

Norway lobster (*Nephrops norvegicus*) in Division 4.a, Functional Unit 7 (northern North Sea, Fladen Ground)

ICES advice on fishing opportunities

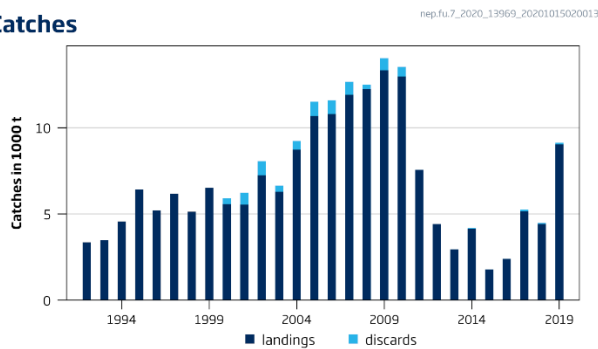
ICES advises that when the EU multiannual plan (MAP) for the North Sea is applied, catches in 2021 that correspond to the F ranges in the MAP are between 8430 tonnes and 9579 tonnes, assuming recent discard rates. The entire range is considered precautionary when applying the ICES advice rule.

To ensure that the stock in Functional Unit (FU) 7 is exploited sustainably, management should be implemented at the functional unit level. The catch in FU 7 has been lower than advised in recent years, and if the difference is transferred to other FUs, this could result in non-precautionary exploitation of those FUs.

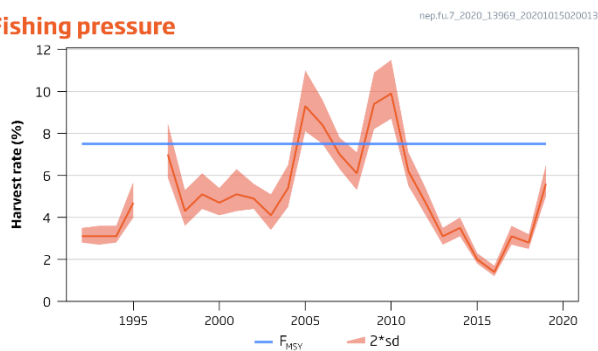
Note: This advice sheet is abbreviated due to the COVID-19 disruption. The previous advice issued for 2020 is attached as Annex 1.

Stock development over time

Catches



Fishing pressure



Stock size

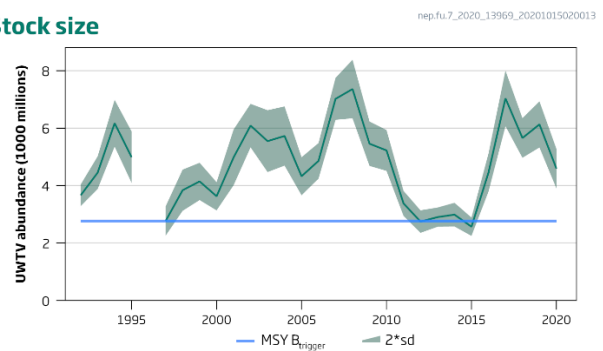


Figure 1

Norway lobster in Division 4.a, Functional Unit 7. Summary of the stock assessment. Long-term trends in catches, harvest rate, and underwater TV survey (UWTV) abundance (for Norway lobster greater than 17 mm carapace length) – used as fishing pressure (F) and spawning-stock biomass (SSB) proxies. Discard data have only been included since 2000. Blue lines show proxies for $MSY B_{trigger}$ and F_{MSY} . Shaded areas for fishing pressure and abundance are 95% confidence intervals. Harvest rates before 2006 may be unreliable because of underreporting of landings.

Stock and exploitation status

Table 1 Norway lobster in Division 4.a, Functional Unit 7. State of the stock and the fishery relative to reference points.

	Fishing pressure			Stock size						
	2017	2018	2019	2018	2019	2020				
Maximum sustainable yield	F_{MSY}	✓	✓	✓	Below	MSY $B_{trigger}$	✓	✓	✓	Above trigger
Precautionary approach	F_{pa}, F_{lim}	✓	✓	✓	Below possible reference points	B_{pa}, B_{lim}	✓	✓	✓	Above possible reference points
Management plan	F_{MGT}	✓	✓	✓	Below	B_{MGT}	✓	✓	✓	Above

Catch scenarios

Table 2 Norway lobster in Division 4.a, Functional Unit 7. The basis for the catch scenarios.

