

Norway lobster (*Nephrops norvegicus*) in Division 7.b, Functional Unit 17 (west of Ireland, Aran grounds)

ICES advice on fishing opportunities

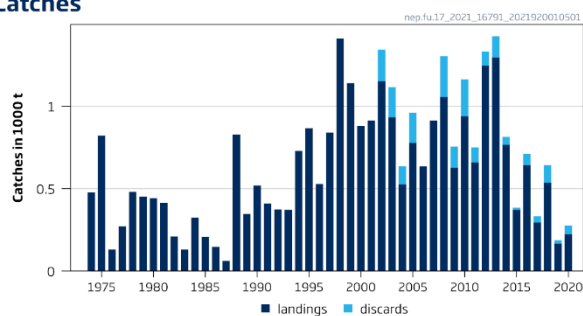
ICES advises that when the EU multiannual plan (MAP) for Western Waters and adjacent waters is applied, and assuming that discard rates and fishery selection patterns do not change from the average of the years 2018–2020, catches in 2022 that correspond to the F ranges in the MAP are between 313 and 360 tonnes.

To ensure that the stock in Functional Unit (FU) 17 is exploited sustainably, management should be implemented at the FU level.

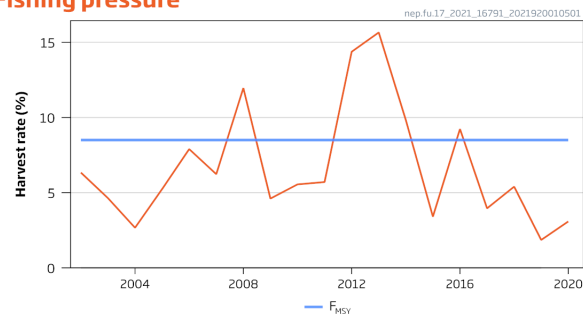
Stock development over time

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

Catches



Fishing pressure



Stock size

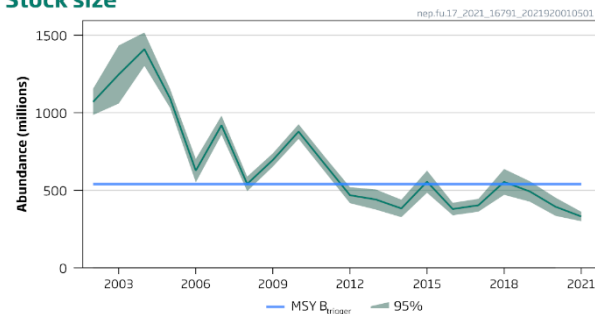


Figure 1 Norway lobster in Division 7.b, Functional Unit 17. Summary of the stock assessment. Catches (discard data are only available since 2002), harvest rate (sum of landings and dead discards in numbers, divided by stock abundance), and stock abundance (underwater TV survey).

Catch scenarios

The latest estimate of stock abundance is below $MSY B_{trigger}$ (540 million individuals). ICES maximum sustainable yield (MSY) approach states that under such conditions the F_{MSY} harvest rate (8.5%) for FU 17 should be reduced by multiplying it by the ratio of current abundance to $MSY B_{trigger}$. This corresponds to a harvest rate of $8.5 \times (331/540) = 5.2\%$ for the advice in 2022.

Table 1 Norway lobster in Division 7.b, Functional Unit 17. The basis for the catch advice and scenarios.

Variable	Value	Notes
Stock abundance (2022)	331	UWTV survey 2021; numbers of individuals in millions
Mean weight in projected landings	22.4	Average 2008–2020; in grammes
Mean weight in projected discards	11.3	Average 2008–2020; in grammes
Projected discard rate	26.9	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 Division 7.b, Functional Unit 17. Annual catch advice and scenarios. 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. All weights are in tonnes.

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							
EU MAP [^] : $F_{MSY} \times$ Stock abundance 2022 / $MSY B_{trigger}$	360	346	303	42	14	5.2	-29
EU MAP [^] : $F_{MSY lower} \times$ Stock abundance 2022 / $MSY B_{trigger}$	313	301	264	37	12	4.5	-29
Other scenarios							
$F_{MSY upper}^{***} \times$ Stock abundance 2022 / $MSY B_{trigger}$	360	346	303	42	14	5.2	-29
F_{MSY}	587	564	495	69	23	8.5	15.6
$F_{MSY lower}$	511	491	431	60	20	7.4	0.59
$F_{MSY upper}^{***}$	587	564	495	69	23	8.5	15.6
F_{2020}	213	205	180	25	8	3.1	-58

* By number.

