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 2024 should be no more than 2 072 tonnes.

The use of a combined species TAC for lemon sole and witch flounder 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 and cover the entire stock distribution area (Subarea 4 and divisions 3.a and 7.d).

ICES advice on conservation aspects

ICES has not identified any conservation aspects.

Stock development over time

Fishing pressure on the stock is below the $F_{MSY\ proxy}$, and the stock size indicator is above $I_{trigger}$.

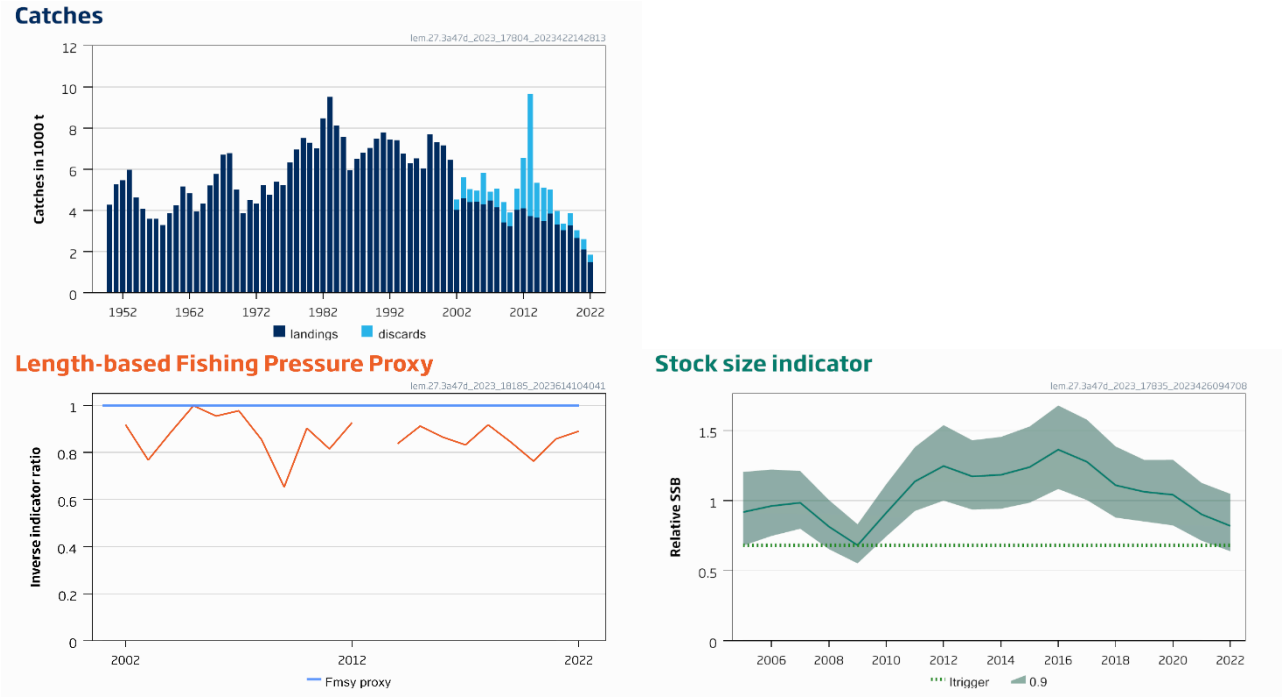

Figure 1 Lemon sole in Subarea 4 and divisions 3.a and 7.d. Summary of the stock assessment. Discards are available since 2002. Indicator ratio $L_{F=M}/L_{mean}$ (inverse of the indicator ratio, *f*) from the length-based indicator (LBI) method is used for the evaluation of the exploitation status. The proxy fishing pressure is less than that corresponding to the $F_{MSY\ proxy}$ ($L_{F=M}$) when the indicator ratio value is lower than 1 (shown by the horizontal blue line). Stock size indicator expressed as relative SSB based on survey based assessment (SURBAR).

Conservation status

ICES is not aware of any information on stock/species-specific conservation status.

Catch scenarios

ICES framework for category 3 stocks was applied (*chr* rule, Method 2.2; ICES, 2022a). The advice is based on the *chr* rule to provide MSY advice. A biomass index from SURBAR 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 considered and applied to limit the decrease in catch advice to 30%. The discard rate in 2022 was 18.6% of the total catch.

