

Norway lobster (*Nephrops norvegicus*) in divisions 7.g and 7.h, functional units 20 and 21 (Celtic Sea)

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 8673 tonnes.

To ensure that the stock in functional units 20 and 21 is exploited sustainably, management should be implemented at the functional unit level.

Stock development over time

The historical harvest rate is below F_{MSY} for the time-series. Stock abundance increased substantially in 2017.

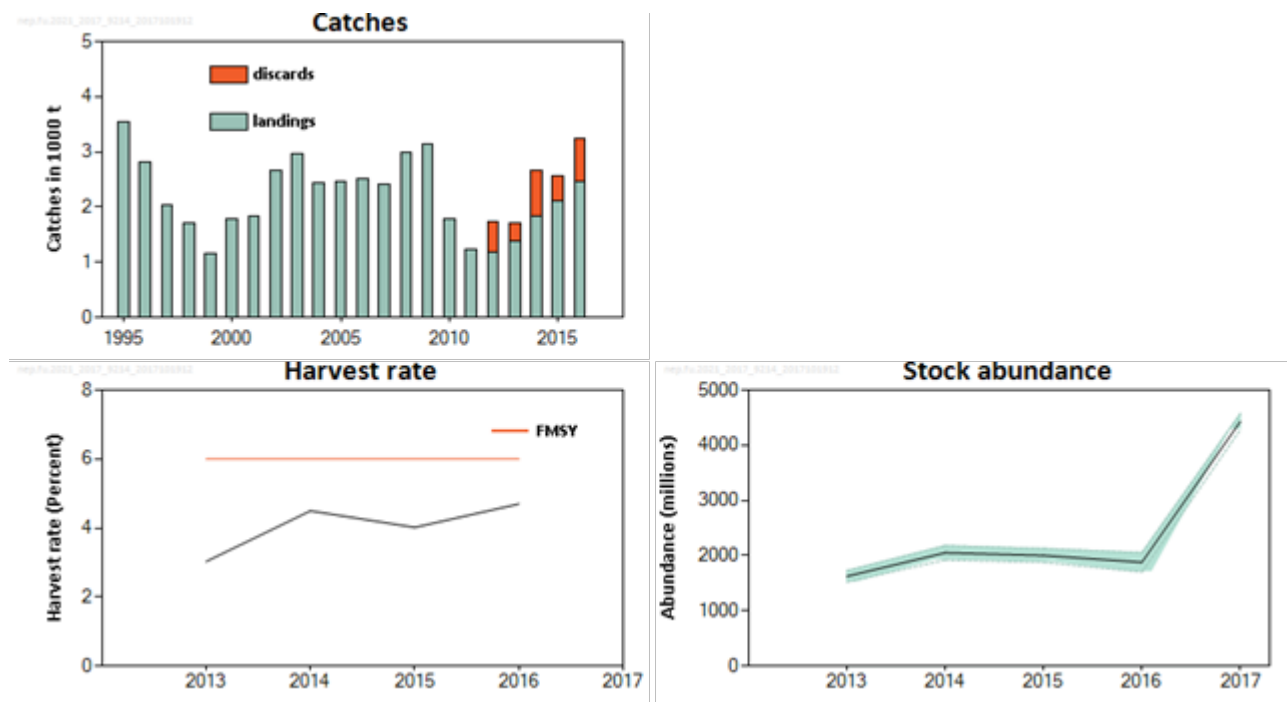


Figure 1 Norway lobster in divisions 7.g and 7.h, functional units 20 and 21. Summary of the stock assessment. Catches (discards only available from 2012), harvest rate (sum of landings and dead discards in numbers divided by total abundance), survey abundance (Underwater TV, millions; SSB proxy; 95% confidence intervals). The orange line represents the F_{MSY} harvest rate.

