

5.3.45 Norway lobster (*Nephrops norvegicus*) in divisions 7.b, 7.c, 7.j, and 7.k – FU 16 (West and Southwest of Ireland, Porcupine Bank)

ICES stock advice

ICES advises that when the MSY approach is applied, catches in 2017 should be no more than 3100 tonnes. All catches are assumed to be landed.

Stock development over time

Stock abundance is estimated to have increased in 2016. The harvest rate calculated as (landings) (abundance estimate)⁻¹ is estimated to be well below the F_{MSY} .

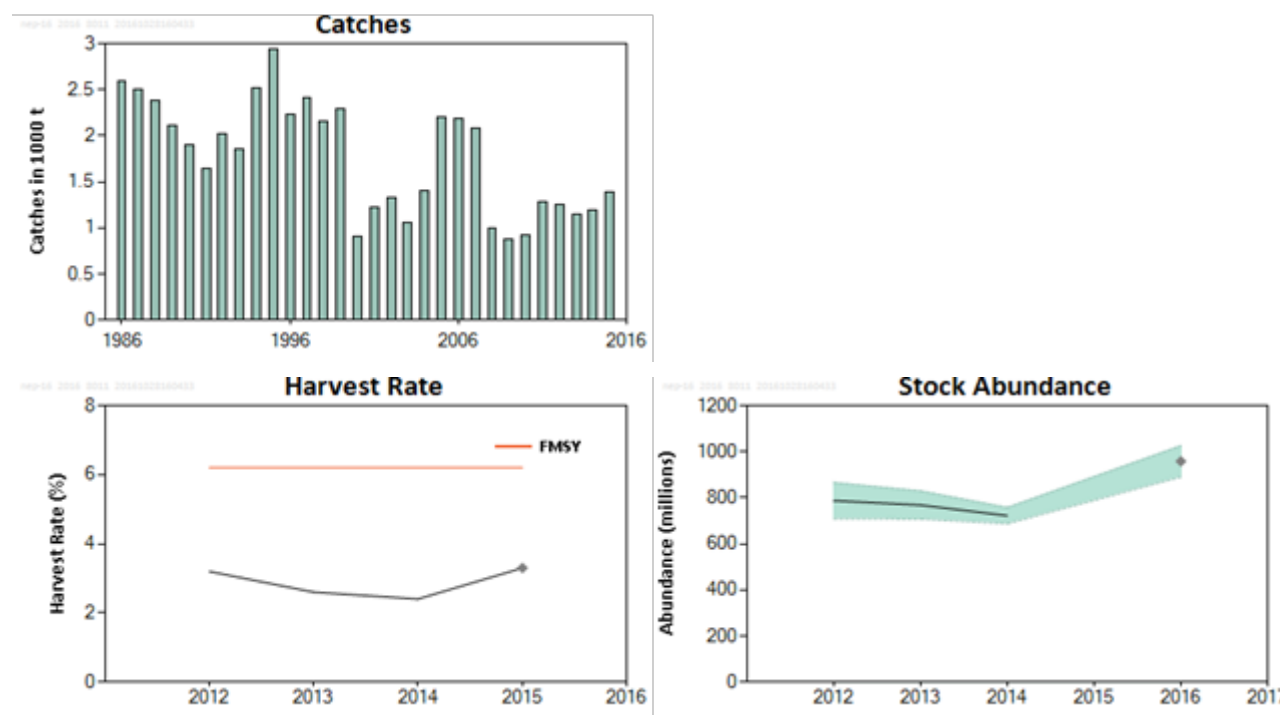


Figure 5.3.45.1 Norway lobster in Divisions 7.b, 7.c, 7.j, and 7.k – FU 16. Catches (thousand tonnes), harvest rate (fishing mortality proxy), survey abundance (Underwater TV, millions; SSB proxy; 95% confidence intervals). The 2015 harvest rate was calculated using an interpolated value for abundance since no survey data are available for 2015. The orange line represents the F_{MSY} harvest rate proxy.

