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

ICES advice on fishing opportunities

ICES advises that when the EU multiannual plan (MAP) for Western Waters and adjacent waters is applied, and assuming zero discards, catches in 2023 that correspond to the F ranges in the MAP are between 3054 and 3787 tonnes. The entire range is considered precautionary when applying ICES advice rule.

To ensure that the stock in FU 16 is exploited sustainably, management should be continued at the FU level.

Stock development over time

Fishing pressure on the stock is below F_{MSY}, and no reference points for stock size have been defined for this stock.

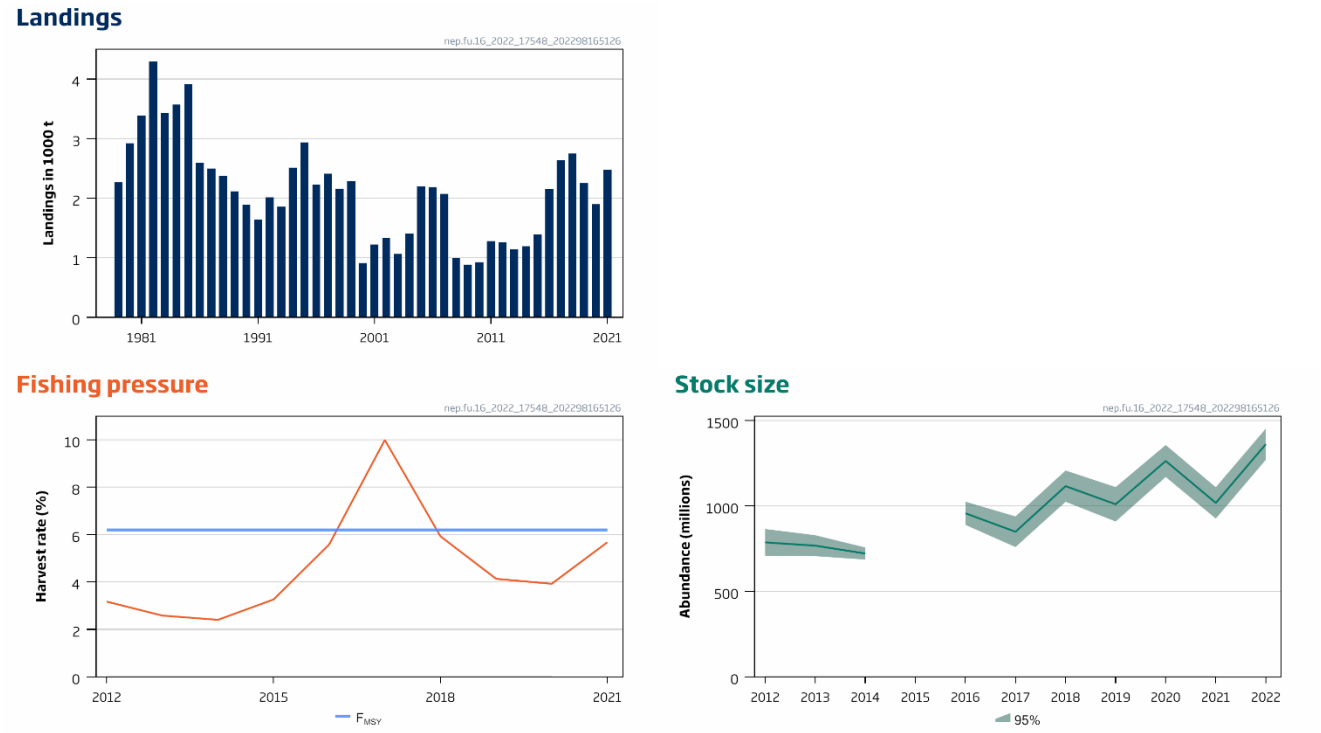

Figure 1 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Summary of the stock assessment. Landings (between 1979–2015 discarding is considered negligible; from 2016 onwards, discards are not quantified), harvest rate (sum of landings in numbers, divided by stock abundance), and stock abundance (underwater TV survey). The harvest rate in 2015 was calculated using an interpolated value for abundance, as no survey data are available. Harvest rates since 2016 may be underestimated because of the unknown discard levels.

Catch scenarios

Table 1 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. The basis for the catch scenarios.