** Advice values for 2022 relative to the corresponding 2021 values (MAP advice of 508, 443, and 508 tonnes, respectively); other option values are relative to 508 t.).

*** $F_{MSY upper} = F_{MSY}$ for this stock.

[^] EU multiannual plan (MAP) for the Western 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 Division 7.b, Functional Unit 17. 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

Since 2002 a dedicated annual underwater television survey (UWTV) has provided abundance estimates for FU17 (Figure 2) with high precision.

Given the low level of landings, it is becoming increasingly challenging to obtain sufficient samples to provide robust estimates of mean weights. The long-term average (2008–2020) is considered to be most appropriate as input for the mean weight in landings and discards in the calculation of catch scenarios.

Issues relevant for 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, 2016a), as it has not evaluated the survival rate estimated by BIM (2017).

The observed burrow density has declined, from high (> 0.8 individuals m^{-2}) at the beginning of the series to medium density (~ 0.3 individuals m^{-2}) towards the end of the time-series. The nature of the fishery has also changed, from a continuous fishery throughout the year to a seasonal fishery concentrated on periods of high catch rates. For these reasons a harvest rate consistent with a combined sex $F_{0.1}$ is considered an appropriate proxy for F_{MSY} (ICES, 2016b).

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 the corresponding MSY approach.

Mixed-fisheries considerations

Norway lobster (*Nephrops norvegicus*) in Division 7.b, Functional Unit 17 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.

