ICES advice for North Western Waters

NWWAC meeting, July 2025

ENGLISH CHANNEL

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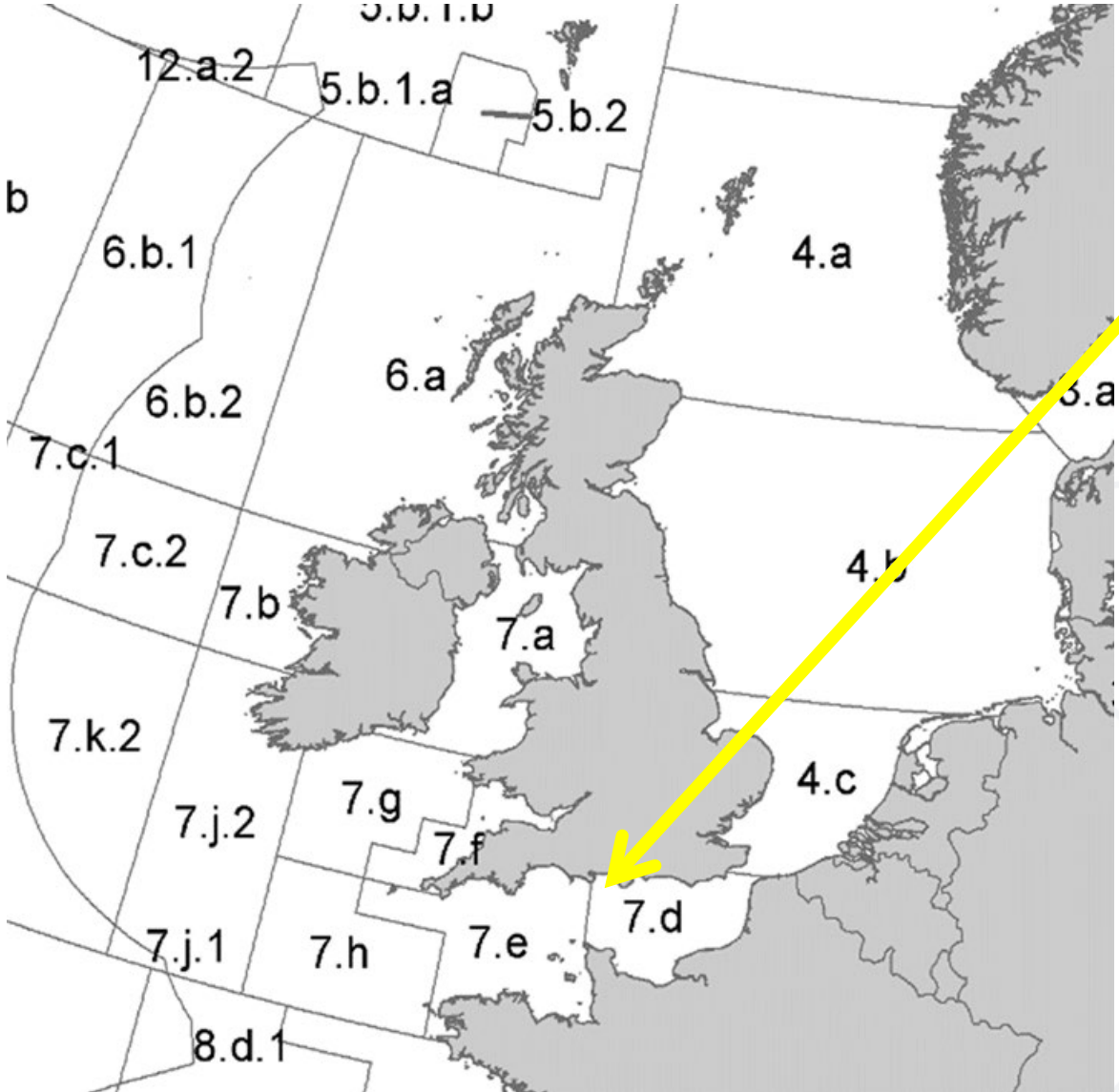
ICES CIEM

Science for sustainable seas

Image Dirk Vonten, Fotolia

English Channel (Divisions 7.d and e)

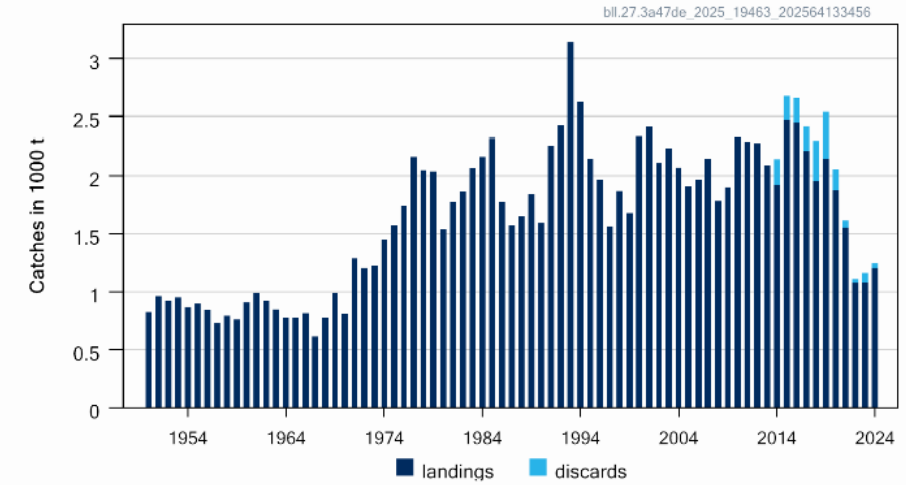


- Brill (3a, 4, 7d)
- Lemon sole (3a,4,7d)
- Plaice (7.d)
- Plaice (7.e)
- Sea bass (4.bc, 7.a,d-h)
- Sole (7.d)
- Sole (7.e)
- Striped red mullet (4,7.d,3.a)
- Whiting (4,7.d)
- Cod (4, 6a,7.d, 20) - delayed
- Autumn
  - Rays and skates

Brill in the North Sea, Skagerrak and Kattegat, English Channel (4, 3.a, 7.de)

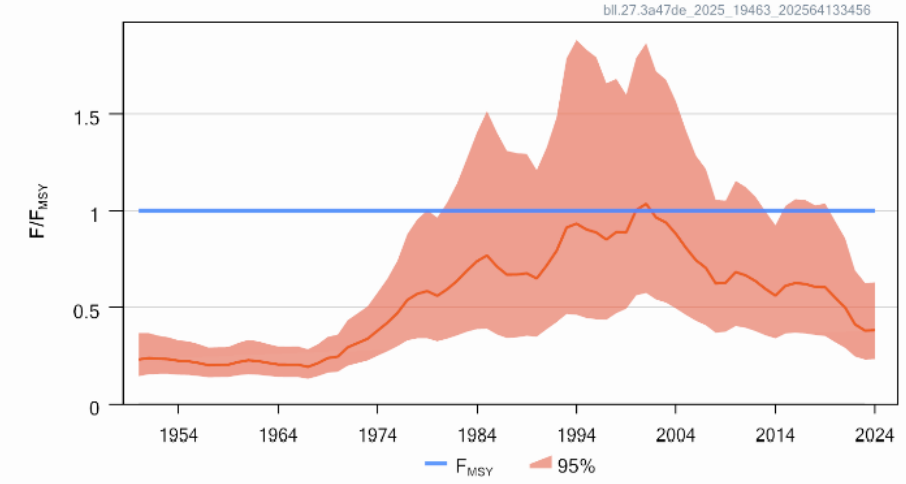
Advice for 2026, MSY: Catch ≤ 3086 t advice +3.9%

Catches

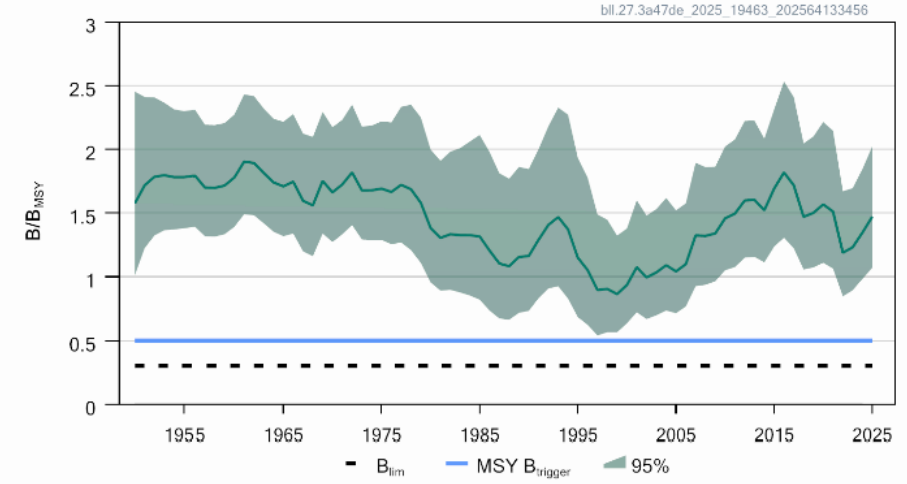


- F below Fmsy
- Stock size above MSY Btrigger
- Increase in biomass
- Some retro in stock size but without clear pattern

Relative fishing pressure



Relative exploitable biomass



Brill in the North Sea, Skagerrak and Kattegat, English Channel (4, 3.a, 7.de)

