

ICES advice for North Western Waters stocks for 2023

NWWAC meeting, July 5, 2022

WEST OF SCOTLAND

Joanne Morgan

ICES ACOM vice-chair



Science for sustainable seas

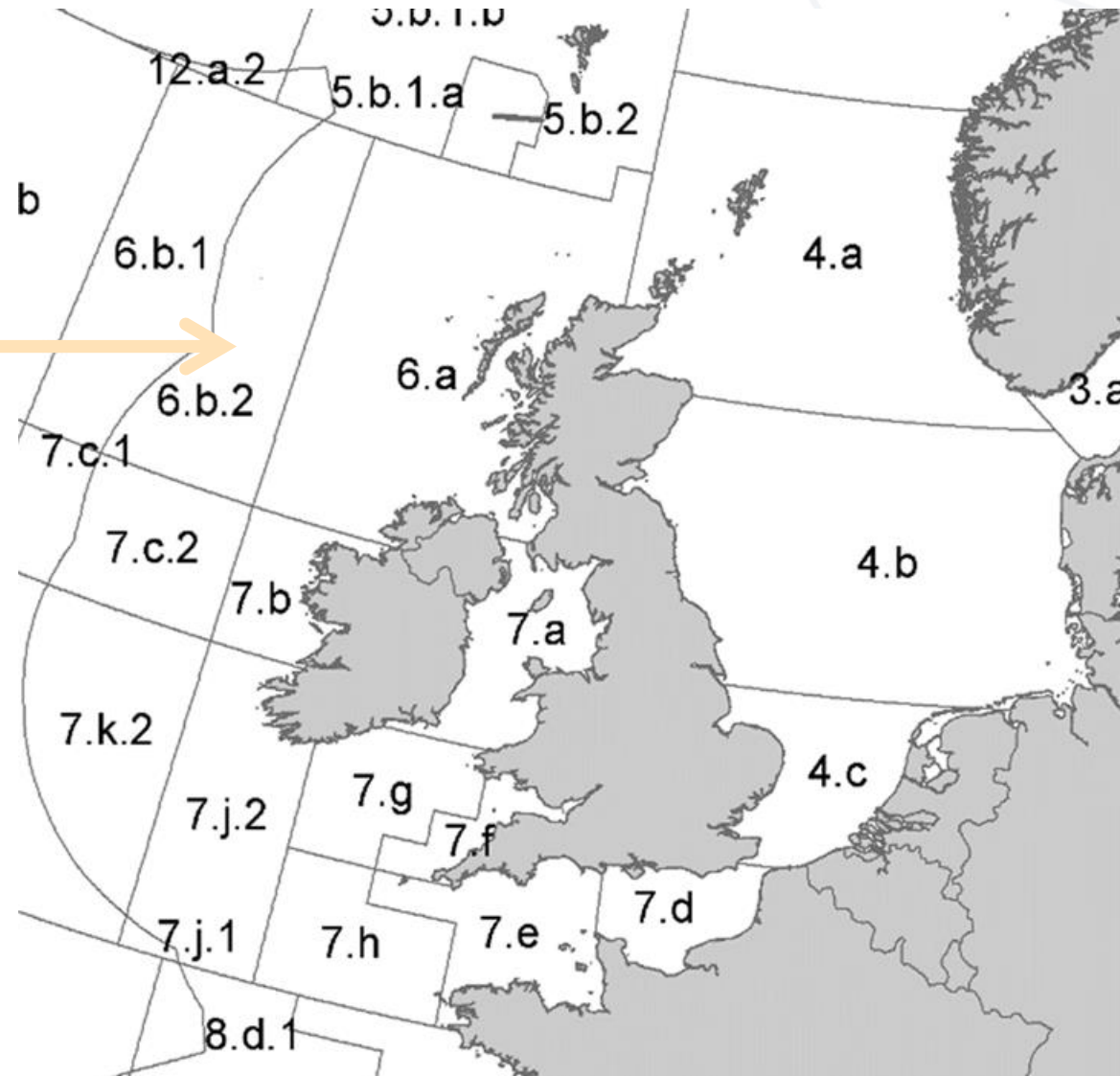
Image Dirk Vonten, Fotolia

Introduction – West of Scotland

- Includes advice released up to 30 June 2022.
- COVID-19 impacts usually in Quality of the assessment.
- Stocks managed by EU and UK: advice provided on the basis of MSY or PA but EU MAP option provided in catch scenario table if available.
- Any changes to advice rules applied by ICES in developing advice documented in sheets.
- Advice to be released in the autumn for the following stocks: Anglerfish (3.a,4,6), Megrim (6.b), Nephrops (Fu 11-13)

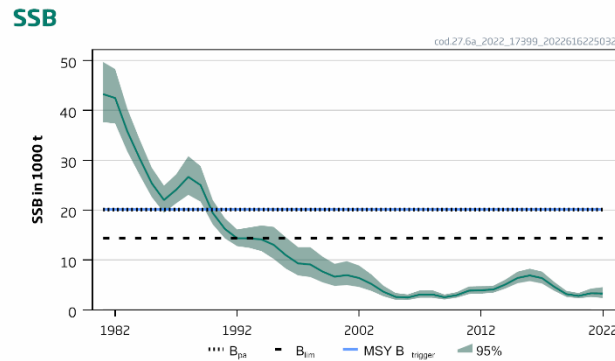
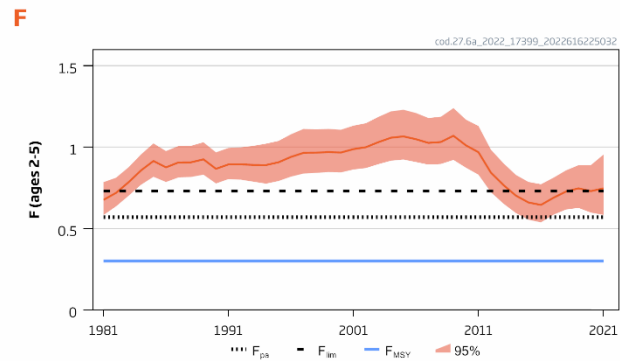
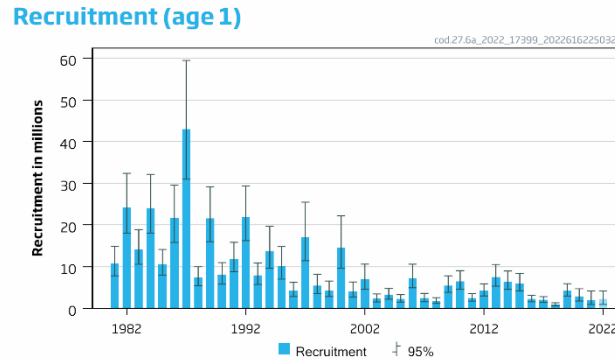
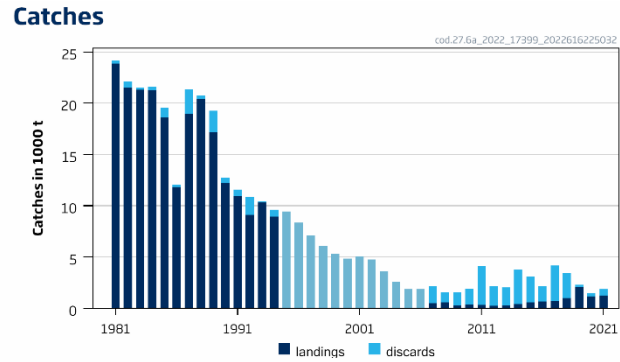
West of Scotland & Rockall (6.a & 6.b)

- Cod 6.a
- Cod 6.b
- Haddock 4, 6.a, sub. 20
- Haddock 6.b
- Hake (4,6,7, 3.a, 8.ab,d)
- Megrin 4.a, 6.a
- Pollack 6, 7
- Saithe 3.a, 4, 6
- Whiting 6.a
- Whiting 6.b
- Tusk 4, 7-9, 3.a, 5.b, 6.a, 12.b
- Tusk 6.b
- Blue ling 6-7 and 5.b
- Rays and skates



Cod in the West of Scotland (6.a)

Advice for 2023 and 2024, MSY: Catch = 0 t



- Fishing pressure above F_{lim}
- Spawning stock below B_{lim}
- No catch scenario that will rebuild above B_{lim}
- Inadequate discard sampling –Covid –minimal impact on results
- Stock structure issues remain.