Stock and exploitation status

Table 5.3.45.1 Norway lobster in Divisions 7.b, 7.c, 7.j, and 7.k – FU 16. State of the stock and fishery relative to reference points.

		Fishing pressure				Stock size		
		2013	2014	2015		2014	2015	2016
Maximum sustainable yield	F_{MSY}	✓	✓	✓	Below	?	?	?
Precautionary approach	F_{pa} , F_{lim}	✓	✓	✓	Below possible reference points	?	?	?
Management plan	F_{MGT}	-	-		Not applicable	-	-	Not applicable
Qualitative evaluation						→	?	↗
								Increasing

Catch options

Table 5.3.45.2 Norway lobster in Divisions 7.b, 7.c, 7.j, and 7.k – FU 16. The basis for the catch options.

Variable	Value	Source	Notes
Stock abundance	958 million individuals	ICES (2016a)	UWTV survey 2016.
Mean weight in landings	52.2 g	ICES (2016a)	Average 1986–2015.
Mean weight in discards	-	ICES (2016a)	Not relevant.
Discard rate	0%	ICES (2016a)	Discarding is negligible.
Discard survival rate	-	ICES (2016a)	Unknown, not relevant.
Dead discard rate	0%	ICES (2016a)	Discarding is negligible.

Table 5.3.45.3 Norway lobster in Divisions 7.b, 7.c, 7.j, and 7.k – FU 16. The catch options. Weights in tonnes.

Rationale	Basis	Total catches*	Landings	Dead discards**	Surviving discards**	Harvest rate
MSY approach	MSY approach	3100	3100	0	0	6.2%
Other option	F ₂₀₁₅	1384	1384	0	0	2.8%

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

** Based on negligible discarding during observer trips until 2015.

Basis of the advice

Table 5.3.45.4 Norway lobster in Divisions 7.b, 7.c, 7.j, and 7.k – FU 16. The basis of the advice.

Advice basis	MSY approach.
Management plan	There is no management plan for Norway lobster in this area.

Quality of the assessment

An UWTV survey has provided abundance data since 2012 (except 2015) with high precision, but the time-series is short. The landings are considered fairly well estimated (an unallocated component related to area misreporting has been included since 2011). Up to 2015 discarding was considered negligible for this functional unit. In 2015 and 2016 some discarding has been observed. Discard estimates are relatively small, 2–3% by weight and 8–9% by number, but data are insufficient to estimate total discards for the fishery. Excluding discards in the assessment does not change the perception that the stock is exploited well below F_{MSY} .

Fluctuations in the recent mean weight estimates meant that a long-term average (1986–2016) was used in the calculation of the catch advice.

Landings length–frequency data have improved significantly since 2010. This is because the fishing industry has collaborated with scientists by providing data on the grade composition (commercial size categories) of landings since 2010.

The harvest rate in 2015 is based on a linear interpolation of abundance for 2014 and 2016 as no survey was carried out in 2015. Although this increases uncertainty in the assessment it does not change the perception that the stock is exploited well below F_{MSY} .

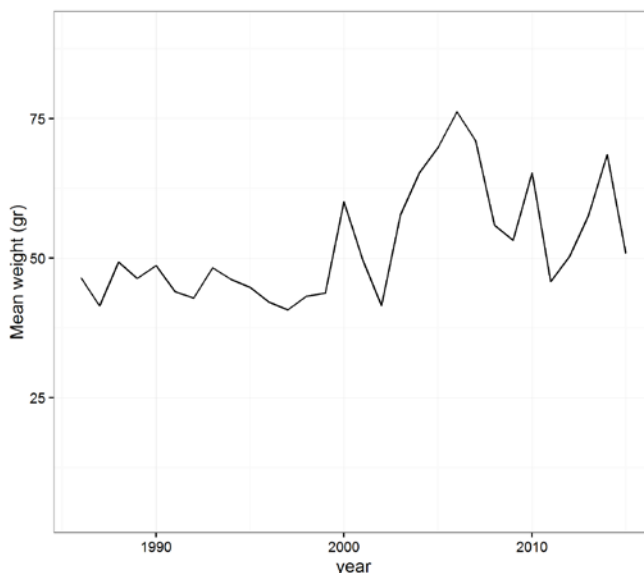


Figure 5.3.45.2 *Nephrops* on the Porcupine Bank (FU 16). Mean weight in the commercial landings.

