

ICES advice for North Western Waters stocks for 2021

NWWAC meeting, July 7-8 2020

WORKING GROUP 1 – WEST OF SCOTLAND

Ghislain Chouinard
ICES ACOM vice-chair



Science for sustainable seas

Image Dirk Vonten, Fotolia

Introduction – West of Scotland

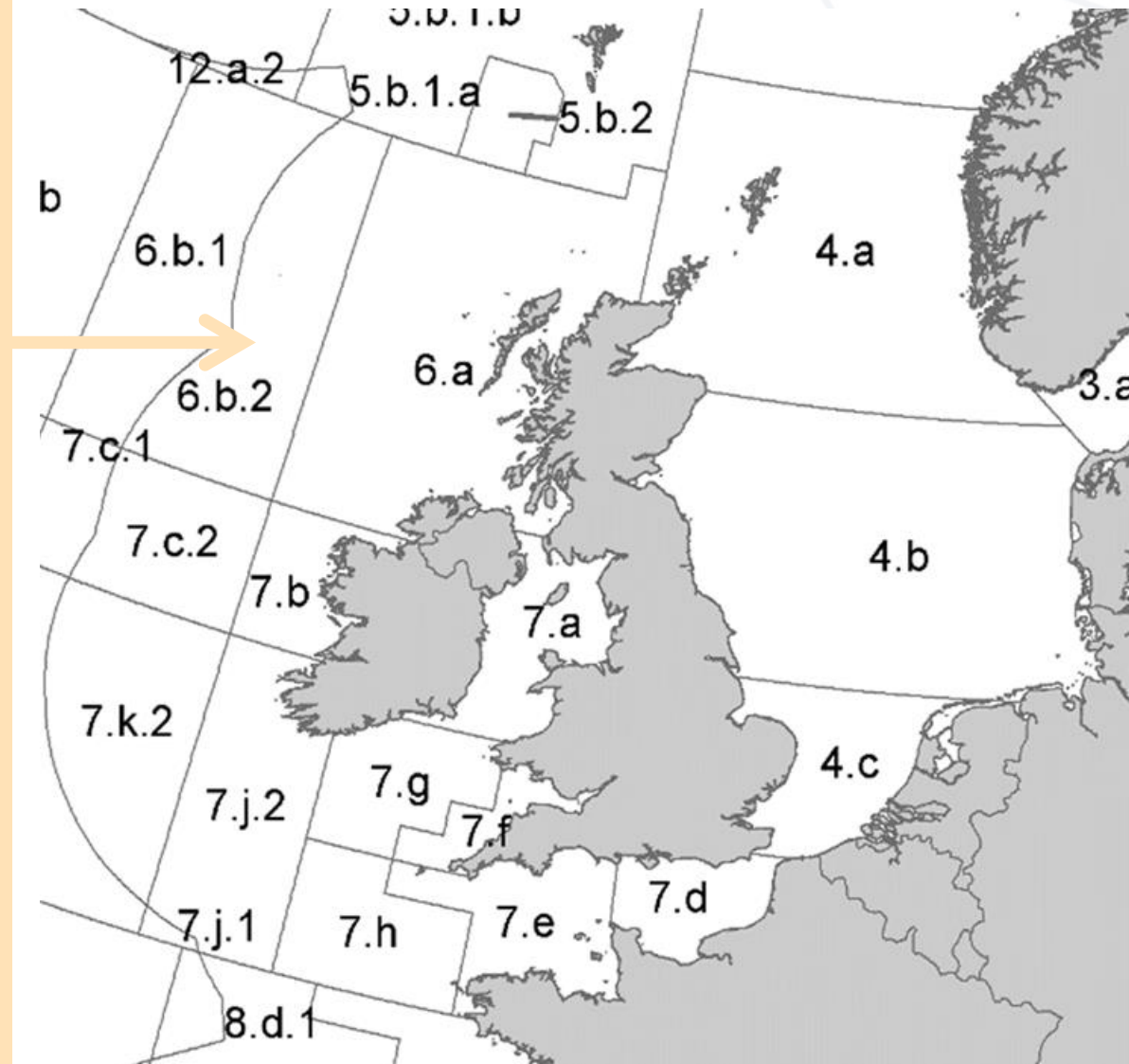
- Advice released on 30 June 2020.
- Advice rules applied by ICES in developing advice on fishing opportunities similar to previous years.
- Abbreviated advice for most stocks due to COVID-19.
- Full advice sheets for benchmarked stocks in early 2020 (cod in 6.a and whiting in 6.a).
- Advice to be released in the autumn for the following stocks:
 - Anglerfish (3.a,4,6)
 - Megrin (6.b)
 - Nephrops (Fu 11-13), skates and rays

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
- Saithe 3.a, 4, 6
- Whiting 6.a
- Deep stocks

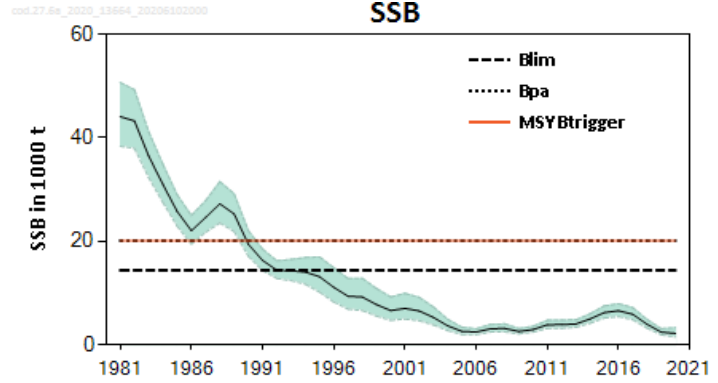
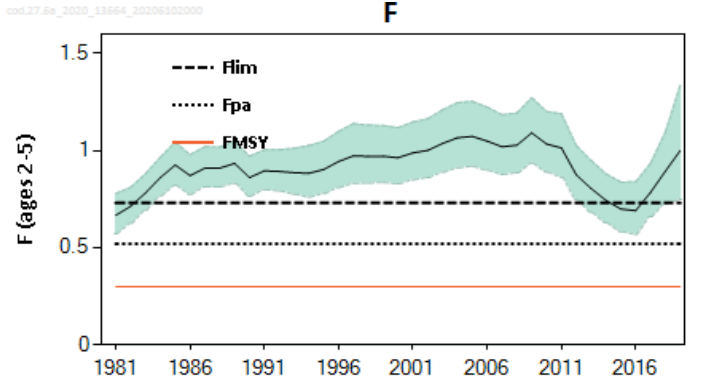
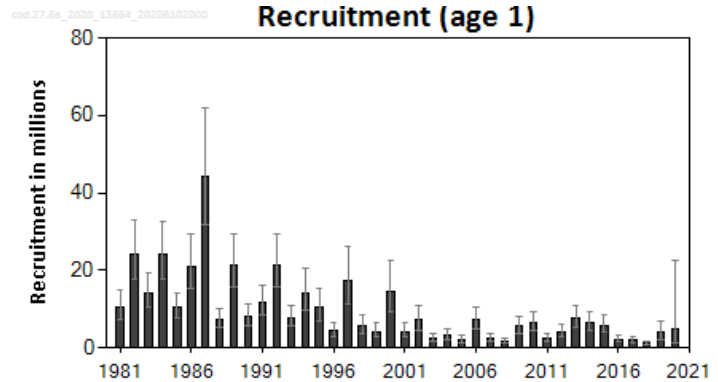
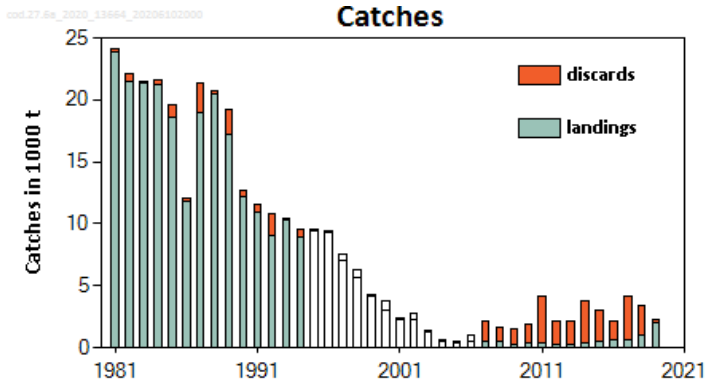
Advice for 2021 provided in previous year

