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

ICES advice on fishing opportunities

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 the years 2018–2020, catches in 2022 should be no more than 1257 tonnes.

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

ICES notes the existence of a management plan, developed and adopted by one of the relevant management authorities for Subarea 7. ICES considers this plan to be precautionary when implemented at the FU level.
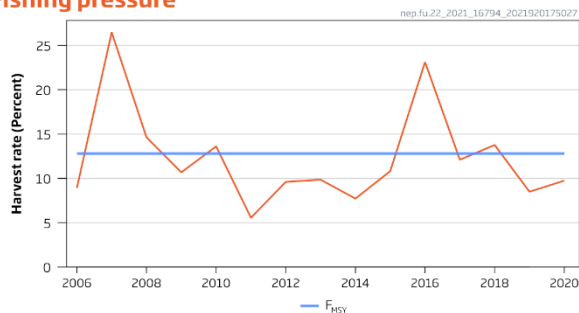
Stock development over time

Fishing pressure on the stock is below F_{MSY}, and stock size is below MSY $B_{trigger}$.
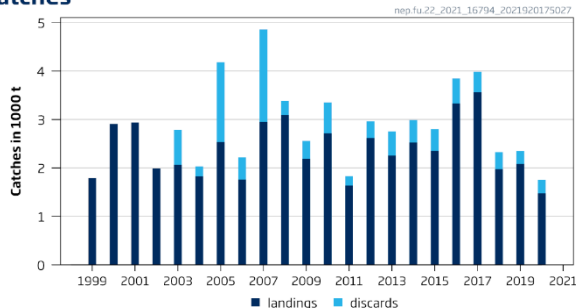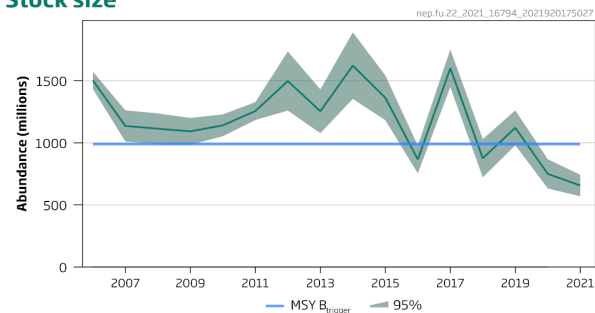

Figure 1   Norway lobster in divisions 7.g and 7.f, Functional Unit 22. Summary of the stock assessment. Catches (discard data only available from 2003), harvest rate (sum of landings and dead discards in numbers, divided by stock abundance), and stock abundance (underwater TV survey).

Catch scenarios

The latest estimate of stock abundance is below MSY $B_{trigger}$ (990 million). ICES maximum sustainable yield (MSY) approach states that under such conditions, the F_{MSY} harvest rate (12.8%) for FU 22 should be reduced by multiplying it by the ratio of current abundance to MSY $B_{trigger}$. This corresponds to a harvest rate of 12.8 × (656/990) = 8.5% for the advice in 2022.

Table 1 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. The basis for the catch advice and scenarios.

Variable	Value	Notes
Stock abundance (2022)	656	UWTV survey 2021; individuals in millions
Mean weight in projected landings	23.9	Average 2018–2020; in grammes
Mean weight in projected discards	12.7	Average 2018–2020; in grammes
Projected discard rate	23.1	Average 2018–2020; percentage by number of the total catch
Discard survival rate	25	Percentage by number of the discards

Table 2 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. Annual catch advice and 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.

Catch scenarios assuming recent discard rates

Basis	Total catch	Dead removals	Projected landings	Projected dead discards	Projected surviving discards	% harvest rate*	% advice change **
	PL + PDD + PSD	PL + PDD	PL	PDD	PSD	for PL + PDD	
ICES advice basis							
MSY approach: F_{MSY} × stock abundance 2022 / MSY $B_{trigger}$	1257	1214	1083	130	43	8.5	−19.4
Other scenarios							
EU MAP^: F_{MSY} × stock abundance 2022 / MSY $B_{trigger}$	1257	1214	1083	130	43	8.5	−19.4
EU MAP^: $F_{MSY\ lower}$ × stock abundance 2022 / MSY $B_{trigger}$	1008	973	868	104	35	6.8	−35
F_{MSY}	1897	1831	1635	197	66	12.8	22
$F_{MSY\ lower}$	1511	1459	1303	157	52	10.2	−3.1
F_{2020}	1444	1394	1245	150	50	9.7	−7.4

* By number.
** Advice values for 2022 are relative to the 2021 advice (MAP F_{MSY} advice of 1560 tonnes).
^ EU multiannual plan (MAP) for the Western Waters and adjacent waters (EU, 2019).