Catch 2024: 1 244 t (3% discards) 484 t in 7de

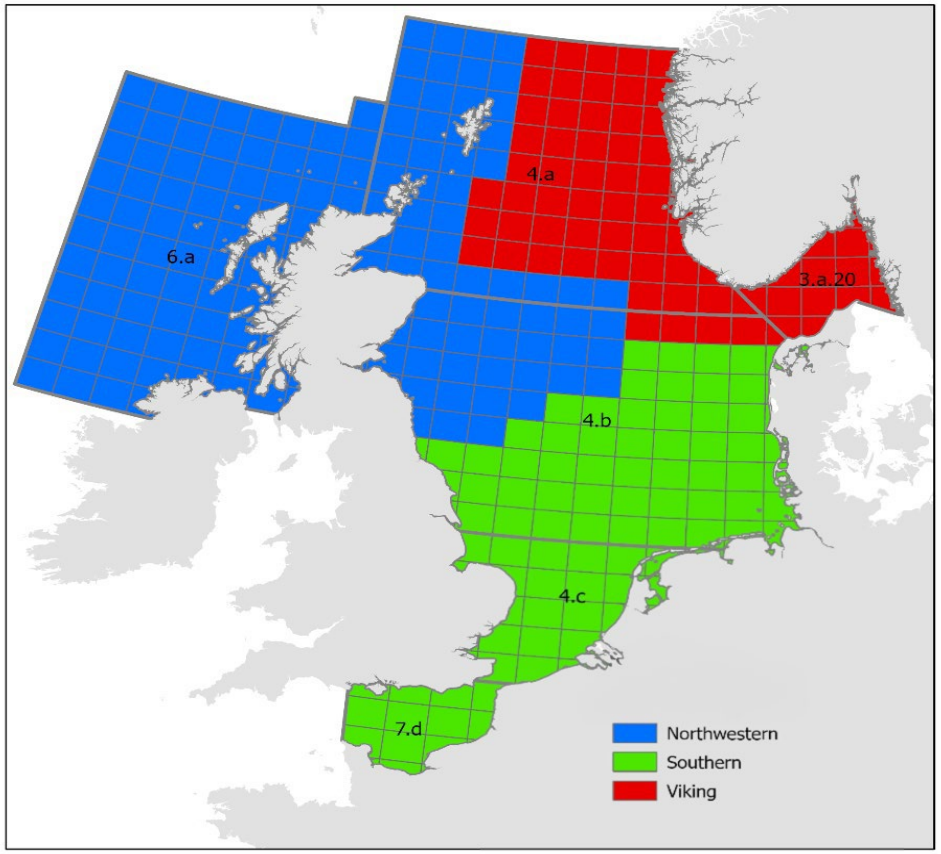
Basis	Total catch (2026)*	Projected landings (2026)	Projected discards (2026)**	Fishing mortality F_{2026}/F_{MSY}	Stock size B_{2027}/B_{MSY}	% B/B_{MSY} change***	% total allowable catch (TAC) change^	% advice change^^
ICES advice basis								
Maximum sustainable yield (MSY) approach (35th percentile of predicted catch distribution under $F = F_{MSY}$)	3086	2950	136	0.92	1.36	−13.0	3.9	3.9
Other scenarios								
F_{MSY}	3314	3168	146	1.00	1.33	−15.5	11.6	11.6
$F = F_{2025}$	1390	1329	61	0.39	1.57	2.4	−53	−53
$F = 0$	0	0	0	0	1.74	12.0	−100	−100

SPiCT

Cod North Sea W Scotland E Channel (4, 6a, 7d, 20)

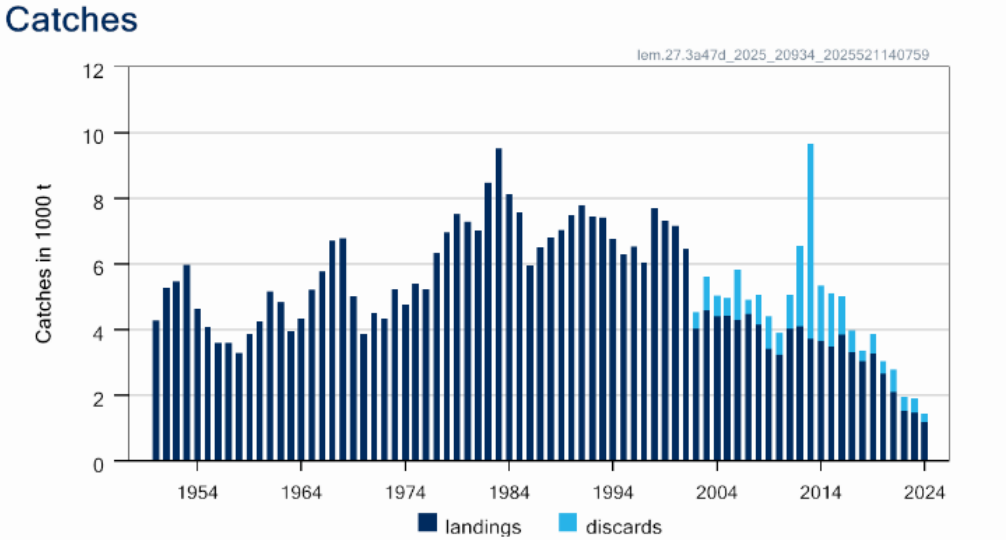
Advice for 2026

- Advice delayed until autumn
- October likely
- Struggle with mixing implications for advice – will give time for ACOM to further discuss
- Team being set up to try to improve assessment

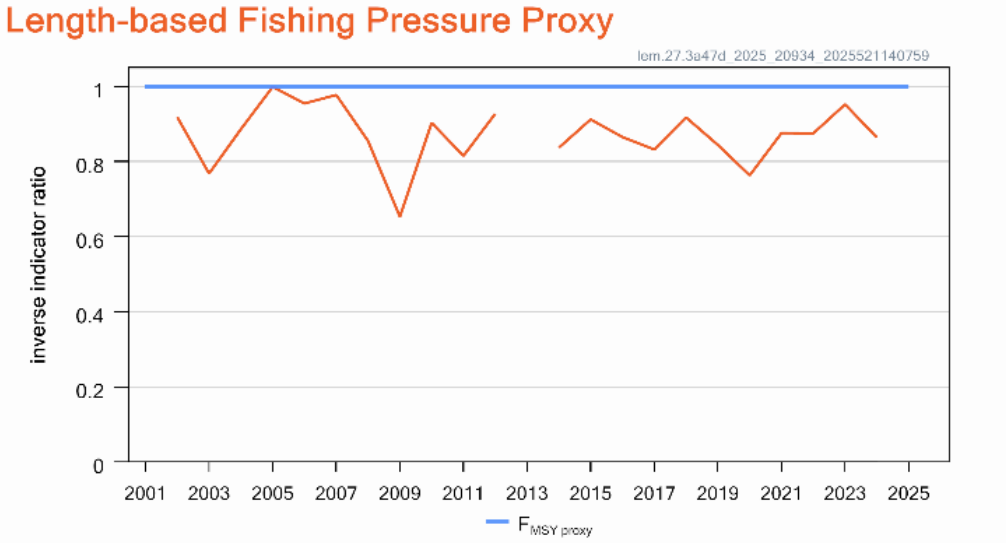


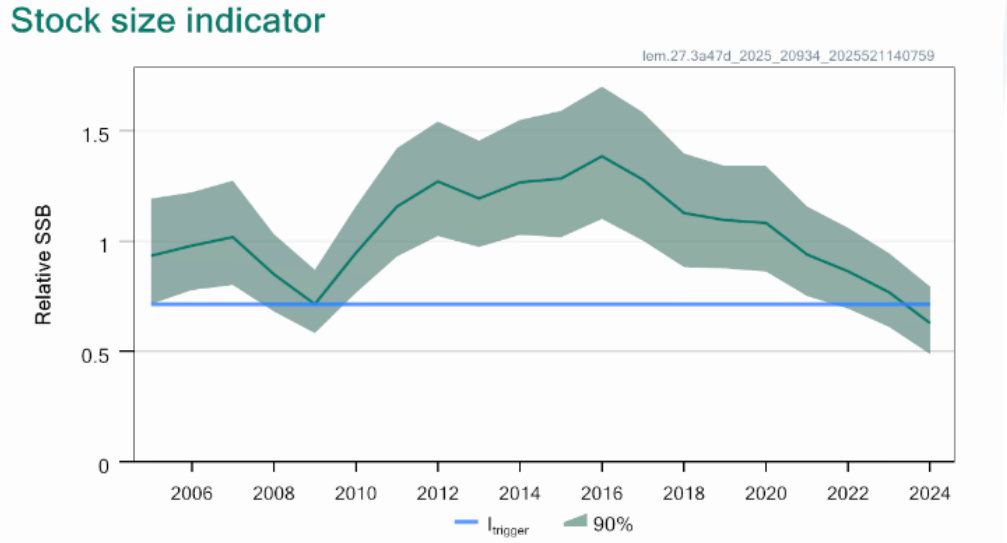
Lemon sole in the North Sea, Skagerrak and Kattegat, E-English Channel (4, 3.a, 7.d)

Advice for 2026, MSY: Catch ≤ 1106 t advice -24%



- DLS method – chr
- F below FMSY proxy
- Stock size indicator below trigger
- Advice lower – lower stock size and below trigger for HR reduced





Lemon sole in the North Sea, Skagerrak and Kattegat, E-English Channel (4, 3.a, 7.d)

Catch (2024) =1444 t (16% discards); landings of 34 t in 7.d

Previous catch advice A_y		1450 tonnes
Biomass index		
I: most recent biomass index (I_{2024})		0.629
Maximum sustainable yield (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 $f = L_{mean}/L_{F=M}$)		4003
Biomass safeguard		
Index trigger value ($I_{trigger}$)		0.715
b: index relative to trigger value, $\min\{I_{2024}/I_{trigger}, 1\}$		0.880
Precautionary multiplier to maintain biomass above B_{lim} with 95% probability		
m: multiplier (generic multiplier based on life history)		0.5
chr calculation**		1107 tonnes
Stability clause (+20%/−30% compared to A_y, only considered if b = 1)	Not applied	
Discard rate (average 2022–2024)		21%
Catch advice for 2026		1107 tonnes
Landings corresponding to the advice		873 tonnes
% total allowable catch (TAC) change^		−24%
% advice change		−24%