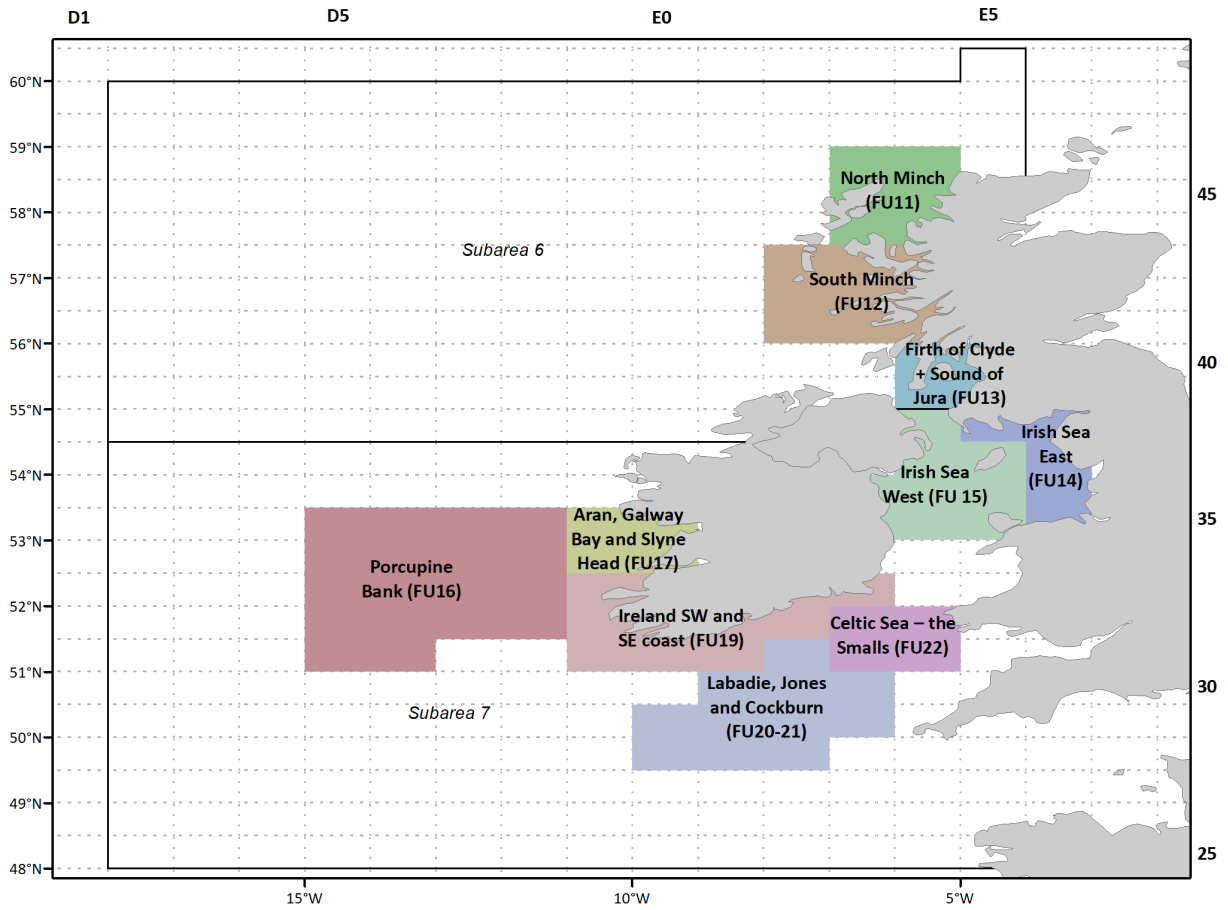


Figure 2 Norway lobster Functional Units in subareas 6 and 7.

Reference points

Table 4 Norway lobster in Division 7.b, Functional Unit 17. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{trigger}$	540	Based on abundance in 2008 from the UWTV survey time-series; individuals in millions	ICES (2016a)
	F_{MSY}	8.5	Proxy harvest rate equivalent to $F_{0.1}$ for combined sexes in 2015, 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		
EU management plan (EU, 2019)	MAP MSY $B_{trigger}$	540	MSY $B_{trigger}$; individuals in millions	ICES (2016a)
	MAP B_{lim}	Not defined		
	MAP F_{MSY}	8.5	Harvest rate equivalent to F_{MSY} ; percentage by numbers	ICES (2016a)
	MAP range F_{lower}	7.4–8.5	Harvest rate, consistent with ranges provided by ICES, resulting in no more than 5% reduction in long-term yield compared with MSY	ICES (2016a)
	MAP range F_{upper}	8.5–8.5	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 (2016a)

Basis of the assessment

Table 5 Norway lobster in Division 7.b, Functional Unit 17. 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 17 [U5917]); commercial catches (international landings, length frequencies from Irish catch sampling); maturity data (commercial catch and discard sampling, survey sampling); fixed natural mortality; discard survival rate
Discards and bycatch	Included in the assessment since 2001
Indicators	Length distributions by sex of the catches
Other information	This stock was benchmarked in 2015 (IBPNeph ; ICES, 2016b)
Working group	Working Group for the Celtic Seas Ecoregion (WGCSE)

History of the advice, catch, and management

Table 6 Norway lobster in Division 7.b, Functional Unit 17. ICES advice, landings, and discards. All weights are in tonnes.

Year	ICES advice	Landings advice	Catch advice*	Recommended landings in divisions 7.b, 7.c, 7.j, and 7.k**	ICES landings	Total discards***
1988					828	
1989					347	
1990					519	
1991					410	
1992				3800	374	
1993				~ 4000	372	
1994				~ 4000	729	
1995				~ 4000	867	
1996				4000	528	
1997				4000	841	
1998				4000	1410	
1999				4000	1140	

Year	ICES advice	Landings advice	Catch advice*	Recommended landings in divisions 7.b, 7.c, 7.j, and 7.k**	ICES landings	Total discards***
2000				4000	880	
2001				4000	913	
2002				4440	1154	192
2003				4440	933	183
2004	Restrict landings to 2000–2002 levels			3300	525	112
2005	Restrict landings to 2000–2002 levels			3300	778	182
2006	Restrict landings to 2000–2002 levels			3300	637	
2007	Constrain effort at recent levels			–	913	
2008	Constrain effort at recent levels			–	1057	248
2009	No increase in effort and landings (2007)	< 900			626	129
2010	Harvest ratio no greater than the lower bound of the range of $F_{0.1}$ for similar stocks	< 500			939	224
2011	MSY approach	< 950			659	92
2012	MSY approach	< 1100			1246	86
2013	MSY approach (updated November 2012)	< 590			1295	129
2014	MSY approach	< 590			766	48
2015	MSY approach	< 524			370	15
2016	MSY approach		≤ 991****		641	69
2017	MSY approach		≤ 489		295	38
2018	MSY approach		≤ 551		536	106
2019	MSY approach		≤ 1002		167	21
2020	Management Plan		800 (range 696–800)		222	54
2021	Management Plan		508 (range 443–508)			
2022	Management Plan		360 (range 313–360)			

* Assuming recent discard rates from 2017 onwards.