Stock and exploitation status

Table 1 Norway lobster in divisions 7.g and 7.h, functional units 20 and 21. 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	?	?	?	Undefined
Precautionary approach	F_{pa} , F_{lim}	✓	✓	✓	Below possible reference points	B_{pa} , B_{lim}	?	?	?	Undefined
Management plan	F_{MGT}	-	-	-	Not applicable	SSB_{MGT}	-	-	-	Not applicable
Qualitative evaluation							→	→	↗	Increasing

Catch options

Table 2 Norway lobster in divisions 7.g and 7.h, functional units 20 and 21. The basis for the catch options.

Variable	Value	Source	Notes
Stock abundance (2018)	4428 million individuals	ICES (2017)	UWTV survey 2017 (used as abundance estimate for 2018).
Mean weight in landings	37.6 g	ICES (2017)	Average 2014–2016.
Mean weight in discards	17.4 g	ICES (2017)	Average 2014–2016.
Discard rate	41.0%	ICES (2017)	Average 2014–2016 (by number). Calculated as total discards divided by landings + total discards.
Discard survival rate	25%	ICES (2017)	Only applies in scenarios where discarding is assumed to continue.
Dead discard rate	34.4%	ICES (2017)	Average 2014–2016 (by number). Calculated as dead discards divided by dead removals (landings + dead discards). Only applies in scenarios where discarding is assumed to continue.

Table 3 Norway lobster in divisions 7.g and 7.h, functional units 20 and 21. 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}	7789	5894	1895	6.0%
Other options				
$F_{2014-2016}$	5712	4322	1390	4.4%

* “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}	8673	8143	6553	1590	530	6.0%
Other options						
$F_{2014-2016}$	6361	5972	4806	1167	389	4.4%

* Calculated for dead removals and applied to total catch.

All harvest rates are calculated in numbers and refer to 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.h, functional units 20 and 21. 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 2013 a dedicated annual UWTV survey has provided abundance estimates of adequate quality, but the time-series is still too short to provide an MSY $B_{trigger}$. In 2017 the observed densities through the whole area increased substantially, leading to a large increase in abundance.

Sampling of landings and discards remains very low. In addition, some samples could not be accurately allocated to functional units (FUs) in the Celtic Sea. Discarding of *Nephrops* is substantial (around 40% by number for the last five years). Discarding prior to 2012 is unknown. The current assessment makes use of the recent discard estimates to calculate total catch advice.

Issues relevant for the advice

The substantial increase in catch advice for 2018 compared to previous years is directly linked to the large estimate of stock abundance in 2017. This abundance increase is most likely linked to high recruitment although there is no additional information to support this. Advised catches are much higher than the highest historical landings (3536 t in 1995).

A single TAC covers the entire ICES Subarea 7. If the advice for this FU is implemented and catches in 2018 are below the advised level, this may result in displacement of unused catch opportunities to other FUs in the TAC area. This could result in non-precautionary exploitations of those FUs. Management should be implemented at the functional unit level to ensure that fishing opportunities are in line with the scale of the resource for each of the stocks and the corresponding MSY approach.

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 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 FUs 20–21 over the last three years is 25%. The discard rate by number used in the calculation of the catch advice implies that the discard rate by weight will be 24.4% in 2018 for the entire fishery.