Formula: $A_{y+1} = I \times HR_{MSY\ proxy} \times b \times m$

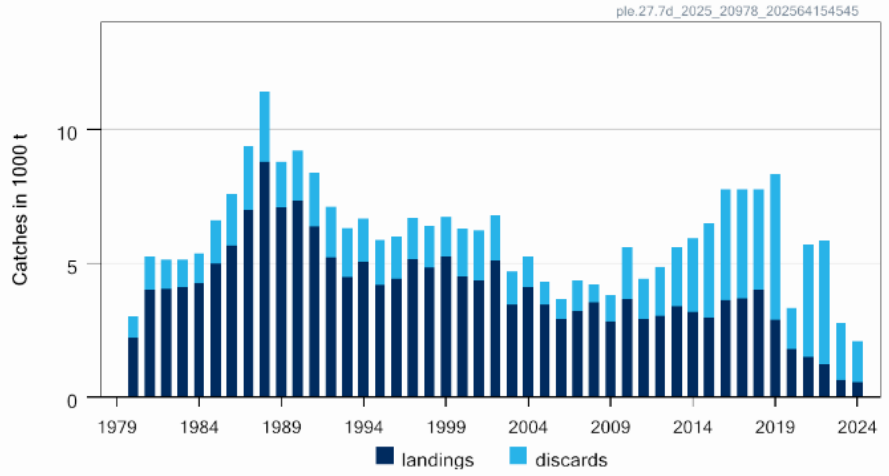
Advice for 2026

- Benchmarked 2025 – WKNSCS
- Discard rate and migration taken into account
- Examined
  - Input data
  - Revised maturity ogive – based on recent study
  - Discard rate – calculated each year
  - Discard survival – 0
  - Migration - catches originating from ple.27.420 and ple.27.7e stocks are assumed to be, respectively, 50% and 12.86% of the mature individuals caught in Division 7.d during the first quarter
- Accepted SAM - previously Aarts and Poos
- New reference points estimated

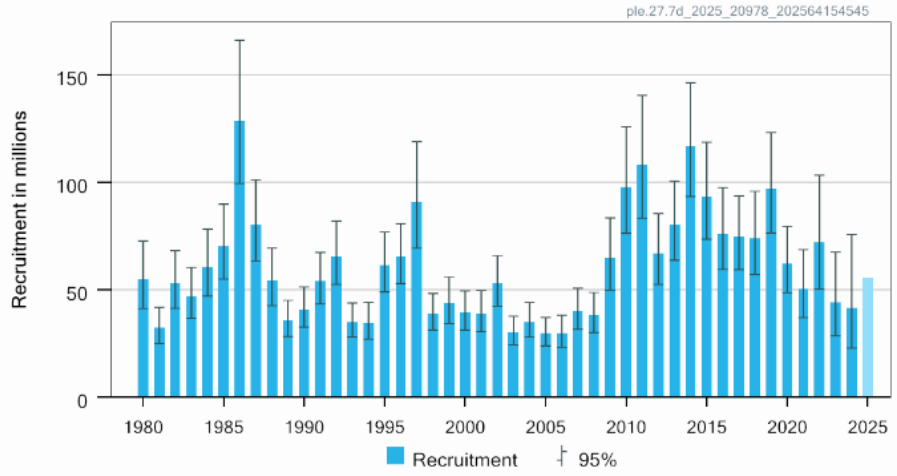
Plaice in the eastern English Channel (7.d)

Advice for 2026, MSY: Catch ≤ 1 151t advice -56%

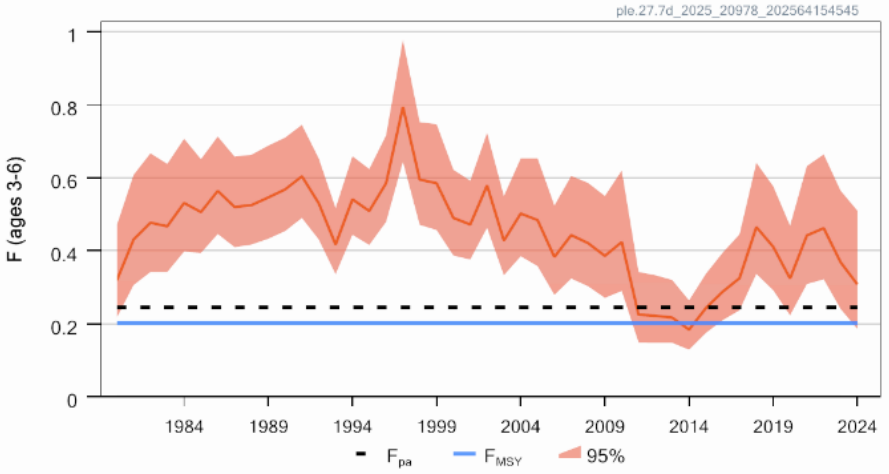
Catches



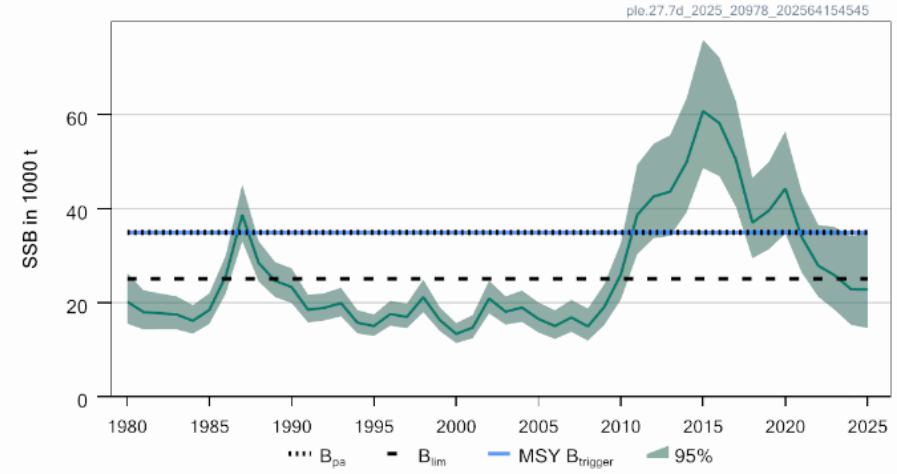
Recruitment (age 1)



Fishing pressure



Spawing Stock Biomass



- Some catches Western Channel and North Sea stocks: advice all plaice in 7d **1384 t**
- F below Fmsy
- SSB below MSY $B_{trigger}$
- 7e below trigger and catch from 7e should be no more than 872 t
- Can not advise how to avoid 7e

Plaice in the eastern English Channel (7.d)

Catch (2024) : 3019 t for the 7d area (75 % discards); 2088 t of 7d stock
F(2025) = 0.308 (Average exploitation pattern 2021-2023, scaled to 2023);
SSB (2026)= 23993 t< $MSY_{Btrigger}$ (34942 t) and Blim (25105 t) F_{MSY}= 0.203 SAM assessment

Basis	Division 7.d plaice stock									
	Total catch (2026)	Projected landings (2026)	Projected discards* (2026)	F_{total} (ages 3–6) (2026)	$F_{projected\ landings}$ (ages 3–6) (2026)	$F_{projected\ discards}$ (ages 3–6) (2026)	Spawning-stock biomass (SSB; 2027)	% SSB change **	Probability of SSB (2027) < B_{lim} (%)***	% advice change$
ICES advice basis										
Maximum sustainable yield (MSY) approach: F_{MSY} × SSB (2026) /MSY $B_{trigger}$	1151	284	867	0.139	0.029	0.110	27504	14.6	34	−56
Other scenarios										
F = $F_{MSY\ lower}$ × SSB (2026)/ MSY $B_{trigger}$	846	210	636	0.101	0.021	0.080	28071	17.0	31	−67
$F_{MSY\ lower}$	1213	299	914	0.147	0.030	0.117	27375	14.1	35	−53
F_{MSY}	1640	403	1237	0.203	0.042	0.161	26635	11.0	38	−37
F = 0	0	0	0	0	0	0	29551	23	22	−100
F_{PA}	1960	480	1480	0.246	0.050	0.196	26016	8.4	44	−25
SSB (2027) = B_{lim}	2501	611	1890	0.322	0.066	0.256	25105	4.6	50	−3.8
SSB (2027) = B_{PA} = MSY $B_{trigger}$ ^^										
F = F_{2025}	2405	587	1818	0.308	0.063	0.245	25291	5.4	49	−7.5

Advice for plaice in Division 7.d is for the stock, it takes into account catches of 7.e and North Sea stocks in 7.d

Advice for 2026 and 2027

- Benchmarked late 2024 – WKBPLAICE
- Previous assessment cat 3 – rfb
- Examined
  - Input data
  - Discard rate - 26% in 7e (updated as required here avg 2012-2023)
  - Discard survival – 50%
  - Migration - 15% of the mature population caught in quarter 1 in Division 7.d is added to the ple.27.7e stock catches (revised to 12.86% after the 7d benchmark)

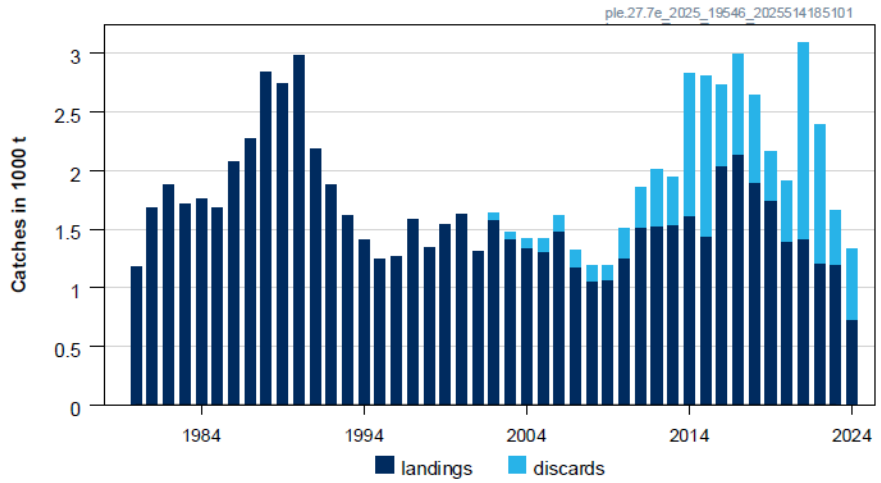
Advice for 2026 and 2027

- Unable to produce Cat 1 assessment
- MSE to produce CHR (Cat 3) designed specifically for this stock
- Discard rate and survival and migration taken into account
- Produced new advice for 2026 (and 2027)

Plaice in the western English Channel (7.e)

