessment

Table 8 Ling in subareas 3, 4, 6–9, 12, and 14. Assessment summary. Standardized biomass index from the Norwegian longline reference fleet (kg per 1 000 hooks; data not representative in 2010 and 2021), landings, and discards. All weights are in tonnes. High and Low refer to the 95% confidence bounds.

Year	Biomass index			Length-based fishing pressure proxy ($L_F=M/L_{mean}$)	ICES landings	ICES discards
	Low	Value	High			
1988					41 056	
1989					34 253	
1990					28 175	
1991					26 777	
1992					25 644	
1993					28 531	
1994					29 823	
1995					35 877	
1996					35 557	
1997					30 097	
1998					36 180	
1999					26 075	
2000	53.82	59.89	65.96		24 918	
2001	39.99	46.12	52.24		20 732	
2002	41.44	47.8	54.16		20 843	
2003	44.7	50.92	57.15		15 913	
2004	57.19	63.65	70.11		15 253	
2005	63.94	70.36	76.79		14 960	
2006	68.85	74.94	81.03		15 433	
2007	60.38	66.65	72.92		13 930	
2008	69.98	76.9	83.81		15 033	
2009	71.81	78.78	85.76		14 347	
2010					14 107	
2011	91.44	97.81	104.18		13 078	
2012	99.14	105.19	111.25		16 218	222
2013	107.04	113.09	119.15		16 773	290
2014	124.26	130.32	136.37		17 014	504
2015	136.56	142.46	148.36		16 757	839
2016	151.5	157.6	163.71		19 284	1 617
2017	155.06	161.04	167.02		20 296	1 148
2018	133.3	139.17	145.04		20 554	1 012
2019	135.88	141.98	148.08		20 479	1 081
2020	162.71	169.76	176.81		15 552	1 376
2021					12 365	274
2022	149.11	155.24	161.37	1.11	18 556	316

Sources and references

ICES. 2022. ICES technical guidance for harvest control rules and stock assessments for stocks in categories 2 and 3. *In* Report of ICES Advisory Committee, 2022. ICES Advice 2022, Section 16.4.11. <https://doi.org/10.17895/ices.advice.19801564>.

ICES. 2023a. Advice on fishing opportunities. *In* Report of the ICES Advisory Committee, 2023. ICES Advice 2023, Section 1.1.1. <https://doi.org/10.17895/ices.advice.22240624>

ICES. 2023b. Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP). ICES Scientific Reports. 5:43. <http://doi.org/10.17895/ices.pub.22691596>

NEAFC. 2016. The NEAFC approach to conservation and management of deep-sea species and categorization of deep-sea species/stocks. Adopted at the 35th Annual Meeting, November 2016. https://www.neafc.org/system/files/NEAFC_approach_to_DSS_conservation-and-management_Nov16.pdf

[Download the stock assessment data and figures](#)

Recommended citation: ICES. 2023. Ling (*Molva molva*) in subareas 3, 4, 6–9, 12, and 14 (Northeast Atlantic and Arctic Ocean). *In* Report of the ICES Advisory Committee, 2023. ICES Advice 2023, lin.27.346-91214. <https://doi.org/10.17895/ices.advice.21828360>