Variable	Value	Notes
Stock abundance (2023)	1363	UWTV survey 2022; individuals in millions
Mean weight in projected landings	44.82	Average 2019–2021; in grammes
Mean weight in projected discards	-	Unknown
Projected discards rate	-	Unknown
Discards survival rate	-	Not applicable

Table 2 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Annual catch scenarios. All weights are in tonnes. 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.

Basis	Total catch	Projected landings	Projected discards	% harvest rate*	% advice change**
	PL + PD	PL	PD	For PL + PD	
ICES advice basis					
EU MAP^: F_{MSY}	3787	3787	0	6.2	35
EU MAP^: $F_{MSY\ lower}$	3054	3054	0	5	35
EU MAP^: $F_{MSY\ upper}$***	3787	3787	0	6.2	35
Other scenarios					
MSY approach	3787	3787	0	6.2	35
F_{2021}	3467	3467	0	5.7	24

* By number.
** Advice values for 2023 relative to the corresponding 2022 values (MAP advice of 2804, 2261, and 2804 tonnes, respectively); other option values are relative to 2804 tonnes.
*** $F_{MSY\ upper}$ = F_{MSY} for this stock.
^ EU multiannual plan (MAP) for the Western Waters (EU, 2019).

The increase in total catch advice is the result of the higher estimated stock abundance after the addition of new data.

Basis of the advice

Table 3 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. The basis of the advice.

Advice basis	Management plan
Management plan	The EU multiannual plan (MAP) for stocks in the Western Waters and adjacent waters applies to this stock. The plan specifies conditions for setting fishing opportunities depending on stock status and for making use of the F_{MSY} range for the stock. ICES considers the MAP to be precautionary when implemented at the FU level. Full details of the plan are described in EU (2019)

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 due to changes in recruitment patterns (Figure 2). For this reason, a three-year average (2019–2021) weight in the landings was considered the most appropriate basis in the calculation of catch scenarios. Since 2020 industry self-sampling has been used to derive mean weights and this is considered appropriate.

Up to 2015, discarding was considered negligible for this FU. Since 2016 some discarding has been observed, and these observations have shown high variability. Sampling levels are insufficient to estimate total discards accurately, and projections assume no discards. Not including discards in the assessment results in an underestimation of the actual fishing pressure. The current estimate is just below F_{MSY}.

Historical landings are considered to be well estimated, including an unallocated component related to area misreporting from 2011 to 2017. Since 2018, following the implementation of new legislation limiting fishing trips to single FUs, misreporting is not included in the assessment.

The UWTV survey has provided abundance for FU 16 (Figure 3) since 2012 (except 2015) with high precision, but the time-series is still too short to provide an MSY $B_{trigger}$ for this FU. The 2022 UWTV survey sampled 88% of the planned stations; this is considered to have had minimal impact on the abundance estimate and quality of the survey, based on burrow densities in adjoining areas and comparing coefficients of variation from the current and previous survey years.

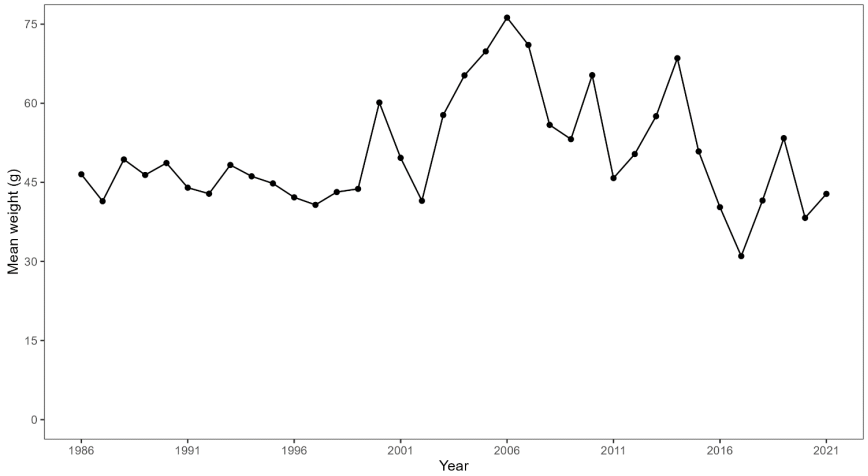

Figure 2 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Mean weight (g) estimations.