Variable	Value	Notes
Stock abundance	4589 million individuals	Underwater TV (UWTV) survey 2020
Mean weight in projected landings	28.09 g	Average 2017–2019
Mean weight in projected discards	13.13 g	Average 2017–2019
Projected discard rate (total)	3.2%	Average 2017–2019 (percentage by number)
Discard survival ratio	25%	Percentage by number
Projected dead discard ratio (total)	2.4%	Average 2017–2019 (percentage by number)

Table 3 Norway lobster in Division 4.a, Functional Unit 7. Annual catch scenarios. 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 \wedge : F_{MSY}	9579	9543	9434	109	36	7.5	-33
$F = MAP F_{MSY lower}$	8430	8398	8302	96	32	6.6	-33
$F = MAP F_{MSY upper}^{***}$	9579	9543	9434	109	36	7.5	-33
Other scenarios							
MSY approach	9579	9543	9434	109	36	7.5	-33
$F_{2017-2019}$	4853	4835	4780	55	18	3.8	-66
F_{2019}	7153	7126	7044	82	27	5.6	-50
$F_{35\%SPR}$	14305	14251	14088	163	54	11.2	0.29
F_{max}	20948	20868	20629	239	80	16.4	47

Catch scenarios assuming zero discards

Basis	Total catch	Projected landings	Projected discards ^^	% Harvest rate *	% advice change **
	PL + PD	PL	PD	for PL + PD	
ICES advice basis					
EU MAP ^: F_{MSY}	9504	9359	145	7.5	-33
$F = MAP F_{MSY lower}$	8362	8235	127	6.6	-33
$F = MAP F_{MSY upper}^{***}$	9504	9359	145	7.5	-33
Other scenarios					
MSY approach	9504	9359	145	7.5	-33
$F_{2017-2019}$	4815	4742	73	3.8	-66
F_{2019}	7096	6988	108	5.6	-50
$F_{35\%SpR}$	14191	13975	216	11.2	-0.50
F_{max}	20780	20464	316	16.4	46

^ EU multiannual plan (MAP) for the North Sea (EU, 2018).

^^ Represents the amount that otherwise would have been discarded, but is now landed under the landing obligation.

* Calculated for dead removals.

** Advice basis values for 2021 relative to the 2020 advice values (MAP advice of 14 263, 12 552, and 14 263 tonnes, respectively); other option values are relative to F_{MSY} .

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

The change in the advice (-33% for the EU MAP F_{MSY} scenario, assuming recent discard rates) from November 2019 is mainly a result of the decrease in the abundance observed between the 2019 and 2020 UWTV surveys, as well as the update of mean weights and discard rates.

History of the advice, catch, and management

Table 4 Norway lobster in Division 4.a, Functional Unit 7. ICES advice and ICES estimates of landings and discards. All weights are in tonnes.

Year	ICES advice	Landings corresponding to the advice	Catch corresponding to the advice	ICES landings	ICES total discards *
1992		~ 2700		3363	
1993		2700		3492	
1994		5000		4568	
1995		5000		6419	
1996		5000		5210	
1997		5000		6170	
1998		7000		5136	
1999		7000		6518	
2000		9000		5570	340
2001		9000		5542	687
2002		9000		7245	820
2003		9000		6294	349
2004		12800		8730	506
2005		< 12800		10684	823
2006	No increase of effort	-		10791	798
2007	No increase in effort and harvest rate below 7.5%	< 10900		11911	747
2008	No new advice, same as for 2007	< 10900		12239	257
2009	No increase in effort and recent average landings	< 11300		13327	707
2010	Harvest rate no greater than that equivalent to fishing at $F_{0.1}$	< 16400		12968	560
2011	MSY approach	< 13300		7559	0
2012	MSY approach	< 14100		4415	0
2013	MSY approach	< 10000		2951	0
2014	MSY approach	< 8959		4147	37
2015	MSY approach	< 10759		1784	0
2016	MSY approach	< 6847	< 6856 **	2399	0 [§]
2017	MSY approach		≤ 12699 ***	5147	115 [§]
2018	MSY approach		≤ 16577 ^	4418	68 [§]
2019	MAP ^^^ F ranges (Harvest rate = 6.6–7.5%)		11596–13178 ^	9032	100 [§]
2020	Management Plan		12552–14263 ^		
2021	Management Plan		8430–9579 ^^		

* Dead + surviving discards.

