

ICES advice for North Western Waters stocks for 2020

NWWAC meeting, Ghent, July 2-3 2019

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ICES ACOM vice-chair



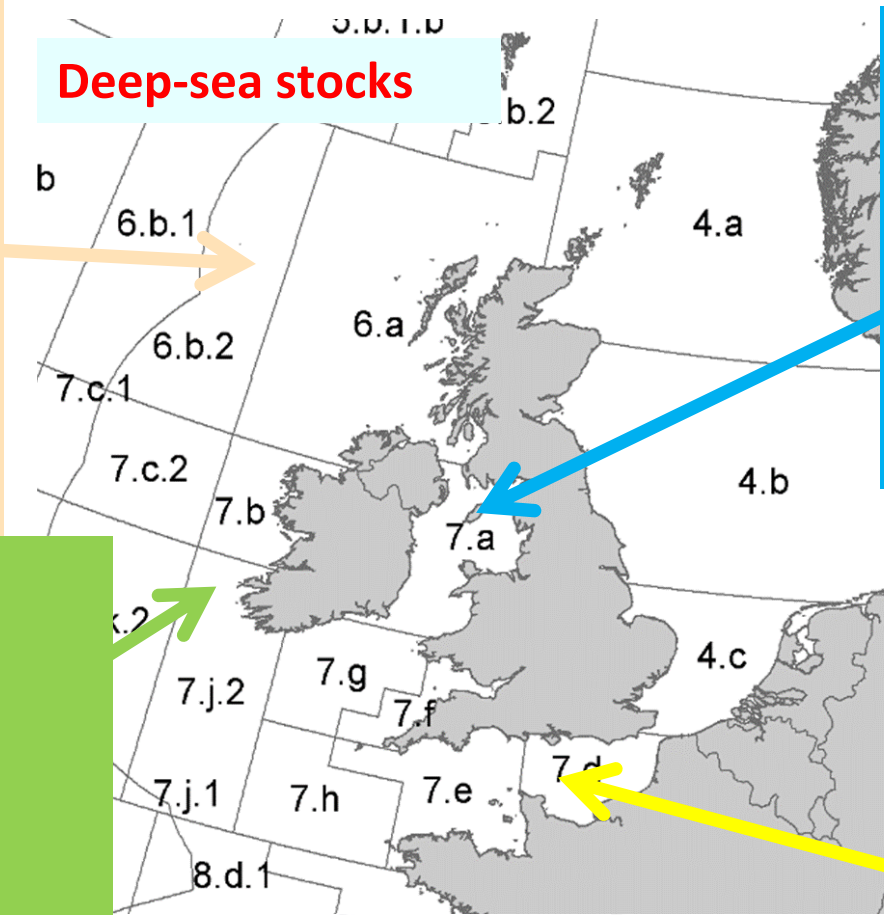
Image Dirk Vonten, Fotolia

North Western Waters stocks

West of Scotland & Rockall (6.ab)

- Cod (6.a; 6.b)
- Haddock (4,6.a,sub 20; 6.b)
- Whiting (6.a; 6.b)
- Anglerfish (3.a,4,6)
- Megrin (4.a-6.a; 6.b)
- Saithe 3.a 4, 6
- *Nephrops* (FUs11-12-13)

Deep-sea stocks



Irish Sea (7.a)

- Cod
- Haddock
- Whiting
- Plaice
- Sole
- *Nephrops* (FUs 14-15-19)

Channel

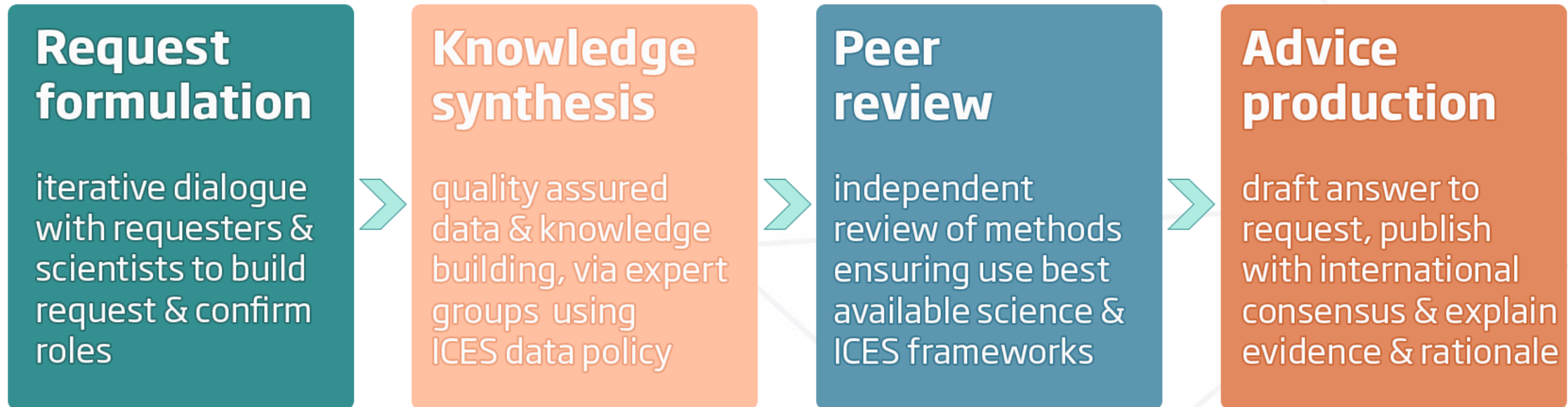
- Cod (4, 7.d, Skagerrak)
- Plaice (7.d; 7.e)
- Sole (7.d; 7.e)
- Whiting (4,7d)
- Brill (3.a, 4, 7.de)
- Witch (3.a, 4, 7.d)
- Lemon sole (3.a, 4, 7.d)
- Striped red mullet (3.a, 4, 7.d)