** Until 2006, ICES provided combined advice for FUs 16, 17, 18, and 19, as well as for “other rectangles” in this area.

*** Dead + surviving discards.

**** Assuming all catches are landed.

History of the catch and landings

Table 7 Norway lobster in Division 7.b, Functional Unit 17. Catch distribution by fleet in 2020 as estimated by ICES.

Catch		Landings	Discards	
95% dead	5% surviving	100% otter trawl	75% dead	25% surviving
276 tonnes		222 tonnes	54 tonnes	

Table 8 Norway lobster in Division 7.b, Functional Unit 17. History of ICES estimates of landings by country and discards. All weights are in tonnes.

Year	France	Rep. of Ireland	UK	Total landings	Discards*
1974	477	n/a	n/a	477	n/a
1975	822	n/a	n/a	822	n/a
1976	131	n/a	n/a	131	n/a
1977	272	n/a	n/a	272	n/a
1978	481	n/a	n/a	481	n/a
1979	452	n/a	n/a	452	n/a
1980	442	n/a	n/a	442	n/a
1981	414	n/a	n/a	414	n/a
1982	210	n/a	n/a	210	n/a
1983	131	n/a	n/a	131	n/a
1984	324	n/a	n/a	324	n/a

Year	France	Rep. of Ireland	UK	Total landings	Discards*
1985	207	n/a	n/a	207	n/a
1986	147	n/a	1	148	n/a
1987	62	n/a	0	62	n/a
1988	14	814	n/a	828	n/a
1989	27	317	3	347	n/a
1990	30	489	n/a	519	n/a
1991	11	399	n/a	410	n/a
1992	11	361	2	374	n/a
1993	11	361	0	372	n/a
1994	18	707	4	729	n/a
1995	91	774	2	867	n/a
1996	2	519	7	528	n/a
1997	2	839	0	841	n/a
1998	9	1401	0	1410	n/a
1999	0	1140	0	1140	n/a
2000	1	879	0	880	n/a
2001	1	912	0	913	n/a
2002	2	1152	0	1154	192
2003	0	933	0	933	183
2004	0	525	0	525	112
2005	0	778	0	778	182
2006	0	637	0	637	n/a
2007	0	913	0	913	n/a
2008	0	1050	7	1057	248
2009	0	626	0	625	129
2010	0	930	9	939	224
2011	0	659	0	659	92
2012	0	1246	0	1246	86
2013	0	1295	0	1295	129
2014	0	766	0	766	48
2015	0	370	0	370	15
2016	0	641	0	641	69
2017	0	295	< 1	295	38
2018	0	494	42	536	106
2019	0	162	4	167	21
2020	0	188	34	222	54

* Dead + surviving discards.

n/a = not available.

Summary of the assessment

Table 9 Norway lobster in Division 7.b, Functional Unit 17. 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	
2002	1070	84	55	18	68	6.3	1154	192	25	19.6	21.2	10.8
2003	1246	187	44	18	58	4.6	933	183	29	24	21.2	10.0
2004	1410	108	29	11	38	2.7	525	112	28	23	18.1	9.9
2005	1092	62	42	20	57	5.2	778	182	32	26	18.4	9.2
2006	627	76	n/a	n/a	50	7.9	637	n/a	n/a	n/a	n/a	n/a
2007	920	62	n/a	n/a	57	6.2	913	n/a	n/a	n/a	n/a	n/a
2008	541	47	48	22	65	12.0	1057	248	31	26	21.94	11.23
2009	696	43	25	9	32	4.6	625	129	27.6	22	25.12	13.63

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	
2010	879	47	37	15	49	5.6	939	224	29	23	25.16	14.70
2011	672	48	32	9	38	5.7	659	92	21	16.7	20.62	10.75
2012	468	52	61	8	67	14.4	1246	86	12.0	9.2	20.40	10.39
2013	441	65	60	12	69	15.7	1295	129	16.7	13.1	21.59	10.73
2014	383	57	34	5	38	9.8	766	48	12.9	10.0	22.62	9.56
2015	556	71	18	2	19	3.4	370	15	8.4	6.4	20.91	9.13
2016	379	41	30	6	35	9.2	641	69	17.4	13.7	21.21	10.85
2017	404	41	13	4	16	4.0	295	38	21	16.9	22.23	10.46
2018	554	83	22	10	30	5.4	536	106	32	26	24.33	10.11
2019	493	66	8	2	9	1.90	167	21	22	17.2	22.00	9.94
2020	394	59	10	4	12	3.1	222	54	27	22	23.31	15.29
2021	331	31										

* Dead + surviving discards.
n/a = not available.

