

**5.3.43 Norway lobster (*Nephrops norvegicus*) in divisions 7.a, 7.g, and 7.j – FU 19 (Irish Sea, Celtic Sea, Eastern Southwest of Ireland)**

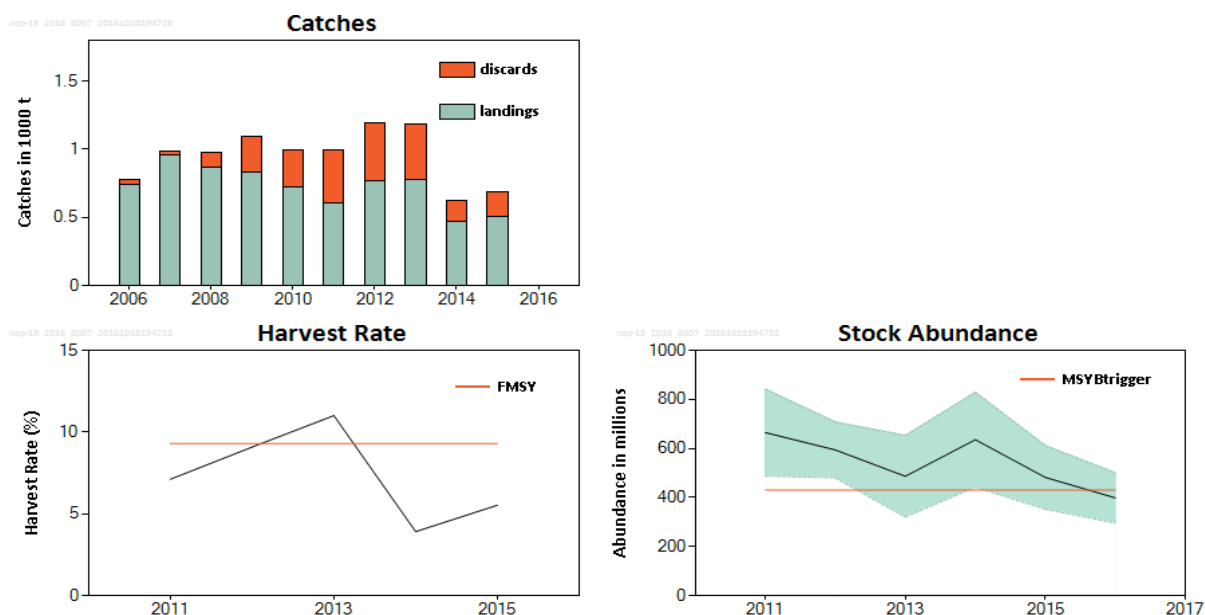
### ICES stock advice

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 2013–2015, catches in 2017 should be no more than 838 tonnes. This implies landings of no more than 599 tonnes.

To ensure that the stock in functional unit (FU) 19 is exploited sustainably, management should be implemented at the functional unit level.

## Stock development over time

The historical harvest rate, calculated as (landings + dead discards) (abundance estimate)<sup>-1</sup>, is below  $F_{MSY}$  in 2015. Stock abundance has been declining and is below  $MSY_{Trigger}$  in 2016.



**Figure 5.3.43.1** Norway lobster in divisions 7.a, 7.g, and 7.j – FU 19. Catches (thousand tonnes), harvest rate (fishing mortality proxy), survey abundance (Underwater TV, millions; SSB proxy; 95% confidence intervals). Orange lines represent  $MSY_{B_{trigger}}$  and the  $F_{MSY}$  harvest rate proxy.

## Stock and exploitation status

**Table 5.3.43.1** Norway lobster in divisions 7.a, 7.g, and 7.j – FU 19. 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	$MSY$	✔	✔	✖	Below
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

## Catch options

The latest estimate of stock abundance (value from August 2016 survey, 399 million) is below the MSY  $B_{\text{trigger}}$  (value 430 million).

