

Norway lobster (*Nephrops norvegicus*) in divisions 7.b–c and 7.j–k, Functional Unit 16 (west and southwest of Ireland, Porcupine Bank)

ICES stock advice

ICES advises that when the MSY approach is applied, catches in 2018 should be no more than 2734 tonnes.

Stock development over time

Stock abundance is estimated to have declined slightly in 2017 but is still above average. The harvest rate has increased but remains below the F_{MSY} .

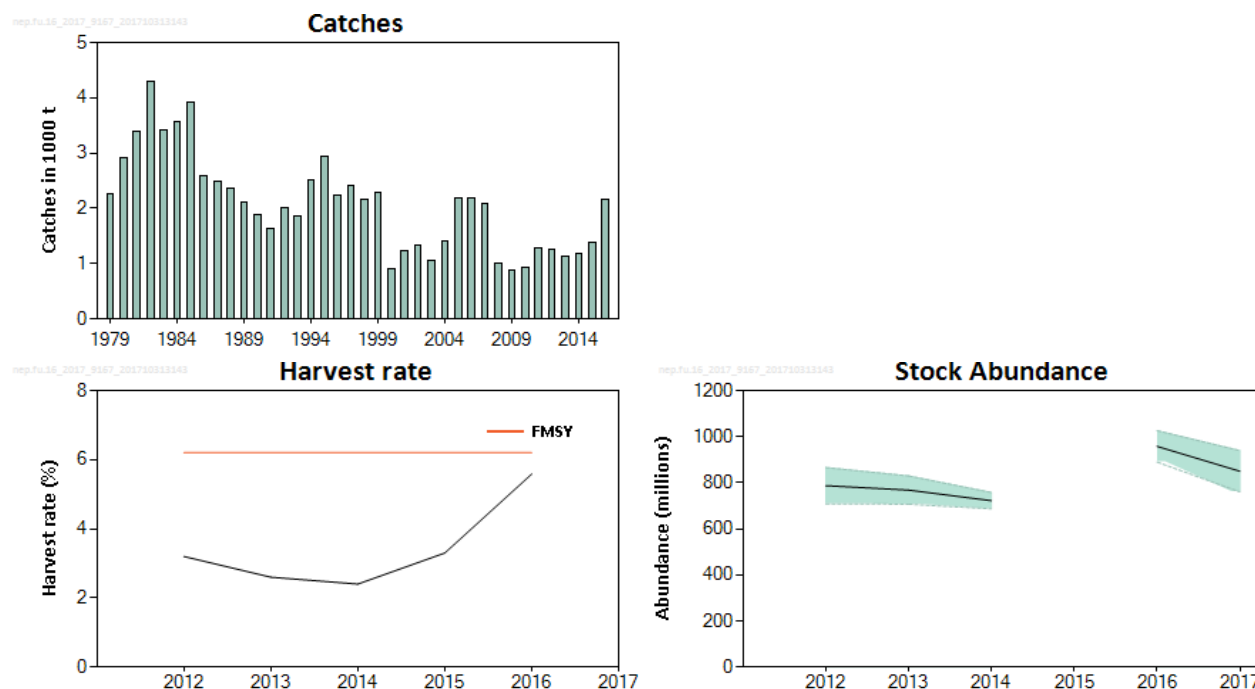


Figure 1 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Summary of the stock assessment. Catches (discards are considered negligible), harvest rate (sum of landings in numbers, divided by total abundance), stock abundance (Underwater TV, millions; SSB proxy; 95% confidence intervals). The harvest rate in 2015 was calculated using an interpolated value for abundance since no survey data are available for 2015. The orange line represents the F_{MSY} harvest rate.

Stock and exploitation status

Table 1 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. State of the stock and fishery relative to reference points.

		Fishing pressure				Stock size		
		2014	2015	2016		2015	2016	2017
Maximum sustainable yield	F_{MSY}	✓	✓	✓	Below	MSY	?	?
Precautionary approach	F_{pa} , F_{lim}	✓	✓	✓	Below possible reference points	$B_{trigger}$?	?
Management plan	F_{MGT}	-	-	-	Not applicable	B_{pa} , B_{lim}	?	?
Qualitative evaluation						SSB_{MGT}	-	-
							?	?
							↗	↘
								Decreasing

Catch options

Table 2 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. The basis for the catch options.