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 2023)		2960 tonnes
Biomass index		
I: most recent biomass index (I_{2022})		0.82
MSY proxy harvest rate		
$HR_{MSY\ proxy}$: MSY proxy harvest rate (average of the ratio of catch to biomass index for the years for which f>1, where f = $L_{mean}/L_{F=M}$)		4120
Biomass safeguard		
Index trigger value ($I_{trigger}$)		0.682
b: index relative to trigger value, min{$I_{2022}/I_{trigger}$, 1}		1
Precautionary multiplier to maintain biomass above B_{lim} with 95% probability		
m: multiplier (generic multiplier based on life history)		0.5
CHR calculation**		1689 tonnes
Stability clause (+20%/−30% compared to A_y, only considered if b=1)	Applied	
Catch advice A_{y+1} for 2024**		2072 tonnes
% advice change***		−30%

* 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: $A_{y+1} = I \times HR_{MSY\ proxy} \times b \times m$, limited by stability clause if applicable.
*** Advice value for 2024 relative to the advice value for 2023 (2960 tonnes).

The change in advice (−30%) is due to application of the stability clause in the *chr* rule and to the change from a biomass index based on the IBTS Q1 survey to a SURBAR-estimated biomass index, which includes changing the respective reference points.

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 2022, several hauls planned for the Q3 BTS and the Q1 NS-IBTS were not conducted. Given that the missing haul stations are located in areas with low abundance of lemon sole, missing stations are not considered to have a substantial impact on the indices and assessment. However, it may become a problem if the issue persists in the future.

So as to utilize the most recent survey data, the advice for 2023 was based on a biomass index from the IBTS Q1 survey alone, as that was the only survey that included 2023 data at the time of the Working Group meeting. However, biological sampling of lemon sole for 2023 has decreased, as lemon sole is not a standard species of the IBTS Q1 survey. The IBTS Q1 biomass on its own is not considered to be the best choice anymore; therefore, for the 2024 advice, the SURBAR biomass index was used to include both Q1 and combined Q3 indices up to 2022.

To calculate Lc for lemon sole, individuals smaller than 100mm should to be removed. In 2022 this was applied only to the length plot and not to the calculation of Lc. This was corrected in the 2023 assessment, resulting in Lc no longer

dropping below 100mm. As the exploitation status derived from the LBI ratio is the same this change does not affect the advice calculation.

Issues relevant for the advice

Lemon sole is mainly a valuable bycatch species in mixed fisheries. ICES (2022b) 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 (Subarea 4 and divisions 3.a and 7.d) would be more appropriate.

To conduct a full analytical assessment, improved information on age and length distributions in landings and discards from most countries participating in the fishery would be required. 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 in 2022 was 18.6% 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	$I_{trigger}$	0.682	I_{loss}: the lowest value of the stock size indicator based on the SURBAR SSB. The fishing pressure proxy relative to MSY proxy f = $L_{mean}/L_{F=M}$ (Table 8) suggests low exploitation, so $I_{trigger}$ = I_{loss}.	ICES (2023a)
	$HR_{MSY\ proxy}$	4120	Average of the ratio of catch to stock size indicator for the years 2007–2022 for which the fishing pressure proxy relative to MSY proxy (f) > 1, where f = $L_{mean}/L_{F=M}$ (Table 8).	ICES (2023a)
	$F_{MSY\ proxy}$	$\frac{L_{mean}}{L_{F=M}}$ = 1*	Relative value from LBI analysis, assuming M/K = 1.5. $L_{F=M}$ is based on L_c (length at 50% of modal abundance), which varies each year.	ICES (2023a)
Management plan	SSB_{mgt}	Not defined		
	F_{mgt}	Not defined		

* No reference points are defined for this stock in terms of absolute values. The LBI-estimated values of the ratio $L_{mean}/L_{F=M}$ are used to estimate exploitation status relative to the proxy MSY reference point.

