

## Lemon sole (*Microstomus kitt*) in Subarea 4 and divisions 3.a and 7.d (North Sea, Skagerrak and Kattegat, eastern English Channel)

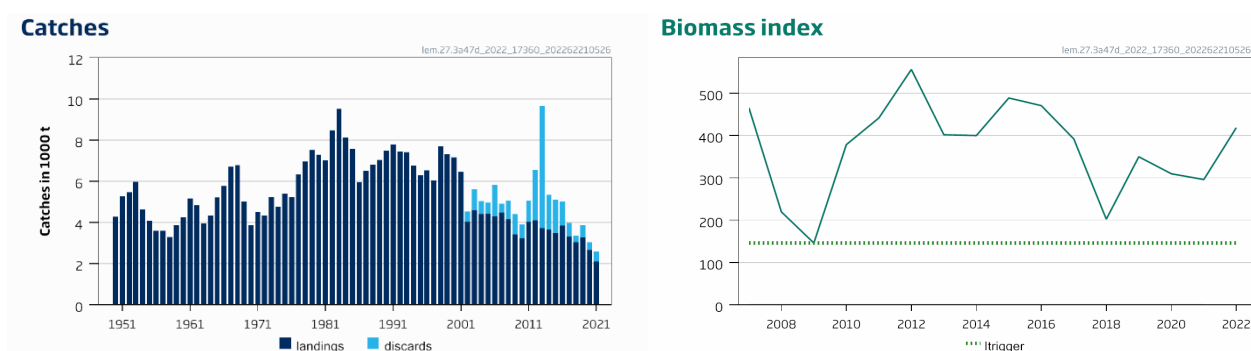
### ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches in 2023 should be no more than 2960 tonnes.

Management of lemon sole and witch flounder under a combined species TAC prevents effective control of the single-species exploitation rates and could lead to the overexploitation of either species. ICES advises that management should be implemented at the species level in the entire stock distribution area (Subarea 4 and divisions 3.a and 7.d).

### Stock development over time

Fishing pressure on the stock is below the  $F_{MSY}$  proxy (Figure 2). The stock size index is above MSY  $B_{trigger}$  proxy ( $I_{trigger}$ ).



**Figure 1** Lemon sole in Subarea 4 and divisions 3.a and 7.d. Summary of the stock assessment. Discards are available since 2002. Biomass index is derived from the IBTS Q1 survey for ages 2–5.

### Catch scenarios

The ICES framework for category 3 stocks was applied (ICES, 2022a). The advice is based on the *chr* rule to provide MSY advice. A biomass index from the IBTS Q1 survey was used as an indicator of stock development. The advice is based on the stock indicator for 2022, multiplied by a constant harvest rate, a biomass safeguard, and a precautionary multiplier. The stability clause was not applied since the change from the previous advice was between +20% or –30%.

The length-based indicator (LBI) analysis shows that fishing mortality is below likely proxies for MSY reference points (Figure 2). While there is no sign of overexploitation, the stock size is unknown.

**Table 1** Lemon sole in Subarea 4 and divisions 3.a and 7.d. The basis for the catch scenarios.\*

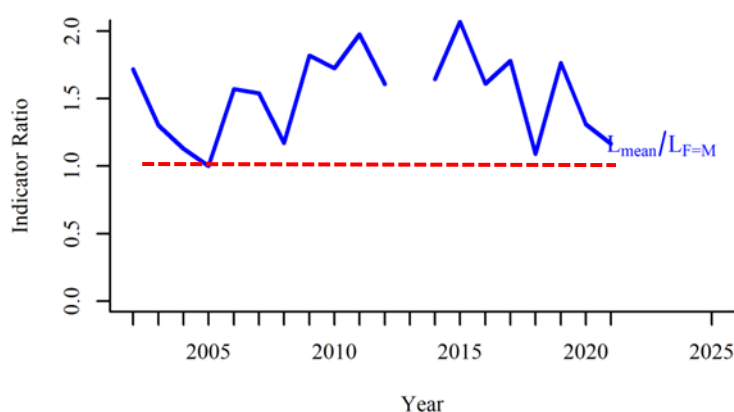
Previous catch advice $A_y$ (advised catch for 2022)	3081 tonnes
Biomass index	
I: most recent biomass index ( $I_{2022}$ )	419
MSY proxy harvest rate	
$F_{MSY \text{ proxy}}$ : MSY proxy harvest rate (average of the ratio of catch to biomass index for the years for which $f > 1$ , where $f = L_{\text{mean}}/L_{F=M}$ )	14.14
Biomass safeguard	
Index trigger value ( $I_{\text{trigger}}$ )	146
b: index relative to trigger value, $\min\{I_{2022}/I_{\text{trigger}}, 1\}$	1.00
Precautionary multiplier to maintain biomass above $B_{\text{lim}}$ with 95% probability	
m: multiplier (generic multiplier based on life history)	0.5
CHR calculation**	2960 tonnes
Stability clause (+20%/–30% compared to $A_y$ , only considered if $b=1$ )	Not applied
Catch advice $A_{y+1}$ for 2023**	2960 tonnes
% advice change***	–3.92%