The decrease in total catch advice is the result of the lower observed stock abundance in 2021 and the lower harvest rate used for the advice.

Basis of the advice

Table 3   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 aware of the EU multiannual management plan (MAP) that has been agreed for this stock (EU, 2019)and considers it to be precautionary when implemented at the FU level. There is no agreement with UK regarding this plan, and it is not used as the basis of the advice for this stock. ICES provides catch scenarios consistent with the F_{MSY} ranges in the MAP.

Quality of the assessment

Since 2006 a dedicated annual underwater television (UWTV) survey has taken place in FU 22 (Figure 2), which gives abundance estimates for the stock with high precision. Sampling of this stock is adequate.

Issues relevant to the advice

During 2016–2020, the EU landing obligation was applied to all catches of Norway lobster fisheries in ICES Subarea 7 with exemptions for high survival. In 2021, this stock is still under a landing obligation and there are still exemptions in place. Observations from the 2018–2020 fishery indicate that some discarding above the minimum conservation reference size (MCRS) continues (Figure 3). Consequently, ICES is providing advice for 2022 assuming average discard rates as observed over the last three years. This is considered to be the most realistic assumption. In a situation where all catch is landed, there would be no surviving discards, and the total catch advice and MSY harvest rate would be lower than those given in the catch scenario table (Table 2). However, reducing the catch of smaller Norway lobster would allow an increase in landings above those given in the catch scenario table.

Irish discard survival experiments indicate that the trawl discard survival may be around 64% (BIM, 2017). As a result, an exemption from the landings obligation based on high survivability has been granted by the European Commission. ICES continues to use the survival rate of 25% (ICES, 2016), as it has not evaluated the survival rates estimated by BIM (2017).

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 $F_{35\%SPR}$ (the fishing mortality that gives 35% spawning potential ratio) are expected to deliver high long-term yield with a low probability of recruitment overfishing and are used as proxy for F_{MSY}.

A single TAC covers the entire ICES Subarea 7. Management should be implemented at the FU level to ensure that fishing opportunities are in line with the scale of the resource for each of the stocks and consistent with an MSY approach.