Celtic Sea & West, Southwest Ireland

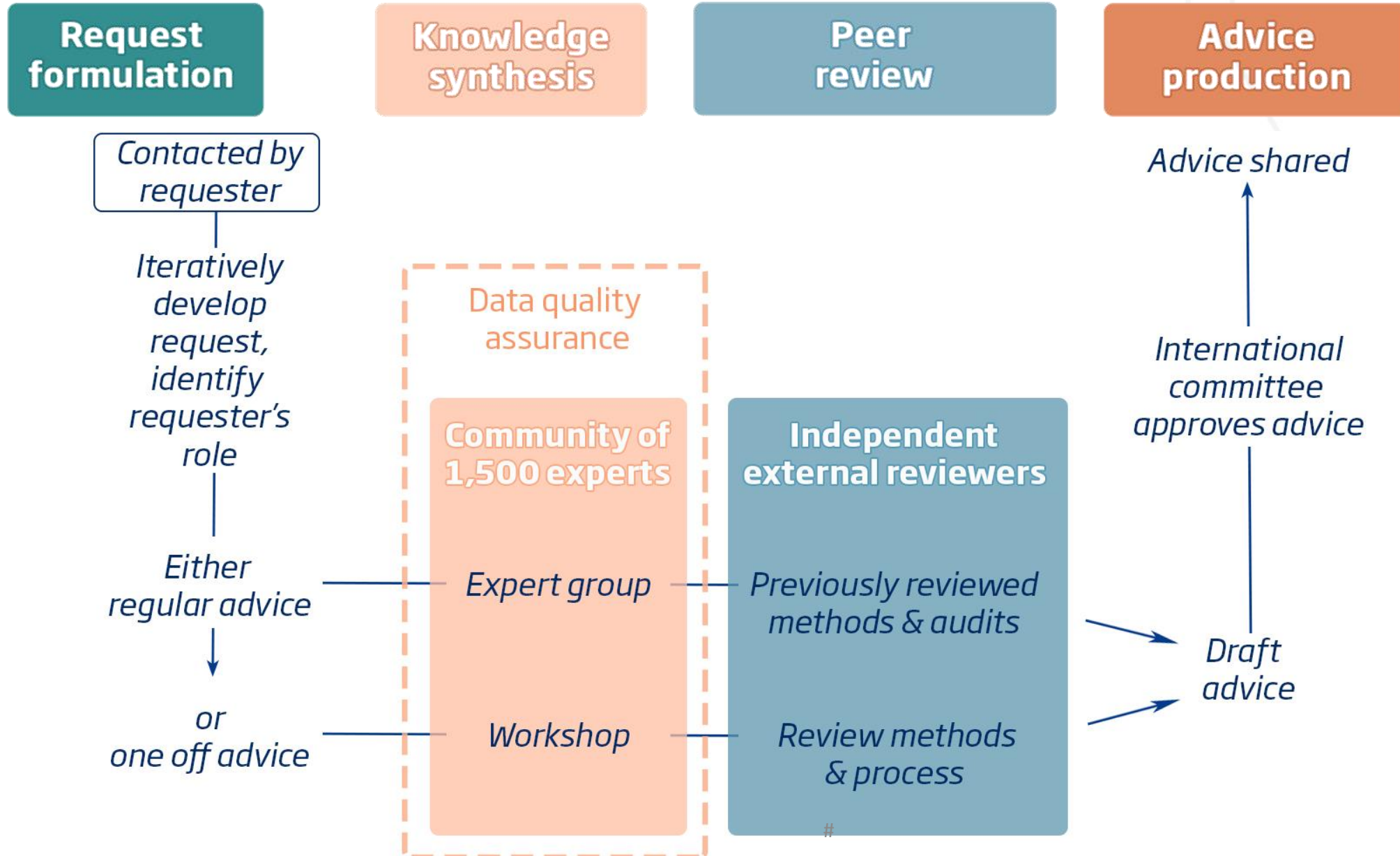
- Cod (7.e-k)
- Haddock (7.b-k)
- Whiting (7.e-k)
- Plaice (CS; 7.h-k; 7.bc)
- Sole (CS; 7.h-k; 7.bc)
- Northern hake
- Anglerfish (7.b-k, 8.abd)
- Megrin (7.b-k, 8.abd)
- Pollack (6,7)
- Sea bass (6.a, 7.b,7.j; 4bc,7ad-h)
- *Nephrops* (FUs 16-17-20-22)

ADVICE IN AUTUMN FOR: *Nephrops*,
Megrin (6.b),
Anglerfish (3.a,4,6)
Skates and rays

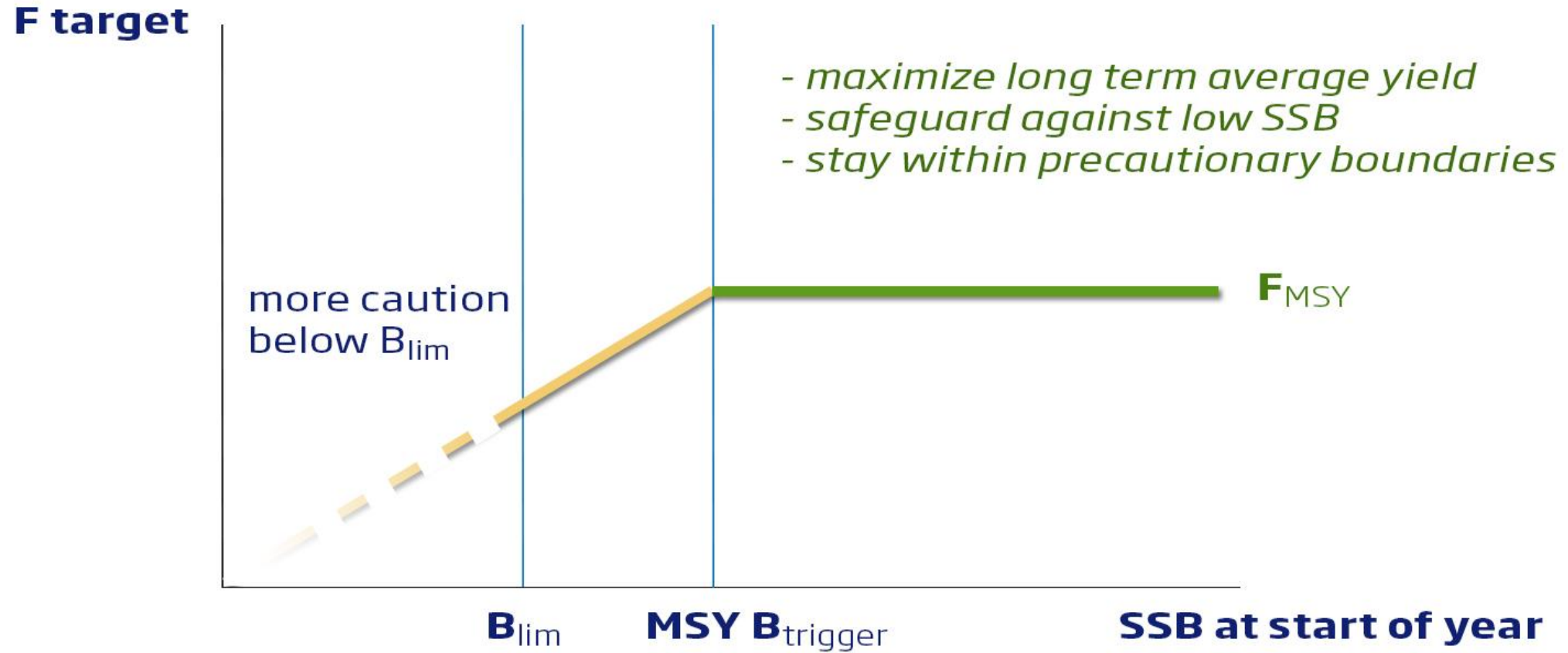
Simplified framework of ICES advisory process