\* 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.

\*\* Formula:  $A_{y+1} = I \times F_{MSY \text{ proxy}} \times b \times m$ , limited by stability clause if applicable.

\*\*\* Advice value for 2023 relative to the advice value for 2022 (3081 tonnes).

The change in advice (–3.92%) is due to the change from the “2-over-3” rule to the *chr* rule (ICES, 2022a), and to the change from a SURBAR-estimated biomass index to a biomass index based on the IBTS Q1 survey.



**Figure 2** Lemon sole in Subarea 4 and divisions 3.a and 7.d. Indicator ratio  $L_{\text{mean}}/L_{F=M}$  from the length-based indicator (LBI) method is used for the evaluation of the exploitation status. The exploitation status is below the  $F_{MSY \text{ proxy}}$  when the indicator ratio value is higher than 1 (shown by a dotted red line).

## Basis of the advice

**Table 2** Lemon sole in Subarea 4 and divisions 3.a and 7.d. The basis of the advice.

Advice basis	MSY approach
Management plan	The EU multiannual plan (MAP) for stocks in the North Sea (EU, 2018) and adjacent waters applies to bycatches of this stock. UK and Norway have not requested ICES to provide advice based on the EU MAP. The MAP stipulates that when the $F_{MSY}$ ranges are not available, fishing opportunities should be based on the best available scientific advice.

## Quality of the assessment

In order to utilise the most recent survey data, the advice is based on a biomass index from the IBTS Q1 survey alone as that is the only survey that includes 2022 data at the time of the Working Group meeting. The IBTS Q1 survey coverage in 2022 was limited by vessel and weather problems. The catchability of lemon sole at younger ages appears to be low in the IBTS survey, and the survey index is noisy, variable from year to year (and within year), and does not track lemon sole

cohort strength very well. However, these issues are not thought to have reduced the utility of the biomass index for North Sea lemon sole.

Commercial sampling for length distributions was impacted during 2020 and 2021 due to the COVID-19 pandemic, but samples are thought to be sufficiently representative.

### Issues relevant for the advice

Lemon sole is mainly a valuable bycatch species in mixed fisheries. ICES (2018a) advised that removing the TAC for lemon sole would generate a low risk of the stock being exploited unsustainably. However, management of witch and lemon sole under a combined species TAC may hinder effective management of the exploitation rates of the individual species. If a TAC is maintained for lemon sole, then a single-species TAC covering the entire stock (areas 3.a, 4 and 7d) would be more appropriate.

Improved information on age and length distributions in landings and discards from most countries participating in the fishery would be required in order to conduct a fully analytical assessment. A fishery-independent index covering the entire distribution area of the stock and targeting all length classes of lemon sole could also improve the assessment.

The discard rate (average 2019–2021) was 15.9% of the total catch.