Mixed-fisheries considerations

Norway lobster (*Nephrops norvegicus*) in divisions 7.g and 7.f, Functional Unit 22 is caught as part of a mixed fishery. Mixed-fisheries advice will be provided as part of the Celtic Seas fisheries overview later in the year.
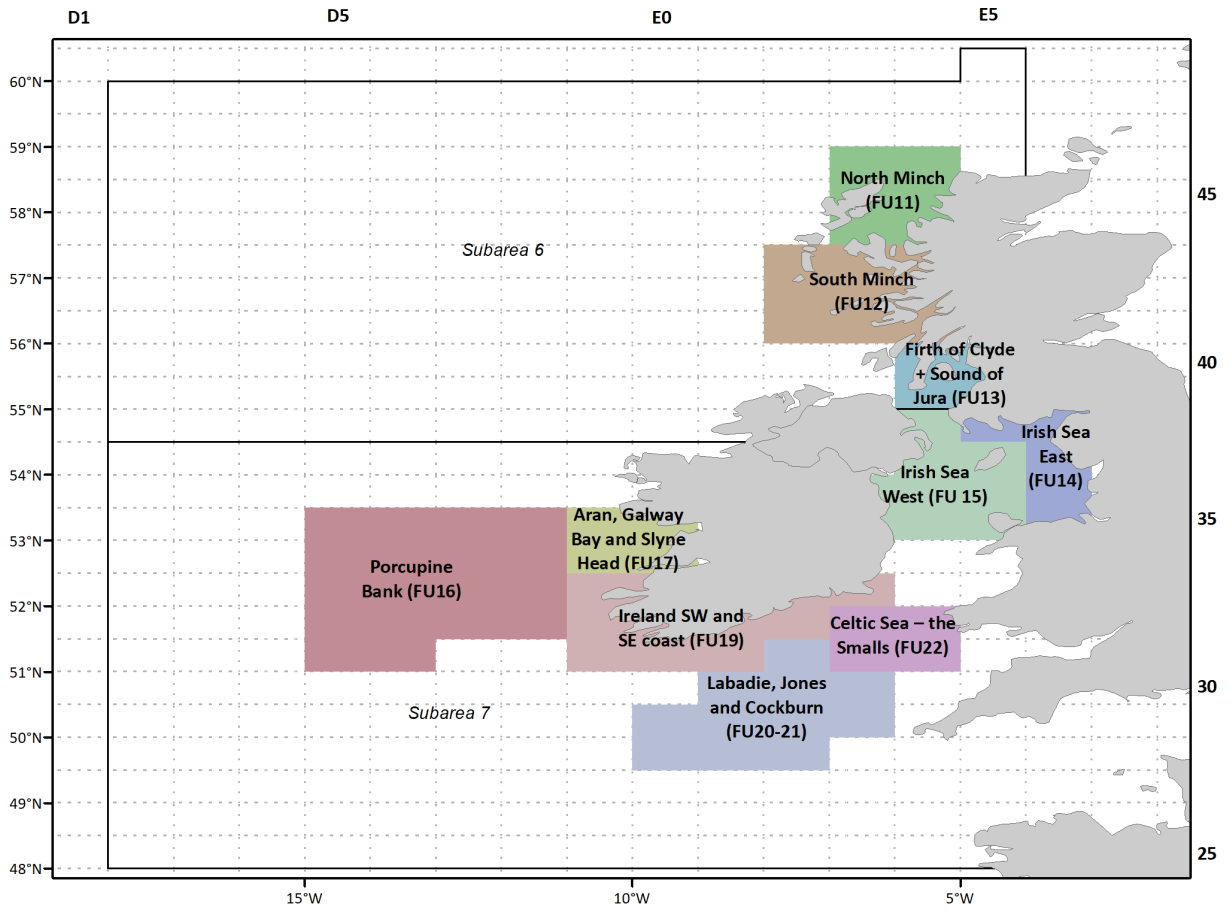
Figure 2   Norway lobster functional units in subareas 6 and 7.

Reference points

Table 4   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	Five percent interval on the probability distribution of abundance for the time-series 2006–2015, assuming a normal distribution; individuals in millions	ICES (2016)
	F_{MSY}	12.8	Proxy harvest rate equivalent to $F_{35\%SPR}$ for combined sexes, derived from a length-based per recruit analysis; percentage by numbers	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 target MSY $B_{trigger}$	990	MSY $B_{trigger}$; individuals in millions	ICES (2016)
	MAP B_{lim}	Not defined		
	MAP F_{MSY}	12.8	Harvest rate equivalent to F_{MSY}; percentage by numbers	ICES (2016)
	MAP range F_{lower}	10.2–12.8	Harvest rate, consistent with ranges provided by ICES, resulting in no more than 5% reduction in long-term yield compared with the maximum sustainable yield (MSY); percentage by number	ICES (2016)
	MAP range F_{upper}	12.8–12.8	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.g and 7.f, Functional Unit 22. Basis of the assessment and advice.

ICES stock data category	1 (ICES, 2021a)
Assessment type	Underwater TV survey (ICES, 2021b)
Input data	One survey index (UWTV-FU 22 [U5917]); commercial catches (international landings); length frequencies (from catch and discard sampling); maturity data (from commercial catch sampling and during surveys); fixed natural mortality and discard survival rate
Discards and bycatch	Included in the assessment since 2003
Indicators	Mean sizes in the catches. One bottom trawl surveys IGFS-WIBTS-Q4 [G7212] survey; length–frequency distributions of the catches by sex.
Other information	This stock follows benchmarked procedures applied to other Norway lobster stocks in Subarea 7 (ICES, 2009, 2014)
Working group	Working Group for the Celtic Seas Ecoregion (WGCSE)