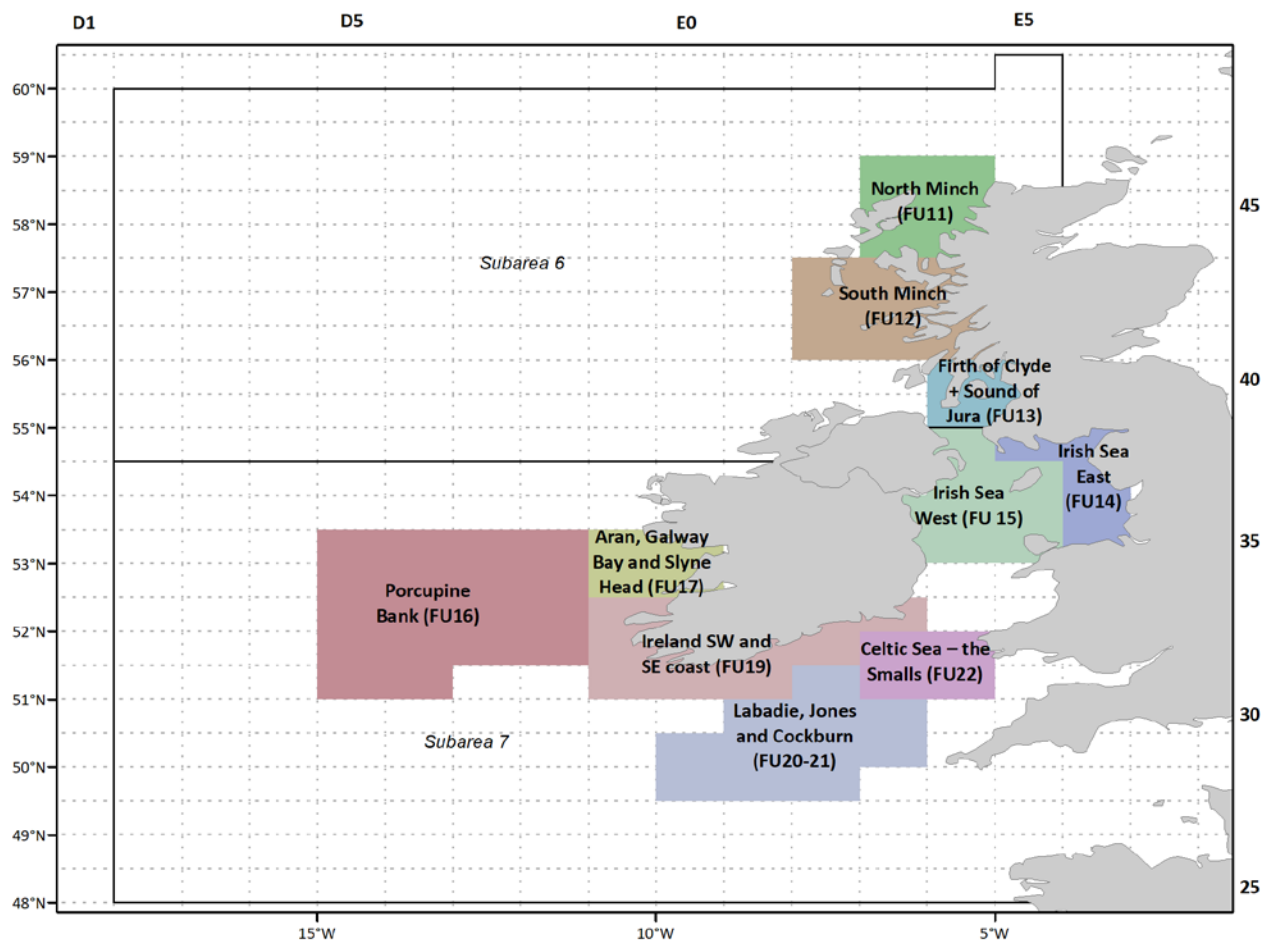


Figure 2 Norway lobster functional units in subareas 6 and 7.

Reference points

Table 5 Norway lobster in divisions 7.g and 7.h, functional units 20 and 21. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	Not defined		ICES (2016a)
	F_{MSY}	6.0% harvest rate	F_{MSY} proxy, equivalent to $F_{0.1}$ for combined sexes, derived from 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 applicable		
	F_{mgt}	Not applicable		

Basis of the assessment

Table 6 Norway lobster in divisions 7.g and 7.h, functional units 20 and 21. 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 2021), commercial catches (international landings (Ireland, France and UK), length frequencies from Irish and French catch and discard sampling); maturity data (from commercial catch sampling and surveys), fixed natural mortality. Discard survival rate.
Discards and bycatch	Included in the assessment since 2012.
Indicators	Mean sizes in the catches. Two bottom trawl surveys (IGFS-WIBTS-Q4 and EVHOE-WIBTS-Q4).
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.h, functional units 20 and 21. ICES advice, landings, and discards. All weights are in tonnes.