### Reference points

**Table 3** Lemon sole in Subarea 4 and divisions 3.a and 7.d. Reference points, values, and their technical basis.

Framework	Reference point	Value	Technical basis	Source
MSY approach	MSY $B_{\text{trigger}}$ proxy	146.141	$I_{\text{loss}}$ : the lowest value of the biomass index based on the IBTS Q1 survey (ages 2-5). The fishing pressure proxy relative to MSY proxy $f = L_{\text{mean}}/L_{F=M}$ (Figure 2 and Table 8) suggests low exploitation, so $I_{\text{trigger}} = I_{\text{loss}}$ .	ICES (2022b)
	$F_{\text{MSY proxy}}$	14.140	Average of the ratio of catch to biomass index for the years for which $f > 1$ , where $f = L_{\text{mean}}/L_{F=M}$ (Figure 2 and Table 8).	ICES (2022b)
	$F_{\text{lim}}$	Not defined		
	$F_{\text{pa}}$	Not defined		
Management plan	$SSB_{\text{mgt}}$	Not defined		
	$F_{\text{mgt}}$	Not defined		

### Basis of the assessment

**Table 4** Lemon sole in Subarea 4 and divisions 3.a and 7.d. Basis of the assessment and advice.

ICES stock data category	3 ( <a href="#">ICES, 2022c</a> )
Assessment type	Survey biomass index applying the <i>chr</i> rule for advice (ICES, 2022b).
Input data	Commercial catches (international landings and discards), relative abundance data from one survey index (IBTS Q1 [G1022]), and fixed maturity estimates and annual stock weight-at-age data from three surveys (IBTS Q1 [G1022], IBTS Q3 [G2829], BTS Q3 [B2453]).
Discards and bycatch	Discarding is known to take place and discards have been quantified for 2002–2021 (rate for 2021 = 19.18%).
Indicators	LBi based on lengths from commercial catch data (2002–2021).
Other information	This stock was benchmarked in 2018 (ICES, 2018b).
Working group	Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak ( <a href="#">WGNSSK</a> )

## History of the advice, catch, and management

**Table 5** Lemon sole in Subarea 4 and divisions 3.a and 7.d. ICES advice and official landings. All weights are in tonnes.

Year	ICES advice	Landings corresponding to advice	Catch corresponding to advice	Agreed TAC * in Subarea 4 and Division 2.a	Division 3.a, Subarea 4, and Division 7.d				
					ICES estimated total catch	ICES estimated landings	ICES estimated discards	Official landings	
				lemon sole and witch	lemon sole	lemon sole	lemon sole	lemon sole and witch	lemon sole
2006		-		6175	5809	4294	1515	6593	4290
2007		-		6175	4919	4468	451	6725	4488
2008		-		6793	5051	4153	898	5929	3975
2009		-		6793	4401	3405	996	5212	3394
2010		-		6521	3907	3234	673	4691	3201
2011		-		6391	5055	4030	1024	5552	4022
2012	No increase in catch	-		6391	6560	4099	2461	5922	4026
2013	No new advice, same as for 2012	-		6391	9663	3725	5938	5754	3761
2014	No more than 16% increase in landings (last three years' average)	< 4350		6391	5335	3645	1690	6335	3689
2015	No new advice, same as for 2014	< 4350		6391	5116	3480	1636	5752	3394
2016	Precautionary approach (decrease catches by 9%)		< 5655	6391	5000	3834	1167	6463	3803
2017	Precautionary approach (same advised catch value as given for 2016)		< 5655	6391	3966	3315	651	6064	3323
2018	Precautionary approach (decrease catches by 3%)		< 5484	6391	3376	3046	332	5966	3014

Year	ICES advice	Landings corresponding to advice	Catch corresponding to advice	Agreed TAC * in Subarea 4 and Division 2.a	Division 3.a, Subarea 4, and Division 7.d				
					ICES estimated total catch	ICES estimated landings	ICES estimated discards	Official landings	
				lemon sole and witch	lemon sole	lemon sole	lemon sole	lemon sole and witch	lemon sole
2019	Precautionary approach (same advised catch value as given for 2018)		< 5484	7874	3878	3273	605	5806	3238
2020	Precautionary approach		≤ 4279	6785	3044	2653	391	4589	2655
2021	Precautionary approach		≤ 3742	5428	2589	2092	497^	3919	2121**
2022	Precautionary approach		≤ 3081	4287					
2023	MSY approach		≤ 2960						

\* A combined TAC for witch and lemon sole in EU waters of Subarea 4 and Division 2.a. up to 2020 and in United Kingdom and European Union waters of 4; United Kingdom waters of 2.a thereafter.

\*\* Preliminary.

^ Includes estimated BMS landings.