** Assuming all catches are landed and selection patterns do not change.

*** Assuming discarding below the minimum conservation reference size (MCRS) only.

^ Assuming an average discard ratio from year 2000 onwards.

^^ Assuming recent years' average discard ratio (2017–2019).

^^^ EU multiannual plan (MAP) for the North Sea (EU, 2018).

§ Since 2016, discard estimates include below minimum size (BMS) landings as reported to ICES.

Summary of the assessment

Table 5 Norway lobster in Division 4.a, Functional Unit 7. Assessment summary.

Year	UWTV abundance *	Two standard deviations	Harvest rate	Landings numbers	Discard numbers	Removals numbers	Landings	Discards	Dead discards	Discard ratio	Mean weight in landings	Mean weight in discards	Dead discard ratio
	millions		% by number	millions			tonnes			% by number	grammes		% by number
1992	3661	376	3.1	114	0	114	3363	0	0	0	29.61	NA	0
1993	4450	569	3.1	138	0	138	3492	0	0	0	25.38	NA	0
1994	6170	814	3.1	193	0	193	4568	0	0	0	23.72	NA	0
1995	4987	896	4.7	233	0	233	6419	0	0	0	27.51	NA	0
1996	NA	NA	NA	175	0	175	5210	0	0	0	29.82	NA	0
1997	2767	510	7	192	0	192	6170	0	0	0	32.08	NA	0
1998	3838	717	4.3	164	0	164	5136	0	0	0	31.37	NA	0
1999	4146	649	5.1	213	0	213	6518	0	0	0	30.55	NA	0
2000	3628	491	4.7	153	21	169	5570	340	255	12	36.35	16.24	9.3
2001	4981	970	5.1	221	43	253	5542	687	515	16.3	25.1	15.94	12.8
2002	6087	757	4.9	259	55	301	7245	820	615	17.4	27.93	14.97	13.7
2003	5547	1076	4.1	209	24	226	6294	349	262	10.1	30.15	14.83	7.8
2004	5725	1030	5.4	282	34	307	8730	506	379	10.6	30.98	15.06	8.2
2005	4325	662	9.3	368	46	403	10684	823	617	11.2	29.05	17.74	8.6
2006	4862	619	8.4	369	54	409	10791	798	599	12.7	29.25	14.87	9.8
2007	7017	730	7	447	55	488	11911	747	560	10.9	26.63	13.67	8.4
2008	7360	1019	6.1	434	18	448	12239	257	192	3.9	28.18	14.54	3.0
2009	5457	772	9.4	473	51	511	13327	707	530	9.7	28.20	13.85	7.5
2010	5224	711	9.9	492	34	517	12968	560	420	6.5	26.38	16.44	4.9
2011	3382	435	6.2	209	0	209	7559	0	0	0	36.17	NA	0
2012	2748	392	4.7	128	0	128	4415	0	0	0	36.91	NA	0
2013	2902	335	3.1	89	0	89	2951	0	0	0	34.90	NA	0
2014	2990	412	3.5	102	3	104	4147	37	28	2.5	43.11	13.9	1.9
2015	2569	320	2.0	51	0	51	1784	0	0	0	36.7	NA	0
2016	4449	662	1.4	63	0	63	2399	0	0	0	39.43	NA	0
2017	7036	968	3.1	212	10	219	5147	115	86	4.4	25.37	11.66	3.4
2018	5656	689	2.8	155	5	159	4418	68	51	2.9	30.58	14.42	2.2
2019	6129	802	5.6	338	8	344	9032	100	75	2.2	28.31	13.32	1.6
2020	4589	688											

* For animals greater than 17 mm carapace length.
NA = not available.