- Whiting 6.b



Cod in the West of Scotland (6.a)

Advice for 2021 and 2022, MSY: Catch = 0 t



- Benchmarked in 2020
- Stock structure issues remain.
- Spawning-stock biomass (SSB) extremely low, has been below B_{lim} since 1997.
- Fishing mortality above F_{pa} .
- Recruitment has been low since early 2000s and impaired.

	Fishing pressure			Stock size			
		2017	2018	2019	2018	2019	2020
Maximum sustainable yield	F_{MSY}	✘	✘	✘ Above	MSY $B_{trigger}$	✘	✘ Below trigger
Precautionary approach	F_{pa}, F_{lim}	✘	✘	✘ Harvested unsustainably	B_{pa}, B_{lim}	✘	✘ Reduced reproductive capacity
Management plan	F_{MGT}	—	—	— Not applicable	B_{MGT}	—	— Not applicable

Cod in the West of Scotland (6.a)

Catch (2019) : 2 264 t (9 % discards);

F(2020) = 1.00 (Recent average fishing pressure (2017-2019); 1395 t.)

SSB (2021) = 3 025 t < B_{lim} = 14 376 t → Zero catch advice

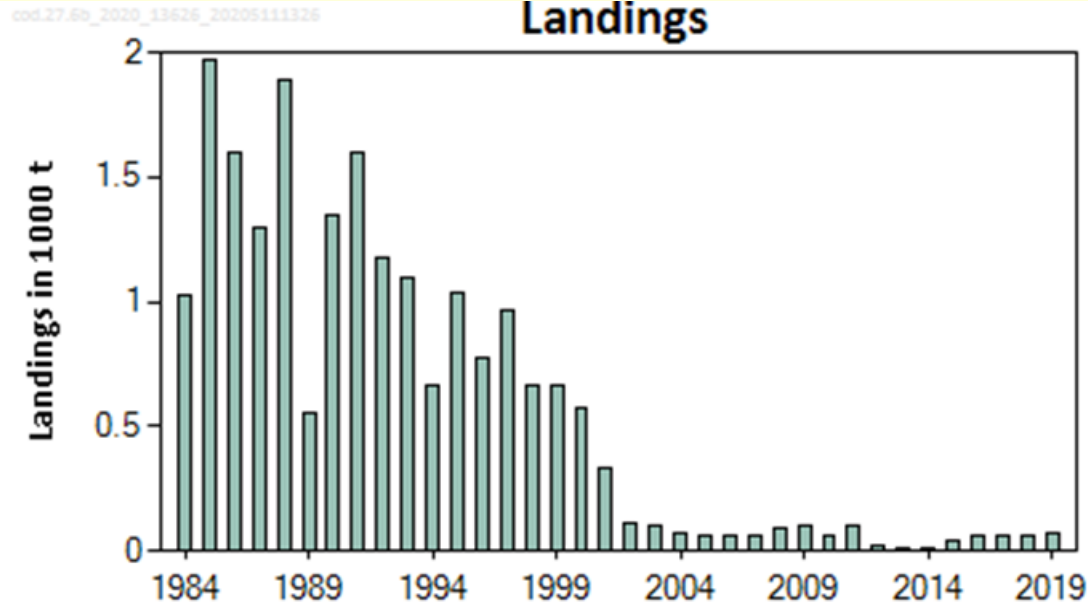


Basis	Total catch (2021)	Projected landings (2021)	Projected discards (2021)	F _{total} (2021)	F _{projected} landings (2021)	F _{projected} discards (2021)	SSB (2022)	% SSB change *	% TAC change ^
ICES advice basis									
MSY approach: F = 0	0	0	0	0	0	0	6070	101	-100
Other scenarios									
F _{MSY} × SSB (2021)/MSY B _{trigger}	123	85	37	0.045	0.036	0.0089	5896	95	-90
F _{MSY lower} : F _{MSY lower} × SSB (2021) / MSY B _{trigger}	74	52	23	0.027	0.022	0.0054	5963	97	-94
F _{MSY upper} : F _{MSY upper} × SSB (2021) / MSY B _{trigger}	198	137	61	0.074	0.059	0.0146	5801	92	-85
F = F _{MSY lower}	465	320	146	0.18	0.144	0.036	5461	81	-64
F = F _{MSY}	738	504	234	0.3	0.24	0.06	5098	69	-42
F = F _{pa}	1182	793	389	0.52	0.42	0.103	4517	49	-7.6
F = F _{MSY upper}	1124	757	367	0.49	0.39	0.097	4591	52	-12.1
F = F ₂₀₁₉	1914	1258	657	1	0.8	0.198	3538	17	50
F = F _{lim}	1532	1020	512	0.73	0.59	0.145	4064	34	19.8
Rollover TAC	1279	857	422	0.58	0.46	0.114	4389	45	0

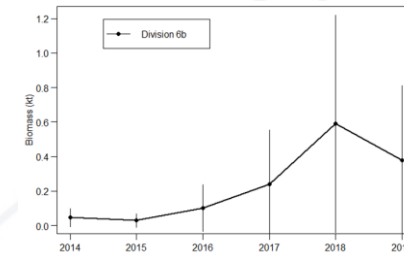
Technical service
on likely catches
in 2021 based on
fishing effort
reduction for
saithe:
1625 to 1914 t

Cod at Rockall (6.b)

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



- Landings in 2019 =66 t.
- Limited information available on cod at Rockall.
- New survey (SIAMISS) suggest some increase but abundance considered low.