## History of the catch and landings

**Table 6** Lemon sole in Subarea 4 and divisions 3.a and 7.d. Catch distribution by fleet in 2021 as estimated by ICES.

Catch	Landings					Discards
2589 tonnes	Otter trawl 62%	Beam trawl 33%	Seine 3%	Gillnet 2%	Other 1%	497 tonnes
2092 tonnes						

**Table 7** Lemon sole in Subarea 4 and divisions 3.a and 7.d. History of commercial catch and landings; official landings (1950–2021), and ICES estimates (2013–2021) are presented by area for each country participating in the fishery. All weights are in tonnes.

### Division 7.d: official landings

Year	Official landings							Total
	Belgium	Denmark	France	Netherlands	UK	Other	BMS	
1950	10	0	174	0	24	0		208
1951	5	0	262	0	47	0		314
1952	10	0	188	0	100	0		298
1953	7	0	196	0	183	0		386
1954	9	0	361	0	164	0		534
1955	9	0	0	0	132	0		141
1956	4	0	0	0	99	0		103
1957	7	0	0	0	95	0		102
1958	1	0	0	0	81	0		82
1959	2	0	0	0	80	0		82
1960	4	0	0	0	62	0		66
1961	1	0	0	0	106	1		108
1962	2	0	0	0	99	0		101
1963	3	0	0	0	63	0		66
1964	5	0	0	0	72	0		77
1965	16	0	0	0	89	0		105
1966	7	0	0	0	194	0		201
1967	6	0	0	0	325	0		331
1968	8	0	0	0	329	0		337
1969	12	0	0	0	303	0		315
1970	16	0	0	0	240	0		256
1971	22	0	0	0	335	0		357
1972	18	0	0	0	457	0		475
1973	25	0	0	0	426	0		451
1974	16	0	0	1	334	0		351
1975	19	0	0	0	14	0		33
1976	24	0	0	0	18	0		42
1977	21	1	0	0	15	0		37
1978	45	2	63	0	31	0		141
1979	60	0	165	0	35	0		260
1980	33	0	109	0	10	0		152
1981	66	0	212	0	12	0		290
1982	96	0	406	1	81	0		584
1983	108	0	298	0	85	0		491
1984	110	0	367	0	109	0		586
1985	117	0	164	0	66	0		347
1986	77	0	133	0	41	0		251
1987	81	0	185	0	44	0		310
1988	74	0	155	0	29	0		258
1989	68	0	252	0	44	0		364
1990	68	0	272	0	83	0		423
1991	83	0	272	0	73	0		428
1992	66	0	176	0	122	0		364
1993	36	0	311	0	75	0		422

Year	Official landings							
	Belgium	Denmark	France	Netherlands	UK	Other	BMS	Total
1994	97	0	505	0	93	0		695
1995	138	0	584	0	155	0		877
1996	213	0	720	0	218	0		1151
1997	143	0	305	0	115	0		563
1998	53	0	198	0	95	0		346
1999	50	0	0	0	90	0		140
2000	62	0	200	0	126	0		388
2001	104	0	191	0	188	0		483
2002	101	0	256	0	117	0		474
2003	128	0	251	0	112	0		491
2004	120	0	198	1	105	0		424
2005	90	0	187	2	71	0		350
2006	98	0	100	0	48	0		246
2007	70	0	72	1	21	0		164
2008	140	0	46	3	45	0		234
2009	149	0	176	9	108	0		442
2010	101	0	85	5	32	0		223
2011	153	0	178	15	57	0		403
2012	171	0	167	20	0	0		358
2013	176	0	179	26	110	0		491
2014	162	0	108	14	72	0		357
2015	123	0	84	5	41	0		253
2016	115	0	69	9	47	0		240
2017	87	0	34	8	29	0		158
2018	57	0	21	5	15	0		99
2019	49	0	27	6	23	0	0	104
2020	46	0	25	6	18	0	0	95
2021	39	0	18	7	26	0	0	90

**Division 7.d: ICES estimates of landings and discards**

Year	ICES estimates of landings							ICES estimates of discards
	Belgium	Denmark	France	Netherlands	UK	Other	Total	Total
2013	241	0	179	27	110	0	557	99
2014	237	0	109	13	72	0	431	149
2015	192	0	85	10	42	0	329	104
2016	158	0	69	8	47	0	282	57
2017	105	0	35	7	30	0	177	22
2018	73	0	20	5	16	0	114	27
2019	96	0	26	5	23	0	151	44
2020	59	0	25	5	18	0	107	36
2021	44	0	18	7	26	0	95	32