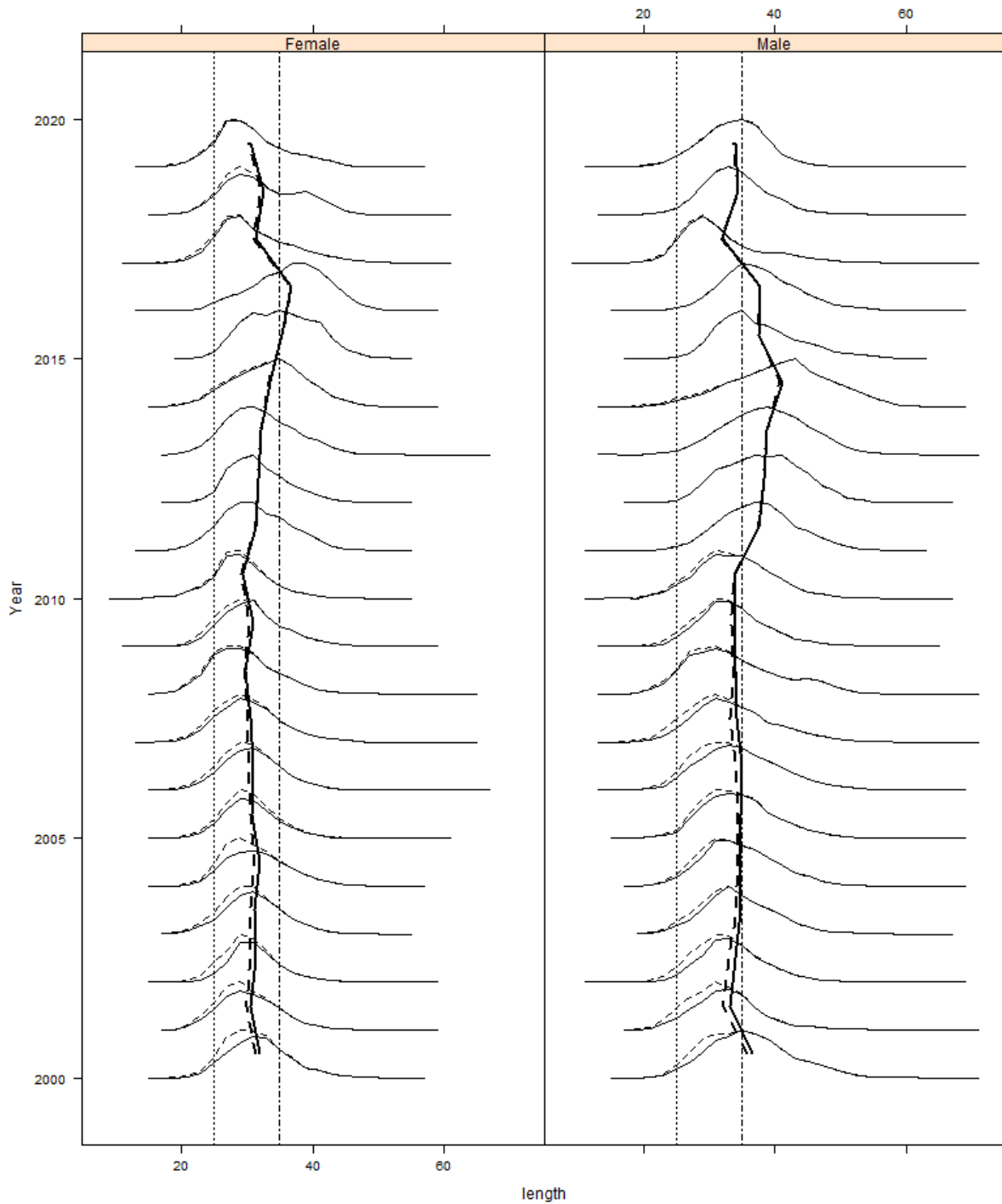


Figure 2 Norway lobster in Fladen Ground (FU 7). Catch length–frequency distribution and mean size in catches (broken vertical line) and landings (solid vertical line). Vertical straight lines are minimum landing size (MLS; 25 mm) and 35 mm.

Sources and references

EU. 2018. Regulation (EU) 2018/973 of the European Parliament and of the Council of 4 July 2018 establishing a multiannual plan for demersal stocks in the North Sea and the fisheries exploiting those stocks, specifying details of the implementation of the landing obligation in the North Sea and repealing Council Regulations (EC) No 676/2007 and (EC) No 1342/2008. Official Journal of the European Union, L 179: 1–13. <http://data.europa.eu/eli/reg/2018/973/oj>.

ICES. 2020. Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK). ICES Scientific Reports, 2:61. 1140 pp. <http://doi.org/10.17895/ices.pub.6092>.

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