ICES advice – more detail



ICES MSY approach for category 1 & 2 stocks



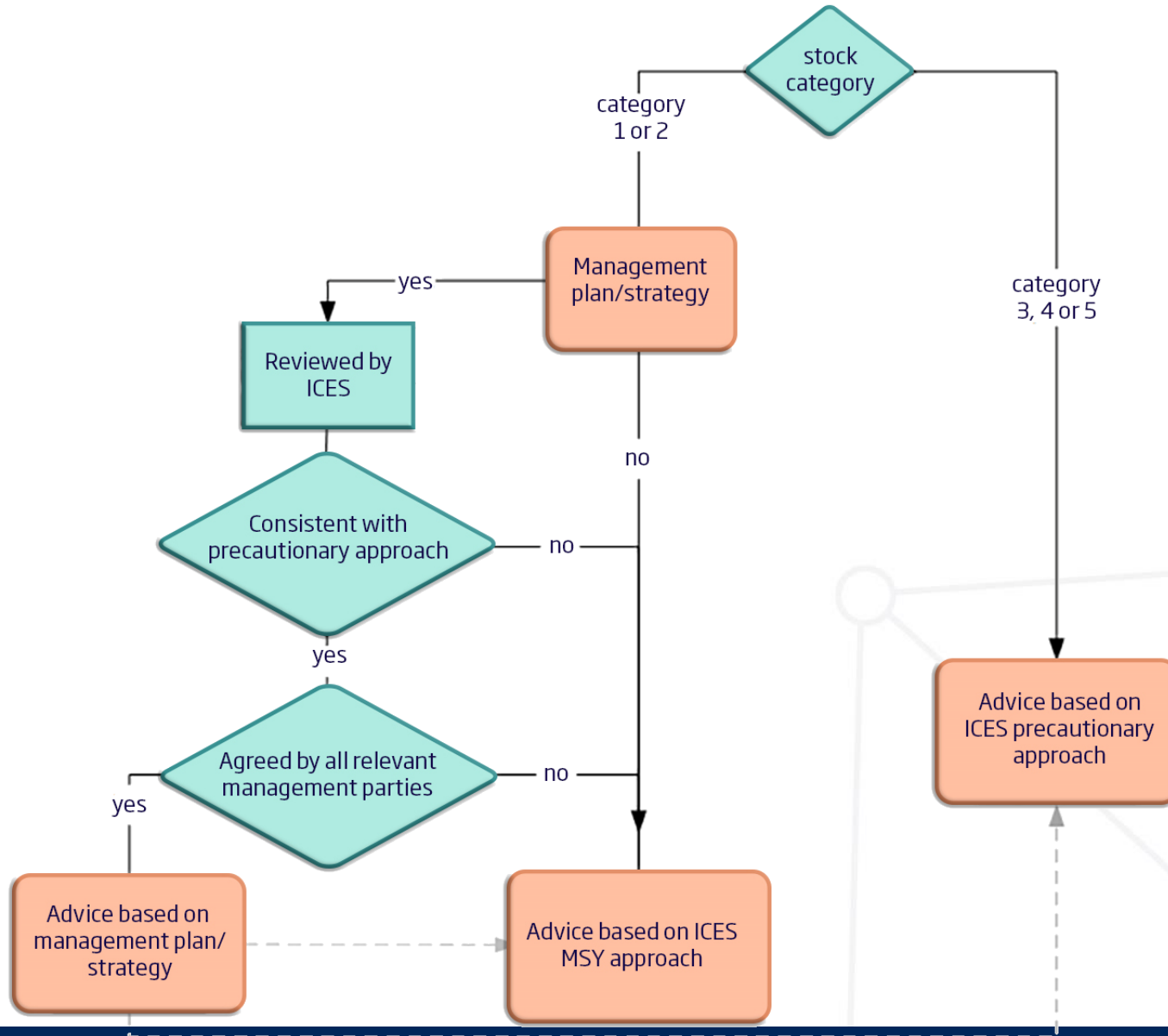
Rules for advice on fishing opportunities



The advice rules applied by ICES in developing advice on fishing opportunities depends on:

- management strategies agreed by relevant management bodies &
- the information & knowledge available for the stock

Hierarchy of Advice



Advice is based on clients requests and is consistent with their policy objectives and frameworks: e.g. EU MAP

Taking into account precautionary and MSY objectives

EU Multi Annual Plans (MAPs)

Advice on:

- status of stock & exploitation for all stocks
- advice on fishing opportunities for stocks for which TACs are set.

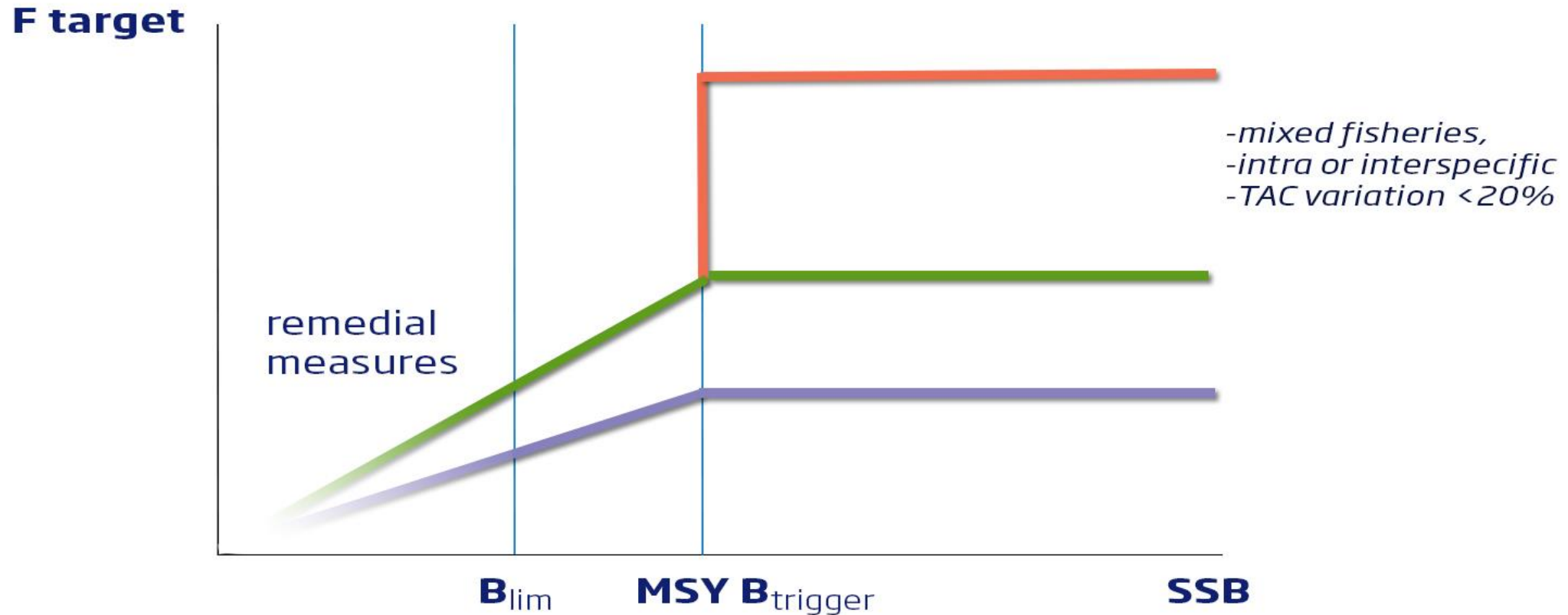
EU MAPs and F ranges

The F ranges in the MAPs are consistent with the ranges provided by ICES in 2015.