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 (ICES, 2023b)
Assessment type	Stock size indicator based on SURBAR (Needle, 2015) and applying the *chr* rule for advice (ICES, 2022a)
Input data	Commercial catches (international landings and discards), two survey indices (IBTS Q1 [G1022] for 2007–2022 and combined index for IBTS Q3 [G2829] and BTS Q3 [B2453] for 2005–2022), and fixed maturity estimates and annual stock weight-at-age data from three surveys (IBTS Q1 [G1022], IBTS Q3 [G2829], and BTS Q3 [B2453])
Discards and bycatch	Discarding is known to take place, and discards have been quantified for 2002–2022 (rate for 2022 = 18.6%)
Indicators	LBI based on lengths from commercial catch data (2002–2022). Growth parameters were estimated as L_∞ = 37.5 cm and K = 0.385. L_c is assumed time-varying.
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 (WGNSSK)

History of the advice, catch, and management

Table 5 Lemon sole in Subarea 4 and divisions 3.a and 7.d. ICES advice, TACs, ICES catch estimates, and official landings. 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	4690	3200
2011		-		6391	5055	4030	1024	5575	4045
2012	No increase in catch	-		6391	6560	4099	2461	5967	4071
2013	No new advice, same as for 2012	-		6391	9663	3725	5938	5756	3763
2014	No more than 16% increase in landings (last three years' average)	< 4350		6391	5335	3645	1690	6341	3692
2015	No new advice, same as for 2014	< 4350		6391	5116	3480	1636	5676	3480
2016	Precautionary approach (decrease catches by 9%)		< 5655	6391	5000	3834	1167	6492	3807
2017	Precautionary approach (same advised catch value as given for 2016)		< 5655	6391	3966	3315	651	6208	3343
2018	Precautionary approach (decrease catches by 3%)		< 5484	6391	3376	3046	331	6026	3021
2019	Precautionary approach (same advised catch value as given for 2018)		< 5484	7874	3878	3273	605	5808	3241

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
2020	Precautionary approach		≤ 4279	6785	3044	2653	391	4589	2656
2021	Precautionary approach		≤ 3742	5428	2605	2104	501^	3928**	2104**
2022	Precautionary approach		≤ 3081	4287	1851	1506	345^	3103**	1503**
2023	MSY approach		≤ 2960	3140					
2024	MSY approach		≤ 2072						

* 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 2022 as estimated by ICES.

Catch	Landings					Discards*
1851 tonnes	Otter trawl 67%	Beam trawl 25%	Seine 4%	Gillnet 3%	Other 1%	345 tonnes
	1506 tonnes					

* Discards include BMS landings from EU and UK fleets.

Table 7 Lemon sole in Subarea 4 and divisions 3.a and 7.d. History of commercial catch and landings; official landings and BMS (1950–2022), and ICES estimates (2002–2022) are presented by area for each country participating in the fishery. Weights are in tonnes.

Division 7.d: official landings

Year	Official landings							
	Belgium	Denmark	France	Netherlands	UK	Other	BMS	Total
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

Year	Official landings							
	Belgium	Denmark	France	Netherlands	UK	Other	BMS	Total
1993	36	0	311	0	75	0		422
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	107	0		441
2010	101	0	85	5	32	0		224
2011	153	0	197	15	57	0		422
2012	171	0	167	20	108	0		466
2013	175	0	181	26	110	0		492
2014	163	0	108	14	72	0		357
2015	122	0	85	10	42	0		260
2016	116	0	69	9	47	0		239
2017	87	0	34	8	30	0		158
2018	57	0	21	5	16	0		99
2019	49	0	27	6	23	0	0	104
2020	46	0	25	6	19	0	0	96
2021	40	0	18	7	26	0	0	91
2022	39	0	17	4	11	0	0	72

Subarea 4: official landings

Year	Official landings									
	Belgium	Denmark	France	Germany	Netherlands	Norway	UK	Other	BMS	Total
1950	112	435	139	31	156	0	2855	26		3754
1951	115	845	90	21	167	0	3430	42		4710
1952	98	391	227	26	168	0	3953	59		4922
1953	73	409	189	18	132	0	4590	29		5440
1954	2	272	177	24	112	0	3368	17		3972
1955	49	311	0	15	78	0	3374	9		3836
1956	48	222	0	19	58	0	3034	14		3395
1957	39	249	0	24	64	0	3032	11		3419
1958	30	171	0	13	43	0	2835	12		3104
1959	85	242	0	40	43	0	3226	11		3647
1960	155	577	0	46	67	0	3178	12		4035
1961	286	488	0	79	102	0	3934	11		4900
1962	175	501	0	54	106	0	3794	0		4630
1963	365	222	0	36	71	0	3097	0		3791
1964	484	358	0	62	75	0	3142	0		4121
1965	562	385	0	91	93	0	3818	0		4949
1966	594	548	0	98	65	0	4110	0		5415
1967	601	791	0	136	61	0	4599	0		6188
1968	422	775	0	96	34	0	4943	0		6270
1969	292	639	0	80	36	0	3423	0		4470
1970	241	307	0	52	58	0	2776	0		3434