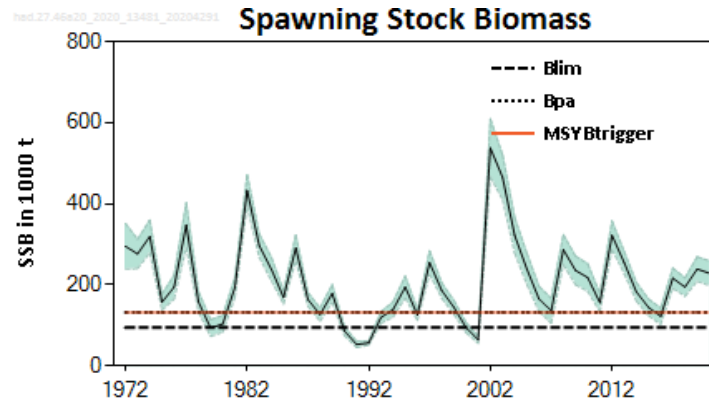
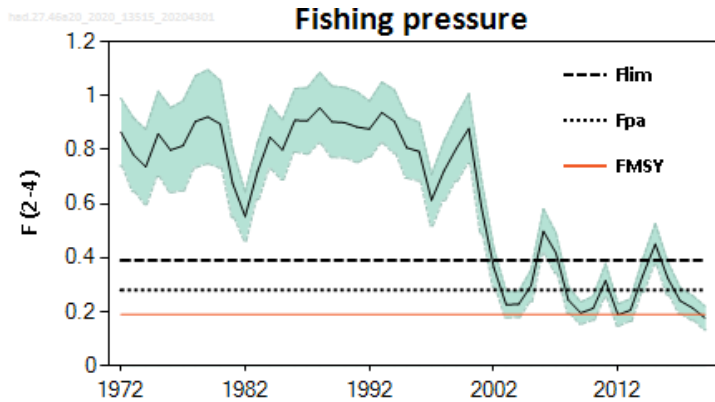
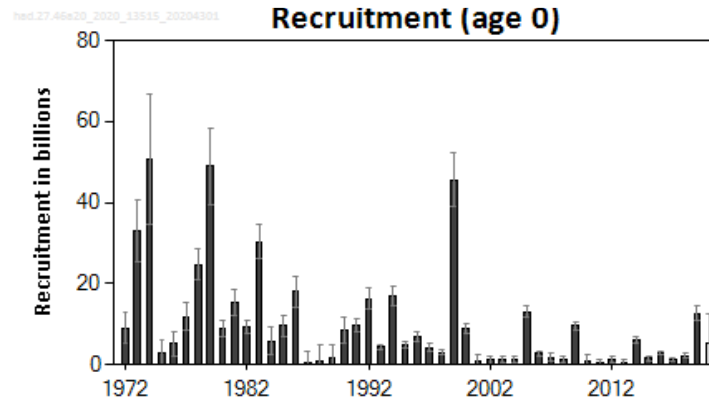
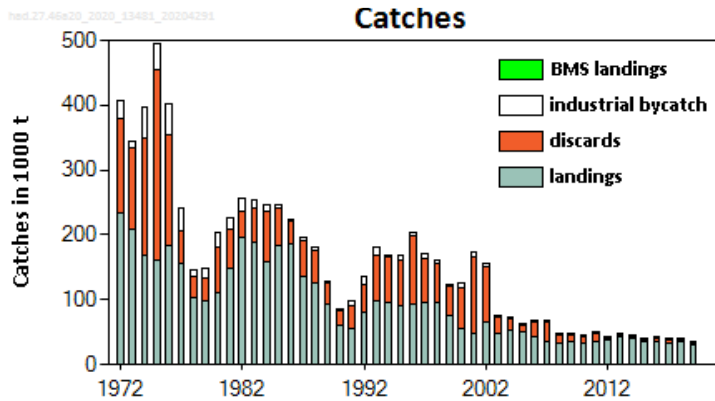


		Fishing pressure			Stock size					
		2017	2018	2019	2017	2018	2019			
Maximum sustainable yield	F_{MSY}	?	?	?	Unknown	$MSY B_{trigger}$?	?	?	Unknown
Precautionary approach	F_{pa}, F_{lim}	?	?	?	Unknown	B_{pa}, B_{lim}	?	?	?	Unknown
Management plan	F_{MGT}	—	—	—	Not applicable	B_{MGT}	—	—	—	Not applicable

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

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

Advice for 2021: MSY: Catch \leq 69 280 t



- Spawning stock mostly above MSY $B_{trigger}$ since 2002.
- Fishing pressure slightly below F_{MSY} in 2019.
- Recruitment since 2000 at low level but 2019 year-class is much larger.
- Increased in advised catch due to recruitment increase.
- In 2020, quota in 6.a is 5.2% of TAC for the stock.

	Fishing pressure			Stock size			
		2017	2018	2019	2018	2019	2020
Maximum sustainable yield	F_{MSY}	✘	✘	✔ Below	$B_{trigger}$	✔	✔ Above trigger
Precautionary approach	F_{pa}, F_{lim}	✔	✔	✔ Harvested sustainably	B_{pa}, B_{lim}	✔	✔ Full reproductive capacity
Management plan	F_{MGT}	—	—	— Not applicable	B_{MGT}	—	— Not applicable

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

Catch (2019) : 35 496 t (16 % discards); **5 023 t from West of Scotland**

F(2020) = 0.194 (TAC constraint – 41 819 t)

