

Norway lobster (*Nephrops norvegicus*) in divisions 7.g and 7.f, Functional Unit 22 (Celtic Sea, Bristol Channel)

ICES stock advice

ICES advises that when the MSY approach is applied, and assuming that discard rates and fishery selection patterns do not change from the average of 2014–2016, catches in 2018 should be no more than 4322 tonnes.

To ensure that the stock in Functional Unit 22 is exploited sustainably, management should be implemented at the functional unit level.

Stock development over time

The harvest rate increased well above F_{MSY} in 2016. The stock abundance has been above $MSY B_{trigger}$, except for 2016.

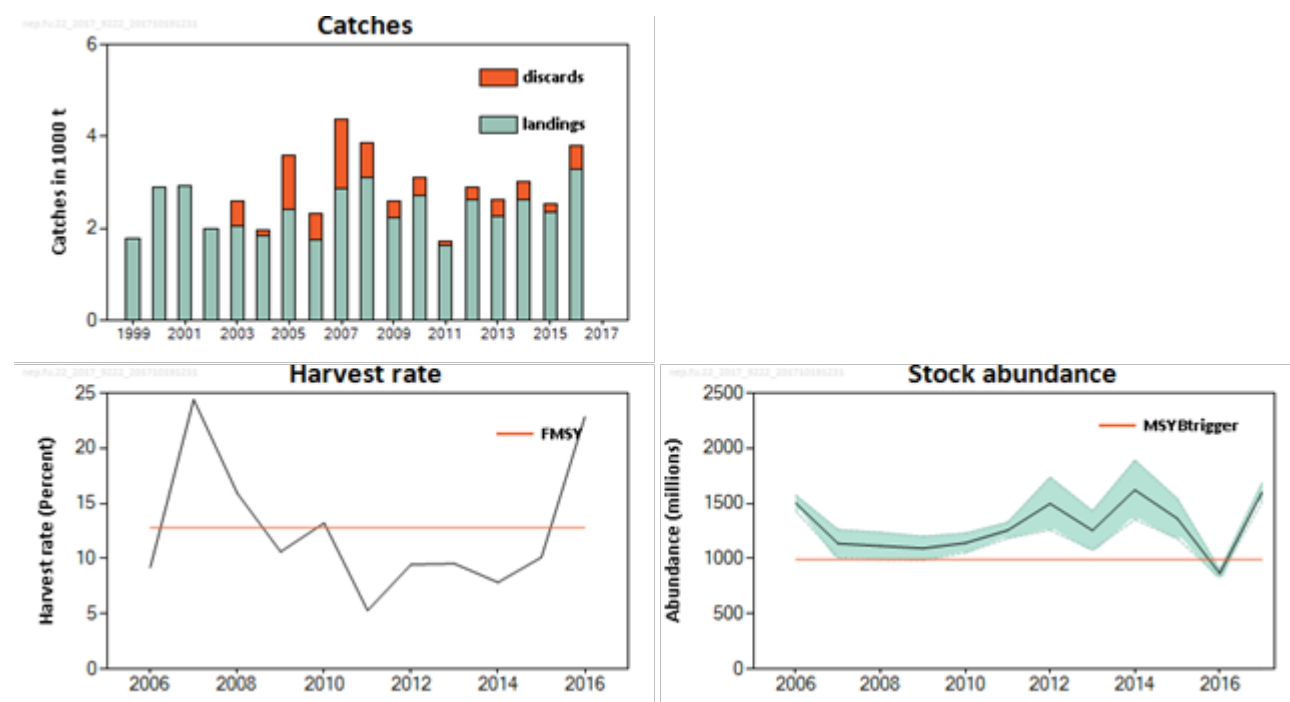


Figure 1 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. Summary of the stock assessment. Catches (discards only available from 2003), harvest rate (sum of landings and dead discards in numbers, divided by total abundance), survey abundance (Underwater TV, millions; SSB proxy; 95% confidence intervals). Orange lines represent $MSY B_{trigger}$ and the F_{MSY} harvest rate.