Issues relevant for the advice

There is a separate catch limit for FU 16 within the wider TAC for Subarea 7 (Figure 3). National legislation was introduced in 2018 preventing Irish vessels from fishing in both FU 16 and other areas during the same fishing trip.

Productivity of deep-water Norway lobster stocks is generally lower and recruitment is more sporadic than in shelf waters, though individual Norway lobster grow to relatively large sizes and attain high market prices. This makes these stocks more vulnerable to overexploitation and potential recruitment failure, as was observed in the early 2000s (ICES, 2018). The separate catch limit for FU 16 should, therefore, remain in place.

From 2016 the EU landing obligation was applied to all catches of Norway lobster fisheries in ICES Subarea 7, with several exemptions. There is insufficient catch sampling to quantify discards in this fishery, although discarding has been observed recently. The current advice assumes that all catches will be landed in 2023.

The density observed in the UWTV survey is low for FU 16 compared to other Norway lobster FUs, with an average density below 0.2 individuals m^{-2}. Under these circumstances, $F_{0.1}$ is considered to be an appropriate F_{MSY} proxy.

With the recent introduction of area closures under the EU Deep-sea Access regulation, approximately 14% of the defined fishing ground is anticipated to be closed to fishing activities using bottom gears in 2023 (EU, 2016).

Mixed-fisheries considerations

Norway lobster in Functional Unit 16 is caught as part of a mixed fishery together with other demersal stocks.

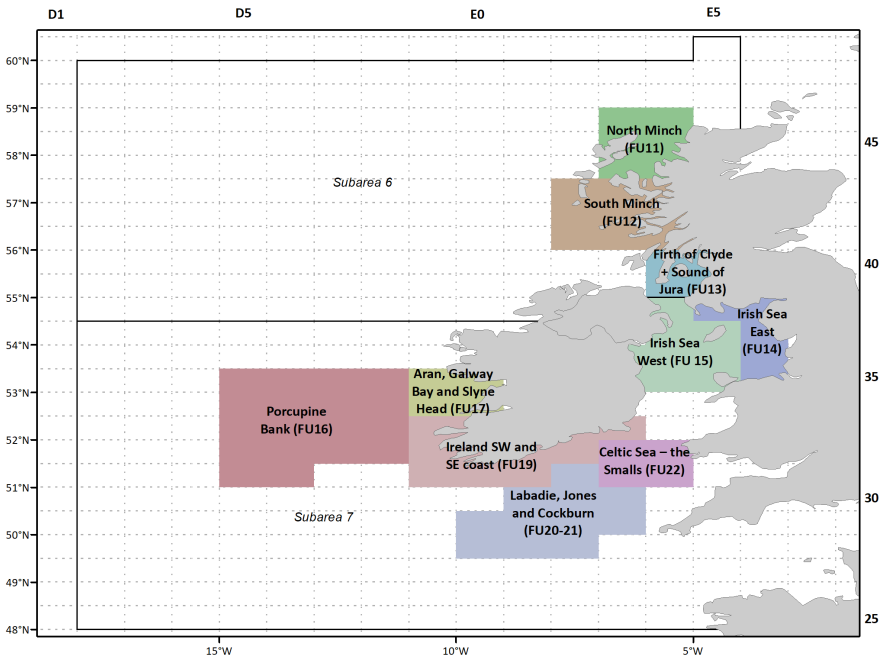

Figure 3 Norway lobster Functional Units in subareas 6 and 7.

Reference points

Table 4 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	Proxy harvest rate equivalent to $F_{0.1}$ for combined sexes, derived from a length-based per recruit analysis; percentage by number	ICES (2016)
Precautionary approach	B_{lim}	Not defined		
	B_{pa}	Not defined		
	F_{lim}	Not defined		
	F_{pa}	Not defined		
EU management plan (EU, 2019)	MAP MSY $B_{trigger}$	Not defined		
	MAP B_{lim}	Not defined		
	MAP F_{MSY}	6.2	Harvest rate equivalent to F_{MSY}; percentage by numbers	ICES (2016)
	MAP Lower range of F_{MSY}	5.0–6.2	Harvest rate, consistent with ranges provided by ICES, resulting in no more than 5% reduction in long-term yield compared with MSY; percentage by number	ICES (2016)
	MAP Upper range of F_{MSY}	6.2–6.2	Harvest rate, $F_{MSY\ upper}$ value capped at F_{MSY} because it has not been possible to evaluate the probability of SSB < B_{lim} as no B_{lim} is defined; percentage by number	ICES (2016)