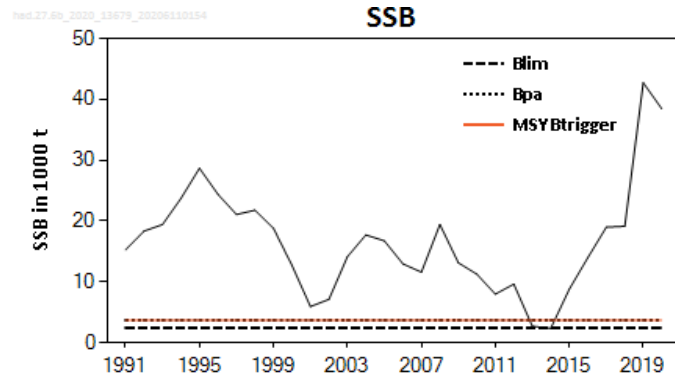
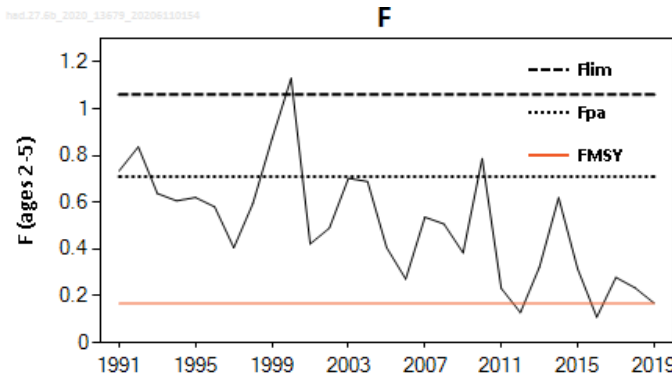
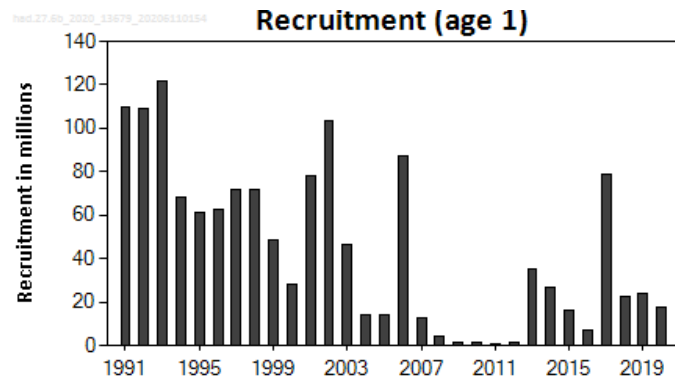
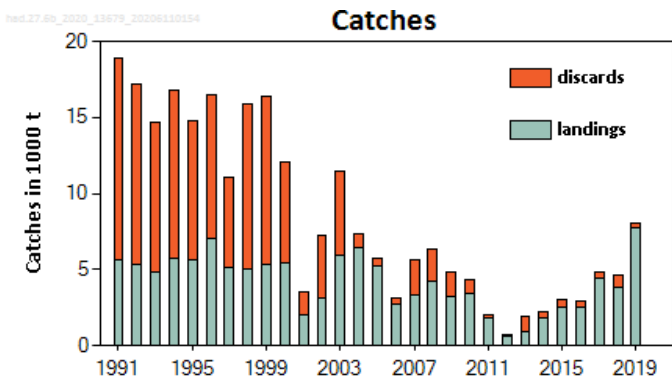
SSB(2021) = 206 064 > MSY_{Btrigger} (132 000t) $F_{MSY} = 0.194$



Basis	Total catch (2021)	Projected landings* (2021)	Projected discards** (2021)	IBC *** (2021)	HCF *** catch (2021)	F _{total} (ages 2–4) (2021)	F _{projected} landings (ages 2–4) -2021	F _{projected} discards (ages 2–4) -2021	F _{IBC} (ages 2–4) (2021) **	SSB (2022)	% SSB change ^	% TAC change ^^	% advice change ^^
ICES advice basis													
MSY approach: F_{MSY}	69280	49061	20110	110	69170	0.194	0.158	0.035	0.0004	471256	129	66	66
Other scenarios													
F = MAP [#] F _{MSY lower}	60139	42609	17419	111	60028	0.167	0.136	0.03	0.0004	480443	133	44	44
F = MAP F _{MSY upper} ^{##}	69280	49061	20110	110	69170	0.194	0.158	0.035	0.0004	471256	129	66	66
F = 0 (IBC only)	119	0	0	119	0	0	0	0	0.0004	542133	163	-100	-100
F _{pa}	95457	67474	27876	107	95350	0.274	0.224	0.05	0.0004	445065	116	128	128
F _{lim}	129323	91152	38069	102	129220	0.384	0.314	0.07	0.0004	411465	100	209	209
SSB (2022) = B _{lim}	493824	327191	166580	52	493771	2.66	2.17	0.49	0.0004	94000	-54	1081	1081
SSB (2022) = B _{pa} = MSY B _{trigger}	436337	293347	142930	61	436276	2.06	1.68	0.38	0.0004	132000	-36	943	943
F ₂₀₂₀	70253	49746	20397	110	70143	0.197	0.161	0.036	0.0004	470279	128	68	68
Rollover TAC	41818	29647	12057	114	41704	0.114	0.093	0.021	0.0004	498918	142	0	0

Haddock at Rockall (6.b)

Advice for 2021: MSY: Catch $\leq 6,239t$



- Spawning stock mostly above MSY $B_{trigger}$ since 2002.
- Fishing pressure slightly below F_{MSY} in 2019.
- Recruitment since 2000 at low level except for 2017 year-class; recent year-classes below average.
- Decrease in advised catch due to revised SSB estimates and change in selectivity assumptions for older ages.
- In 2020, quota in 6.a is 5.2% of TAC for the stock.

	Fishing pressure			Stock size			
		2017	2018	2019	2018	2019	2020
Maximum sustainable yield	F_{MSY}	✘	✘	✔ Below	$MSY B_{trigger}$	✔	✔ Above trigger
Precautionary approach	F_{pa}, F_{lim}	✔	✔	✔ Harvested sustainably	B_{pa}, B_{lim}	✔	✔ Full reproductive capacity
Management plan	F_{MGT}	—	—	— Not applicable	B_{MGT}	—	— Not applicable

Haddock at Rockall (6.b)

Catch (2019) : 8 081 t (4 % discards);

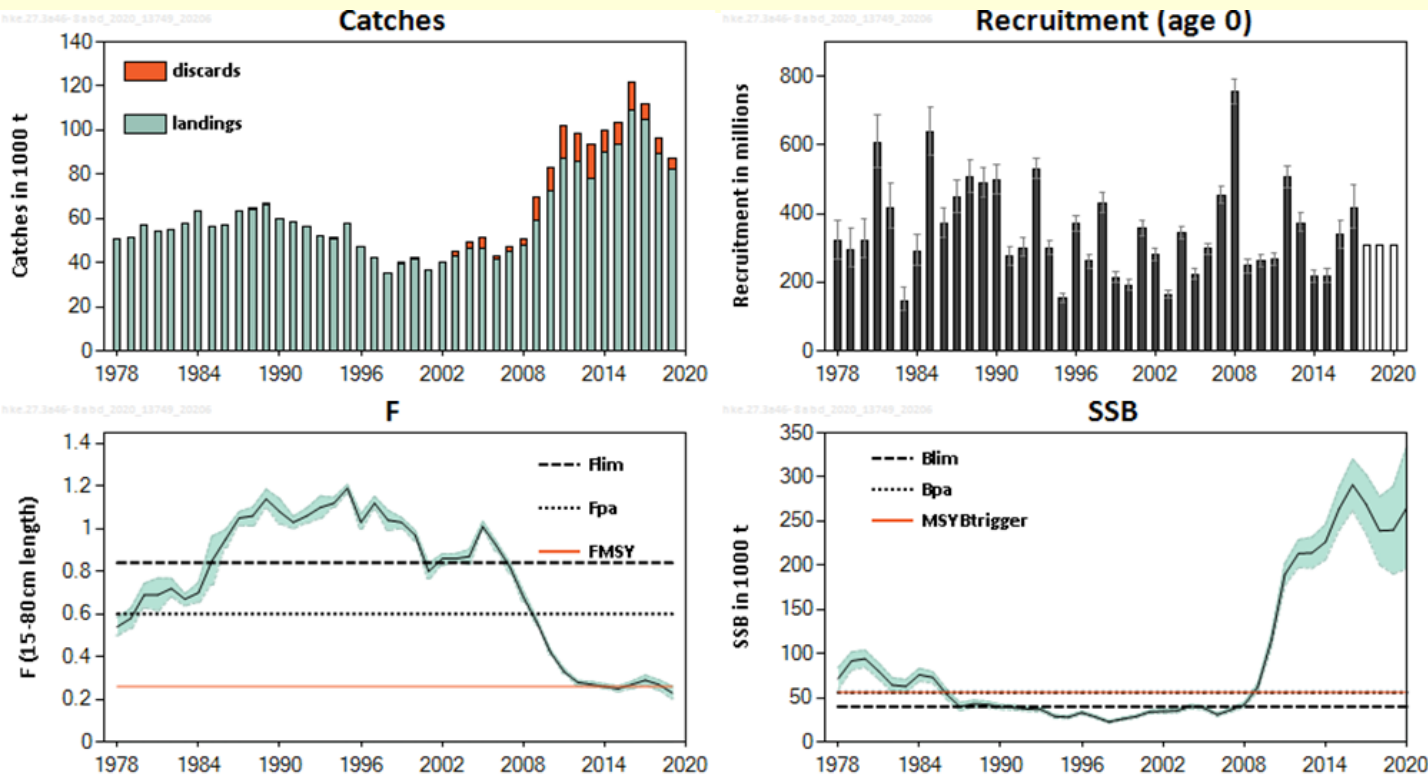
$F(2020) = 0.229$ (F corresponding to catch constraint = 9 766 t);