Year	Official landings									
	Belgium	Denmark	France	Germany	Netherlands	Norway	UK	Other	BMS	Total
1971	348	514	0	54	122	0	2929	0		3967
1972	423	530	0	59	130	0	2530	0		3672
1973	566	478	0	73	217	16	3218	0		4568
1974	486	447	0	59	269	0	2966	0		4227
1975	748	521	0	83	299	0	3367	11		5029
1976	493	506	0	68	308	0	3443	12		4830
1977	618	321	0	71	262	0	4387	2		5661
1978	760	517	28	54	231	0	4518	0		6108
1979	674	876	136	41	390	0	4308	3		6428
1980	484	599	102	49	303	0	4885	2		6424
1981	555	605	237	39	412	0	4084	1		5933
1982	879	670	419	52	759	0	4386	3		7168
1983	1122	735	402	28	1009	0	4957	4		8257
1984	1144	567	344	22	0	0	4850	3		6930
1985	989	555	157	26	0	0	4703	5		6435
1986	511	577	103	16	0	0	3839	1		5047
1987	448	742	174	14	0	0	4137	1		5516
1988	539	639	184	14	301	0	4220	1		5898
1989	441	828	176	40	397	0	4083	2		5967
1990	491	1007	208	49	0	0	4431	4		6190
1991	544	1099	250	41	0	12	4666	6		6618
1992	577	1149	177	30	0	13	4175	5		6126
1993	525	966	240	37	0	9	4059	3		5839
1994	436	597	436	27	0	11	3754	1		5262
1995	588	585	412	70	0	9	3046	2		4712
1996	592	547	534	67	0	18	2976	3		4737
1997	504	499	224	76	0	29	3391	4		4727
1998	815	796	197	149	838	23	3643	5		6466
1999	662	1015	0	62	681	24	3866	6		6316
2000	711	1277	184	72	492	17	3222	5		5980
2001	694	1281	191	77	451	22	2666	7		5389
2002	604	971	190	116	402	17	1521	6		3827
2003	517	1008	239	136	369	16	1399	4		3688
2004	667	1113	120	81	355	12	1192	3		3543
2005	595	1057	102	85	402	13	1188	2		3444
2006	552	968	57	183	412	13	1440	2		3627
2007	542	1136	66	143	367	23	1609	6		3892
2008	527	925	48	119	434	26	1383	3		3465
2009	389	897	88	63	294	31	927	2		2690
2010	376	821	32	102	323	36	935	2		2626
2011	387	999	60	96	641	27	1157	2		3369
2012	406	999	34	61	587	30	1003	2		3123
2013	527	649	28	67	479	16	1214	2		2981
2014	650	626	27	63	424	23	1203	3		3019
2015	443	794	17	82	453	12	1120	3		2925
2016	448	1055	15	82	443	23	1197	5		3268
2017	345	1032	4	43	360	14	1042	4		2845
2018	370	815	9	52	349	14	1029	3		2641
2019	467	671	8	47	475	13	1122	4	1	2808
2020	376	497	9	32	385	5	912	6	1	2221
2021	320	332	2	32	422	7	637	3	1	1757
2022	150	225	1	29	244	7	475	3	1	1135

Division 3.a: 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
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

Year	Official landings							
	Belgium	Denmark	Germany	Netherlands	Sweden	Other	BMS	Total
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	8		350
2011	0	223	3	0	12	16		254
2012	0	446	3	0	15	18		482
2013	0	259	3	5	10	12		290
2014	0	276	7	12	14	6		315
2015	0	250	4	25	10	6		295
2016	0	265	5	16	8	6		300
2017	0	314	1	11	7	7		340
2018	0	253	5	14	6	2		280
2019	0	292	1	30	5	1	0	329
2020	0	286	3	45	4	1	0	339
2021	0	226	2	25	3	1	0	256
2022	0	281	1	20	4	1	0	307