Basis of the assessment

Table 5 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, 2022a)
Assessment type	Underwater TV survey (ICES, 2022b)
Input data	Commercial catches (international landings and length frequencies reconstructed from sampling and industry data); one UWTV survey (UWTV-FU 16 [U5917]); fixed maturity and natural mortality
Discards and bycatch	Not included, considered negligible until 2016 and not quantified since
Indicators	Trawl survey (SpPGFS-WIBTS-Q4 [G5768]); 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)

History of the advice, catch, and management

Table 6 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
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		2632
2018	MSY approach	≤ 2734	2734		2751
2019	MSY approach	≤ 2645***	2645		2229
2020	Management plan	2637 (range 2127–2637)***	2637		1899
2021	Management plan	3290 (range 2653–3290)***	3290		2476
2022	Management plan	2804 (range 2261–2804)***	2804		
2023	Management plan	3787 (range 3054–3787)***			

* Since 2011, a maximum limit on landings from FU 16 is included in the TAC regulation (the "of which limit").
** Until 2006, ICES gave combined advice for FUs 16, 17, 18, and 19, as well as for "other rectangles" in this area.
*** Assuming zero discards.

History of the catch and landings

Table 7 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Catch distribution by fleet in 2021 as estimated by ICES.

Catch	Landings	Discards
Unknown	100% otter trawl	Not quantified
	2476 tonnes	

Table 8 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. ICES estimates of landings by country. All weights are in tonnes.

Year	France	Ireland	Spain	UK (E & W & NI)	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

Year	France	Ireland	Spain	UK (E & W & NI)	UK (Scotland)	Unallocated	Total
2011	8	643	182	23	122	301	1278
2012	<1	605	198	0	134	320	1258
2013	6	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
2017	63	743	73	249	131	1373	2632
2018	81	2079	158	288	144	0	2751
2019	54	1529	112	332	201	0	2229
2020	41	1516	82	260	< 1	0	1899
2021	49	1611	318	329	169	0	2476

Summary of the assessment

Table 9 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Assessment summary.

Year	UWTV abundance estimate	High 95% confidence interval	Low 95% confidence interval	Landings in number	Total discards in number*	Removals in number	Harvest rate (by number)**	Landings	Total discards*	Discard rate (by number)	Dead discard rate (by number)	Mean weight in landings	Mean weight in discards
	millions						%	tonnes		%		grammes	
2012	787	866	708	25	0	25	3.2	1258	0	0	0	50.36	NA
2013	768	829	707	20	0	20	2.6	1141	0	0	0	57.54	NA
2014	722	757	687	17	0	17	2.4	1189	0	0	0	68.54	NA
2015	840	NA	NA	27	0	27	3.3***	1394	0	0	0	50.86	NA
2016	958	1026	890	53	NA	53	5.6	2154	NA	NA	NA	40.29	NA
2017	850	939	760	85	NA	85	10.0	2632	NA	NA	NA	31.01	NA
2018	1117	1208	1025	66	NA	66	5.9	2751	NA	NA	NA	41.55	NA
2019	1010	1111	910	42	NA	42	4.1	2229	NA	NA	NA	53.38	NA
2020	1264	1358	1170	50	NA	50	3.9	1899	NA	NA	NA	38.26	NA
2021	1018	1110	927	58	NA	58	5.7	2476	NA	NA	NA	42.82	NA
2022	1363	1454	1271										

* Discarding up to 2015 was considered to be negligible. Discard estimates are not available since 2016 and are therefore not included in the assessment.

** Values since 2016 onwards may be underestimated owing to insufficient discard data.

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

NA = not available.

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Download the stock assessment data and figures.

Recommended citation: ICES. 2022. Norway lobster (*Nephrops norvegicus*) in divisions 7.b-c and 7.j-k, Functional Unit 16 (west and southwest of Ireland, Porcupine Bank). *In* Report of the ICES Advisory Committee, 2022. ICES Advice 2022, nep.fu.16, https://doi.org/10.17895/ices.advice.19772410