$SSB(2021) = 40\,609\text{ t} > MSY_{B_{trigger}} (2\,474\text{ t}) \quad F_{MSY} = 0.168$

Basis	Total catch * (2021)	Projected landings (2021)	Projected discards (2021)	F_{total} (2021)	$F_{projected}$ landings (2021)	$F_{projected}$ discards (2021)	SSB (2022)	% SSB change **	% advice change ^
ICES advice basis									
MSY approach: F_{MSY}	6239	5501	738	0.168	0.119	0.049	38128	-6.1	-40
Other scenarios									
NEAFC Proposed management strategy 1 ^^	7086	6247	839	0.193	0.137	0.057	37192	-8.4	-32
NEAFC Proposed management strategy 2 ^^^	8378	7385	993	0.233	0.165	0.068	35764	-11.9	-20
$F = 0$	0	0	0	0	0	0	44215	8.9	-100
F_{pa}	20561	18096	2465	0.71	0.5	0.21	22450	-45	96
F_{lim}	26535	23331	3204	1.06	0.75	0.31	16065	-60	153
$SSB_{2022} = B_{lim}$	40228	35235	4993	3.13	2.2	0.92	2474	-94	280
$SSB_{2022} = B_{pa} = MSY B_{trigger}$	38819	34025	4794	2.664	1.88	0.78	3712	-91	270
Rollover TAC	10472	9229	1243	0.301	0.213	0.088	33456	-17.7	0
$F = F_{2020}$	8264	7285	979	0.229	0.162	0.067	35890	-11.6	-21

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

Advice for 2021: MSY: Catch = 98 657 t



- Spawning stock above $MSY B_{trigger}$ since 2009, near highest values.
- Recruitment variable with no trend.
- Fishing pressure declined and around F_{MSY} since 2013.
- Some reduction in advice due to revised perception of the stock.
- Advice based on MSY but EU MAP option provided.

	Fishing pressure			Stock size				
	2017	2018	2019	2018	2019	2020		
Maximum sustainable yield	F_{MSY}	✗	✗	✓	Below			
Precautionary approach	F_{pa}, F_{lim}	✓	✓	✓	Harvested sustainably			
Management plan	F_{MGT}	—	—	—	Not applicable			
				$MSY B_{trigger}$	✓	✓	✓	Above trigger
				B_{pa}, B_{lim}	✓	✓	✓	Full reproductive capacity
				B_{MGT}	—	—	—	Not applicable

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

Catch (2019) : 87 238 t (5.7 % discards)

F(2020) = 0.263 Average F₂₀₁₇₋₂₀₁₉

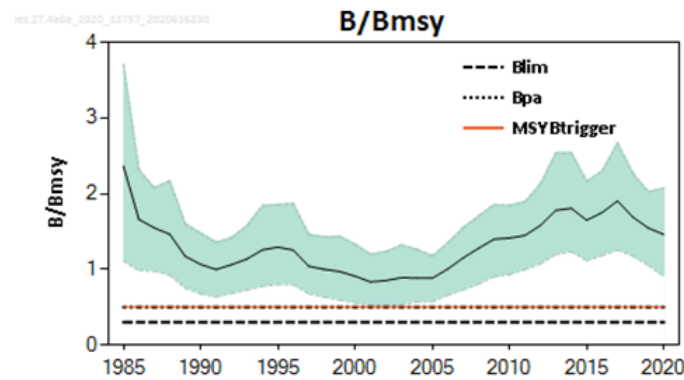
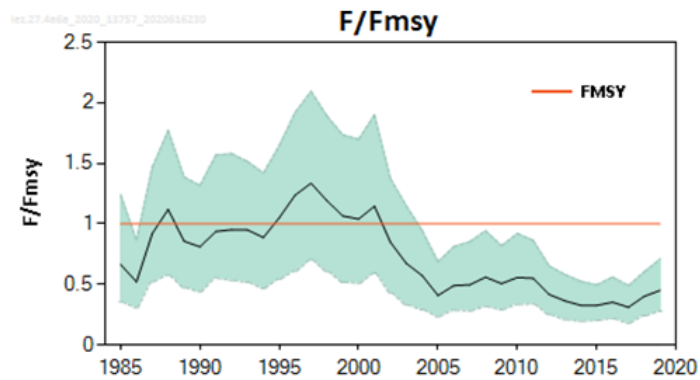
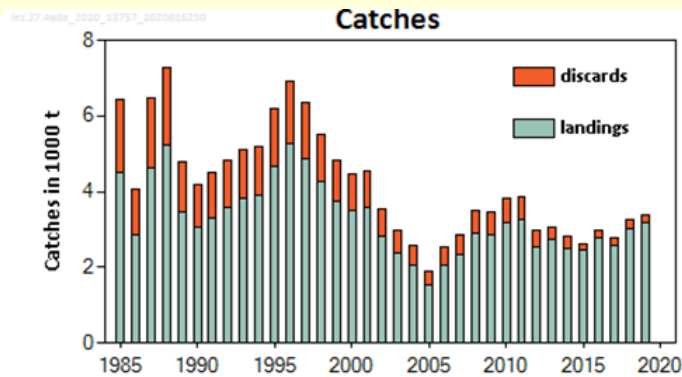
SSB (2021)= 257 712 t > MSY_{Btrigger} (56 000 t)