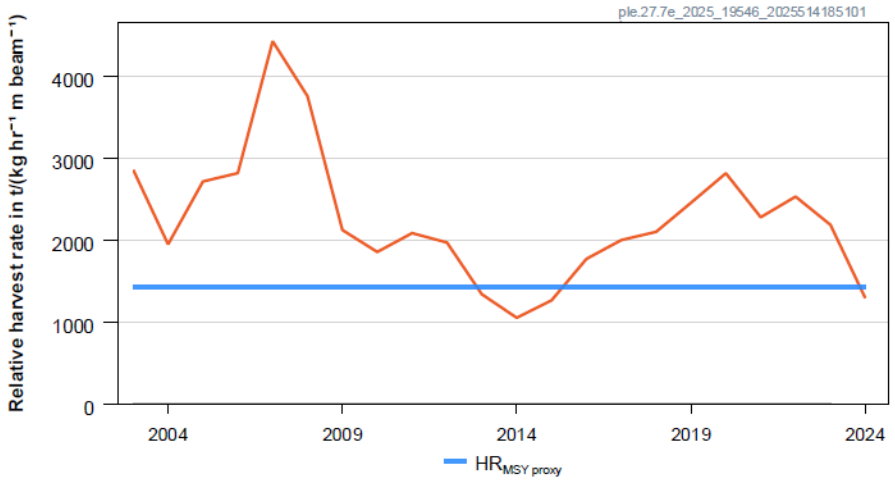
Advice for 2026 and 2027, MSY: Catch ≤ 872 t -5.9% (819 in 7e)

Catches

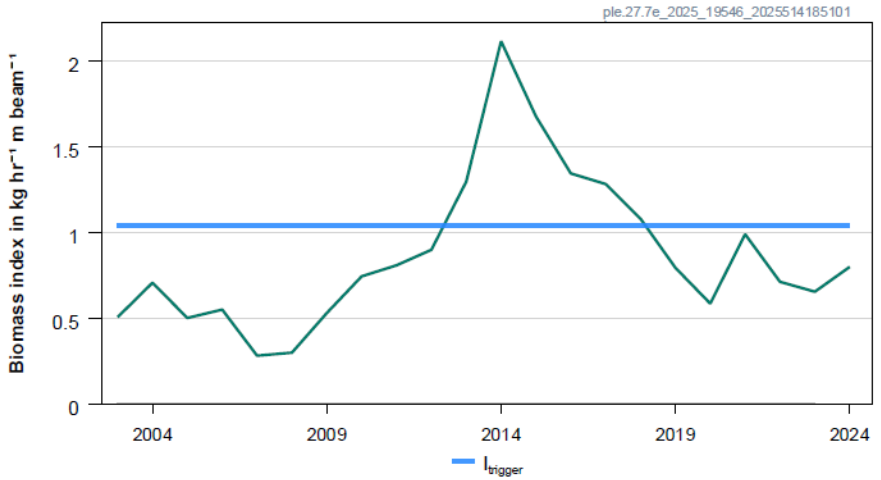


F below FMSY proxy
Stock size below Itrigger
Change in assessment method and below trigger

Relative harvest rate



Biomass index



Plaice in the western English Channel (7.e)

Catch (2024) : 1122 t (39% discards) in 7e; +41 t in 7d

calculated using the rounded figures in the table.

Division 7.e plaice stock		
Biomass index		
I: most recent biomass index ($I_{2023–2024}$)		0.73 kg hr^{-1} m $beam^{-1}$
MSY proxy harvest rate		
$HR_{MSY\ proxy}$: MSY proxy harvest rate (derived from stock-specific simulations)		1 424 tonnes/(kg hr^{-1} m $beam^{-1}$)
Biomass safeguard		
Index trigger value ($I_{trigger}$, derived from stock-specific simulations)		1.04 kg hr_{-}^{1} m $beam_{-}^{1}$
b: multiplier for index relative to trigger value, min{$I_{2023\text{-}2024}/I_{trigger}$, 1}		0.70
Precautionary multiplier to maintain biomass above B_{lim} with 95% probability		
m: multiplier (derived from stock-specific simulations)		1
Catch advice calculations		
chr calculation# ($I \times HR_{MSY\ proxy} \times b \times m$)*		722 tonnes
A_y: dead catch corresponding to previous catch advice**		804 tonnes
Stability clause (+20%/−30%, chr calculation compared to A_y, only applied if b = 1)***	Not applied	
Discard rate (average 2012–2024)		34%
Discard survival		50%
Catch advice for 2026 and 2027 ([chr calculation]/[1 – discard rate × discard survival])^		872 tonnes
Landings corresponding to advice ([advised catch] × [1 – discard rate])		572 tonnes
% advice change^^		−5.9%

chr rule

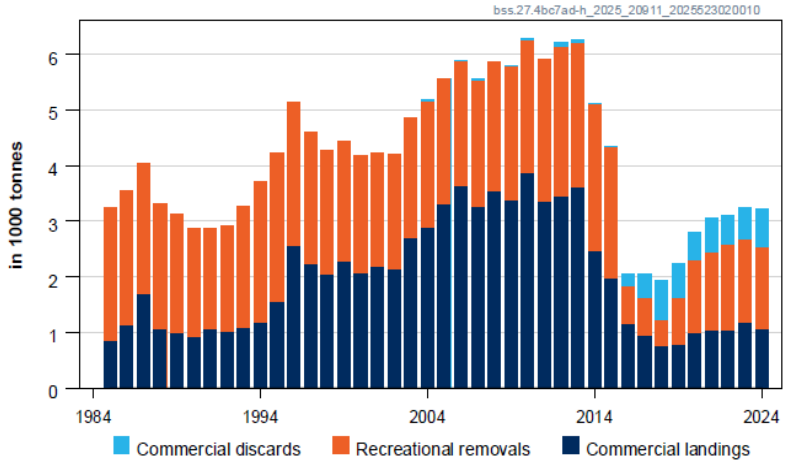
Since 2024, the TAC includes considerations of how much can be fished in each of the divisions 7.e and 7.d

Advice for 2026

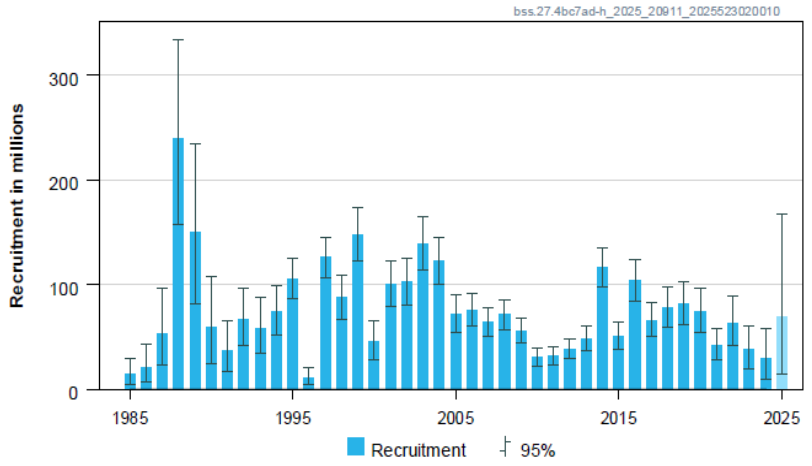
- Benchmark 2025 - WKBSEABASS
- With Southern bss.27.8ab – northern and central Bay of Biscay
- Examined
  - All input data
  - Stock structure – move 29 % Q3 and 41 % Q4 catch to south
  - Recreational data – new time series 95% post release survival
  - New natural mortality
  - 3 new recruitment surveys
- New SS3 model accepted

Advice for 2026, MSY: Total removals ≤ 5 180 t: advice +98%

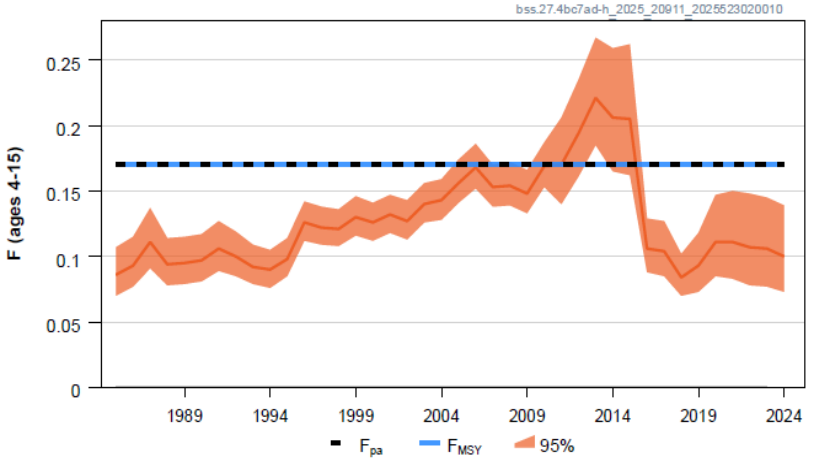
Catches



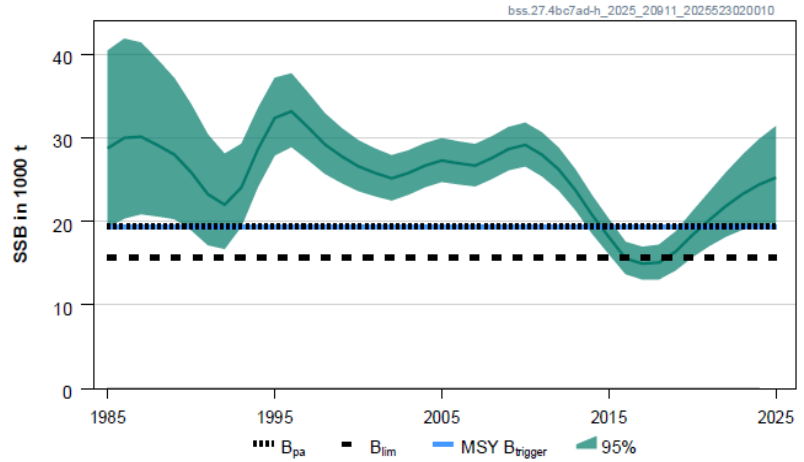
Recruitment (age 0)