Issues relevant for the advice

From 2016, fisheries catching *Nephrops* in Subarea 7 are covered by the EU landings obligation (EU, 2015). Creel fisheries are exempted from the landings obligation, with a *de minimis* exemption consisting of a 7% discard rate by weight for the trawl fishery 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 in 2015 and 2016. The current advice assumes that all catches are landed in 2017.

MSY reference points were recalculated at WKMSYREF4 (ICES, 2016b). 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} . In 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. The other option is based on $F_{2013-15}$ as the 2015 harvest rate is interpolated in the absence of a survey in 2015.

There is a separate catch limit for FU 16 within the wider TAC for Subarea 7.

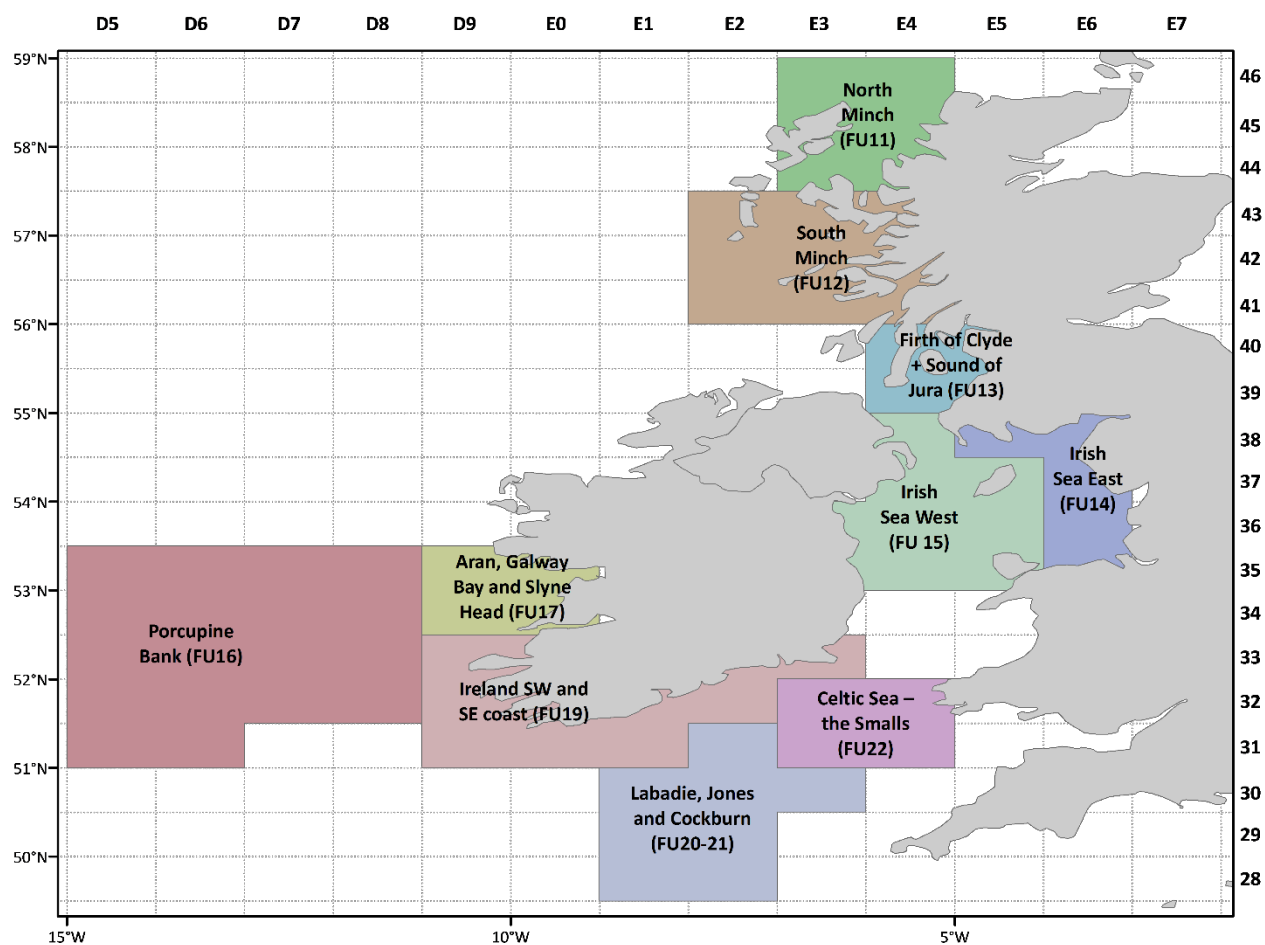


Figure 5.3.45.3 *Nephrops* functional units in Division 6.a and Subarea 7.

Reference points

Table 5.3.45.5 Norway lobster in Divisions 7.b, 7.c, 7.j, and 7.k – FU 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.	ICES (2016c)
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 5.3.45.6 Norway lobster in Divisions 7.b, 7.c, 7.j, and 7.k – FU 16. The basis of the assessment.

ICES stock data category	1 (ICES, 2016d).
Assessment type	Underwater TV survey combined with yield-per-recruit analysis from length data.
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 (ICES, 2013).
Working group	Working Group for the Celtic Seas Ecoregion (WGCSE).

Information from stakeholders

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 2015 grade data was provided for 44% of the Irish landings.

History of advice, catch, and management

Table 5.3.45.7 Norway lobster in Divisions 7.b, 7.c, 7.j, and 7.k – FU 16. History of ICES advice, the agreed TAC, and ICES estimates of landings. All weights in thousand tonnes.

Year	ICES advice	Catch advice	The 'of which limit' in TAC regulation	Recommended landings in Divisions 7.b, 7.c, 7.j and 7.k*	ICES landings
1987					2.5