F_{MSY} = 0.26

Basis	Total catch (2021)	Projected landings [^] (2021)	Projected discards [^] (2021)	F _{total} (2021)	F _{projected} landings (2021)	F _{projected} discards (2021)	SSB (2022)	% SSB change *	% advice change **
ICES advice basis									
MSY approach = F _{MSY}	98657	92821	5835	0.26	0.21	0.047	249402	-3.2	-5.8
Other scenarios									
EU MAP ***: F _{MSY}	98657	92821	5835	0.26	0.21	0.047	249402	-3.2	-5.8
F = MAP F _{MSY} lower	71881	67712	4169	0.18	0.148	0.032	274972	6.7	-31
F = MAP F _{MSY} upper	139206	130693	8513	0.4	0.33	0.072	210729	-18.2	33
F = 0	0	0	0	0	0	0	343745	33	-100
F _{pa}	185639	173764	11875	0.6	0.49	0.108	166515	-35	77
F _{lim}	227603	212300	15302	0.84	0.69	0.151	126601	-51	117
SSB (2022) = B _{lim}	317994	292478	25516	1.96	1.61	0.35	39987	-84	204
SSB (2022) = B _{pa}	301541	278435	23106	1.61	1.32	0.29	56005	-78	188
SSB (2022) = MSY B _{trigger}	301541	278435	23106	1.61	1.32	0.29	56005	-78	188
F = F ₂₀₂₀	99750	93845	5905	0.263	0.216	0.047	248359	-3.6	-4.8

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

Advice for 2021: EU MAP: Catch: 5 700- 7 300 t ($F_{MSY}=7300$ t)



- Increase in spawning stock since the mid-2000s and is above MSY $B_{trigger}$. Some decline in recent years.
- Fishing pressure reduced well below F_{MSY} since mid-2000.
- 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.

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

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

Catch (2019) : 3381 t (5 % discards); 1 611 t (landings) from West of Scotland
 $F(2020) = 0.39$ (Recent average fishing pressure (2016-2018); 3 381 t.)

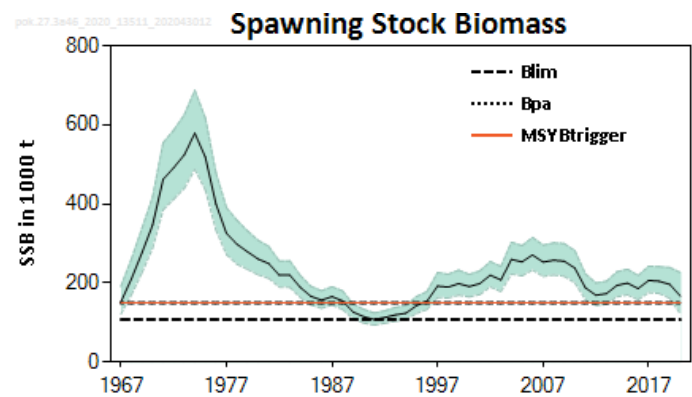
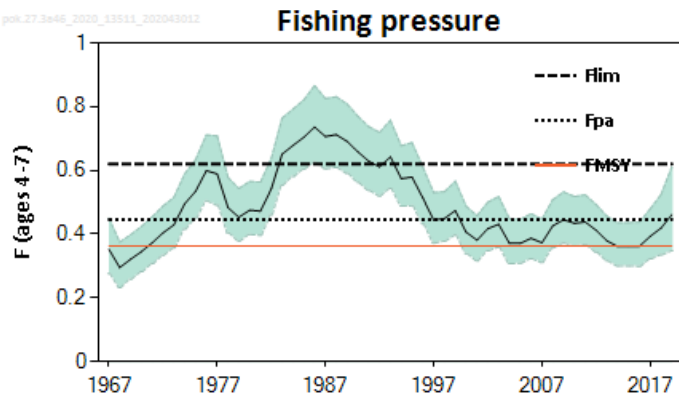
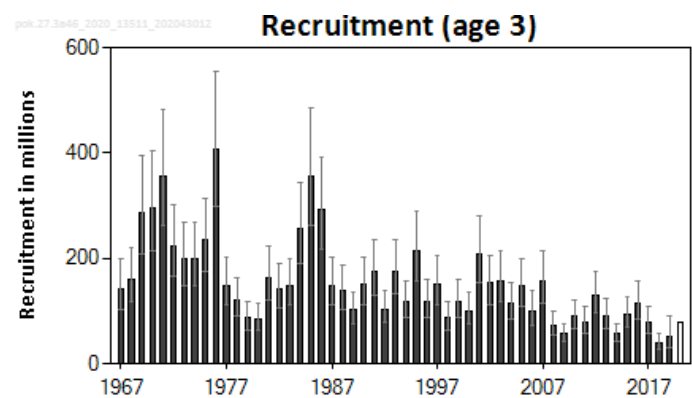
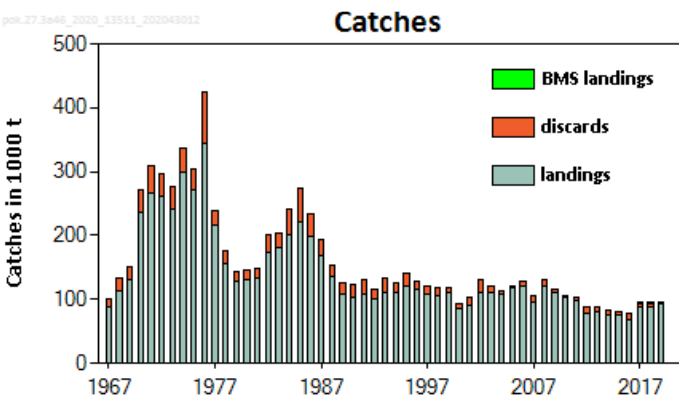


$SSB(2021) > MSY_{Btrigger}$

Basis	Total catch (2021)	Projected landings (2021)	Projected discards (2021)	Fishing mortality F_{2021}/F_{MSY}	Stock size B_{2022}/B_{MSY}	% B change *	% TAC change ^	% advice change ^^
ICES advice basis								
EU MAP ^^^: F_{MSY}	7300	6757	543	1	1.35	-12.3	-17.3	-12.6
$F = MAP F_{MSY lower}$	5700	5276	424	0.78	1.43	-7	-35	-11.6 [#]
$F = MAP F_{MSY upper}$	7300	6757	543	1	1.35	-12.3	-17.3	-12.6 [#]
Other scenarios								
$F = 0$	0	0	0	0	1.72	11.7	-100	-100
$B_{2022} = B_{lim}$	28200	26102	2098	3.83	0.33	-79	220	238
$B_{2022} = B_{pa} = MSY B_{trigger}$	13800	12774	1026	1.87	0.5	-68	56	65
$F = F_{2020}$	3381	3132	249	0.39	1.54	0	-62	-60