These were evaluated to result in no more than 5% reduction in long-term yield compared with MSY.

The ranges are considered precautionary:
<5% probability that the stock size will be below Blim.

ICES understanding of the harvest control rule in the MAP.













ICES interpretation of Baltic MAP harvest control rule

Type of advice depends on whether a stock is considered a target stock in the MAP or not, and whether F ranges are defined for the stock.

- a) Target stocks with F ranges & not shared with third party. Advice to be based on F range.
- b) Target stocks with no range defined or shared with third party. Advice to be based agreed management plan, ICES MSY or ICES PA.
- c) Non-target stocks with TAC & shared with third party. Advice to be based on agreed management plans, ICES MSY or ICES PA.
- d) Non-target stocks with TAC and not shared with third party. Advice to be based on ICES PA.
- e) Non-target stocks with no TAC. No advice on fishing opportunities.

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

SUMMARY

Stock	Exploitation	State of stock	Advice 2020	Advice 2019	Catch 2018	TAC 2019
Haddock 4, 6.a, sub. 20			30228	33956	39525	33956
Haddock 6.b	Advice to be provided on 30 September					
cod 6.a			0	0	1890	1735
Saithe 3.a, 4, 6			88093	103327	94832	103327
Megrim 4.a, 6.a			6450-8350	8250	3258	8669
Greater silver smelt 5.b 6.a			7703	12036	16033	4661

Colours indicate that the value for the Advice for 2020 is either above (green) or below (red) the Advice for 2019. For TAC 2019 in blue, area or species differ from the advice.

Advice provided in previous years

Stock	Advice 2019 (t)	Advice 2020 (t)	Year advice provided
Whiting 6.a	0	0	2018
Whiting 6.b	9	9	2018
Cod 6.b	14	14	2017
Tusk 6.b	280	280	2018

SUMMARY

Stock	Exploitation	State of stock	Advice 2020	Advice 2019	Catch 2018	TAC 2019	
Cod 7.e-k			0	0	1565	1610	
Haddock 7.b-k			11418-23262	6317	12545	8329	
Whiting 7.bc,e-k			4157-6481	15841	10268	19184	
Sole 7.fg			1020-2665	864	997	841	
Sole 7.h-k			213	311	296	382	
Plaice 7.fg			2295	2160	930	1662	
Plaice 7.h-k			0	0	97	109	
Hake 4,6,7, 3.a, 8.ab,d	Advice to be provided on 5 July						
Megrim 7.b-k, 8.ab,d			13218-28838	18976	14133	19836	
Pollack 6-7			3360	3360	2911	12560	
W.anglerfish 7, 8.a-b, 8.d			21428-42331	31042	23768	41370	
B-B Anglerfish 7, 8.a-b, 8.d			12959	10799	11283	41370	
Sea bass 4.b-c,7.a,7.d-h			1634-1946	1806	1439	-	

Colours indicate that the value for the Advice for 2020 is either above (green) or below (red) the Advice for 2019. For TAC 2019 in blue, area or species differ from the advice.

Deep-sea stocks

SUMMARY

Stock	Exploitation	State of stock	Advice 2020	Advice 2019	Catch 2018	TAC 2019
G. Silver smelt 7-10, 12, 6.b	?	?	193	14(landings)	36	4661
Tusk 4,7-9,3.a, 5.b,6.a,12.b	✓	✓	8627	8984	4507	4551
Ling 6-9,12,14,3.a,4.a	✓	?	18516	17695	20688	25868

















Colours indicate that the value for the Advice for 2020 is either above (green) or below (red) the Advice for 2019. For TAC 2019 in blue, area or species differ from the advice.

ICES advice provided in previous years

Stock	Advice 2019 (t)	Advice 2020 (t)	Year advice provided
Alfonsinos - NE Atlantic	224	224	2018
Black scabbardfish - NE Atlantic	5914	5914	2018
Greater forkbeard - NE Atlantic	1346	1346	2018
Blackspot seabream 6, 7, 8	0	0	2018
Roundnose grenadier 6, 7, 5.b, 12.b	3971	3971	2018
Blue ling 5.b, 6-7	11778	11500	2018











English Channel (Divisions 7.d and e)

SUMMARY

Stock	Exploitation	State of stock	Advice 2020	Advice 2019	Catch 2018	TAC 2019
Cod 3.a.20, 7.d. 4			10457	28204	48620	35357
Sole 7.d	Advice to be provided on 14 November					
Sole 7.e			878-1685	1272	1078	1242
Plaice 7.d			6545-12029	7864	6826	10354
Plaice 7.e			2721	3648	2370	10354
Whiting 4, 7.d			22082	24195	28083	39404
Witch 3.a, 4, 7.d			1651	2390	3209	7874
Lemon sole 4, 7.d and 3.a			4279	5484	3377	7874
Brill 4, 7.d and 3.a			2559	3170	2277	8122

Colours indicate that the value for the Advice for 2020 is either above (green) or below (red) the Advice for 2019. For TAC 2019 in blue, area or species differ from the advice.