1988					2.4
1989					2.1
1990					1.9
1991					1.6
1992				3.8	2.0
1993				~4.0	1.9
1994				~4.0	2.5
1995				~4.0	2.9
1996				4.0	2.2
1997				4.0	2.4
1998				4.0	2.2
1999				4.0	2.3
2000				4.0	0.9
2001				4.0	1.2
2002				4.44	1.3
2003				4.44	1.1
2004	Restrict landings to 2000–2002 levels			3.3	1.4
2005	Restrict landings to 2000–2002 levels			3.3	2.2
2006	Restrict landings to 2000–2002 levels			3.3	2.2
2007	Constrain effort at recent levels			--	2.1
2008	Constrain effort at recent levels			--	1.0
2009	No increase in effort, and average landings (2000–2003)	< 1.0			0.9
2010	Reduce catches to lowest possible level	0			0.9
2011	Reduce catches to lowest possible level	0	1.26		1.3
2012	No increase in catch	-	1.26		1.3
2013	MSY approach (updated November 2012)	< 1.8	1.8		1.1
2014	MSY approach	< 1.848	1.848		1.2
2015	MSY approach	< 1.850	1.850		1.4
2016	MSY approach	≤ 1.850	1.850		
2017	MSY approach	≤ 3.100			

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

History of catch and landings

Table 5.3.45.8 Norway lobster in Divisions 7.b, 7.c, 7.j, and 7.k – FU 16. Catch distribution by fleet in 2015 as estimated by ICES.

Total catch	Total landings	Total discards
1394 tonnes	100% otter trawl	Discarding is considered to be negligible.
	1394 tonnes	

Table 5.3.45.9 Norway lobster in Divisions 7.b, 7.c, 7.j, and 7.k – FU 16. History of commercial landings; ICES estimated values are presented by country participating in the fishery. All weights 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
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

* Preliminary.

Summary of the assessment

Table 5.3.45.10 Norway lobster in Divisions 7.b, 7.c, 7.j, and 7.k – FU 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	millions	millions	millions	millions	%	grammes	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				958	68.1					

*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 when no survey was carried out.

Sources and references

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