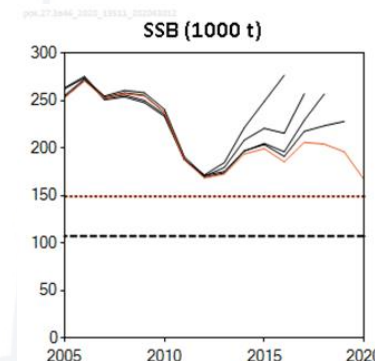
Saithe in the North Sea, Rockall and West of Scotland, Skagerrak and Kattegat (4,6,3.a)

Advice for 2021: MSY: Catch \leq 65 687 t



- Spawning stock fluctuated without trend and has been above MSY $B_{trigger}$ since 1996.
- Fishing pressure increased recently; above F_{MSY} in 2019.
- Recruitment lower in recent years.
- Estimates of stock revised downwards

	Fishing pressure			Stock size						
	2017	2018	2019	2018	2019	2020				
Maximum sustainable yield	F_{MSY}	✘	✘	✘	Above	$MSY B_{trigger}$	✔	✔	✔	Above trigger
Precautionary approach	F_{pa}	✔	✔	⚠	Increased risk	B_{pa}	✔	✔	✔	Full reproductive capacity
Management plan	F_{MGT}	—	—	—	Not applicable	B_{MGT}	—	—	—	Not applicable



In 2020, quota in 6 is 9.3% of TAC for the stock (8280 t)

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

Catch (2019) : 97 178 t (5 % discards); **4 934 t from West of Scotland**

$F(2020) = 0.46$ (Average exploitation pattern (2017-2019), scaled to 2019);

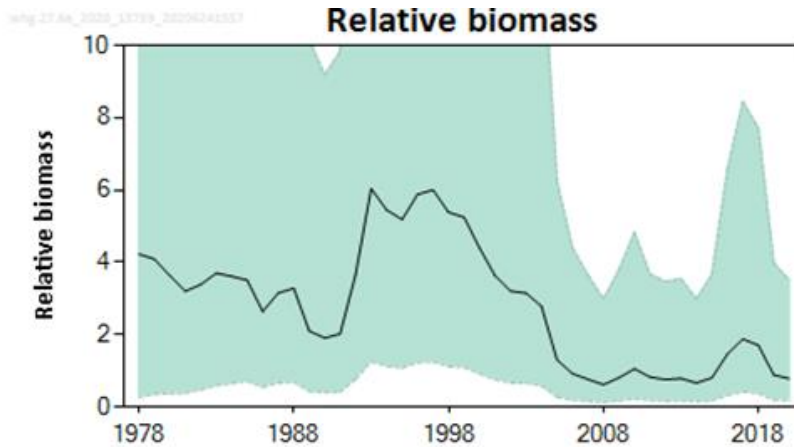
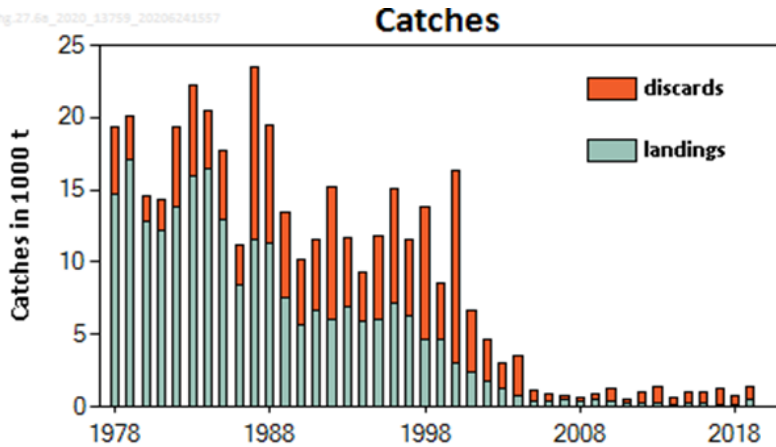
$SSB(2021) = 151\,404\text{ t} > MSY_{B_{trigger}} (149\,098\text{ t}) \quad F_{MSY} = 0.363$



Basis	Total catch (2021)	Projected landings * (2021)	Projected discards** (2021)	Projected landings *., ##		F_{total} (ages 4-7) (2021)	$F_{projected}$ landings (ages 4-7) (2021)	$F_{projected}$ discards (ages 4-7) (2021)	SSB (2022)	% SSB change ***	% TAC change #	% advice change ^
				Div. 3.a and Subarea 4	Subarea 6							
ICES advice basis												
MSY approach: F_{MSY}	65687	61056	4631	55317	5739	0.363	0.34	0.024	164624	8.7	-25	-25
Other scenarios												
$F = MAP^{lower} F_{MSY}$	40391	37551	2840	34021	3530	0.21	0.196	0.014	187780	24	-54	-54
$F = MAP^{upper} F_{MSY}$	90731	84297	6434	76373	7924	0.536	0.5	0.035	142255	-6.0	3	3
$F = 0$	0	0	0	0	0	0	0	0	225332	49	-100	-100
F_{pa}	78122	72613	5509	65787	6826	0.446	0.42	0.03	153407	1.32	-11.3	-11.3
F_{lim}	101721	94499	7222	85616	8883	0.62	0.58	0.041	132683	-12.4	15.5	15.5
$SSB_{2022} = B_{lim}$	131384	121862	9522	110407	11455	0.88	0.82	0.058	107297	-29	49	49
$SSB_{2022} = B_{pa}$	83429	77541	5888	70252	7289	0.48	0.45	0.032	149098	-1.52	-5.3	-5.3
$SSB_{2022} = MSY B_{trigger}$	83429	77541	5888	70252	7289	0.48	0.45	0.032	149098	-1.52	-5.3	-5.3
$F = F_{2020}$	80210	74548	5662	67540	7008	0.46	0.43	0.031	151564	0.106	-8.9	-8.9
TAC_{2020}	88093	81868	6225	74172	7696	0.52	0.48	0.034	144600	-4.5	0	0
$TAC_{2020} -15\%$	74879	69603	5276	63060	6543	0.42	0.4	0.028	156285	3.2	-15.0	-15.0
$TAC_{2020} +15\%$	101308	94102	7206	85256	8846	0.62	0.58	0.041	133033	-12.1	15	15
$TAC_{2020} -20\%$	70476	65513	4963	59355	6158	0.39	0.37	0.026	160238	5.8	-20.0	-20.0
$TAC_{2020} +25\%$	110117	102228	7889	92619	9609	0.69	0.64	0.045	125433	-17.2	25	25

Whiting in division 6.a

Advice for 2021 and 2022: PA: Catch = 0 t



		Fishing pressure			Stock size					
		2017	2018	2019	2018	2019	2020			
Maximum sustainable yield	F_{MSY}	?	?	?	Undefined	$MSY B_{trigger}$?	?	?	Undefined
Precautionary approach	F_{pa}, F_{lim}	?	?	?	Undefined	B_{pa}, B_{lim}	?	?	?	Undefined
Management plan	F_{MGT}	-	-	-	Not applicable	B_{MGT}	-	-	-	Not applicable
Qualitative evaluation	-	-	-	-			⊗	⊗	⊗	Below possible reference points

Technical service on likely catches in 2021: not possible to forecast catches but best possible estimate: catches in 2019 which were 1 444 t.