**Subarea 4: official landings**

Year	Official landings									
	Belgium	Denmark	France	Germany	Netherlands	Norway	UK	Other	BMS	Total
1950	112	435	139	31	156	0	2 855	26		3754
1951	115	845	90	21	167	0	3 430	42		4710
1952	98	391	227	26	168	0	3 953	59		4922
1953	73	409	189	18	132	0	4 590	29		5440
1954	2	272	177	24	112	0	3 368	17		3972
1955	49	311	0	15	78	0	3 374	9		3836
1956	48	222	0	19	58	0	3 034	14		3395
1957	39	249	0	24	64	0	3 032	11		3419
1958	30	171	0	13	43	0	2 835	12		3104
1959	85	242	0	40	43	0	3 226	11		3647

Year	Official landings									
	Belgium	Denmark	France	Germany	Netherlands	Norway	UK	Other	BMS	Total
1960	155	577	0	46	67	0	3 178	12		4035
1961	286	488	0	79	102	0	3 934	11		4900
1962	175	501	0	54	106	0	3 794	0		4630
1963	365	222	0	36	71	0	3 097	0		3791
1964	484	358	0	62	75	0	3 142	0		4121
1965	562	385	0	91	93	0	3 818	0		4949
1966	594	548	0	98	65	0	4 110	0		5415
1967	601	791	0	136	61	0	4 599	0		6188
1968	422	775	0	96	34	0	4 943	0		6270
1969	292	639	0	80	36	0	3 423	0		4470
1970	241	307	0	52	58	0	2 776	0		3434
1971	348	514	0	54	122	0	2 929	0		3967
1972	423	530	0	59	130	0	2 530	0		3672
1973	566	478	0	73	217	16	3 218	0		4568
1974	486	447	0	59	269	0	2 966	0		4227
1975	748	521	0	83	299	0	3 367	11		5029
1976	493	506	0	68	308	0	3 443	12		4830
1977	618	321	0	71	262	0	4 387	2		5661
1978	760	517	28	54	231	0	4 518	0		6108
1979	674	876	136	41	390	0	4 308	3		6428
1980	484	599	102	49	303	0	4 885	2		6424
1981	555	605	237	39	412	0	4 084	1		5933
1982	879	670	419	52	759	0	4 386	3		7168
1983	1 122	735	402	28	1 009	0	4 957	4		8257
1984	1 144	567	344	22	0	0	4 850	3		6930
1985	989	555	157	26	0	0	4 703	5		6435
1986	511	577	103	16	0	0	3 839	1		5047
1987	448	742	174	14	0	0	4 137	1		5516
1988	539	639	184	14	301	0	4 220	1		5898
1989	441	828	176	40	397	0	4 083	2		5967
1990	491	1 007	208	49	0	0	4 431	4		6190
1991	544	1 099	250	41	0	12	4 666	6		6618
1992	577	1 149	177	30	0	13	4 175	5		6126
1993	525	966	240	37	0	9	4 059	3		5839
1994	436	597	436	27	0	11	3 754	1		5262
1995	588	585	412	70	0	9	3 046	2		4712
1996	592	547	534	67	0	18	2 976	3		4737
1997	504	499	224	76	0	29	3 391	4		4727
1998	815	796	197	149	838	23	3 643	5		6466
1999	662	1 015	0	62	681	24	3 866	6		6316
2000	711	1 277	184	72	492	17	3 222	5		5980
2001	694	1 281	191	77	451	22	2 666	7		5389
2002	604	971	190	116	402	17	1 521	6		3827
2003	517	1 008	239	136	369	16	1 399	4		3688
2004	667	1 113	120	81	355	12	1 192	3		3543
2005	595	1 057	102	85	402	13	1 188	2		3444
2006	552	968	57	183	412	13	1 440	2		3627
2007	542	1 136	65	143	367	23	1 610	6		3892
2008	527	925	47	120	434	26	1 383	4		3466
2009	389	898	88	64	294	31	927	2		2693