Stock and exploitation status

Table 1 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. 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}	✓	✓	✗ Above		MSY $B_{Trigger}$	✓ ✗	✓ Above trigger
Precautionary Approach	F_{pa} F_{lim}	✓	✓	? Undefined		B_{pa} B_{lim}	✓ ?	✓ Above possible reference points
Management plan	F_{MGT}	—	—	— Not applicable		B_{MGT}	—	— Not applicable

Catch options

Table 2 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. The basis for the catch options.

Variable	Value	Source	Notes
Stock abundance (2018)	1600 million individuals	ICES (2017)	UWTV 2017 (used as abundance estimate for 2018).
Mean weight in landings	22.1 g	ICES (2017)	Average 2003–2016.
Mean weight in discards	12.0 g	ICES (2017)	Average 2003–2016.
Discard rate	20.7%	ICES (2017)	Average 2014–2016 (by number). Calculated as total discards divided by landings + total discards.
Discard survival rate	25.0%	ICES (2017)	Only applies in scenarios where discarding is assumed to continue.
Dead discard rate	16.4%	ICES (2017)	Average 2014–2016 (by number). Calculated as dead discards divided by removals (landings + dead discards). Only applies in scenarios where discarding is assumed to continue.

Table 3 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. Annual catch options. All weights are in tonnes.

a) Catch options for 2018 assuming zero discards.

Basis	Total catch	Wanted catch*	Unwanted catch*	Harvest rate**
ICES advice basis				
MSY approach; F_{MSY}	4098	3590	509	12.8%
Other options				
$F_{2014-2016}$	4355	3814	541	13.6%

* “Wanted” and “unwanted” catch are used to describe *Nephrops* that would be landed and discarded in the absence of the EU landing obligation, based on the average estimated discard rates for 2014–2016.

** Calculated for dead removals and applied to total catch.

b) Catch options for 2018 assuming discarding continues at the recent average rate.

Basis	Total catch	Dead removals	Landings	Dead discards	Surviving discards	Harvest rate*
	L+DD+SD	L+DD	L	DD	SD	for L+DD
ICES advice basis						
MSY approach; F_{MSY}	4322	4187	3784	403	134	12.8%
Other options						
$F_{2014-2016}$	4592	4449	4021	428	143	13.6%

* Calculated for dead removals and applied to total catch.

All harvest rates are calculated in numbers and refer to the dead removals. The difference in catch weights between catch options with the same harvest rates is related to the fact that, in the scenario allowing for discarding, a proportion of the discards is assumed to survive (25%).

Basis of the advice

Table 4 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. The basis of the advice.

Advice basis	MSY approach.
Management plan	ICES is not aware of any agreed precautionary management plan for Norway lobster in this area.

Quality of the assessment

Since 2006 a dedicated annual UWTV survey has taken place which gives abundance estimates for the Smalls Grounds with high precision. Sampling of this stock is adequate.

The long-term average (rather than a three-year average) was considered to be more appropriate as input for the mean weight in landings and discards in the calculation of catch options, to account for interannual variation.

Issues relevant for the advice

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 for Functional Unit (FU) 22 over the last three years is 11.4%. The discard rate by number used in the calculation of the catch advice implies that the discard rate by weight will be 12.4% in 2018 for the entire fishery.

For FU 22, the absolute density observed during the UWTV survey is medium (~ 0.4 individuals m^{-2}). The fishery in this area has been in existence since the 1960s and has been relatively stable for many years. Harvest rates around the $F_{35\%SPR}$ are expected to deliver high long-term yield with a low probability of recruitment overfishing and are used as proxy for F_{MSY} for FU 22.

A single TAC covers the entire ICES Subarea 7. Management should be implemented at the functional unit level to ensure that fishing opportunities are in line with the scale of the resource in each of the stocks.