F



SSB



- SSB above MSYBtrigger
- F below F_{MSY}
- New assessment and reference points

EU MAP : Catch: 4472 – 5180 t

Sea bass in divisions 4.b–c, 7.a, and 7.d–h

Catch 2024: 3828 t (1282 t commercial, 716 t discards and 1830 t recreational)

F (2025)= 0.104 (average 2022-2024)

SSB(2026) = 25 330 > B_{lim} 15 666 t and > MSY $B_{trigger}$= 19 339t F_{MSY} = 0.170

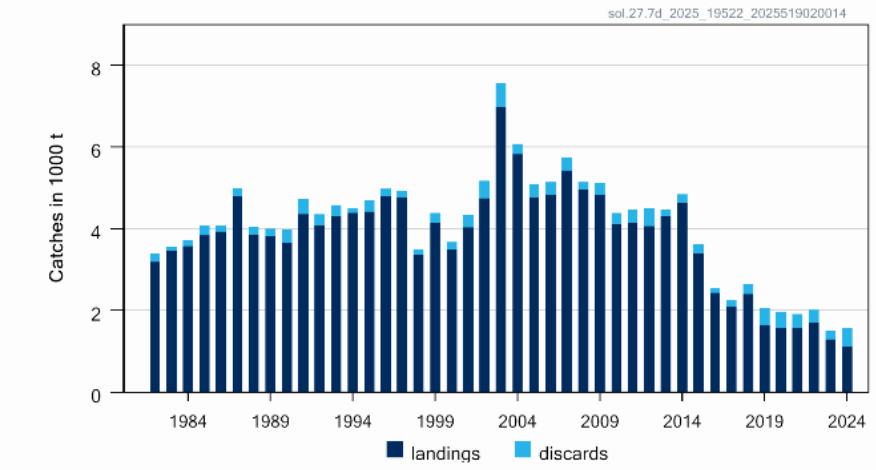
SS3

Basis	Bss.27.4bc7ad-h sea bass stock											
	Total removals (2026)*	Commercial landings** (2026)	Recreational kept** (2026)	Commercial discards** (2026)	Recreational dead released** (2026)	Survival recreational released** (2026)	$F_{ages\ 4–15}$ total removals (2026)*	$F_{ages\ 4–15}$ commercial catch (2026)	$F_{ages\ 4–15}$ recreational removals (2026)	Spawning-stock biomass (SSB; 2027)	% SSB change^	% advice change^^
ICES advice basis												
Maximum sustainable yield (MSY) approach: F = F_{MSY}	5180	1821	2302	781	276	5524	0.170	0.086	0.085	23154	-8.6	98
Other scenarios												
F = 0	0	0	0	0	0	0	0	0	0	27544	8.7	−100
EU MAP#: F_{MSY}	5180	1821	2302	781	276	5524	0.170	0.086	0.085	23154	−8.6	98
EU MAP#: $F_{MSY\ lower}$	4472	1573	1988	672	239	4772	0.145	0.073	0.072	23751	−6.2	71
EU MAP#: $F_{MSY\ upper}$	5180	1821	2302	781	276	5524	0.170	0.086	0.085	23154	−8.6	98
F = F_{PA}	5180	1821	2302	781	276	5524	0.170	0.086	0.085	23154	−8.6	98
SSB_{2027} = B_{lim}	14250	4956	6288	2252	755	15090	0.56	0.28	0.28	15666	−38	440
SSB_{2027} = MSY $B_{trigger}$ = B_{pa}	9757	3413	4321	1504	519	10371	0.35	0.176	0.173	19339	−24	270
SSB_{2027} = SSB_{2026}	2603	917	1159	388	139	2781	0.082	0.041	0.041	25330	0	−0.66
F = F_{2025}	3271	1152	1455	489	175	3493	0.104	0.053	0.052	24764	−2.2	25
Total removals advice (2026) = total removals advice (2025)	2620	923	1166	391	140	2799	0.082	0.041	0.041	25317	−0.054	−0.038

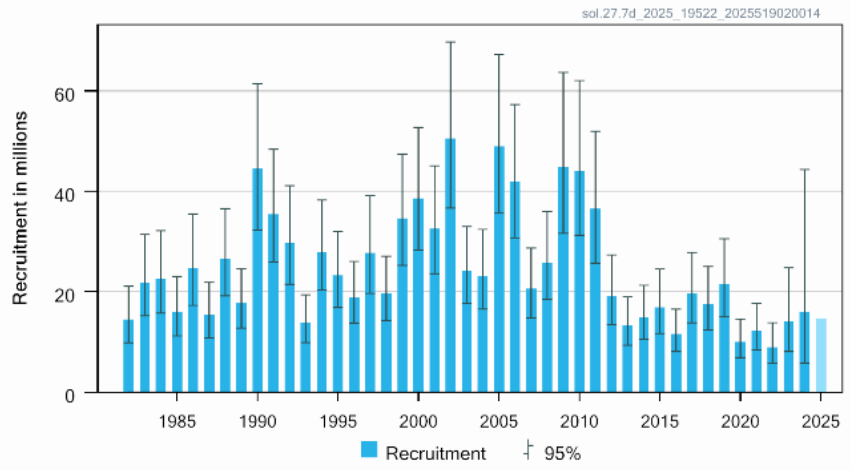
Sole in the eastern English Channel (7.d)

Advice for 2026, MSY : Catch ≤ 1 275 t +5.5%

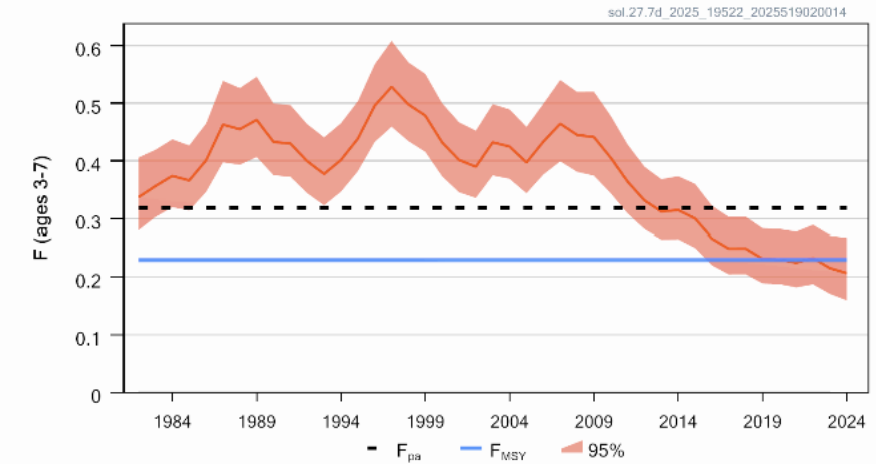
Catches



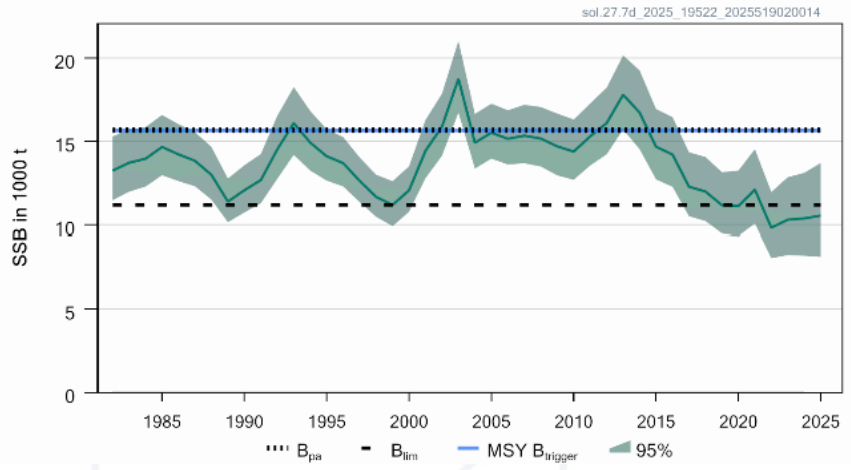
Recruitment (age 1)



Fishing pressure



Spawning Stock Biomass



- F below F_{MSY}
- SSB below Blim
- Higher recruitment than assumed in last forecast
- SSB increase closer to Btrigger – higher target F than last year

Sole in the eastern English Channel (7.d)

Catch (2024) : 1583 t (30% discards)

F(2025) = 0.207 (F2024)

SSB (2026)= 11009< B_{lim} 11 181 t F_{MSY} = 0.23

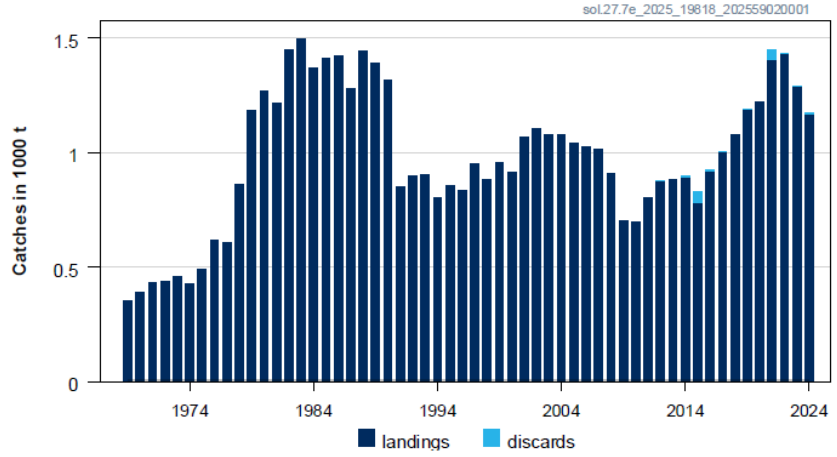
Basis	Total catch (2026)	Projected landings (2026)	Projected discards^ (2026)	F_{total} (ages 3–7) (2026)	$F_{projected\ landings}$ (ages 3–7) (2026)	$F_{projected\ discards}$ (ages 3–7) (2026)	Spawning -stock biomass (SSB; 2027)	% SSB change*	% total allowable catch (TAC) change**	% advice change**	Probability of SSB (2027) < B_{lim} (%) ***
ICES advice basis											
Maximum sustainable yield (MSY) approach: F_{MSY} × SSB (2026)/MSY $B_{trigger}$	1275	1002	273	0.162	0.126	0.036	11860	7.7	5.5	5.5	35
Other scenarios											
$F_{MSY\ lower}$ × SSB (2026)/ MSY $B_{trigger}$	889	699	190	0.110	0.086	0.024	12309	11.8	−26	−26	26
F = 0	0	0	0	0	0	0	13324	21	−100	−100	11.6
F_{PA}	2322	1833	489	0.318	0.25	0.069	10652	−3.2	92	92	62
SSB (2027) = B_{lim}	1873	1475	398	0.248	0.194	0.054	11181	1.56	55	55	50
SSB (2027)= B_{PA} = MSY $B_{trigger}$#											
F = F_{2025}	1596	1256	340	0.207	0.162	0.045	11495	4.4	32	32	44
$F_{MSY\ lower}$	1235	971	264	0.156	0.122	0.034	11904	8.1	2.2	2.2	34
F_{MSY}	1751	1379	372	0.230	0.180	0.050	11315	2.8	45	45	47