Year	Official landings									
	Belgium	Denmark	France	Germany	Netherlands	Norway	UK	Other	BMS	Total
2010	375	821	32	102	323	35	935	2		2625
2011	387	999	56	96	641	27	1 157	2		3365
2012	406	999	34	61	587	30	n/a	2		2119
2013	527	649	27	67	479	16	1 214	2		2981
2014	648	626	27	63	425	23	1 202	3		3017
2015	425	794	16	82	423	12	1 116	3		2871
2016	448	1 054	15	82	443	23	1 196	5		3266
2017	345	1 032	0	42	356	14	1 028	4		2822
2018	370	815	9	52	347	14	1 025	3		2635
2019	467	671	8	46	473	13	1 122	4	1	2805
2020	376	497	9	32	385	5	910	6	1	2219
2021	338	332	2	32	422	7	637	3	1	1774

\* n/a = not available.

#### Subarea 4: ICES estimates of landings and discards

Subarea 4: ICES estimates of landings and discards										
Year	ICES estimates of landings									ICES estimates of discards
	Belgium	Denmark	France	Germany	Netherlands	Norway	UK	Other	Total	Total
2013	457	679	28	66	426	17	1 214	4	2 891	1664
2014	575	645	27	63	363	23	1 202	8	2 906	1481
2015	375	829	17	82	427	12	1 119	4	2 865	1514
2016	406	1 075	15	133	420	23	1 195	7	3 274	1018
2017	326	1 059	4	45	342	14	1 026	7	2 823	551
2018	354	858	10	52	343	13	1 029	5	2 664	260
2019	421	690	9	46	459	13	1 141	4	2 783	487
2020	357	506	9	32	374	5	911	6	2 200	253
2021	302	340	2	33	425	7	638	4	1 751	427

#### Division 3.a: Official landings

Division 3 - Official landings

Year	Official landings							
	Belgium	Denmark	Germany	Netherlands	Sweden	Other	BMS	Total
1950	0	100	1	0	206	0		307
1951	0	74	1	0	173	0		248
1952	0	64	0	0	179	0		243
1953	0	35	0	0	97	0		132
1954	0	33	0	0	95	0		128
1955	0	29	0	0	73	0		102
1956	0	33	0	0	63	0		96
1957	0	27	0	0	51	0		78
1958	0	38	0	0	56	0		94
1959	0	71	0	0	59	0		130
1960	0	95	1	0	57	0		153
1961	0	90	0	0	71	0		161
1962	0	92	1	0	0	0		93
1963	0	99	0	0	0	0		99
1964	0	133	1	0	0	0		134
1965	0	163	1	0	0	0		164
1966	0	159	0	0	0	0		159
1967	0	189	1	0	0	1		191
1968	0	184	0	0	0	1		185
1969	0	215	0	0	0	0		215
1970	0	169	0	0	0	0		169
1971	0	173	0	0	0	0		173
1972	0	168	0	0	0	0		168
1973	0	214	0	0	0	0		214
1974	0	183	0	0	0	0		183

Year	Official landings							Total
	Belgium	Denmark	Germany	Netherlands	Sweden	Other	BMS	
1975	0	263	1	1	52	0		317
1976	10	294	1	19	37	0		361
1977	9	528	2	37	51	0		627
1978	4	628	2	12	59	0		705
1979	7	704	1	10	111	0		833
1980	12	622	0	0	87	1		722
1981	1	710	0	3	75	4		793
1982	2	647	0	9	77	0		735
1983	3	636	0	10	110	0		759
1984	6	525	0	0	64	0		595
1985	0	729	0	0	64	0		793
1986	7	576	0	0	56	0		639
1987	24	577	0	0	68	0		669
1988	11	569	0	6	56	0		642
1989	8	610	0	0	75	0		693
1990	16	782	0	0	74	0		872
1991	11	640	0	0	83	0		734
1992	22	793	0	0	120	17		952
1993	14	980	4	0	141	17		1156
1994	10	648	2	0	127	16		803
1995	27	576	2	0	91	18		714
1996	0	513	1	0	97	24		635
1997	0	628	2	0	115	23		768
1998	0	743	3	0	100	22		868
1999	0	731	3	0	88	22		844
2000	0	722	1	0	65	15		803
2001	0	511	1	0	53	19		584
2002	0	457	4	0	41	20		522
2003	0	451	6	30	35	21		543
2004	0	472	5	82	29	19		607
2005	0	468	5	147	38	16		674
2006	0	321	8	40	32	16		417
2007	0	374	5	16	18	19		432
2008	0	239	7	3	15	12		276
2009	0	233	4	1	15	9		262
2010	0	286	3	35	19	7		350
2011	0	223	0	0	12	16		254
2012	0	446	3	0	15	18		482
2013	0	259	3	5	10	12		289
2014	0	276	7	12	14	6		315
2015	0	250	4	0	9	6		269
2016	0	265	5	16	7	6		299
2017	0	314	5	11	6	7		343
2018	0	252	5	14	6	2		280
2019	0	293	1	29	5	1	0	329
2020	0	288	3	44	4	1	0	340
2021	0	226	2	25	3	1	0	256