Cod in the West of Scotland (6.a)

Catch (2021) : 1 906 t (33 % discards – underestimated – sampling issues);

Technical service on likely catches in 2022 :

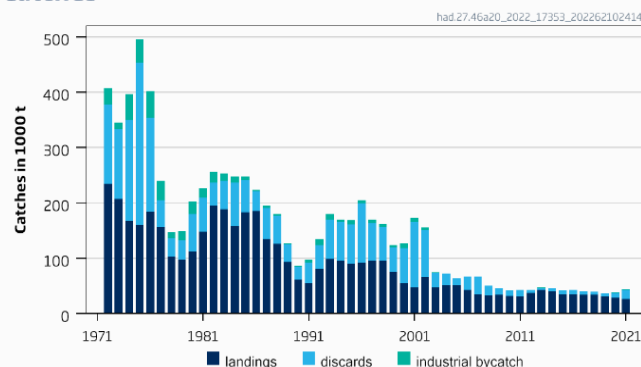
- fishing effort consistent with advice for saithe : 1 642 t (saithe advice ~ unchanged)
- fishing effort consistent with fishing on haddock : 2 562 t (haddock advice increased)

Basis	Total catch (2023)	Projecte d landings (2023)	Projecte d discards (2023)	F _{total} (2023)	F _{projected} landings (2023)	F _{projected} discards (2023)	SSB (2024)	% SSB change *	% TAC change ^
ICES advice basis									
MSY approach: F = 0	0	0	0	0	0	0	4728	62	-100
Other scenarios									
F = 2.16 x F ₂₀₂₂	2 562	1 779	783	1.60	1.23	0.37	1650	-44	100
F = F ₂₀₂₂	1 642	1 181	461	0.74	0.57	0.17	2760	-5.6	28
Catch = TAC(2022)	1 279	929	350	0.53	0.41	0.12	3196	9.3	0.0

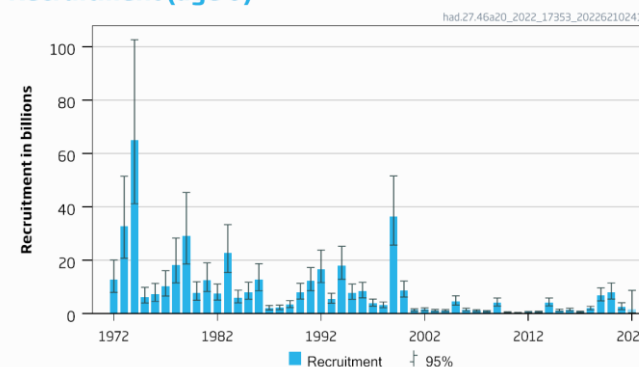
Haddock in the North Sea, West of Scotland, Skagerrak (4, 6.a and Subdiv. 20)

Advice for 2023: MSY: Catch \leq 137 058 t advice +6.5%

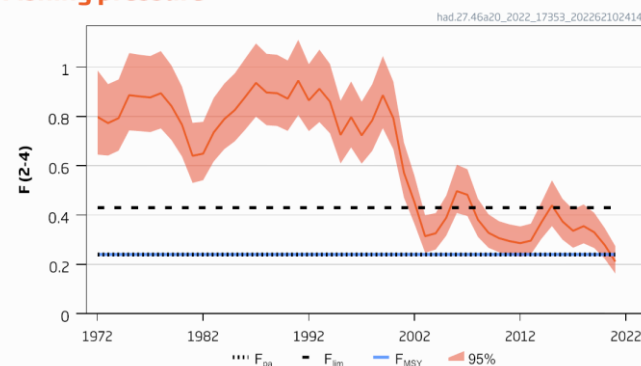
Catches



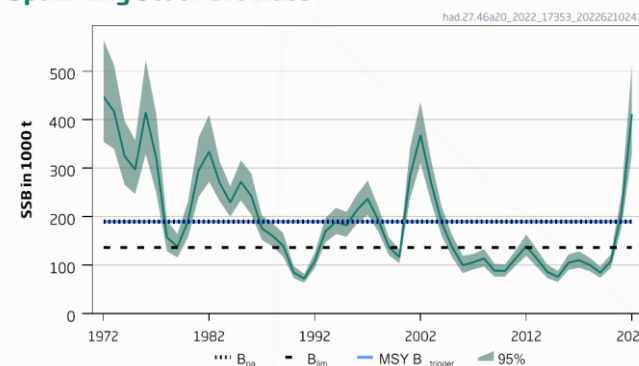
Recruitment (age 0)



Fishing pressure



Spawning Stock Biomass



- Benchmark 2022
- New model – SAM
- New reference points
- No change to perception of stock
- Fishing pressure below F_{MSY}
- Spawning stock above MSY $B_{trigger}$
- In 2022, TAC in 6.a was about 9.5 % of TAC for the stock.
- Reduced sampling 2021 –Covid – impact not significant
- Survey weather issues –model accounts for increased Q1 uncertainty

Haddock in the North Sea, West of Scotland, Skagerrak (4, 6.a and Subdiv. 20)

Catch (2021) : 44 122t (37 % discards); **8 030 t catch in 6.a**

$F(2022) = 0.111$ (catch constraint – 52 692 t TAC 2022)