SAM assessment

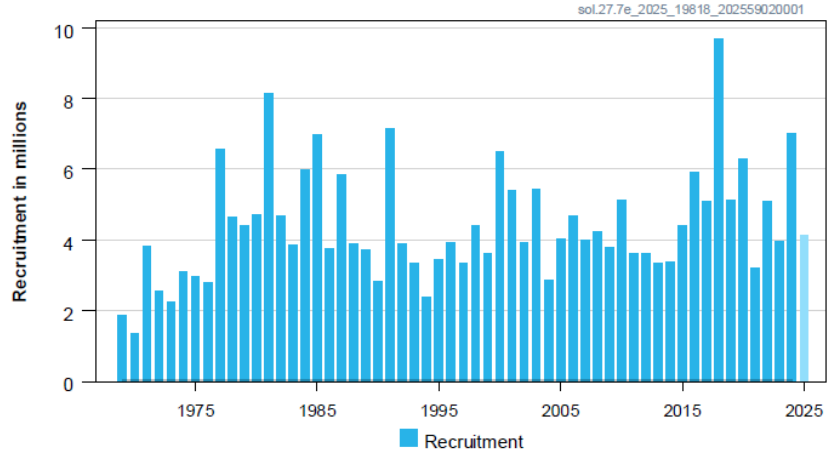
Sole in the western English Channel (7.e)

Advice for 2026, MSY : Catch ≤ 1 213 t advice +5.4%

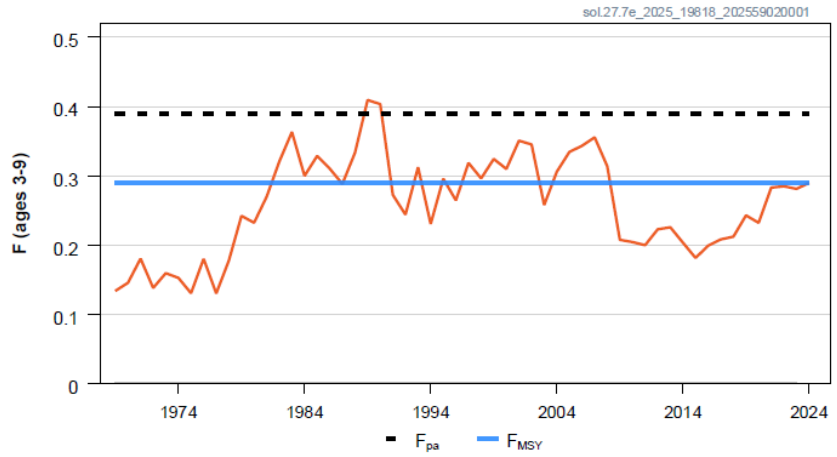
Catches



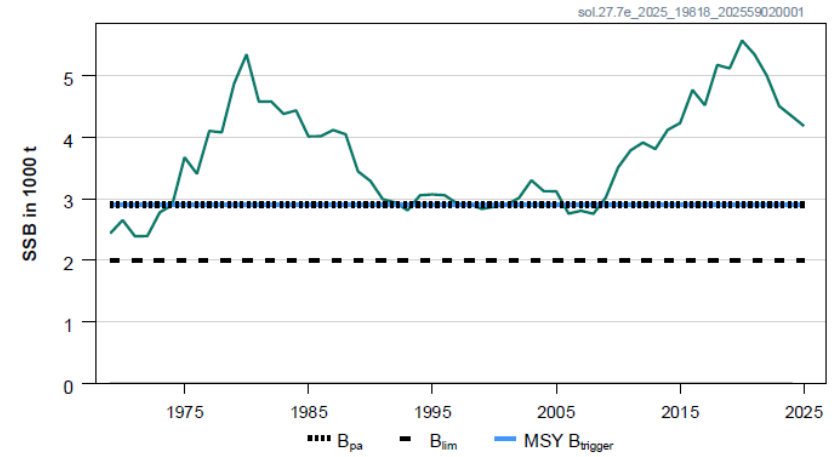
Recruitment (age 2)



F



SSB



EU MAP : Catch: 710 – 1 391 t

- F at F_{MSY}
- SSB above MSY $B_{trigger}$
- SSB declining but advice higher – upward revision in SSB (retrospective) and STF has lower interim F and higher recruitment assumption than last year

Sole in the western English Channel (7.e)

Catch (2024) : 1 174 t (negligible)

F(2025) = 0.26 (Based on assumed landings)

SSB (2026)= 4 198 t > $MSY_{Btrigger}$ (2 900 t) F_{MSY}= 0.29

Basis	Total catch** (2026)	Projected landings (2026)	Projected discards (2026)	$F_{projected\ landings}$ (2026)	Spawning-stock biomass (SSB; 2027)	% SSB change ***	% advice change^
ICES advice basis							
Maximum sustainable yield (MSY) approach: F = F_{MSY}	1213	1206	8	0.29	3944	−6.1	5.4
Other scenarios							
EU MAP^^: F_{MSY}	1213	1206	8	0.29	3944	−6.1	5.4
EU MAP^^: $F_{MSY\ lower}$	710	706	4	0.160	4425	5.4	−38
EU MAP^^: $F_{MSY\ upper}$	1391	1383	9	0.34	3774	−10.1	21
F = 0	0	0	0	0	5106	22	−100
F = F_{PA}	1561	1551	10	0.39	3613	−13.9	36
SSB_{2027} = B_{lim}	3284	3263	20	1.09	2000	−52	185
Rollover total allowable catch (TAC)	1151	1144	7	0.27	4003	−4.7	0
SSB_{2027} = B_{pa} = MSY $B_{trigger}$	2316	2301	14	0.65	2900	−31	101
SSB_{2027} = SSB_{2026}	946	941	6	0.22	4198	0	−17.8
F = F_{2025}	1111	1104	7	0.26	4042	−3.7	−3.5

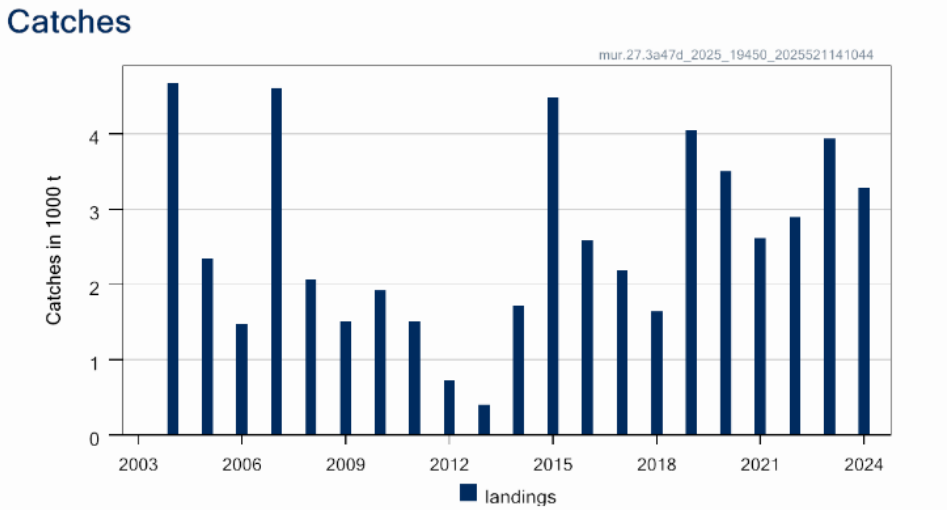
FLXSA assessment

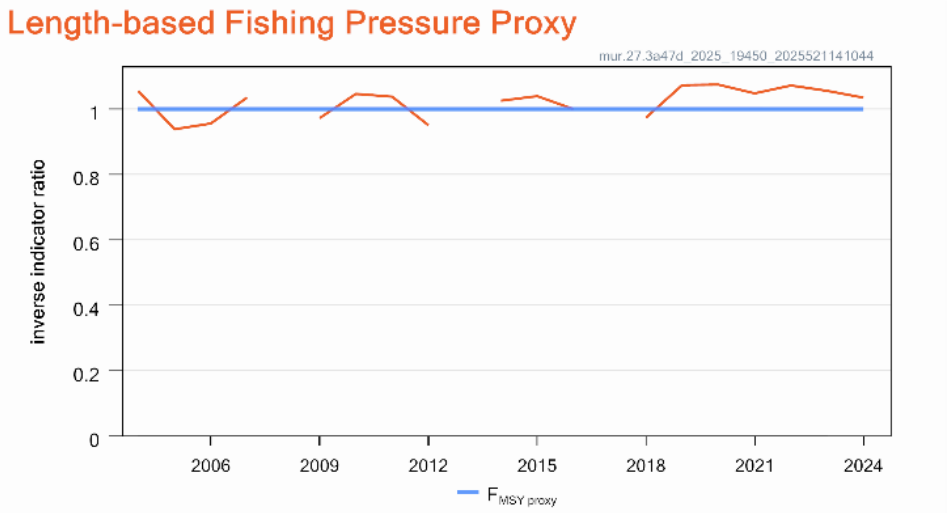
UK 2021-2023 catch and sample data revised – minimal impact