- Benchmark in 2020, no suitable method for assessment.
- Indicator from analysis of surveys suggest the stock is very low and below possible reference points.
- No signs of rebuilding
- Catch in 2019= 1, 444 t (66% discards)

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

SUMMARY

Stock	Exploitation	State of stock	Advice 2021	Advice 2020	Catch 2019	TAC 2020
Cod 6.a	X	X	0	0	2264	1279
Cod 6.b	?	?	14	14	66	74
Haddock 4, 6.a, sub. 20	✓	✓	69280	41818	35496	41819
Haddock 6.b	X	✓	6239	10472	8081	10472
Hake 4,6,7, 3.a, 8.ab,d	✓	✓	98657	104763	87238	112903
Megrim 4.a, 6.a	✓	✓	7300 (5700-7300)	8350 (6450-8350)	3381	8823
Saithe 3.a, 4, 6	X	✓	65687	88093	97178	88093
Whiting 6.a	?	?	0	0	1444	937

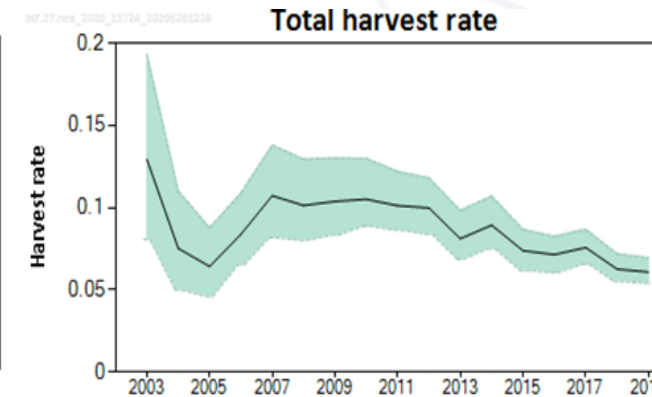
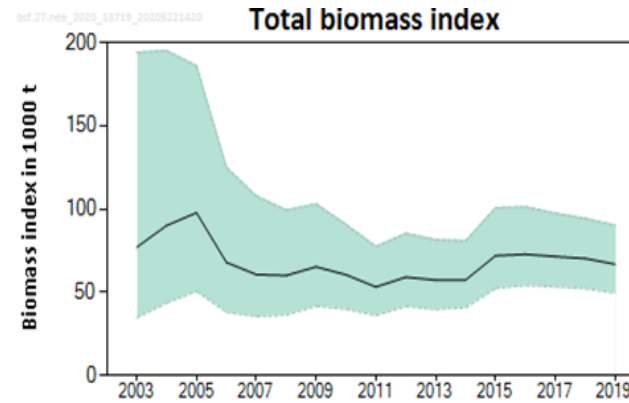
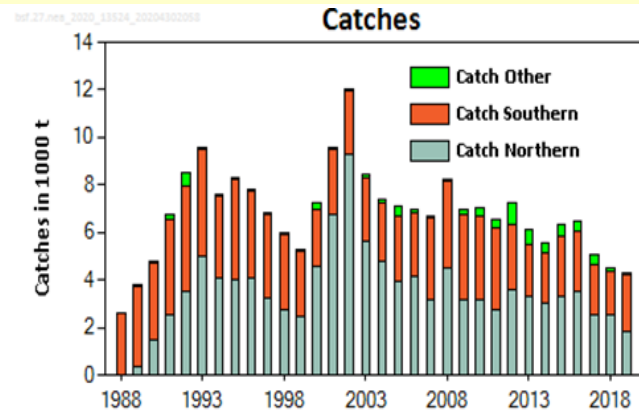
Colours indicate that the value for the Advice for 2021 is either above (green) or below (red) the Advice for 2020. For TAC 2020 in blue, area or species differ from the advice.

Advice provided in previous years

Stock	Advice 2021 (t)	Year advice provided
Whiting 6.b	9	2018

Black scabbardfish in the Northeast Atlantic and Arctic Ocean

Advice for 2021 and 2022, PA: Catch \leq 4 506 t



		Fishing pressure			Stock size					
		2017	2018	2019	2017	2018	2019			
Maximum sustainable yield	F_{MSY}	?	?	?	Undefined	$MSY B_{trigger}$?	?	?	Undefined
Precautionary approach	$F_{pa} F_{lim}$?	?	?	Undefined	$B_{pa} B_{lim}$?	?	?	Undefined
Management plan	F_{MGT}	-	-	-	Not applicable	B_{MGT}	-	-	-	Not applicable
Qualitative evaluation	-	↗	↘	→	Stable	-	→	→	→	Stable

Minimum slope of the two component	-0.048
Uncertainty cap	Not applied
Recent advised catch for 2019–2020 iss	5914 tonnes
Discard rate	Negligible
Precautionary buffer	Applied 0.8
Catch advice **	4506 tonnes
% advice change ***	-24%

- Catches in 2019 = 4, 317 t (discards negligible)
- Single stock
- Migrates through NE Atlantic
- Total abundance with slight decline over recent years.
- Advice split by areas: \leq 2 143 t in 6, 7, 5.b and 12.b; \leq 2 084 t in 8 and 9.a; \leq 280 tonnes in 1, 2, 4, 10, 3.a and 5.a.

Deep-sea stocks

SUMMARY

Stock	Exploitation	State of stock	Advice 2021	Advice 2020	Catch 2019	TAC 2020
Alfonsinos - NEA	?	?	224	224	294	252
Black scabbardfish - NEA	?	?	4506	5914	4317	5311
Greater forkbeard - NEA	?	?	861	1346	1850	-
Blackspot seabream 6, 7, 8	?	X	0	0	98	105
Roundnose grenadier 6, 7, 5.b, 12.b	?	?	3177	3971	689	4839
Blue ling 5.b, 6–7	✓	✓	11522	11150	3218	-
Tusk 6.b	?	?	280	280	112	-

Colours indicate that the value for the Advice for 2021 is either above (green) or below (red) the Advice for 2020. For TAC 2020 in blue, area or species differ from the advice.

ICES advice provided in previous years

Stock	Advice 2021 (t)	Year advice provided
G. Silver smelt 7-10, 12, 6.b	193	2019
Tusk 4,7–9,3.a, 5.b,6.a,12.b	8627	2019
Ling 6-9,12,14,3.a,4.a	18516	2019



**Thank you
for your
attention!**



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