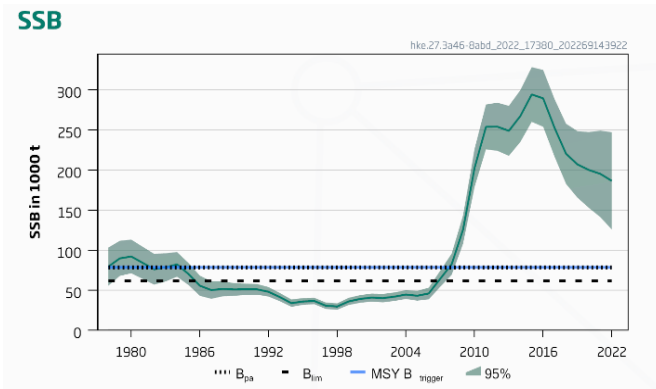
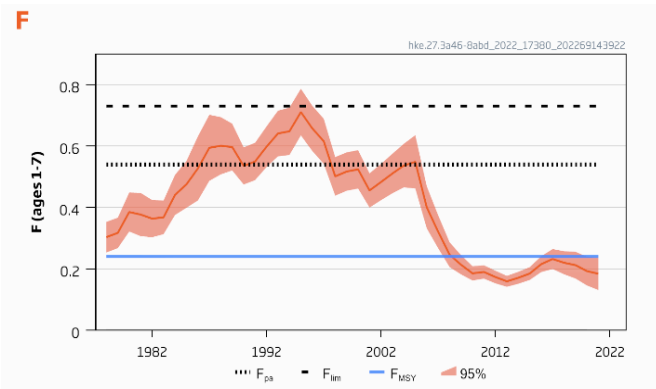
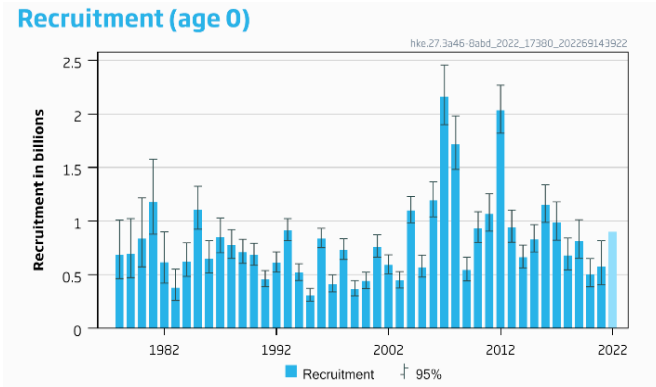
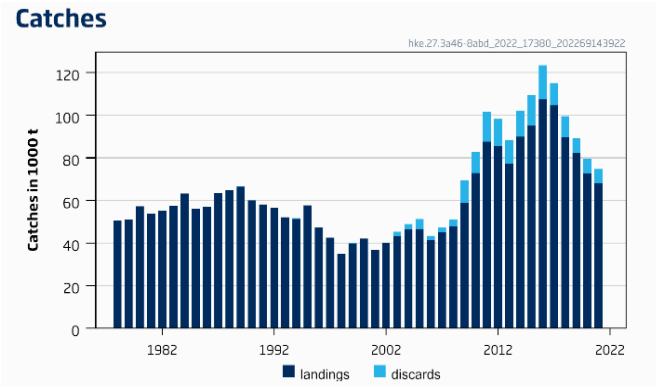
$SSB(2023) = 494\,778\text{ t} > MSY_{Btrigger} (189\,734\text{ t}) \quad F_{MSY} = 0.24$

Basis	Total catch (2023)	Projected landings (2023)	Projected discards and IBC* (2023)	F _{total} (ages 2–4) (2023)	F _{projected} landings (ages 2–4) (2023)	F _{projected} discards and IBC (ages 2–4) (2023)	SSB (2024)	% SSB change ^	% TAC change ^^	% advice change ^^^
ICES advice basis										
MSY approach: F _{MSY}	137 058	118 373	18 685	0.24	0.19	0.05	438 042	-11.50	160	6.50
Other scenarios										
F = F _{MSY} lower	109 157	94 391	14 766	0.19	0.15	0.04	461 609	-6.70	107	-15.20
F = F _{MSY} upper [#]	137 058	118 373	18 685	0.24	0.19	0.05	438 042	-11.50	160	6.50
F = 0	0	0	0	0	0	0	556 373	12.40	-100	-100
F _{pa}	137 058	118 373	18 685	0.24	0.19	0.05	438 042	-11.50	160	6.50
F _{lim}	223 464	192 501	30 963	0.43	0.35	0.09	363 491	-27	324	74
SSB (2024) = B _{lim}	496 564	419 677	76 887	1.54	1.24	0.31	136 540	-72	842	286
SSB (2024) = B _{pa} = MSY B _{trigger}	429 169	363 631	65 538	1.13	0.91	0.22	189 733	-62	715	233
F = F ₂₀₂₂	67 653	58 557	9096	0.11	0.09	0.02	498 369	0.73	28	-47
Rollover TAC	52 690	45 652	7038	0.09	0.07	0.02	511 261	3.30	0	-59

- ICES can not provide advice because of impact of suspension of Russian Federation from participation in ICES activities

Hake – Northern stock (3.a, 4, 6, 7, 8.abd)

Advice for 2023: MSY: Catch = 83 130 t advice +10.8%



- Benchmark 2022
- SSB now females only – total stock size on average 71% higher
- Fishing pressure below F_{MSY}
- Spawning stock above MSY $B_{trigger}$

Hake – Northern stock (3.a, 4, 6, 7, 8.abd)

Catch (2021) : 74 799t (9 % discards)

F(2022) = 0.198 Average F₂₀₁₉₋₂₀₂₁

SSB (2023)= 168 765t > MSY_{Btrigger} (78 405t)

F_{MSY} = 0.24

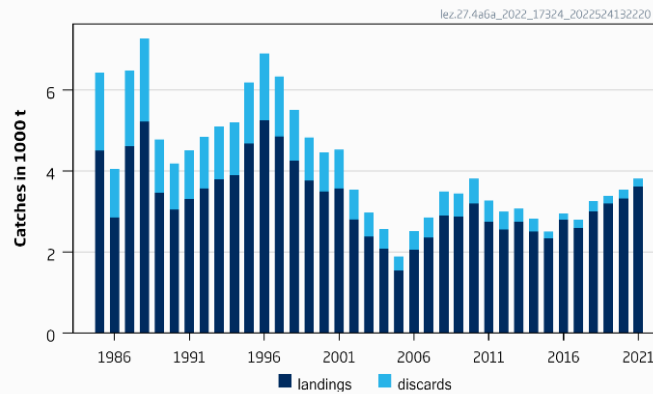
Length based
and sex
disaggregated
stock synthesis

Basis	Total catch (2023)	Projecte d landings (2023)	Projecte d discards (2023)	Fages 1-7 total (2023)	Fages 1-7 projecte d landings (2023)	Fages 1-7 projecte d discards (2023)	SSB (2024)	% SSB change*	% advice change**
ICES advice basis									
MSY approach = F _{MSY}	83130	76360	6770	0.24	0.223	0.020	148841	-11.8	10.8
Other scenarios									
EU MAP***: F _{MSY}	83130	76360	6770	0.24	0.22	0	148841	-11.8	10.8
F = MAP*** F _{MSY lower}	53284	49067	4218	0.147	0.135	0.0120	168127	-0.38	-29
F = MAP*** F _{MSY upper}	117526	107599	9927	0.37	0.34	0.031	126984	-25	57
F = 0	0	0	0	0	0	0	203180	20	-100
F = F _{pa}	155336	141603	13733	0.54	0.49	0.047	103497	-39	107
SSB (2024) = B _{lim}	226111	203813	22298	0.98	0.89	0.097	61563	-64	201
SSB (2024) = B _{pa}	197045	178555	18491	0.77	0.70	0.072	78405	-54	163
SSB (2024) = MSY B _{trigger}	197045	178555	18491	0.71	0.70	0.072	78405	-54	163
SSB (2024) = SSB(2023)	52303	48167	4136	0.14	0.133	0.0110	168765	0.0	-30
F = F ₂₀₂₂	69596	64003	5593	0.198	0.182	0.0160	157552	-6.6	-7.3

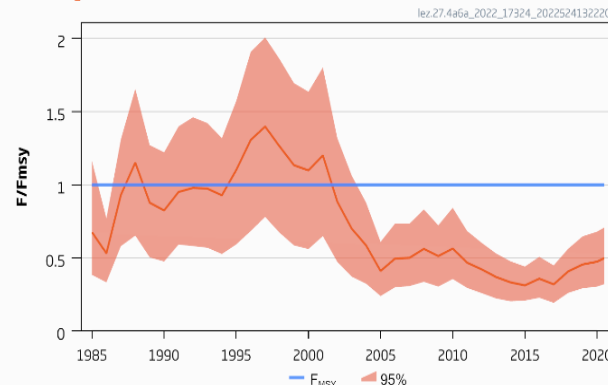
Megrim in the northern North Sea and West of Scotland (4.a and 6.a)