SUMMARY

Stock	Exploitation	State of stock	Advice 2020	Advice 2019	Catch 2018	TAC 2019
Cod 7.a			116	807	257	807
Haddock 7.a			2333-3830	3739	2561	3739
Sole 7.a			561	414	38	414
Whiting 7.a			0	0	899	727
Plaice 7.a			5640	3503	830	3075

Colours indicate that the value for the Advice for 2019 is either above (green) or below (red) the Advice for 2018 and above (green shade) or below (red shade) the Catch in 2017

All advice available online at:



<http://www.ices.dk>

Click on

Follow Our Advisory process → Latest advice

In addition to advice items, “Introduction to ICES Advice” document describes principles and advice basis

For advice release dates, follow link:

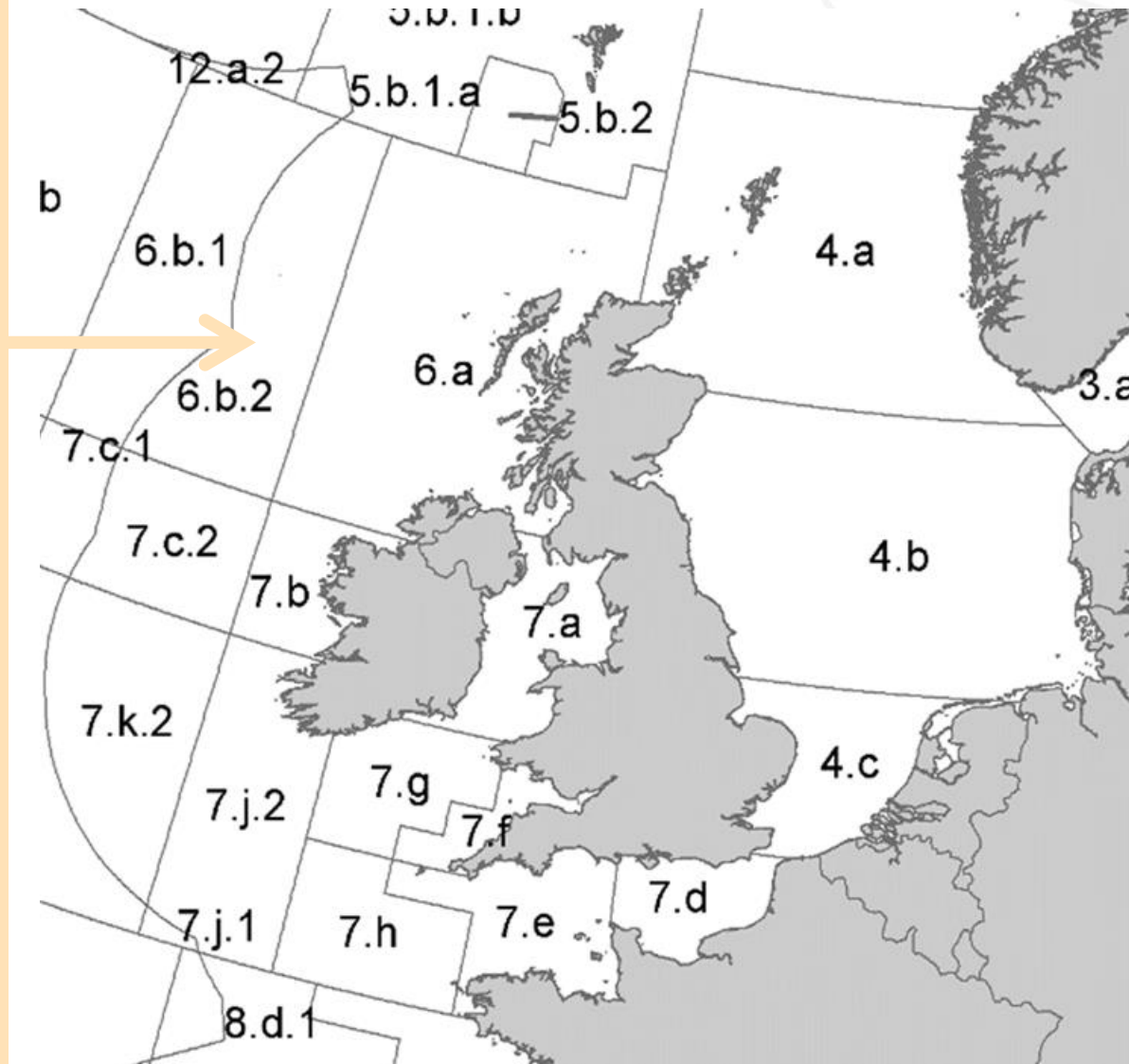
Follow Advisory process → Advice requests and advice release dates

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

- Cod 6.a
- Cod 6.b
- Haddock 4, 6.a, sub. 20
- Haddock 6.b
- Saithe 3.a, 4, 6
- Norway pout 6.a
- Whiting 6.a
- Whiting 6.b
- Megrin 4.a, 6.a
- Ling

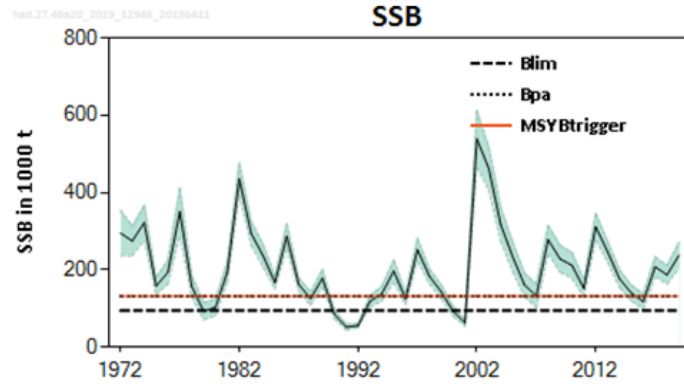
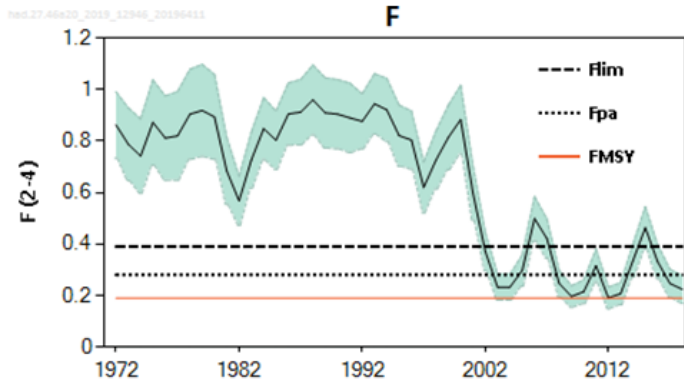
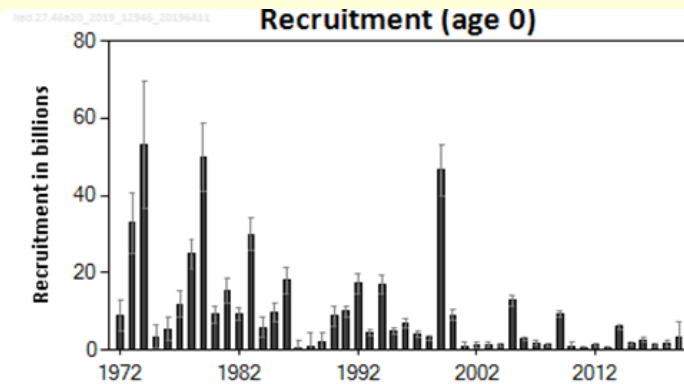
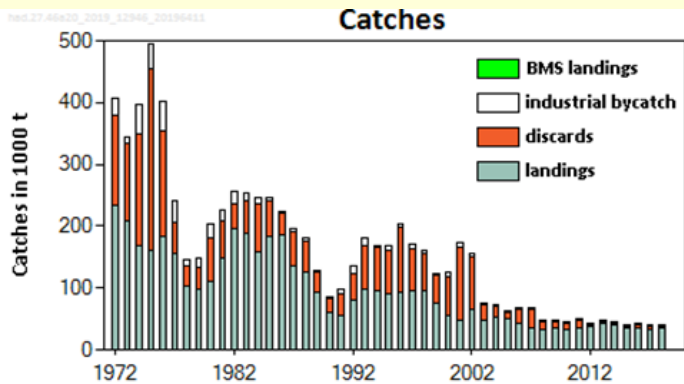
IN AUTUMN:

- Anglerfish (3.a,4,6)
- Megrin (6.b)
- *Nephrops* / Skates and rays



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

Advice for 2020: MSY: Catch \leq 30 228 t



- Spawning stock mostly above MSY $B_{trigger}$ since 2002.
- Fishing pressure above F_{MSY} in 2018.
- Recruitment since 2000 at low level.
- Decline in advised catch due to continuing low recruitment.
- In 2019, quota in 6.a is 9.5% of TAC for the stock.

		Fishing pressure				Stock size				
		2016	2017	2018		2017	2018	2019		
Maximum sustainable yield	F_{MSY}	✘	✘	✘	Above	$B_{trigger}$	✔	✔	✔	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 (2018) : 39 525(13 % unwanted); **5 575 t from West of Scotland**

F(2019) = 0.194 (TAC constraint – 33 956 t)

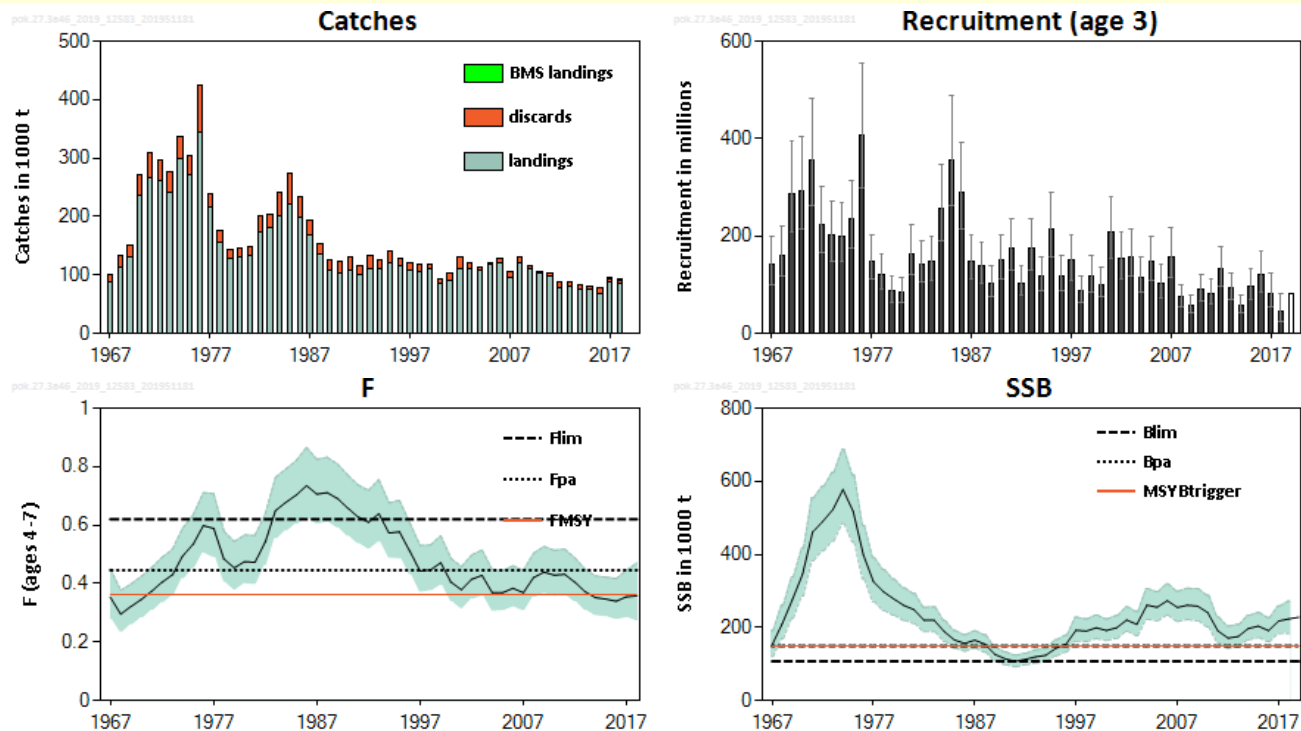
SSB(2020) = 203 239 > MSY_{Btrigger} (132 000t) $F_{MSY} = 0.194$



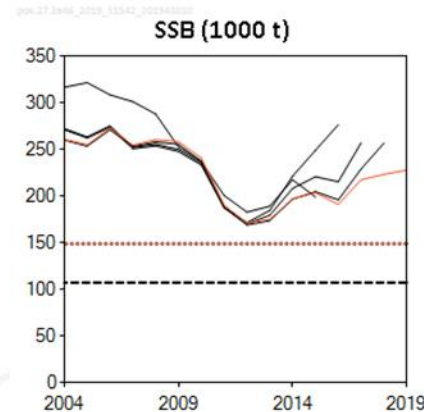
Basis	Total catch (2020)	Wanted catch * (2020)	Unwanted catch * (2020)	IBC ** (2020)	HCF ** catch (2020)	F _{total} (ages 2-4) (2020)	F _{wanted} (ages 2-4) (2020)	F _{unwanted} (ages 2-4) -2020	F _{IBC} (ages 2-4) -2020	SSB (2021)	% SSB change	% TAC change	% Advice change
ICES advice basis													
MSY approach: F_{MSY}	30228	25537	4662	30	30199	0.194	0.163	0.03	0.0002	196243	-3.4%	-11.1%	-11.1%
Other scenarios													
F = MAP ^{^^^} F _{MSY lower}	26269	22207	4032	30	26239	0.167	0.141	0.026	0.0002	200542	-1.33%	-23%	-23%
F = MAP F _{MSY upper} [#]	30228	25537	4 662	30	30199	0.194	0.163	0.03	0.0002	196243	-3.4%	-11.1%	-11.1%
F = 0 (IBC only)	32	0	0	32	0	0	0	0	0.0002	229410	12.90%	-100%	-100%
F _{pa}	41488	34971	6 489	29	41460	0.274	0.23	0.043	0.0002	184091	-9.4%	22%	22%
F _{lim}	55822	46886	8 908	28	55794	0.384	0.32	0.06	0.0002	168805	-16.9%	64%	64%
SSB (2021) = B _{lim}	114594	93181	21 392	21	114573	1.06	0.89	0.166	0.0002	94000	-54%	237%	237%
SSB (2021) = B _{pa} = MSY B _{trigger}	88573	73499	15 049	24	88549	0.69	0.58	0.108	0.0002	132000	-35%	161%	161%
F ₂₀₁₉	30257	25561	4666	30	30228	0.194	0.164	0.03	0.0002	196212	-3.5%	-11.0%	-11.0%
Rollover TAC	33985	28691	5 265	29	33956	0.22	0.19	0.034	0.0002	192176	-5.4%	0%	0%

- Benchmark assessment was conducted earlier this spring.
- Advice for haddock in 6.b. scheduled to be provided on 30 September 2019.
 - a) Advice on fishing opportunities for 2020.
 - b) NEAFC request for harvest control component of a long-term management plan for Rockall haddock.