Variable	Value	Source	Notes
Stock abundance (2018)	850 million individuals	ICES (2017)	UWTV survey 2017 (used as abundance estimate for 2018).
Mean weight in landings	51.9 g	ICES (2017)	Average 1986–2016.
Mean weight in discards	-	ICES (2017)	Not relevant.
Discard rate	0	ICES (2017)	Discarding is negligible.
Discard survival rate	-	ICES (2017)	Not relevant.
Dead discard rate	0	ICES (2017)	Discarding is negligible.

Table 3 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Annual catch options. All weights are in tonnes.

Basis	Total catches*	Landings	Dead discards**	Surviving discards**	Harvest rate
	L+DD+SD	L	DD	SD	for L+DD
ICES advice basis					
MSY approach; F_{MSY}	2734	2734	0	0	6.2%
Other options					
$F_{2014-2016}$	1659	1659	0	0	3.8%
F_{MSY} (lower)	2205	2205	0	0	5.0%

* Total catches are the landings plus dead and surviving discards.

** Based on minimal discarding during observer trips up to 2016.

Basis of the advice

Table 4 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. The basis of the advice.

Advice basis	MSY approach.
Management plan	ICES is not aware of any agreed precautionary management plan for <i>Nephrops</i> in this area.

Quality of the assessment

The main uncertainties for the stock assessment relate to mean weight and discarding. The mean weight for this stock has been fluctuating strongly since 2000 and has declined recently due to incoming recruitment (Figure 2). Although the mean weight has declined in the last few years it is likely that this trend will reverse as the strong year class increases in size and a long term mean weight was considered the most appropriate basis in the calculation of catch options.

Up to 2015 discarding was considered negligible for this functional unit. Since 2015 some discarding has been observed (although sampling levels are insufficient to accurately estimate total discards) and discarding may be increasing partly due to

the incoming recruitment. Not including discards in the assessment will result in an underestimate of the actual harvest rate, particularly in 2016.

The landings are considered fairly well estimated (an unallocated component related to area misreporting has been included since 2011).

The UWTV survey provides abundance since 2012 (except 2015) with high precision, but the time-series is still too short to provide an $MSY B_{trigger}$.

The provision of grade information (commercial size categories) by individual fishers and fishery co-ops remains highly important for calculating mean weight in the landings. In 2016 grade data was provided for 49% of the Irish landings.

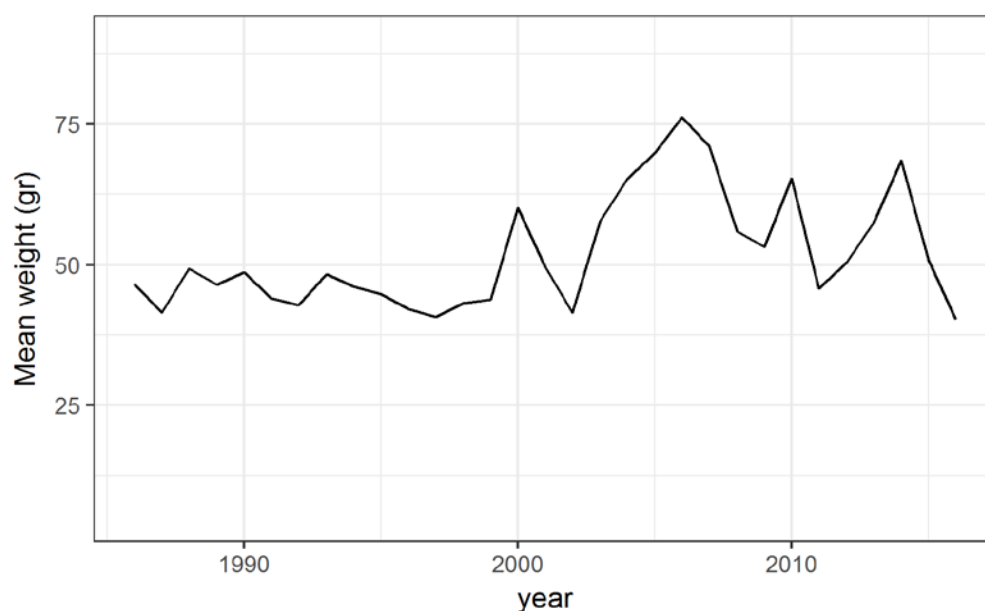


Figure 2 Norway lobster in divisions 7.b-c and 7.j-k, Functional Unit 16. Mean weight (g) in the commercial landings.