Advice for 2023: MSY: Catch \leq 7 200 t advice -2%

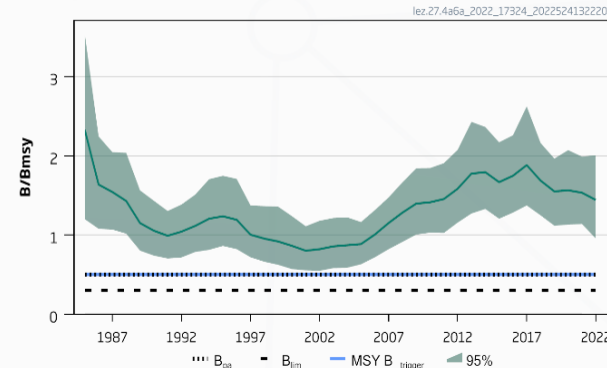
Catches



F/F_{msy}



B/B_{msy}



- Fishing pressure below F_{MSY}
- Stock size above MSY Btrigger
- Bycatch in the mixed demersal trawl in 6a and 4a.
- Advice is for 2 species: *L. whiffiagonis* and *L. boscii* combined.
- *L. boscii* negligible in catches.
- Separate advice for Division 6b in autumn.

Megrim in the northern North Sea and West of Scotland (4.a and 6.a)

Catch (2021) : 3 803 t (5% discards)

$F(2022) = 0.52$ ($F_{sq} = F_{2021}$)

$B_{2023}/B_{MSY} = 1.53$

Note: TAC includes area 6b for which separate advice given

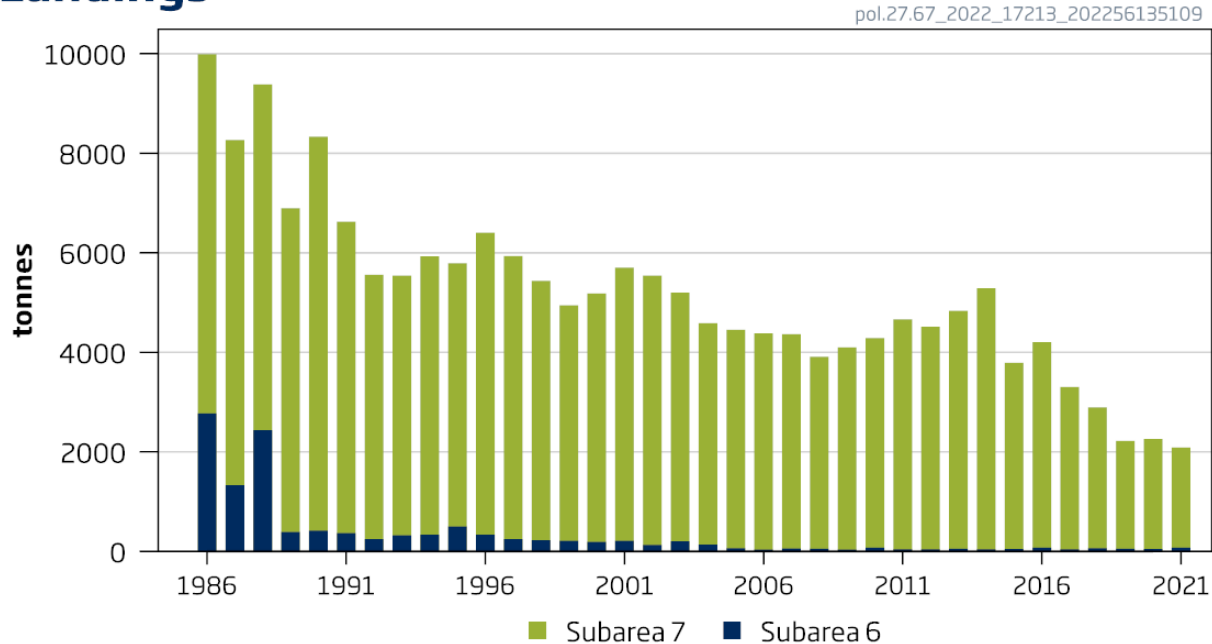


Basis	Total catch (2023)	Projected landings (2023)	Projected discards (2023)	Fishing mortality F_{2023}/F_{MSY}	Stock size B_{2024}/B_{MSY}	% B change*	% advice change^
ICES advice basis							
MSY approach: $F = F_{MSY}$	7200	6798	402	1	1.32	-13.6	-2.0
Other scenarios							
EU MAP^^: F_{MSY}	7200	6798	402	1	1.32	-13.6	-2.0
EU MAP^^ F_{MSY} lower	5550	5240	310	0.76	1.41	-7.6	-24
EU MAP^^ F_{MSY} upper	7200	6798	402	1	1.32	-13.6	-2.0
$F = 0$	0	0	0	0	1.71	11.7	-100
$B_{2024} = B_{lim}$	26800	25302	1498	3.70	0.33	-79	264
$B_{2024} = B_{pa} = MSY B_{trigger}$	13000	12273	727	1.80	1.01	-34	77
$B_{2024} = B_{2023}$	3500	3304	196	0.48	1.52	0	-52
$F = F_{2022}$	3400	3210	190	0.52	1.52	0	-54

Pollack in the Celtic Seas and the English Channel (6 and 7)

Advice for 2023 : PA: Commercial catch \leq 3 360 t

Landings



- Limited information available on pollack in this area.
- Catches have declined since the late 1980's, lowest in 2019-2021
- Fishing pressure considered to be below reference points.
- Stock size unknown

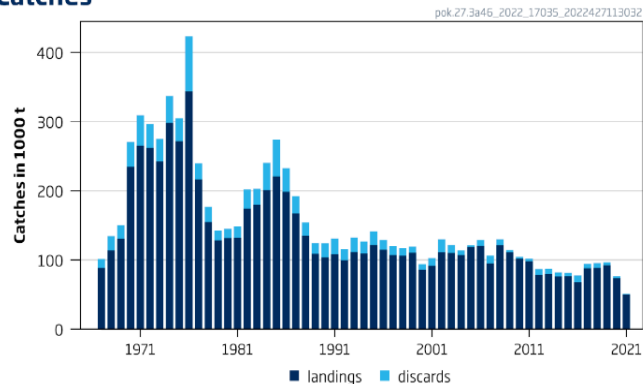
Catch (2021) = 2 087 t (comercial only – recreational unknown but substantial)

Advised commercial catches for 2022	3360 tonnes
Discard rate	< 1%
Uncertainty cap	Not applied -
Commercial catches advice for 2023	3360 tonnes
% advice change*	0

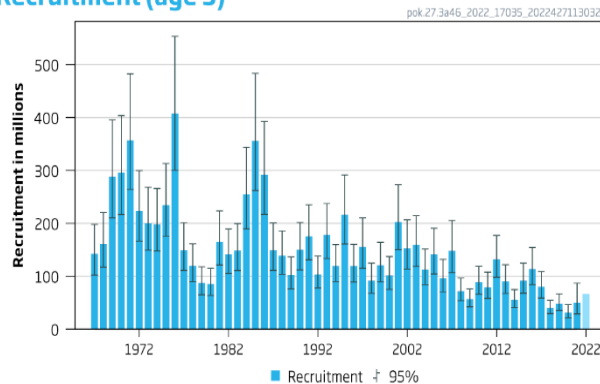
Saithe in the North Sea, Rockall and West of Scotland, Skagerrak and Kattegat (4,6,3.a)