Subarea 4 and divisions 3.a and 7d: ICES estimates of landings and discards

Year	ICES estimates of landings				ICES estimates of discards				ICES estimates of catches
	4	3a	7d	Total landings	4	3a	7d	Total discards	Total
2002	3119	528	364	4011	299	176	37	511	4522
2003	3525	549	501	4575	878	106	53	1037	5612
2004	3366	618	410	4395	479	94	61	635	5029
2005	3426	668	335	4429	374	122	31	527	4956
2006	3624	432	238	4294	1367	122	26	1515	5809
2007	3872	437	159	4468	363	67	21	451	4919
2008	3519	290	344	4153	755	47	96	898	5051
2009	2688	270	447	3405	877	50	70	996	4401
2010	2653	361	221	3234	519	111	42	673	3907
2011	3349	264	417	4030	853	71	100	1024	5055
2012	3118	504	477	4099	2197	95	169	2461	6560
2013	2870	298	557	3725	1631	4208	99	5938	9663
2014	2892	322	431	3645	1442	99	149	1690	5335
2015	2849	302	329	3480	1468	65	104	1636	5116
2016	3251	302	281	3834	1049	57	61	1167	5000
2017	2794	345	176	3315	571	55	25	651	3966
2018	2643	288	114	3045	229	76	27	331	3376
2019	2783	339	151	3273	487	74	44	605	3878
2020	2200	345	107	2653	253	102	36	391	3044
2021	1751	257	96	2104	410	58	32	501	2605
2022	1124	308	74	1506	257	79	9	345	1851

Summary of the assessment

Table 8 Lemon sole in Subarea 4 and divisions 3.a and 7.d. Assessment summary. Weights for landings, discards, and catch are in tonnes. Catch, stock size indicator, harvest rate (Catch/Stock size indicator), and length-based fishing pressure proxy (inverse f = $L_{F=M}/L_{mean}$). Data for the years 2007–2022 are used for the application of the *chr* rule. L_{mean} refers to the mean length above length at first capture (L_c), and $L_{F=M}$ refers to the target reference length. Low and High represent 90% confidence intervals.

Year	Landings*	Discards**	Catch	Stock size indicator			Harvest rate	Length-based fishing pressure proxy*** ($L_{F=M}/L_{mean}$)
				Low	Value	High		
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							
1988	6798							
1989	7024							
1990	7485							
1991	7780							
1992	7442							
1993	7417							
1994	6760							
1995	6303							

Year	Landings*	Discards**	Catch	Stock size indicator			Harvest rate	Length-based fishing pressure proxy*** ($L_{F=M}/L_{mean}$)
				Low	Value	High		
1996	6523							
1997	6058							
1998	7680							
1999	7300							
2000	7171							
2001	6456							
2002	4011	511	4522					0.918
2003	4575	1037	5612					0.768
2004	4395	635	5029					0.886
2005	4429	527	4956	0.678	0.918	1.205	5399	0.999
2006	4294	1515	5809	0.748	0.962	1.222	6038	0.955
2007	4468	451	4919	0.799	0.985	1.212	4994	0.977
2008	4153	898	5051	0.654	0.815	1.005	6197	0.855
2009	3405	996	4401	0.552	0.682	0.832	6453	0.653
2010	3234	673	3907	0.744	0.913	1.118	4279	0.903
2011	4030	1024	5055	0.926	1.137	1.382	4445	0.815
2012	4099	2461	6560	1	1.247	1.539	5261	0.928
2013	3725	5938	9663	0.936	1.173	1.431	^	^
2014	3645	1690	5335	0.942	1.184	1.455	4506	0.837
2015	3480	1636	5116	0.985	1.239	1.529	4129	0.912
2016	3834	1167	5000	1.083	1.364	1.679	3666	0.865
2017	3315	651	3966	1.004	1.277	1.578	3106	0.832
2018	3045	331	3376	0.879	1.11	1.387	3042	0.918
2019	3273	605	3878	0.851	1.063	1.291	3648	0.844
2020	2653	391	3044	0.823	1.042	1.292	2921	0.763
2021	2104	501	2605	0.714	0.902	1.127	2888	0.858
2022	1506	345	1851	0.639	0.82	1.049	2257	0.891

* Official landings statistics 1950–2001, ICES-estimated landings 2002–2022.

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

***Only harvest rates in years where the inverse *f* ratio ($L_{F=M}/L_{mean}$) is below 1 are included in the calculation of $HR_{MSY\ proxy}$.

^ Length data and harvest rates for 2013 have been treated as missing.

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Recommended citation: ICES. 2023. Lemon sole (*Microstomus kitt*) in Subarea 4 and divisions 3.a and 7.d (North Sea, Skagerrak and Kattegat, eastern English Channel). *In* Report of the ICES Advisory Committee, 2023. ICES Advice 2023, lem.27.3a47d. https://doi.org/10.17895/ices.advice.21840915