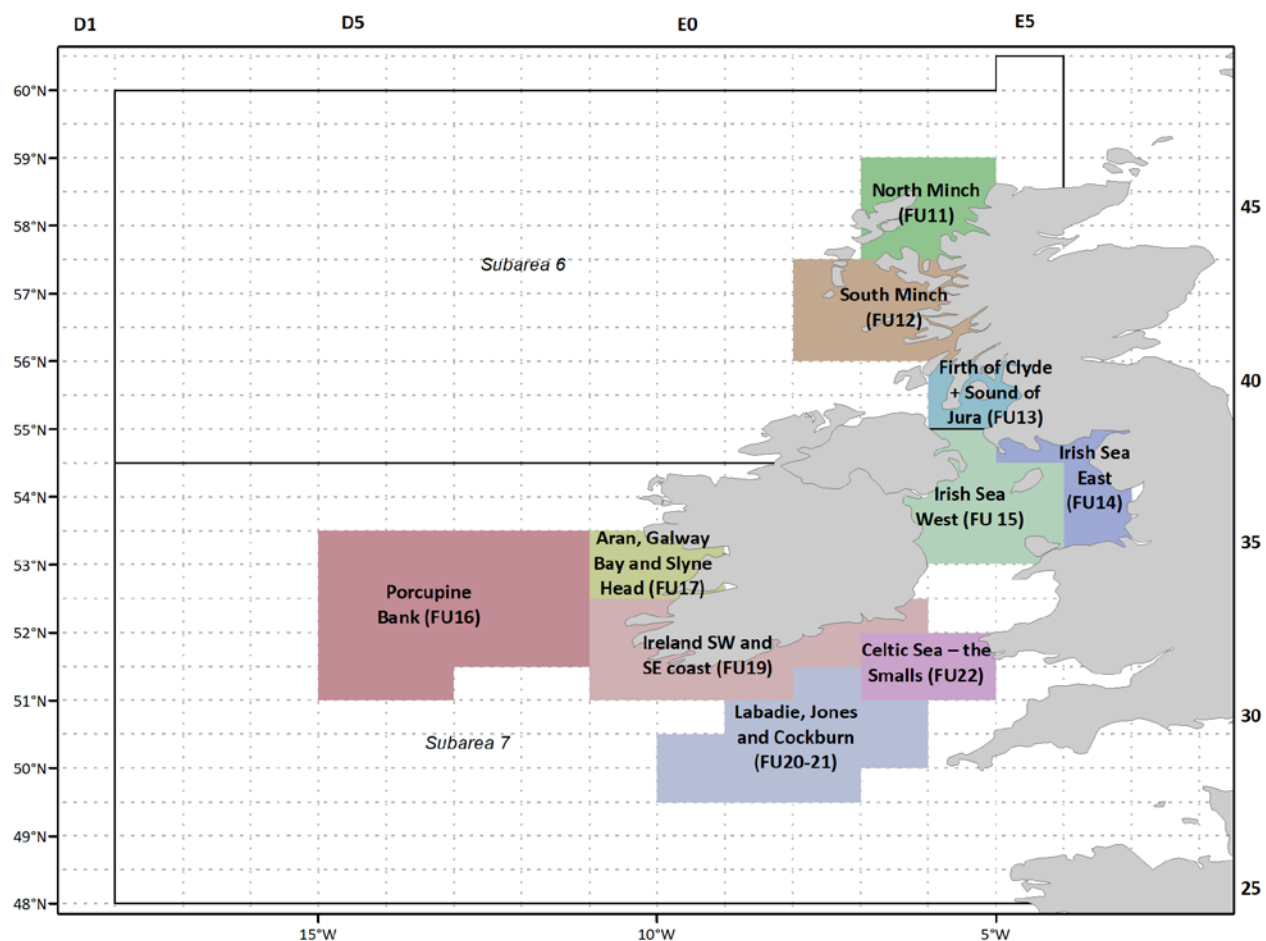


Figure 2 Norway lobster functional units in subareas 6 and 7.

Reference points

Table 5 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	990 million individuals	5% interval on the probability distribution of abundance for the time-series 2006–2015, assuming a normal distribution.	ICES (2016a)
	F_{MSY}	12.8% harvest rate	F_{MSY} proxy equivalent to $F_{35\%SPR}$ 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.g and 7.f, Functional Unit 22. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2016b).
Assessment type	Underwater TV survey.
Input data	One survey index (UWTV-FU 22), commercial catches (international landings), length frequencies (from catch and discard sampling), maturity data (from commercial catch sampling and during surveys), fixed natural mortality. Discard survival rate.
Discards and bycatch	Included in the assessment since 2003.
Indicators	IBTS Q4 survey; length–frequency distributions of the catches by sex.
Other information	This stock was benchmarked in 2014 (WKCELT ; ICES, 2014).
Working group	Working Group for the Celtic Seas Ecoregion (WGCSE)

Information from stakeholders

There is no additional available information for this stock.