Advice for 2023: MSY: Catch \leq 58 912 t advice +18.7%

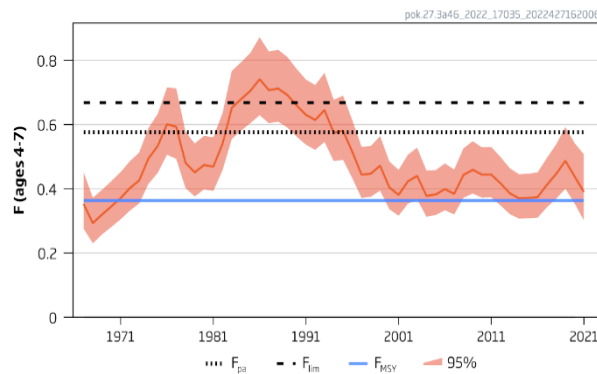
Catches



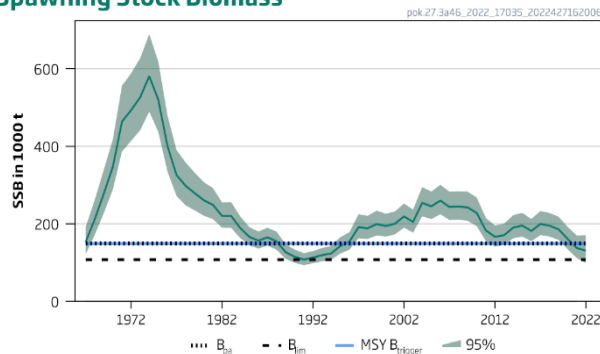
Recruitment (age 3)



F



Spawning Stock Biomass



- Fishing pressure above F_{MSY}
- Spawning stock below MSY $B_{trigger}$ between B_{pa} and B_{lim}
- In 2022, quota in 6 is 9.4% (4644 t) of TAC for the stock
- Sampling lower in 2021 –Covid – but considered reasonable

Saithe in the North Sea, Rockall and West of Scotland, Skagerrak and Kattegat (4,6,3.a)

Catch (2021) : 50 951t (2 % discards); **3 598 t from West of Scotland**

F(2022) = 0.34 (Catch 2022 = 49 614);

SSB (2023)= 141 805 t < MSY_{Btrigger} (149 098 t) $F_{MSY} = 0.363$

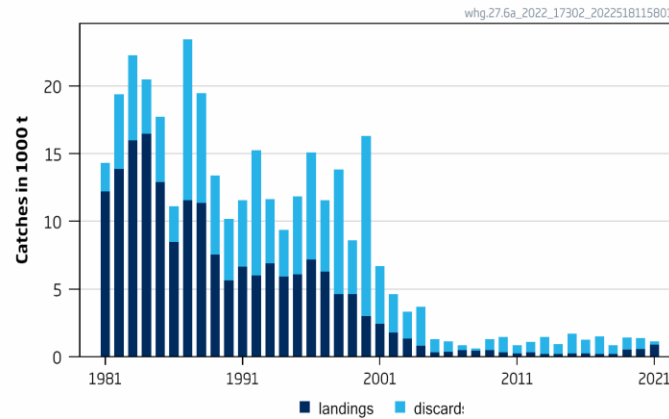
Basis	Total catch (2023)	Projected landings (2023)	Projected discards* (2023)	Projected landings ##		Ftotal (ages 4–7) (2023)	Fprojected landings (ages 4–7) (2023)	Fprojected discards (ages 4–7) (2023)	SSB (2024)	% SSB change **	% TAC change #	% advice change ^
				Div. 3.a and Subarea 4	Subarea 6							
ICES advice basis												
MSY approach: $F_{MSY} \times SSB(2023) / MSY_{Btrigger}$	58 912	56 645	2 267	51 320	5 325	0.35	0.33	0.01	159 133	12.20	18.70	18.70
Other scenarios												
F = $F_{MSY lower} \times SSB(2023) / MSY_{Btrigger}$	36 076	34 673	1 403	31 414	3 259	0.20	0.19	0.01	179 382	26	-27	-27
F _{MSY}	61 507	59 152	2 355	53 592	5 560	0.36	0.35	0.01	156 893	10.60	24	24
F = $F_{MSY lower}$	37 777	36 309	1 468	32 896	3 413	0.21	0.20	0.01	177 899	25	-24	-24
F = 0	0	0	0	0	0	0	0	0	211 886	49	-100	-100
F _{pa}	90 144	86 596	3 548	78 456	8 140	0.58	0.56	0.02	132 129	-6.80	82	82
F _{lim}	101 104	97 133	3 971	88 002	9 131	0.67	0.64	0.02	122 762	-13.40	104	104
SSB ₂₀₂₄ = B _{lim}	121 742	116 900	4 842	105 911	10 989	0.85	0.82	0.03	107 297	-24	145	145
SSB ₂₀₂₄ = B _{pa}	72 399	69 563	2 836	63 024	6 539	0.44	0.42	0.01	149 098	5.10	46	46
SSB ₂₀₂₄ = MSY _{Btrigger}	72 399	69 563	2 836	63 024	6 539	0.44	0.42	0.01	149 098	5.10	46	46
F = F ₂₀₂₂	57 384	55 183	2 201	49 996	5 187	0.34	0.32	0.01	160 486	13.20	15.70	15.70
TAC ₂₀₂₂	49 614	47 713	1 901	43 228	4 485	0.28	0.27	0.01	167 290	18.00	0.00	0.00

Note have excluded a few catch options

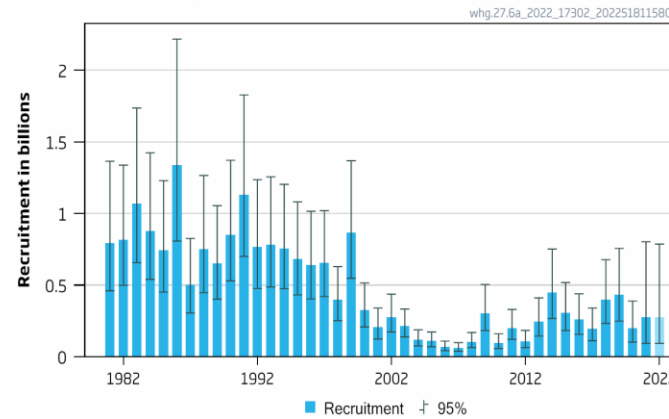
Whiting in division 6.a

Advice for 2023: MSY: Catch $\leq 4\,155$ t advice +1%

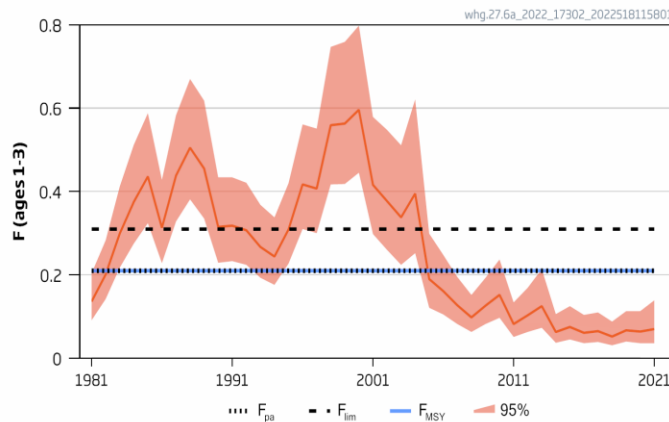
Catches



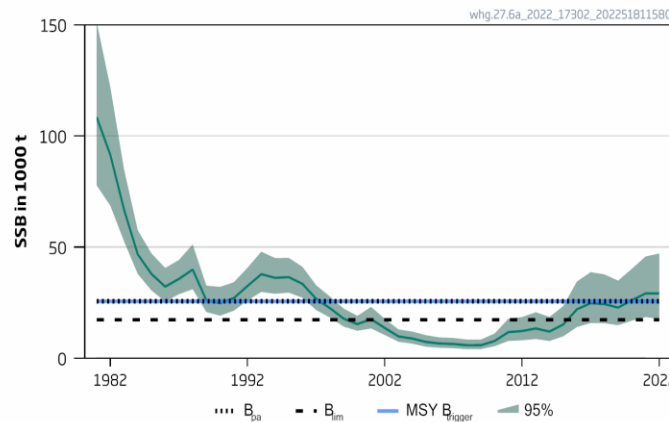
Recruitment (age 0)