Issues relevant for the advice

There is a separate catch limit for Functional Unit (FU) 16 within the wider TAC for Subarea 7. This has resulted in very restrictive quotas for some vessels which has increased area misreporting and the risk of discarding.

From 2016, fisheries catching *Nephrops* in Subarea 7 are covered by the EU landings obligation (EC, 2015). Creel fisheries are exempted from the landings obligation, with a *de minimis* exemption consisting of a 6% discard rate by weight for the trawl fishery in 2018 (reduced from 7% in 2016 and 2017). The average discard rate by weight in the trawl fishery in FU 16 has been negligible up to 2015. Restrictive quotas and incoming recruitment has resulted in some highgrading of catch since 2015. The current advice assumes that all catches are landed in 2018.

For FU 16, the absolute density observed in the UWTV survey is low compared to other *Nephrops* FUs, with an average density of around 0.1 individuals m^{-2} . Under these circumstances $F_{0.1}$ is considered to be an appropriate F_{MSY} proxy. Previous reference points ($F_{35\%SPR}$ and F_{max}) were not recalculated and hence not included in the catch options table.

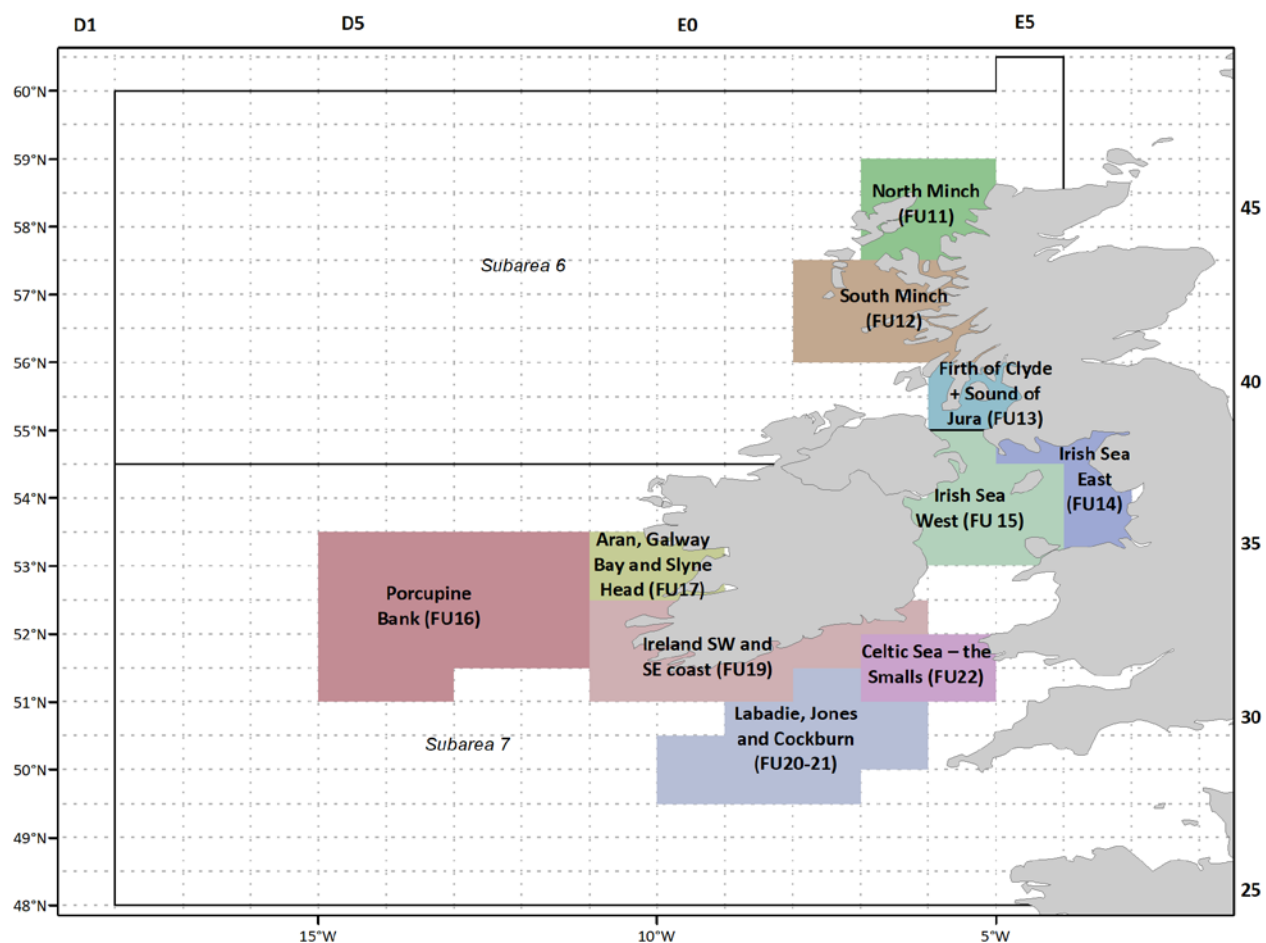


Figure 3 Norway lobster functional units in subareas 6 and 7.

Reference points

Table 5 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	Not defined		
	F_{MSY}	6.2% harvest rate	F_{MSY} proxy equivalent to $F_{0.1}$ for combined sexes, derived from a length-based per recruit analysis.	ICES (2016a)
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		

Basis of the assessment

Table 6 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2016b).
Assessment type	Underwater TV survey.
Input data	Commercial catches (international landings and length frequencies reconstructed from sampling and industry data); one UWTV survey (UWTV-FU 16); fixed maturity and natural mortality.
Discards and bycatch	Not included, considered negligible.
Indicators	Trawl survey (SpPGFS-WIBTS-Q4); mean weight, mean length, and sex ratio from commercial landings and surveys.