The ICES MSY approach states that under such conditions the  $F_{\text{MSY}}$  harvest rate (9.3% for FU 19 Norway lobster) should be reduced by multiplying it by the ratio of current abundance to MSY  $B_{\text{trigger}}$ . This corresponds to a harvest rate of  $9.3 \times 399 \div 430 = 8.6\%$  for the advice in 2017.

**Table 5.3.43.2** Norway lobster in divisions 7.a, 7.g, and 7.j – FU 19. The basis for the catch options.

Variable	Value	Source	Notes
Stock abundance	399 million individuals	ICES (2016a)	UWTV 2016.
Mean weight in landings	28.6 g	ICES (2016a)	Average 2013–2015.
Mean weight in discards	13.3 g	ICES (2016a)	Average 2013–2015.
Discard rate	46%	ICES (2016a)	Average 2013–2015 (by number). Calculated as discards divided by landings + discards.
Discard survival rate	25%	ICES (2016a)	Only applies in scenarios where discarding is allowed.
Dead discard rate	39.1%	ICES (2016a)	Average 2013–2015 (by number). Calculated as dead discards divided by removals (landings + dead discards). Only applies in scenarios where discarding is allowed.

**Table 5.3.43.3** Norway lobster in divisions 7.a, 7.g, and 7.j – FU 19. The catch options. All weights are in tonnes.

Catch options assuming zero discards.

Rationale	Basis	Total catch	Wanted catch*	Unwanted catch*	Harvest rate**
MSY approach	MSY approach	742	531	211	8.6%
Other options	$F_{\text{MSY}}$	800	572	227	9.3%
	$F_{2015}$	474	339	135	5.5%

\* “Wanted” and “unwanted” catch are used to described *Nephrops* that would be landed and discarded in the absence of the EU landing obligation, based on the average estimated discard rates for 2013–2015.

\*\* Applied to total catch.

Catch options assuming discarding allowed.

Rationale	Basis	Total catches	Dead removals	Landings	Dead discards	Surviving discards	Harvest rate*
		L+DD+SD	L+DD	L	DD	SD	for L+DD
MSY approach	MSY approach	838	779	599	179	60	8.6%
Other option	$F_{\text{MSY}}$	904	839	646	193	64	9.3%

\* Applied to dead removals.

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.

## Basis of the advice

**Table 5.3.43.4** Norway lobster in divisions 7.a, 7.g, and 7.j – FU 19. 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 annual UWTV survey has been carried out since 2011, with full coverage of all the discrete patches since 2013. The survey gives estimates of burrow densities for the main patches of *Nephrops* habitat in FU 19 and an abundance estimate for the entire stock with acceptable precision.

The main quality concern relates to mean weight estimates and discard rates that are quite variable over the time-series, partially reflecting the difference in mean sizes of patches with different underlying densities. Adequate catch sampling remains difficult for such a heterogeneous area.

## 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 for FU 19 over the last three years is 29%. The catch advice assumes that the discard rate will be 28.5% by weight in 2017 for the entire fishery.

The proportion of discarded *Nephrops* in FU 19 is high relative to other areas because the vessels tend to be small with limited space and crew; therefore, the on-board tailing of the catch is not as prevalent as in other FUs around Ireland.

The density of *Nephrops* in FU 19 is considered medium (average density 0.3 individuals m<sup>-2</sup>). The knowledge of biological parameters is poor and the exploitation rate on males is usually higher than on females. For these reasons, a harvest ratio consistent with a combined sex  $F_{0.1}$  is considered an appropriate proxy for  $F_{MSY}$ .

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 for each of the stocks and the corresponding MSY approach.