F



SSB



- Fishing pressure below F_{MSY}
- Spawning stock above MSY $B_{trigger}$
- Lack of discard sampling from Nephrops fleet – covid – catch numbers for ages 1 and 2 estimated by model – minimal impact

Whiting in division 6.a

Catch (2021) : 1 113 t (23 % discards - under estimated)

F(2021) = 0.07 (Average F (2017-2021), scaled to 2021);

SSB (2023)= 28 727 > MSY_{Btrigger} (25 597 t) $F_{MSY} = 0.21$

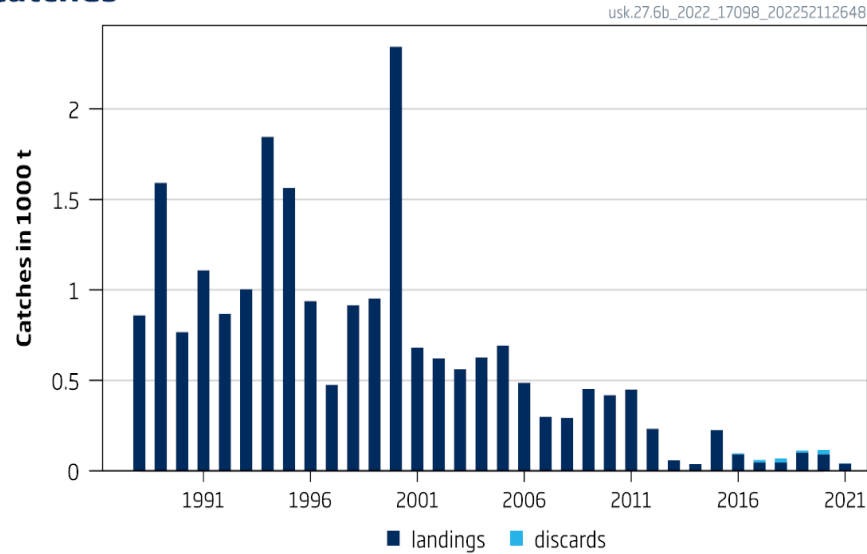
Basis	Total catch (2023)	Projected landings* (2023)	Projected discards** (2023)	F _{total} (2023)	F _{projected} landings (2023)	F _{projected} discards (2023)	SSB (2024)	% SSB change ***	% advice change^
ICES advice basis									
MSY approach: F _{MSY}	4155	2081	2074	0.21	0.043	0.167	25 692	-10.6	1
Other scenarios									
F = 0	0	0	0	0	0	0	30 665	6.7	-100
F= F _{MSY} lower	3472	1735	1737	0.173	0.036	0.137	26 463	-7.9	-15.6
F= F _{MSY} upper	4155	2081	2074	0.21	0.043	0.167	25 692	-10.6	1
F= F _{pa}	4155	2081	2074	0.21	0.043	0.167	25 692	-10.6	1
F= F _{lim}	5907	2978	2929	0.31	0.064	0.25	23 765	-17.3	44
SSB (2024) = B _{lim}	12 447	6432	6015	0.77	0.158	0.61	17 286	-40	200
SSB (2024) = B _{pa} = MSY B _{trigger}	4241	2124	2117	0.22	0.044	0.171	25 597	-10.9	3.1
SSB (2024) = SSB (2023)	1547	766	781	0.074	0.0153	0.059	28 727	0	-62
F = F ₂₀₂₂	1468	728	740	0.070	0.0145	0.055	28 825	0.34	-64

Tusk Division 6b Rockall

Advice for 2023 and 2024, PA: Catch \leq 224 t landings \leq 197 -20%



Catches



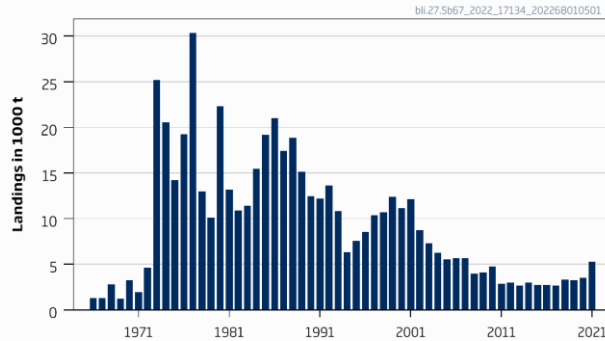
- Landings (2021) =41 t
- Cannot assess status
- PA buffer applied
- There is no directed fishery

Advised catch for 2021–2022		280 tonnes
Discard rate, average 2019–2021		0.12
Precautionary buffer	Applied	0.80
Catch advice**		224 tonnes
Landings corresponding to catch advice***		197 tonnes
% advice change^		-20 %

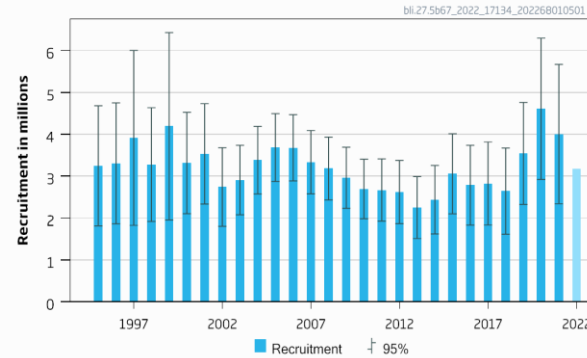
Blue ling in 6–7 and 5.b (Celtic Seas, English Channel, and Faroes grounds)

Advice for 2023 and 2024, MSY: Catch $\leq 10\,859$ t and $\leq 10\,972$ t

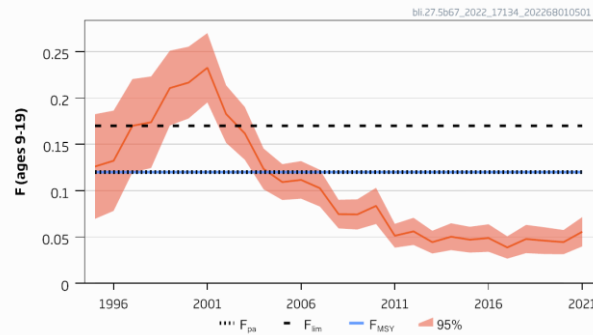
Catches



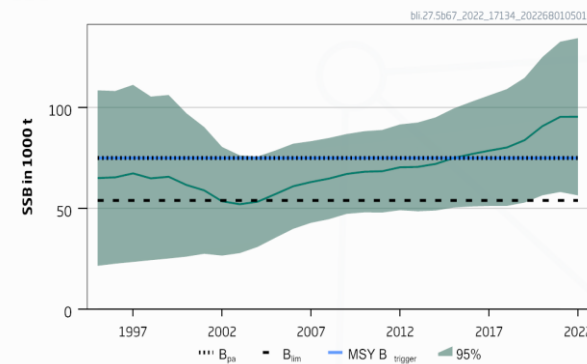
Recruitment (age 9)