Year	ICES advice *	Landings advice	Catch advice	ICES landings	ICES discards**
1987					
1988					
1989					
1990					
1991					
1992		~3800			
1993		3800			
1994		3800			
1995		3800		3536	
1996		3800		2822	
1997		3800		2038	
1998		3800		1713	
1999		3800		1152	
2000		3800		1778	
2001		3800		1833	
2002		3800		2674	
2003		3800		2953	
2004	Adjust TAC in line with landings of most recent 10 years	4600		2443	
2005	Adjust TAC in line with landings of most recent 10 years	4600		2469	
2006	Recent average landings 2000–2002	4600		2523	
2007	No increase in effort	-		2419	
2008	No increase in effort	< 5300		2980	
2009	No increase in effort	< 5300		3145	
2010	No new advice, same as for 2009	< 5300		1793	

2011	See scenarios; MSY reduce catch or PA < 5.3	-		1237	
2012	Reduce catch	-		1189	542
2013	Average landings (last 10 years)	< 2500		1387	327
2014	No new advice, same as for 2013	< 2500		1837	834
2015	Same as for 2013	< 2500		2116	442
2016	Precautionary approach (harvest rate consistent with previous advice)		≤ 3045***	2453	801
2017	MSY approach		≤ 3552^		
2018	MSY approach		≤ 8673^		

* Advice prior to 2013 applies to FUs 20–22.

** Dead + surviving discards.

*** Assuming zero surviving discards.

^ Assuming recent discard rates.

History of the catch and landings

Table 8 Norway lobster in divisions 7.g and 7.h, functional units 20 and 21. Catch distribution by fleet in 2016 as estimated by ICES.

Catch		Total landings	Total discards	
93.8% dead	6.2% surviving	Almost 100% otter trawl (both 70–99 mm and > 100 mm)	75% dead	25% surviving
3253 t		2453 t	801 t	

Table 9 Norway lobster in divisions 7.g and 7.h, functional units 20 and 21. History of landings and discards; ICES estimates of landings by country and total discards. All weights are in tonnes.

Year	France	Rep. of Ireland	UK	Total landings	Total discards*
1995	3419	117	na	3536	
1996	2721	101	na	2822	
1997	1957	81	na	2038	
1998	1583	130	na	1713	
1999	1051	83	18	1152	
2000	1661	107	10	1778	
2001	1750	69	14	1833	
2002	2559	104	11	2674	
2003	2796	148	9	2953	
2004	2140	299	4	2443	
2005	2008	455	6	2469	
2006	2066	450	7	2523	
2007	1816	600	3	2419	
2008	2036	937	7	2980	
2009	1930	1202	13	3145	
2010	975	756	62	1793	
2011	566	637	34	1237	
2012	453	708	28	1189	542
2013	486	844	57	1387	327
2014	465	1342	29	1836	834
2015	355	1620	141	2116	442
2016**	477	1531	440	2453	801

* Dead + surviving discards.

** Preliminary.

Summary of the assessment

Table 10 Norway lobster in divisions 7.g and 7.h, functional units 20 and 21. 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	38.2	36.1	65.3				31.1	15.0	49%	41%
2013	34.8	19.2	49.2	1624	103	3.0%	39.9	17.0	36%	29%
2014	50.6	55.5	92.2	2051	131	4.5%	36.3	15.0	52%	45%
2015	59.4	28.1	80.5	2003	125	4.0%	35.7	15.7	32%	26%
2016	60.2	37.5	88.3	1879	175	4.7%	40.7	21.4	38%	32%
2017				4428	145					

* Dead + surviving 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. Report of the Workshop to consider FMSY ranges for stocks in ICES categories 1 and 2 in Western Waters (WKMSYREF4), 13–16 October 2015, Brest, France. ICES CM 2015/ACOM:58. 187 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.