Advice for 2020: MSY: Catch \leq 88 093 t



- Spawning stock fluctuated without trend and has been above MSY $B_{trigger}$ since 1996.
- Fishing pressure reduced to about F_{MSY} since 2013.
- Recruitment below long-term average since 2003.
- Estimates of stock revised downwards



	Fishing pressure			Stock size						
	2016	2017	2018	2017	2018	2019				
Maximum sustainable yield	F_{MSY}	✓	✓	✓	At F_{MSY}	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

In 2019, quota in 6 is 9.4% of TAC for the stock

Note: Advice for 2019 was updated in February 2019.

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

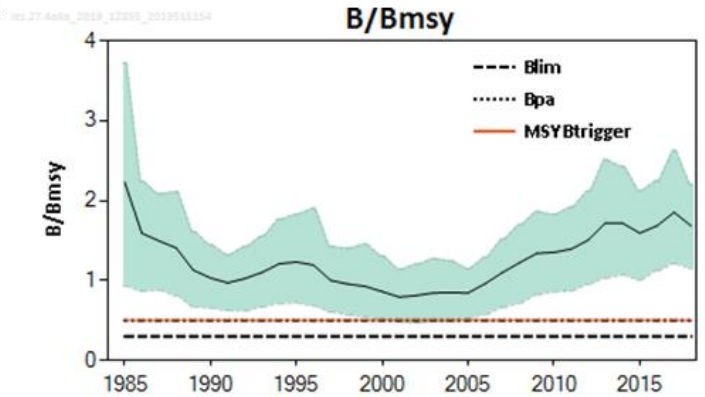
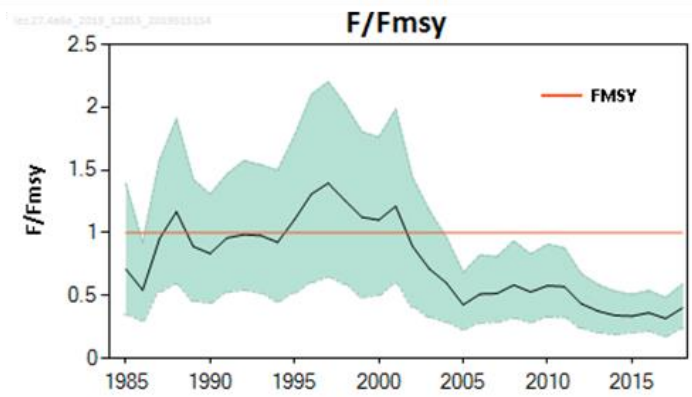
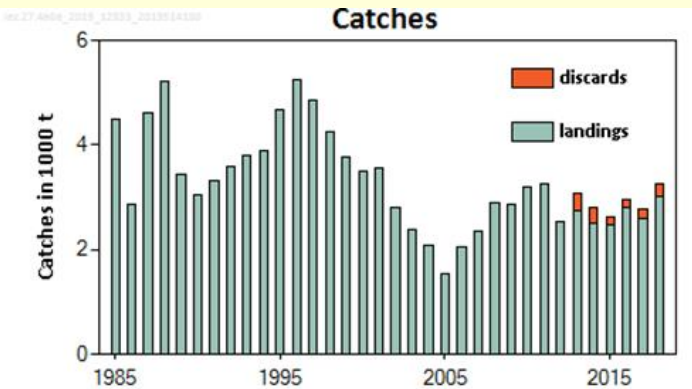
Catch (2018) : 94 832 t (8% discards); **7 113 t from West of Scotland**
 F(2019) = 0.36 (Average exploitation pattern (2016-2018), scaled to 2018);
 SSB (2019)= 217 356 t > MSY_{Btrigger} (149 098 t) $F_{MSY} = 0.363$



Basis	Total catch (2020)	Wanted catch* (2020)	Unwanted catch* (2020)	Wanted catch*# 3a4	Wanted catch*# 6	F _{total} (ages 4-7) (2020)	F _{wanted} (ages 4-7) (2020)	F _{unwanted} (ages 4-7) (2020)	SSB (2021)	% SSB change **	% TAC change ***	% advice change ^
ICES advice basis												
MSY approach: F_{MSY}	88093	80676	7417	73092	7584	0.363	0.33	0.032	213159	-1.93	-14.7	-14.7
Other scenarios												
F = MAP^^ F _{MSY lower}	54430	49936	4494	45242	4694	0.21	0.191	0.019	245209	12.8	-47	-47
F = MAP^^ F _{MSY upper}	121041	110641	10400	100241	10400	0.536	0.49	0.048	182110	-16.2	17.1	17.1
F = 0	0	0	0	0	0	0	0	0	298215	37	-100	-100
F _{pa}	104446	95642	8804	86652	8990	0.446	0.41	0.04	197699	-9.0	1.08	1.08
F _{lim}	135413	123673	11740	112048	11625	0.62	0.56	0.055	168963	-22	31	31
SSB ₂₀₂₁ = B _{lim}	203255	184872	18383	167494	17378	1.13	1.03	0.1	107297	-51	97	97
SSB ₂₀₂₁ = B _{pa}	157456	143563	13893	130068	13495	0.76	0.7	0.068	149098	-31	52	52
SSB ₂₀₂₁ = MSY B _{trigger}	157456	143563	13893	130068	13495	0.76	0.7	0.068	149098	-31	52	52
F = F ₂₀₁₉	86995	79683	7312	72193	7490	0.36	0.33	0.032	214145	-1.48	-15.8	-15.8
TAC ₂₀₁₉	103328	94616	8712	85722	8894	0.44	0.4	0.039	198740	-8.6	0	0

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

Advice for 2020: EU MAP: Catch: 6 450 - 8 350 t ($F_{MSY}=8350$ t)



- Increase in spawning stock since the mid-2000s and is above MSY $B_{trigger}$.
- 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						
	2016	2017	2018	2016	2017	2018				
Maximum sustainable yield	F_{MSY}	✓	✓	✓	Below	MSY $B_{trigger}$	✓	✓	✓	Above trigger
Precautionary approach	F_{pa}, F_{lim}	✓	✓	✓	Below possible reference points	B_{pa}, B_{lim}	✓	✓	✓	Full reproductive capacity
Management plan	F_{MGT}	✓	✓	✓	Below range	B_{MGT}	✓	✓	✓	Above trigger

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

Catch (2018) : 3258 t (8 % discards); 1 392 t (landings) from West of Scotland
 F(2019) = 0.40 (Recent average fishing pressure (2016-2018); 3258 t.)