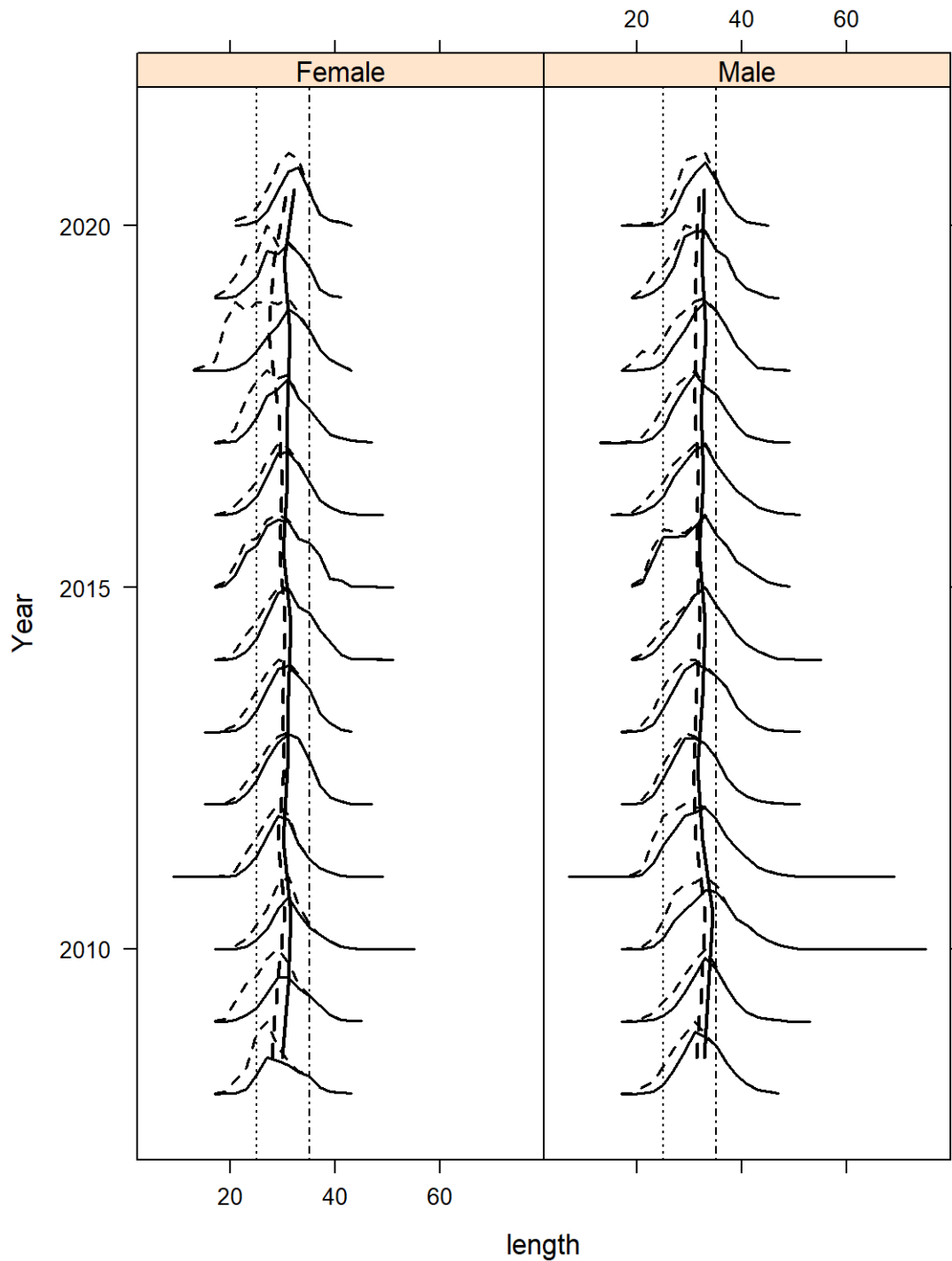


Figure 3 Norway lobster in Division 7.b, Functional Unit 17. The dashed lines represent catches while the solid lines represent landings. Annual length–frequency distributions are shown on the horizontal; the vertical bold lines represent mean lengths. Minimum conservation reference size (20 mm) and 35 mm visual reference levels indicated. All lengths are shown in carapace length (mm).

Sources and references

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[Download the stock assessment data and figures.](#)

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