History of the advice, catch, and management

Table 7 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. ICES advice, landings and discards. All weights are in tonnes.

Year	ICES advice*	Landings advice*	Catch advice	ICES landings	Total discards**
1992		3800			
1993		3800			
1994		3800			
1995		3800			
1996		3800			
1997		3800			
1998		3800			
1999		3800		1788	
2000		3800		2907	
2001		3800		2935	
2002		3800		1990	
2003		3800		2050	536
2004	Adjust TAC in line with landings of most recent 10 years	4600		1828	119
2005	Adjust TAC in line with landings of most recent 10 years	4600		2425	1149
2006	Recent average landings 2000–2002	4600		1752	579
2007	No increase in effort	-		2880	1487
2008	No increase in effort	< 5300		3114	742
2009	No increase in effort	< 5300		2245	357
2010	No new advice, same as for 2009	< 5300		2708	383
2011	See scenarios; MSY reduce catch or PA < 5300	-		1617	118
2012	MSY approach	2300		2633	256
2013	MSY approach (updated November 2012)	3100		2255	362

Year	ICES advice*	Landings advice*	Catch advice	ICES landings	Total discards**
2014	MSY approach	2674		2615	415
2015	MSY approach	3409		2368	179
2016	MSY approach		≤ 3027***	3276^	516^
2017	MSY approach		≤ 2063^^		
2018	MSY approach		≤ 4322^^		

* Advice prior to 2012 applies to FUs 20–22.

** Dead + surviving discards.

*** Assuming all catches are landed.

^ Preliminary.

^^ Assuming recent discard rates.

History of the catch and landings

Table 8 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. Catch distribution by fleet in 2016 as estimated by ICES.

Catch		Landings	Total discards	
96.6% dead	3.4% surviving	Almost 100% otter trawl	75% dead	25% surviving
3792 t		3276 t	516 t	

Table 9 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. History of landings and discards; ICES estimates of landings and total discards. All weights are in tonnes.

Year	France	Rep. of Ireland	UK	Belgium	Total landings	Total discards*
1999	1027	741	20		1788	
2000	1186	1687	34		2907	
2001	876	2054	5		2935	
2002	595	1392	3		1990	
2003	799	1241	10		2050	536
2004	465	1330	33		1827	119
2005	494	1931	0		2425	1149
2006	302	1398	52		1752	579
2007	218	2614	48		2881	1487
2008	312	2474	328		3114	742
2009	235	1642	368		2245	357
2010	136	2353	351		2708	383
2011	54	1548	15		1617	118
2012	65	2509	59		2633	256
2013	83	2079	86	7	2255	362
2014	29	2443	134	8	2615	415
2015	9	2258	97	5	2368	179
2016**	7	2952	314	3	3276	516

* Surviving + dead discards.

** Preliminary.

Summary of the assessment

Table 10 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. 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		%	
2003	96	54	136				21.4	9.9	36%	30%
2004	72	9	78				25.5	13.9	11%	8%
2005	115	91	183				21.1	12.7	44%	37%
2006	97	55	138	1503	70	9%	18.0	10.6	36%	30%
2007	165	150	277	1136	126	24%	17.5	9.9	48%	41%
2008	132	61	177	1114	123	16%	23.6	12.3	31%	26%
2009	93	31	116	1093	108	11%	24.2	11.5	25%	20%
2010	124	27	144	1141	88	13%	21.9	14.2	18%	14%
2011	62	7	67	1256	72	5%	26.3	17.8	10%	7%
2012	124	24	142	1498	239	9%	21.3	10.7	16%	13%
2013	97	31	120	1254	177	10%	23.3	11.8	24%	19%
2014	105	30	127	1622	268	8%	25.0	13.7	23%	18%
2015	123	20	138	1363	180	10%	19.3	8.9	14%	11%
2016	158	53	198	866	35	23%	20.8	9.7	25%	20%
2017				1600	83					

*Surviving + dead discards.

Sources and references

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. 2014. Report of the Benchmark Workshop on Celtic Sea Stocks (WKCELT), 3–7 February 2014, ICES Headquarters, Copenhagen, Denmark. ICES CM 2014/ACOM:42. 194 pp.

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 5.2.3.1. 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.