Other information	This stock was benchmarked in 2013 (WKNEPH ; ICES, 2013).
Working group	Working Group for the Celtic Seas Ecoregion (WGCSE)

Information from stakeholders

There is no additional information available other than what has already been provided (grade information) and used in the assessment.

History of the advice, catch, and management

Table 7 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. ICES advice and landings. All weights are in tonnes.

Year	ICES advice	Catch advice	The “of which limit” in the TAC regulation*	Recommended landings in divisions 7.b, 7.c, 7.j, and 7.k**	ICES landings
1987					2499
1988					2375
1989					2115
1990					1895
1991					1640
1992				3800	2015
1993				~4000	1857
1994				~4000	2512
1995				~4000	2936
1996				4000	2230
1997				4000	2409
1998				4000	2155
1999				4000	2290
2000				4000	910
2001				4000	1222
2002				4440	1327
2003				4440	1064
2004	Restrict landings to 2000–2002 levels			3300	1406
2005	Restrict landings to 2000–2002 levels			3300	2197
2006	Restrict landings to 2000–2002 levels			3300	2185
2007	Constrain effort at recent levels			--	2074
2008	Constrain effort at recent levels			--	1000
2009	No increase in effort, and average landings (2000–2003)	< 1000			879

Year	ICES advice	Catch advice	The “of which limit” in the TAC regulation*	Recommended landings in divisions 7.b, 7.c, 7.j, and 7.k**	ICES landings
2010	Reduce catches to lowest possible level	0			922
2011	Reduce catches to lowest possible level	0	1260		1278
2012	No increase in catch	-	1260		1258
2013	MSY approach (updated November 2012)	< 1800	1800		1141
2014	MSY approach	< 1848	1848		1189
2015	MSY approach	< 1850	1850		1394
2016	MSY approach	≤ 1850	1850		2154
2017	MSY approach	≤ 3100	3100		
2018	MSY approach	≤ 2734			

* Since 2011, a maximum limit on landings from FU 16 is included in the TAC regulation (the “of which limit”).

** Previously ICES gave combined advice for FUs 16, 17, 18, and 19, and “other rectangles” in this area.

History of the catch and landings

Table 8 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Catch distribution by fleet in 2016 as estimated by ICES.