**Division 3.a: ICES estimates of landings and discards**

Year	ICES estimates of landings							ICES estimates of discards
	Belgium	Denmark	Germany	Netherlands	Sweden	Other	Total	Total
2013	0	251	4	5	8	12	280	4174
2014	0	274	7	13	9	6	309	60
2015	0	243	5	25	8	6	287	18
2016	0	244	5	20	5	6	280	17
2017	0	290	6	11	4	7	318	20
2018	0	239	6	15	5	2	267	45
2019	0	297	1	35	5	0	339	74
2020	0	289	3	48	4	0	345	102
2021	0	215	1	27	3	1	246	38

**Summary of the assessment**

**Table 8** Lemon sole in Subarea 4 and divisions 3.a and 7.d. Assessment summary. Weights for landings and discards are in tonnes. Catch C, biomass index I, harvest rate C/I and fishing pressure proxy relative to MSY proxy  $f$  ( $L_{\text{mean}}/L_{F=M}$ ) are given for the years 2007–2022 used in the application of the *chr* advice method (ICES, 2022).

Year	Landings*	Discards**	Catch C	Biomass index I	Harvest rate C/I	$f = L_{\text{mean}}/L_{F=M}$
1950	4269					
1951	5272					
1952	5463					
1953	5958					
1954	4634					
1955	4079					
1956	3594					
1957	3599					
1958	3280					
1959	3859					
1960	4254					
1961	5169					
1962	4824					
1963	3956					
1964	4332					
1965	5218					
1966	5775					
1967	6710					
1968	6792					
1969	5000					
1970	3859					
1971	4497					
1972	4315					
1973	5233					
1974	4761					
1975	5379					
1976	5233					
1977	6325					
1978	6954					
1979	7521					
1980	7298					
1981	7016					
1982	8487					
1983	9507					
1984	8111					
1985	7575					
1986	5937					
1987	6495					

Year	Landings*	Discards**	Catch C	Biomass index I	Harvest rate C/I	$f = L_{\text{mean}}/L_{F=M}$
1988	6798					
1989	7024					
1990	7485					
1991	7780					
1992	7442					
1993	7417					
1994	6760					
1995	6303					
1996	6523					
1997	6058					
1998	7680					
1999	7300					
2000	7171					
2001	6456					
2002	4011	511	4522			1.716
2003	4575	1036	5611			1.302
2004	4394	635	5029			1.128
2005	4429	527	4956			1.001
2006	4294	1515	5809			1.569
2007	4468	451	4919	465.989	10.556	1.539
2008	4153	898	5051	219.747	22.984	1.170
2009	3405	996	4401	146.140	30.116	1.819
2010	3234	673	3907	378.678	10.317	1.724
2011	4030	1024	5055	441.611	11.446	1.976
2012	4099	2461	6560	556.314	11.793	1.606
2013	3725	5938	9663	402.044	24.035	NA***
2014	3645	1690	5335	400.058	13.335	1.645
2015	3480	1636	5116	488.912	10.464	2.07
2016	3834	1167	5000	470.777	10.622	1.609
2017	3315	651	3966	392.063	10.116	1.779
2018	3046	332	3376	202.476	16.675	1.090
2019	3273	605	3878	349.965	11.080	1.764
2020	2653	391	3044	309.898	9.822	1.310
2021	2092	497	2589	296.070	8.743	1.166
2022				418.705		

\* Official landings statistics 1968–2001, ICES-estimated landings 2002–2021.

\*\* Since 2016, discards include BMS landings from EU and UK fleets.

\*\*\* Length data have been treated as missing for 2013.

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