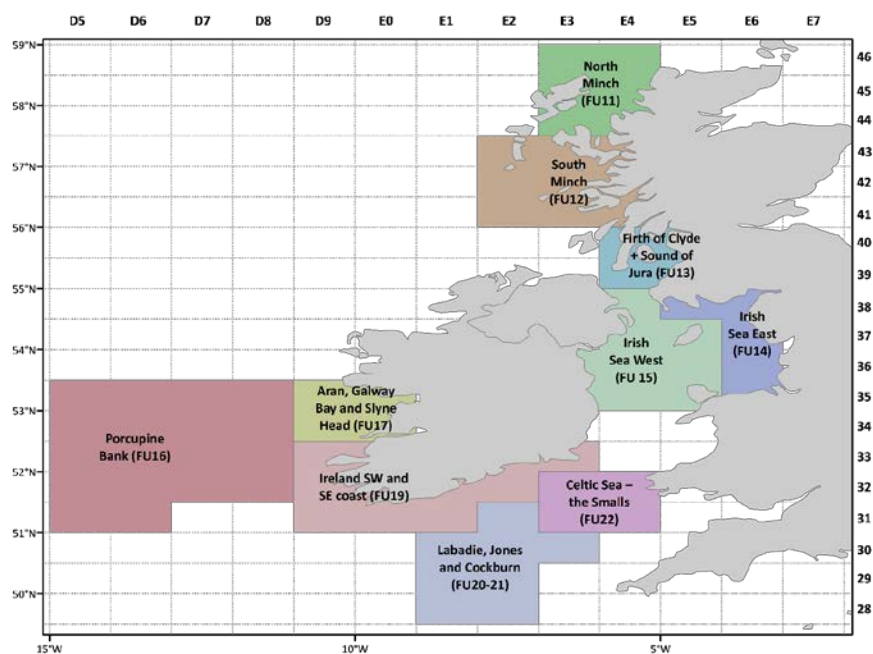


Figure 5.3.43.2 *Nephrops* functional units in Division 6.a and Subarea 7.

## Reference points

**Table 5.3.43.5** Norway lobster in divisions 7.a, 7.g, and 7.j – FU 19. Reference points, values and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{\text{trigger}}$	430 million individuals	5% interval on the probability distribution of abundance for the time-series 2011–2015, assuming a normal distribution.	ICES (2016b)
	$F_{\text{MSY}}$	9.3% harvest rate	$F_{\text{MSY}}$ proxy equivalent to $F_{0.1}$ for combined sexes.	ICES (2016b)
Precautionary approach	$B_{\text{lim}}$	Not defined		
	$B_{\text{pa}}$	Not defined		
	$F_{\text{lim}}$	Not defined		
	$F_{\text{pa}}$	Not defined		
Management plan	$SSB_{\text{MGT}}$	Not defined		
	$F_{\text{MGT}}$	Not defined		

## Basis of the assessment

**Table 5.3.43.6** Norway lobster in divisions 7.a, 7.g, and 7.j – FU 19. The basis of the assessment.

ICES stock data category	1 ( <a href="#">ICES, 2016c</a> ).
Assessment type	Underwater TV survey combined with yield-per-recruit analysis from length data.
Input data	Commercial catches (international landings from Ireland, France, and UK); length frequencies from catch and discard sampling (Ireland); one UWTV survey index (UWTV-FU 19); maturity data from commercial catch and survey sampling; fixed natural mortality. Discard survival rate.
Discards and bycatch	Included in the assessment since 2006.
Indicators	Commercial length frequencies by sex. Two bottom trawl surveys (IGFS-WIBTS-Q4 and EVHOE-WIBTS-Q4).
Other information	This stock was benchmarked in 2014 (WKCELT; <a href="#">ICES, 2014</a> ).
Working group	Working Group for the Celtic Seas Ecoregion ( <a href="#">WGCSE</a> ).

## Information from stakeholders

There is no available information.

## History of advice, catch and management

**Table 5.3.43.7** Norway lobster in divisions 7.a, 7.g, and 7.j – FU 19. History of ICES advice and ICES estimates of landings and discards. All weights are in thousand tonnes.