History of the advice, catch, and management

Table 6   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		1775	
2000		3800		2890	
2001		3800		2938	
2002		3800		1993	
2003		3800		2065	720
2004	Adjust TAC in line with landings of most recent ten years	4600		1828	202
2005	Adjust TAC in line with landings of most recent ten years	4600		2533	1648
2006	Recent average landings 2000–2002	4600		1761	454
2007	No increase in effort	-		2950	1906
2008	No increase in effort	< 5300		3090	289
2009	No increase in effort	< 5300		2185	371
2010	No new advice, same as for 2009	< 5300		2714	636
2011	See scenarios; MSY reduce catch or PA < 5300	-		1636	196
2012	MSY approach	2300		2618	347
2013	MSY approach (updated November 2012)	3100		2257	497
2014	MSY approach	2674		2526	460
2015	MSY approach	3409		2350	450
2016	MSY approach		≤ 3027^	3329	519
2017	MSY approach		≤ 2063	3560	424
2018	MSY approach		≤ 4322	1975	350
2019	MSY approach		≤ 2084	2083	262
2020	Management plan		2820 (range 2247–2820)	1476	278
2021	Management plan		1560 (range 1238–1560)		
2022	MSY approach		≤ 1257		

* Advice prior to 2012 applies to FUs 20–22.
** Assuming recent discard rates.
*** Dead + surviving discards.
^ Assuming all catches are landed.

History of the catch and landings

Table 7   Norway lobster in divisions 7.g and 7.f, Functional Unit 22. Catch distribution by fleet in 2020 as estimated by ICES.

Catch		Landings	Discards	
96% dead	4% surviving	~100% otter trawl	75% dead	25% surviving
1754 tonnes		1476 tonnes	278 tonnes	

Table 8   Norway lobster in divisions 7.g and 7.f, Functional Unit 22. History of ICES estimates for landings by country and discards. All weights are in tonnes.

Year	France	Rep. of Ireland	UK	Belgium	Total landings	Discards*
1999	1034	741	0		1775	
2000	1192	1687	11		2890	
2001	882	2054	2		2938	
2002	598	1392	3		1993	
2003	799	1257	10		2065	720
2004	454	1349	26		1828	202
2005	478	1987	68		2533	1648
2006	293	1442	19	7	1761	454
2007	216	2716	13	5	2950	1906
2008	301	2539	241	9	3090	289
2009	258	1609	306	12	2185	371
2010	129	2219	351	15	2714	636
2011	64	1521	44	7	1636	196
2012	65	2506	41	6	2618	347
2013	83	2054	107	12	2257	497
2014	29	2428	61	8	2526	460
2015	9	2215	121	5	2350	450
2016	5	2967	354	3	3329	519
2017	7	2815	737	1	3560	424
2018	3	1639	331	1	1975	350
2019**	9	1884	187	2	2083	262
2020**	3	1448	22	2	1476	278

* Surviving + dead discards.
**Landings are preliminary.

Summary of the assessment

Table 9   Norway lobster in divisions 7.g and 7.f, Functional Unit 22. Assessment summary.

| Year	UWTV abundance estimate	± 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	
2003			95	68	146		2065	720	42	35	21.70	10.65
2004			71	13	80		1828	202	15.6	12.2	25.87	15.39
2005			119	129	216		2533	1648	52	45	21.24	12.81
2006	1503	70	100	45	134	8.9	1761	454	31	25	17.58	10.06
2007	1136	126	165	181	301	27	2950	1906	52	45	17.86	10.54
2008	1114	123	144	26	163	14.6	3090	289	15.3	12.0	21.52	11.11
2009	1093	108	92	33	117	10.7	2185	371	26	21	23.75	11.25
2010	1141	88	122	45	155	13.6	2714	636	27	22	22.28	14.28
2011	1256	72	60	13	70	5.6	1636	196	18.0	14.1	27.29	14.93
2012	1498	239	120	31	144	9.6	2618	347	21	16.3	21.75	11.07
2013	1254	177	94	40	124	9.9	2257	497	30	24	24.13	12.39
2014	1622	268	100	33	125	7.7	2526	460	25	20	25.22	13.78
2015	1363	180	114	44	147	10.8	2350	450	28	23	20.59	10.14
2016	866	112	160	54	200	23	3329	519	25	20	20.79	9.70
2017	1600	153	164	39	194	12.1	3560	424	19.2	15.2	21.66	10.84
2018	876	154	98	31	121	13.8	1975	350	24	19.0	20.19	11.03
2019	1121	141	81	19	95	8.5	2083	262	19.1	15.1	25.76	13.67
2020	750	118	58	21	73	9.7	1476	278	27	21	25.64	13.41
2021	656	87										