F



SSB



- Fishing pressure below F_{MSY}
- Spawning stock above MSY Btrigger

Blue ling in 6–7 and 5.b (Celtic Seas, English Channel, and Faroes grounds)

Catch (2021) : 5 285 t

F(2022) = 0.056 Fsq=2021

SSB (2023)= 95 770 > MSY_{Btrigger} (75 037) F_{MSY}= 0.12



Rationale	Catch (2023)	F (2023)	SSB (2024)	% SSB change*	% advice change^
ICES advice basis					
MSY approach (F = F _{MSY})	10 952	0.12	90 298	-5.7	1
Other scenarios					
F _{pa}	10 952	0.12	90 298	-5.7	1
F ₂₀₂₁ = 0	0	0	106 655	5.6	-100
F ₂₀₂₁ = F _{lim}	15 161	0.17	86 136	-10.1	40
SSB (2024) = B _{pa} = MSY B _{trigger}	26 411	0.32	75 037	-21.6	144
SSB (2024) = B _{lim}	48 895	0.67	54 000	-43.6	351
F ₂₀₂₃ = F _{sq} = F ₂₀₂₁	5 237	0.056	95 958	0.2	-52

Catch scenario table for 2023



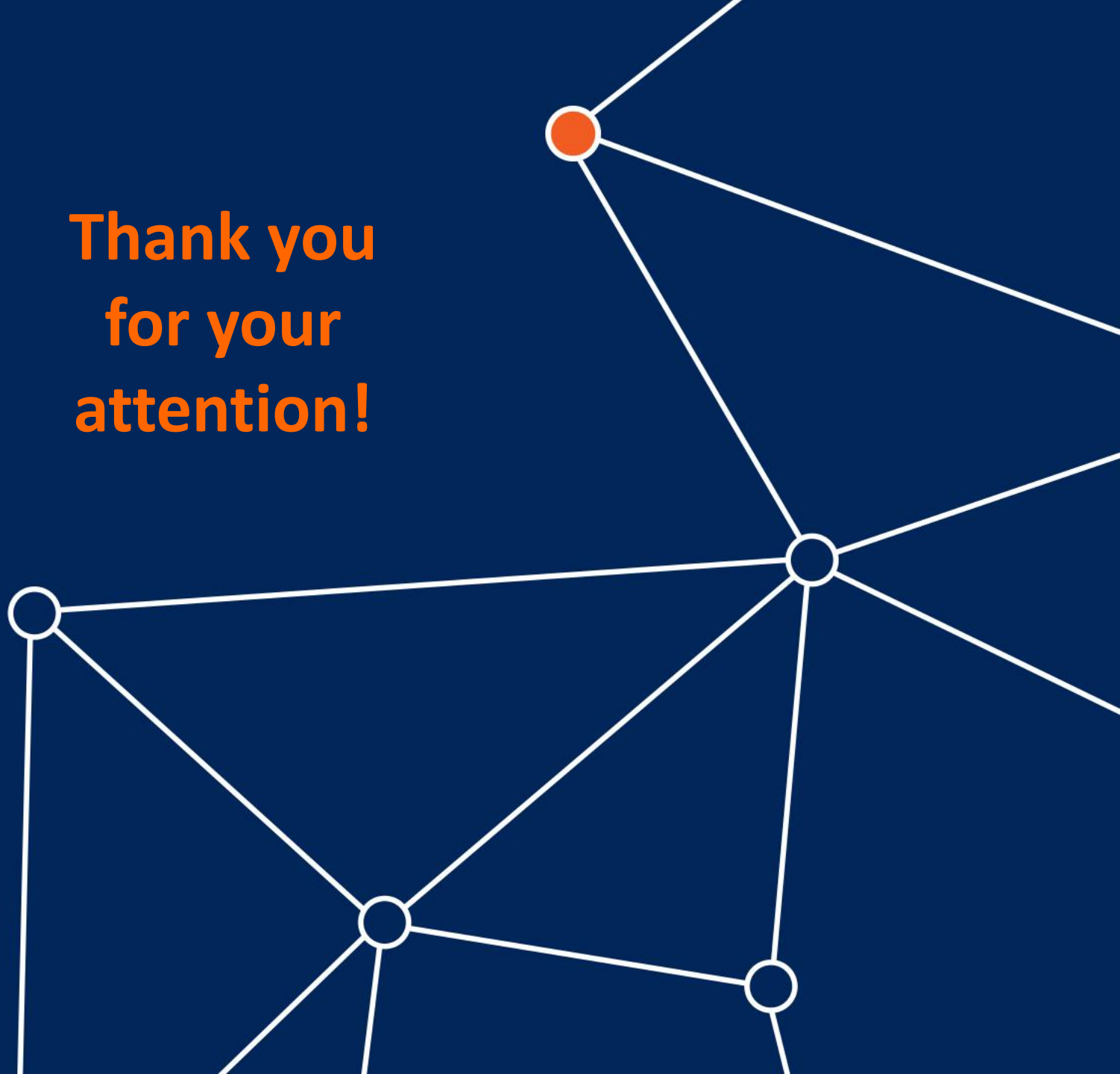
**Thank you
for your
attention!**

Joanne.morgan@ices.dk



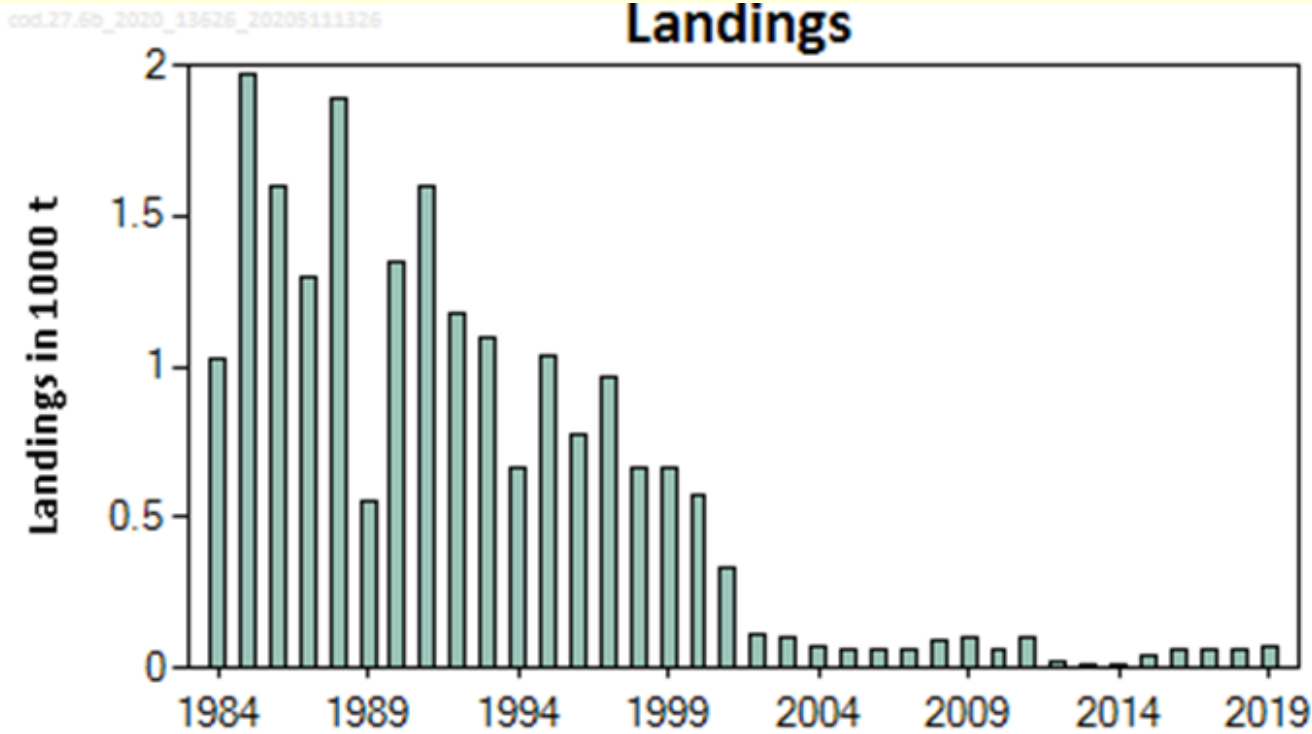
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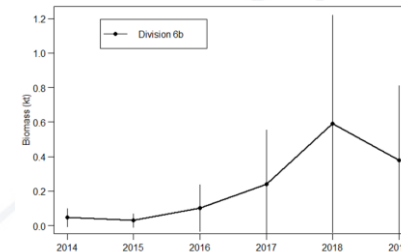