Catch	Total landings	Total discards
2154 tonnes	100% otter trawl	Discarding is considered to be negligible.
	2154 tonnes	

Table 9 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. History of landings; ICES estimates of landings. All weights are in tonnes.

Year	France	Ireland	Spain	UK (E & W)	UK (Scotland)	Unallocated	Total
1965	514						514
1966	0						0
1967	441						441
1968	441						441
1969	609						609
1970	256						256
1971	500		1444				1944
1972	0		1738				1738
1973	811		2135				2946
1974	900		1894				2794
1975	0		2150				2150
1976	6		1321				1327
1977	0		1545				1545
1978	2		1742				1744
1979	14		2255				2269
1980	21		2904				2925
1981	66		3315				3381
1982	358		3931				4289
1983	615		2811				3426
1984	1067		2504				3571
1985	1181		2738				3919
1986	1060		1462	69			2591
1987	609		1677	213			2499
1988	600		1555	220			2375
1989	324	350	1417	24			2115

Year	France	Ireland	Spain	UK (E & W)	UK (Scotland)	Unallocated	Total
1990	336	169	1349	41			1895
1991	348	170	1021	101			1640
1992	665	311	822	217			2015
1993	799	206	752	100			1857
1994	1088	512	809	103			2512
1995	1234	971	579	152			2936
1996	1069	508	471	182			2230
1997	1028	653	473	255			2409
1998	879	598	405	273			2155
1999	1047	609	448	185			2290
2000	351	227	213	120			910
2001	425	369	270	158			1222
2002	369	543	276	139			1327
2003	131	307	489	108	29		1064
2004	289	494	468	126	28		1406
2005	397	754	681	208	156		2197
2006	462	731	636	201	155		2185
2007	302	1060	384	146	183		2074
2008	26	562	234	41	138		1000
2009	4	356	348	13	159		879
2010	4	579	240	10	90		922
2011	8	643	182	23	122	301	1278
2012	0.46	605	198	0	134	320	1258
2013	5.8	651	132	1	118	234	1141
2014	3	813	129	0	96	148	1189
2015	3	744	84	0	109	454	1394
2016*	35	1052	58	1	160	849	2154

*Preliminary.

Summary of the assessment

Table 10 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Assessment summary.

Year	Landings in number	Total discards in number *	Removals in number	UWTV abundance estimates	95% conf. intervals	Harvest rate	Mean weight in landings	Mean weight in discards	Discard rate*	Dead discard rate*
	millions					%	grammes		%	
2012	25	0	25	787	78.7	3.2	50.4	NA	0	0
2013	19.8	0	19.8	768	61.4	2.6	57.5	NA	0	0
2014	17.4	0	17.4	722	35.4	2.4	68.4	NA	0	0
2015	27.4	0	27.4	NA	NA	3.3**	50.9	NA	0	0
2016	53.5	0	53.5	958	68.1	5.6	40.3	NA	0	0
2017				850	89.7					

*Discarding is considered negligible and data are not included in the assessment.

** The harvest rate is estimated based on a linear interpolation of abundance for 2015 as no survey was carried out in this year.

NA = not available.

Sources and references

ICES. 2013. Report of the Benchmark Workshop on *Nephrops* assessment (WKNEPH), 25 February–1 March 2013, Lysekil, Sweden. ICES CM 2013/ACOM:45. 230 pp.

EU. 2015. COMMISSION DELEGATED REGULATION (EU) 2015/2438 of 12 October 2015 establishing a discard plan for certain demersal fisheries in north-western waters. Official Journal of the European Union, L 336: 29–35.
<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015R2438&from=EN>.

ICES. 2016a. EU request to ICES to provide F_{MSY} ranges for selected stocks in ICES subareas 5 to 10. *In* Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 5, Section 5.4.1. 13 pp.

ICES. 2016b. Advice basis. *In* Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 1, Section 1.2.

ICES. 2017. Report of the Working Group for the Celtic Seas Ecoregion (WGCSE), 9–18 May 2017, ICES Headquarters, Copenhagen, Denmark. ICES CM 2017/ACOM:13. 1464 pp.