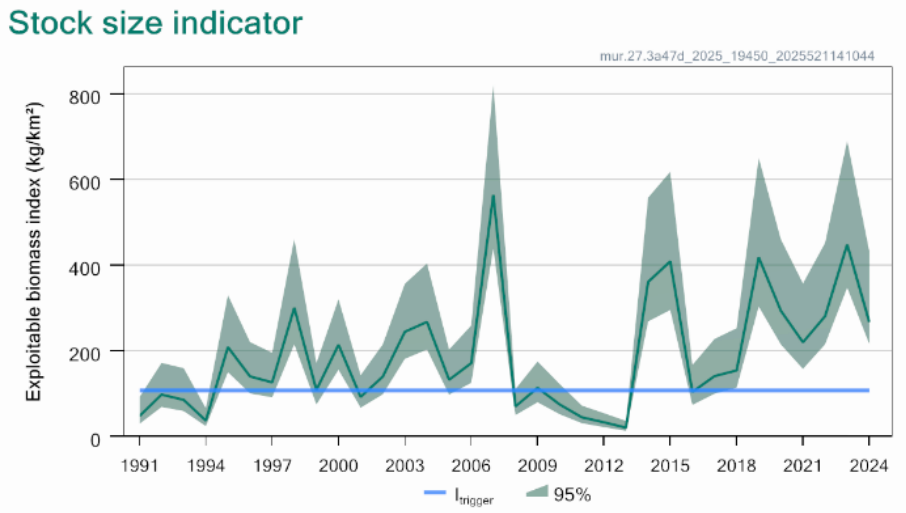
Striped red mullet in the North Sea, east English Channel, Skagerrak and Kattegat (4 ,7.d, 3.a)

Advice for 2026 and 2027 , MSY: Catch ≤ 1 932 t -2.7%

- DLS method - chr
- F above Fishing pressure proxy
- Stock size above trigger
- Small decrease in indicator
- Limited sampling







Catch (2024) : 3 289 t (negligible discards)

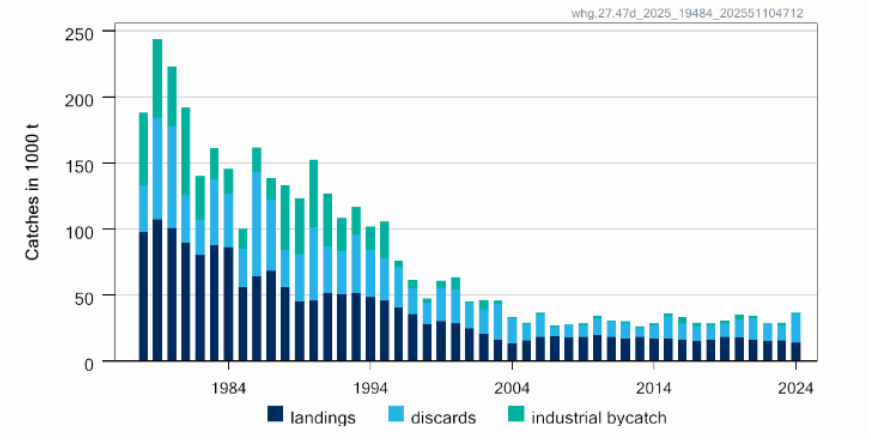
Previous catch advice A_y (advised catch for 2024 and 2025)		1985 tonnes
Biomass index		
I: most recent biomass index (I_{2024})		266.48 kg/km^2
Maximum sustainable yield (MSY) proxy harvest rate		
$HR_{MSY\ proxy}$: MSY proxy harvest rate (average of the ratio of catch to biomass index for the years for which f > 1, where $f = L_{mean}/L_{F=M}$)		14.50
Biomass safeguard		
Index trigger value ($I_{trigger}$)		107.27 kg/km^2
b: index relative to trigger value, min{$I_{2024}/I_{trigger}$, 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**		1932 tonnes
Stability clause (+20%/−30% compared to A_y, only considered if b = 1)	Not applied	
Discard rate		0
Catch advice for 2026 and 2027		1932 tonnes
Landings corresponding to the advice for 2026 and 2027		1932 tonnes
% advice change		−2.7 %

CHR calculation $A_{y+1} = I \times HR_{MSY\ proxy} \times b \times m$

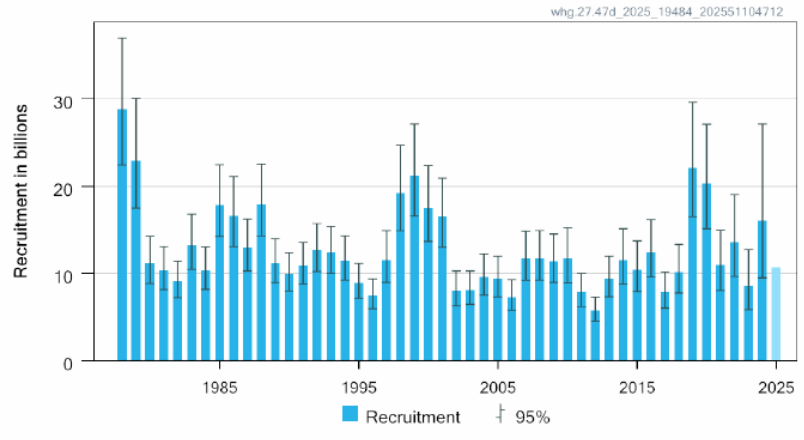
Whiting in the North Sea and eastern English Channel (4 and 7.d)

Advice for 2026, MSY: Catch ≤ 198 609 t advice +5.6%

Catches

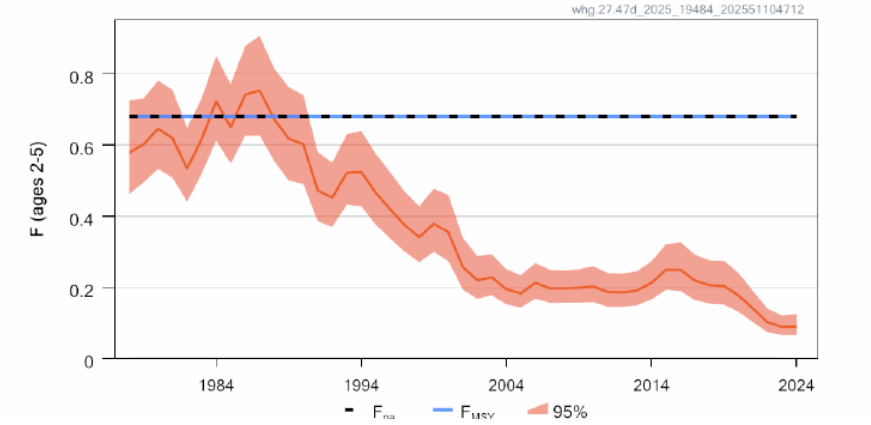


Recruitment (age 0)

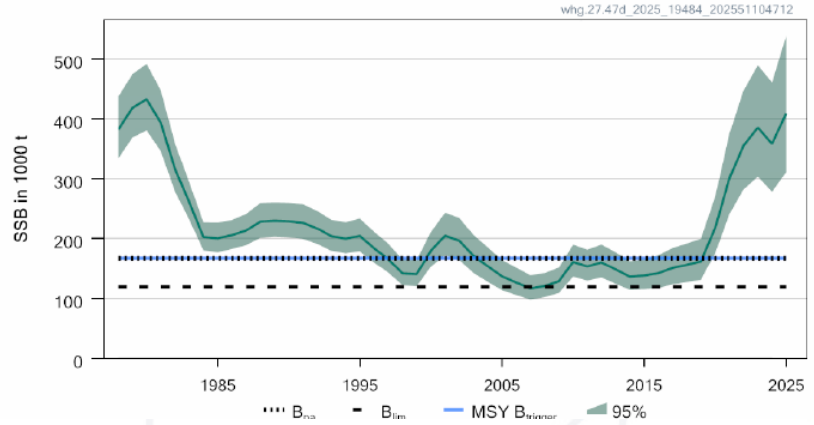


- 2025 advice rvised in autumn 2024
- F below F_{MSY}
- SSB above MSY $B_{trigger}$.
- Increase stock size

Fishing pressure



Spawning Stock Biomass



Whiting in the North Sea and eastern English Channel (4 and 7.d)

Catch (2024): 36 577 t (57% discards) ; Catch of 6 159t in 7.d

F (2025)=0.090 (Average exploitation pattern(2022-2024), scaled to F 2024)