Year	ICES advice	Landings advice*	Catch advice	ICES landings FU 19	Total discards FU 19**
1992		3.8		0.9	
1993		~4.0		0.9	
1994		~4.0		0.4	
1995		~4.0		0.7	
1996		4		0.9	
1997		4		0.8	
1998		4		0.8	
1999		4		0.6	
2000		4		0.7	
2001		4		0.8	
2002		4.44		1.3	
2003		4.44		1.2	
2004	Restrict landings to 2000–2002 levels	3.3		1.1	
2005	Restrict landings to 2000–2002 levels	3.3		0.7	
2006	Restrict landings to 2000–2002 levels	3.3		0.7	0
2007	Constrain effort at recent levels	--		1	0
2008	Constrain effort at recent levels	--		0.9	0.1
2009	No increase in effort and landings (2007)	< 0.8	--	0.8	0.3
2010	No new advice, same as for 2009	< 0.8	--	0.7	0.3
2011	See scenarios	-		0.6	0.4
2012	Reduce catches	-		0.8	0.4
2013	MSY approach	< 0.82		0.8	0.4
2014	MSY approach	< 0.521		0.5	0.2
2015	MSY approach	< 0.715		0.5	0.2
2016	MSY approach		≤ 0.793***		
2017	MSY approach		≤ 0.838^		

\* Prior to 2007 ICES gave combined advice for FUs 16, 17, 18, and 19, and other rectangles in this area.

\*\* Dead + surviving discards.

\*\*\* Assuming all catches are landed.

^ Assuming discarding at average rates (2013–2015).

## History of catch and landings

**Table 5.3.43.8** Norway lobster in divisions 7.a, 7.g, and 7.j – FU 19. Catch distribution by fleet in 2015 as estimated by ICES.

Total catch		Landings	Total discards	
93.5% dead	6.5% surviving	Almost 100 % otter trawl	75% dead	25% surviving
684 t		507 t	177 t	

**Table 5.3.43.9** Norway lobster in divisions 7.a, 7.g, and 7.j – FU 19. History of landings; ICES estimated values are presented for each country participating in the fishery. Weights are in tonnes.

Year	France	Rep. of Ireland	UK	Total landings	Total discards**
1989	245	652	2	899	
1990	181	569	4	754	
1991	212	860	5	1077	
1992	233	640	15	888	
1993	229	672	4	905	
1994	216	153	21	390	
1995	175	507	12	695	
1996	145	736	7	888	
1997	93	656	7	756	
1998	92	733	2	827	
1999	77	499	3	579	
2000	144	541	11	696	
2001	111	702	2	815	
2002	188	1130	0	1318	
2003	165	1075	0	1239	
2004	76	997	1	1074	
2005	62	648	2	711	
2006	65	675	1	741	37
2007	63	894	0	957	26
2008	46	805	15	866	107
2009	55	764	15	833	258
2010	14	694	13	722	269
2011	23	585	1	608	387
2012	11	758	1	770	420
2013	4	771	6	781	404
2014	6	459	3	468	161
2015*	5	502	0	507	177

\* Preliminary.

\*\* Dead + surviving discards.

Summary of the assessment

**Table 5.3.43.10** Norway lobster in divisions 7.a, 7.g, and 7.j – FU 19. 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	%	%
2006	26	3	28				28.3	14.4	9%	7%
2007	31	2	32				31.1	17.0	5%	4%
2008	26	6	30				33.8	19.3	18%	14%
2009	27	18	41				30.5	14.5	39%	33%
2010	24	20	39				29.6	13.5	45%	38%
2011	24	31	47	665	171	7.1%	25.0	12.6	56%	49%
2012	29	33	54	594	111	9.1%	26.4	12.7	53%	46%
2013	29	33	54	487	161	11.0%	27.4	12.1	54%	47%
2014	16	11	25	636	188	3.9%	28.6	14.1	41%	34%
2015	17	13	27	482	126	5.5%	29.8	13.8	43%	36%
2016				399	100					

\*Dead + surviving discards.

## Sources and references

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