* Surviving + dead discards.
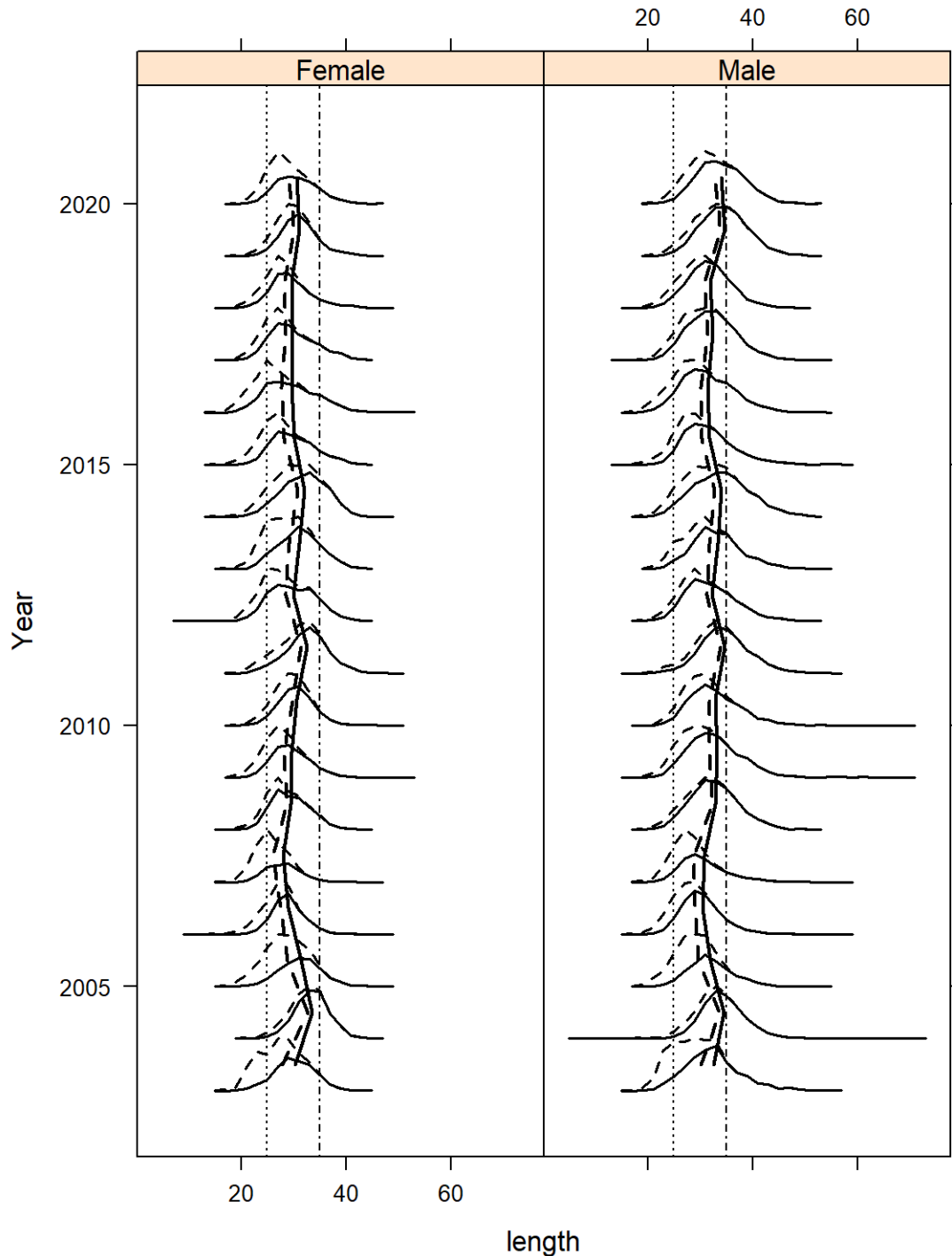
Figure 3   Norway lobster in Division 7.f–g, Functional Unit 22. The dashed lines represent catches while the solid lines represent landings. Annual length–frequency distributions are shown on the horizontal; the vertical bold lines represent mean lengths. Minimum conservation reference size (25 mm) and 35 mm visual reference levels indicated. All lengths are shown in carapace length (mm).

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Download the stock assessment data and figures.

Recommended citation: ICES. 2021. Norway lobster (*Nephrops norvegicus*) in divisions 7.f and 7.g, Functional Unit 22 (Celtic Sea, Bristol Channel). *In* Report of the ICES Advisory Committee, 2021. ICES Advice 2021, nep.fu.22. https://doi.org/10.17895/ices.advice.7803.