SSB(2026) = 413 121 t> $MSY_{Btrigger}$ =167 419t F_{MSY}=0.68

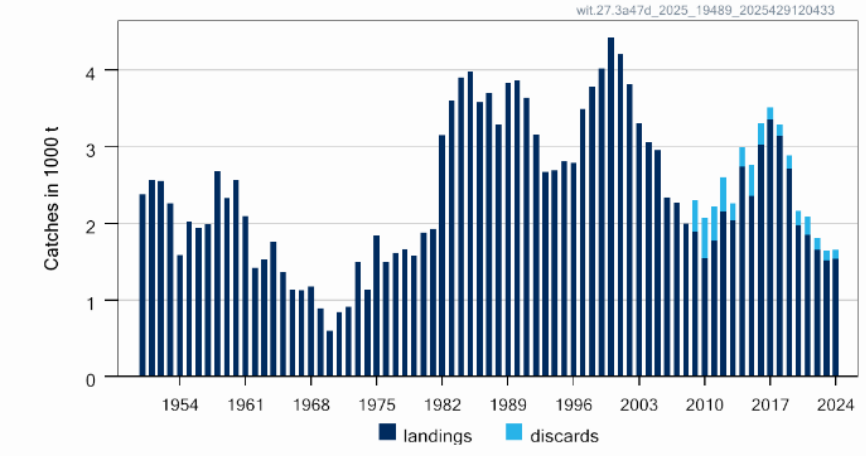
SAM

Basis	Total catch (2026)	Projected landings (2026)*	Projected discards (2026)*	Projected industrial bycatch (IBC) (2026)*	Human consumption catch (2026)	F_{total} (ages 2–5) (2026)**	$F_{projected\ landings}$ (ages 2–5) (2026)	$F_{projected\ discards}$ (ages 2–5) (2026)	$F_{projected\ IBC}$ (ages 2–5) (2026)**	SSB (2027)	% SSB change ^	% TAC change^^	% advice change^^^
ICES advice basis													
Maximum sustainable yield (MSY) approach: F_{MSY}	198609	121538	75495	1576	197033	0.68	0.36	0.32	0.0054	286198	−31	42	5.6
Other scenarios													
$F_{MSY\ upper}$	198609	121538	75495	1576	197033	0.68	0.36	0.32	0.0054	286198	−31	42	5.6
$F_{MSY\ lower}$	146669	90964	53946	1759	144910	0.46	0.24	0.21	0.0054	323685	−22	5.2	-22
F = 0 (industrial bycatch [IBC] only)	2242	0	0	2242	0	0.0054	0	0	0.0054	430525	4.2	−98	-99
$F = F_{2025}$	33503	20286	11088	2130	31374	0.090	0.045	0.040	0.0054	403077	−2.4	−76	-82
$0.75 \times F_{2025}$***	25875	15364	8358	2153	23721	0.069	0.034	0.030	0.0054	408306	−1.17	−81	-86
$1.25 \times F_{2025}$***	40962	25082	13774	2106	38856	0.111	0.056	0.050	0.0054	397949	−3.7	−71	-78
F_{PA}	198609	121538	75495	1576	197033	0.68	0.36	0.32	0.0054	286198	−31	42	5.6
SSB (2027) = B_{PA} = MSY $B_{trigger}$	385494	215820	168808	866	384628	2.3	1.19	1.06	0.0054	167419	−59	176	105
SSB (2027) = B_{lim}	485115	244498	240124	492	484622	4.2	2.22	1.97	0.0054	119585	−71	248	158

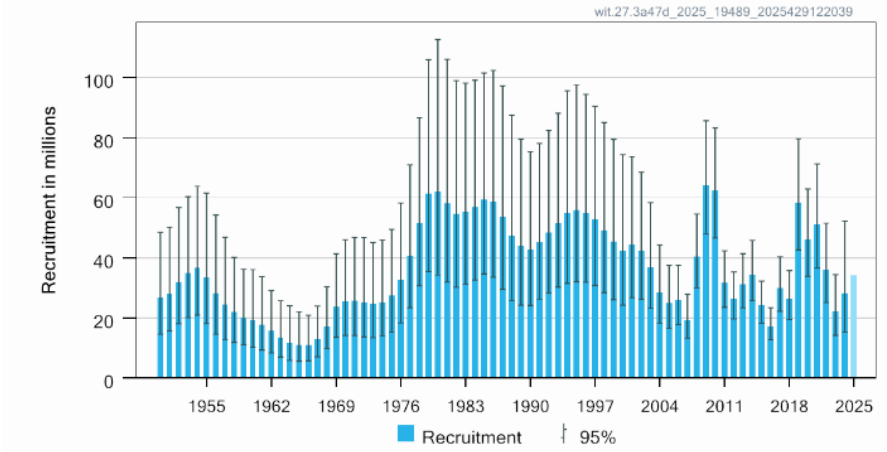
Witch North Sea, Skagerrak and Kattegat, eastern English Channel (SA4, 3a, 7d)

Advice for 2026, MSY: Catch ≤ 2 187t advice +11%

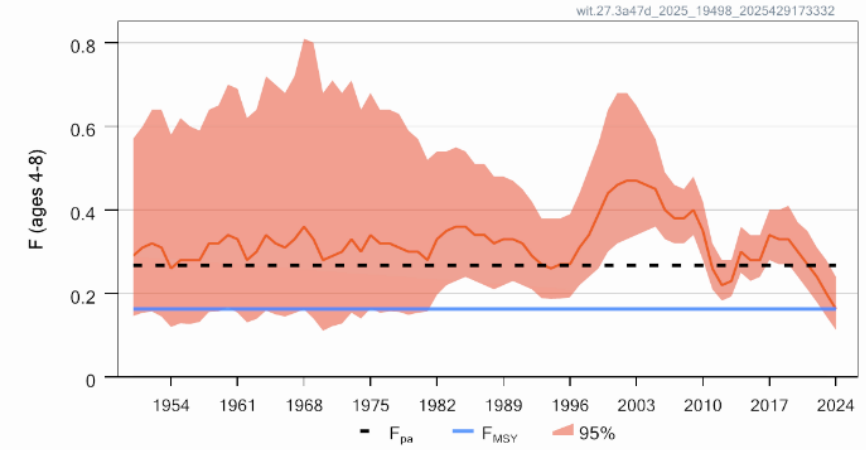
Catches



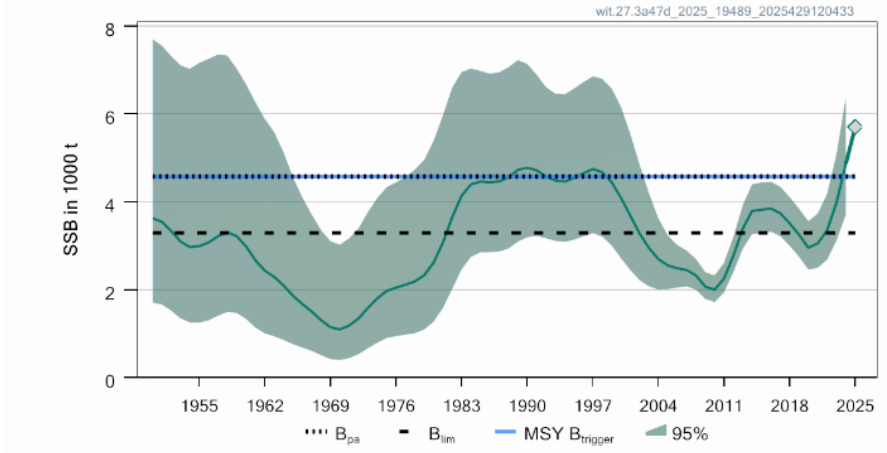
Recruitment (age 1)



Fishing pressure



Spawning Stock Biomass



- F at F_{MSY}
- SSB above MSY $B_{trigger}$.
- Increase in stock size

Witch North Sea, Skagerrak and Kattegat, eastern English Channel (SA4, 3a, 7d)

Catch (2024): 1 593t (11.7% discards) ;

F (2025)=0.157 (catch constraint, exploitation pattern 2024)

SSB(2026, July 1) = 5702 t> $MSY_{Btrigger}$ (4576 t) F_{MSY}=0.163

SAM

Basis	Total catch (2026)	Projected landings (2026)	Projected discards* (2026)	F_{total} (ages 4–8) (2026)	Spawning-stock biomass (SSB)** (2026)	SSB**,*** (2027)	% SSB change ^	% total allowable catch (TAC) change ^^	% advice change ^^^
ICES advice basis									
Maximum sustainable yield (MSY) approach: F_{MSY}	2187	2107	80	0.163	6210	6365	8.9	11.1	11.1
Other scenarios									
$F_{MSY\ upper}$	2877	2770	107	0.222	5992	5771	5.1	46	46
$F_{MSY\ lower}$	1538	1481	57	0.111	6410	6941	12.4	−22	−22
F = 0	0	0	0	0	6865	8381	20	−100	−100
F_{PA}	3376	3248	128	0.267	5839	5357	2.4	71	71
$F = F_{2025}$	2119	2043	76	0.157	6231	6427	9.3	7.6	7.6
$SSB\ (2027) = B_{lim}$	6283	6006	277	0.59	4865	3293	−14.7	220	220
$SSB\ (2027) = B_{PA} = MSY\ B_{trigger}$	4403	4229	174	0.37	5503	4576	−3.5	124	124
Rollover advice	1969	1898	71	0.145	6277	6580	10.1	0	0

Thank you for your attention!

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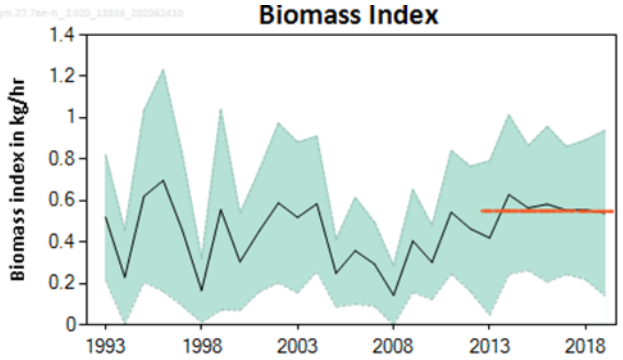
Skates and rays

- Advice for the following stocks for 2022 to be issued in autumn
  - **Thornback ray in Subarea 4 and in divisions 3.a and 7.d**
  - **Blonde ray in divisions 4.c and 7.d**
  - **Spotted ray in Subarea 4 and in divisions 3.a and 7.d**

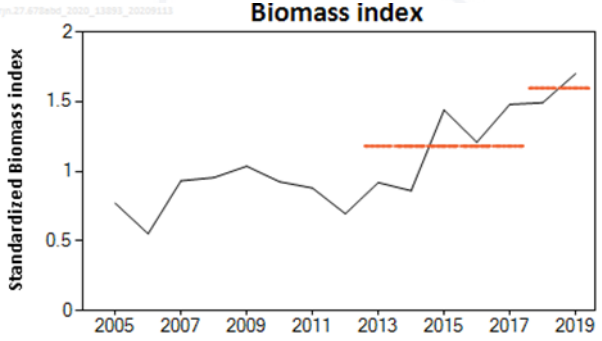
- Advice issued in 2020 for 2021/2022

Stock	Landings (2020)	Advice for 2022 Landings	Rationale
Spotted ray in 7.a and 7.e-h	741	1041	PA - based on survey index (UK(E&W)-BTS-Q3)
Cuckoo ray in 6,7, 8abd	2453	3150	PA - based on survey indices (IGFS and EVHOE)
Undulate ray in 7.de	225	183 (2552)	PA - based on survey index (CGFS)
Small-eyed ray in 7de	53	40	PA - based on historical landings
Thornback ray in 7.e	464	170	PA - based on historical landings
Blonde ray in 7e	1014	266	PA - based on historical landings

Spotted ray in 7.a , 7e-h



Cuckoo ray in 6, 7, 8 abd



Undulate ray in 7.de