Cod at Rockall (6.b)

Advice for 2021, 2022 and 2023: PA: Catch \leq 14 t



- Landings in 2020 = 39 t.
- Limited information available on cod at Rockall.
- New survey (SIAMISS) suggest some increase but abundance considered low.



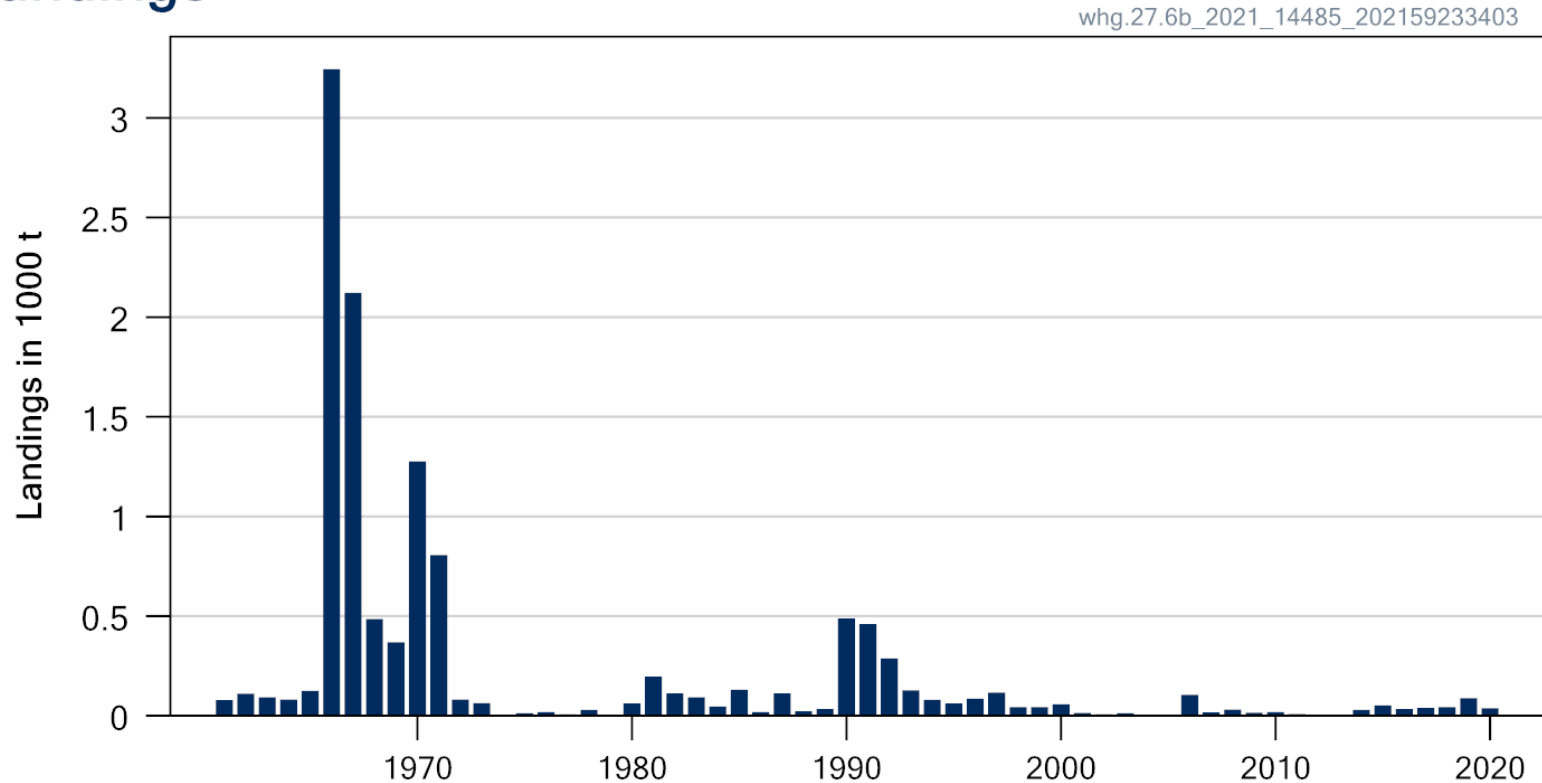
		Fishing pressure			Stock size					
		2017	2018	2019	2017	2018	2019			
Maximum sustainable yield	F_{MSY}	?	?	?	Unknown	$MSY B_{trigger}$?	?	?	Unknown
Precautionary approach	F_{pa}, F_{lim}	?	?	?	Unknown	B_{pa}, B_{lim}	?	?	?	Unknown
Management plan	F_{MGT}	—	—	—	Not applicable	B_{MGT}	—	—	—	Not applicable

- Stock identity is unknown.
- Advice based on recent advised catch.

Whiting in division 6.b

Advice for 2022, 2023, 2024: PA: Catch ≤ 7 t

Landings

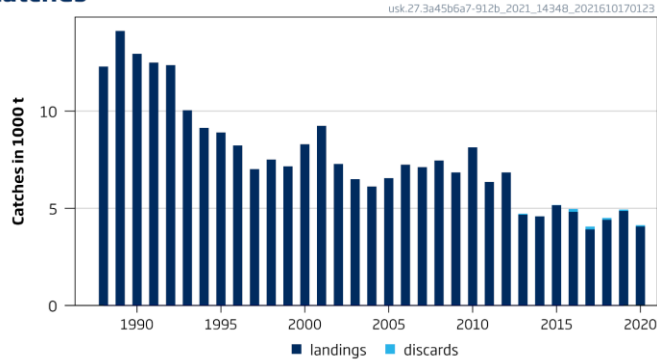


- Only landings data are available.
- Catch of 38 t in 2020.
- There is uncertainty on the accuracy of historical landings.
- Discards uncertain.

Tusk in the Northeast Atlantic (4, 7–9, 3.a, 5.b, 6.a, and 12.b)

Advice for 2022 and 2023, PA: Catch \leq 7 821 t)

Catches



Biomass index



Catch (2020) = 4 134 t (2% discards)

Index A (2019–2020)	144	
Index B (2016–2018)	127	
Index ratio (A/B)	1.13	
Uncertainty cap	Not applied	
Advised catch for 2020–2021 (issued in 2019)	8 627 tonnes	
Discard rate	1.80%	
Precautionary buffer	Applied	0.8
Catch advice *	7 821 tonnes	
Projected landings corresponding to advice**	7 684 tonnes	
% Advice change ***	-9.30%	

- Lower catches since 2013
- Catch per unit effort based on the Norwegian longline fleet remains high.