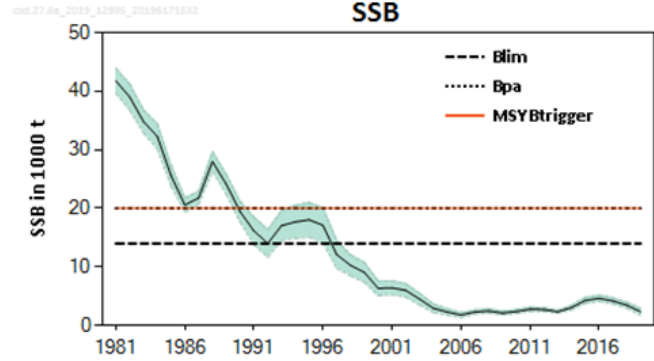
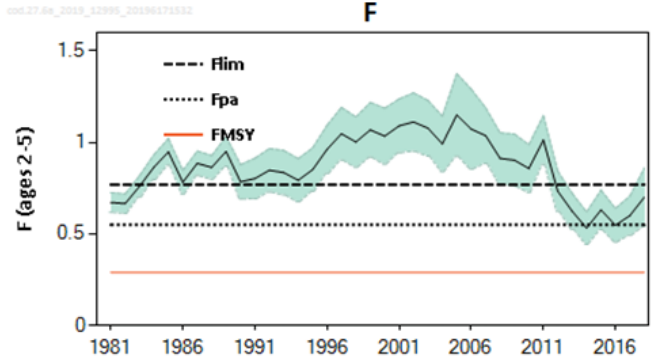
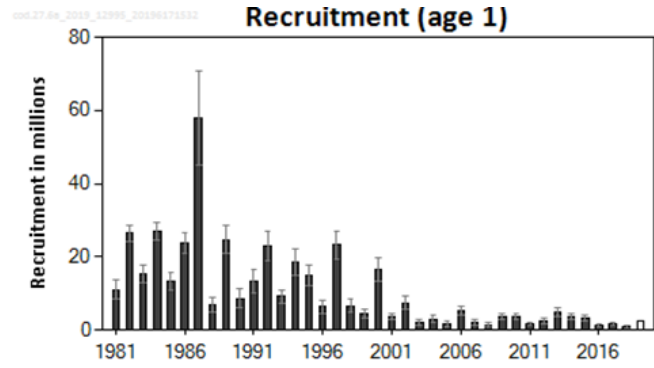
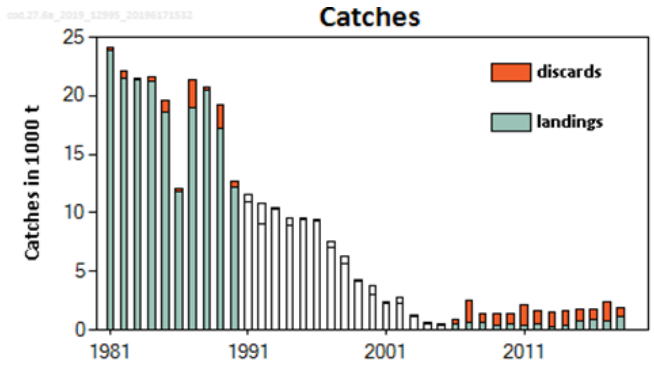


SSB (2020) > MSY_{Btrigger}

Basis	Total catch (2020)	Wanted catch *(2020)	Unwanted catch * (2020)	Fishing mortality F ₂₀₂₀ /F _{MSY}	Stock size B ₂₀₂₁ /B _{MSY}	% B change **	% TAC change ^	% Advice change ^^
ICES advice basis								
EU MAP ^^^: F _{MSY}	8350	7684	666	1	1.42	-15	4	1
F = MAP F _{MSY lower}	6450	5935	515	0.77	1.52	-10	-26	-22
F = MAP F _{MSY upper}	8350	7684	666	1	1.42	-15	4	1
Other scenarios								
F = 0	0	0	0	0	1.83	9	-100	-100
B ₂₀₂₁ = B _{lim}	31550	29033	2517	3.77	0.35	-79	264	282
B ₂₀₂₁ = B _{pa} = MSY B _{trigger}	16700	15368	1332	1.99	1.01	-40	92.6	102.4
F = F ₂₀₁₉	3258	2998	260	0.4	1.68	0	-62	-61

Cod in the West of Scotland (6.a)

Advice for 2020 and 2021, MSY: Catch = 0 t

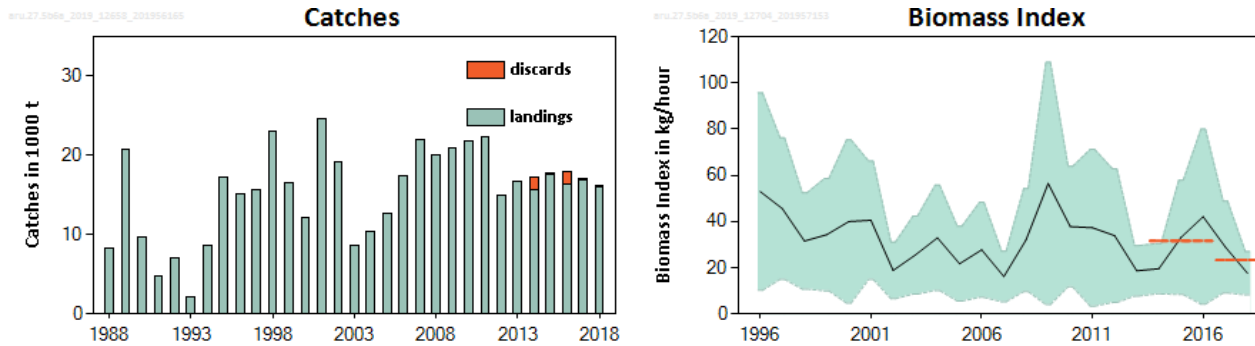


- High discarding (40-60% over 2016 to 2018).
- Fishing mortality above F_{pa} .
- Spawning-stock biomass (SSB) has been below B_{lim} since 1997.
- Recruitment has been low since early 2000s and impaired.

	Fishing pressure			Stock size						
		2016	2017	2018	2017	2018	2019			
Maximum sustainable yield	F_{MSY}	✗	✗	✗	Above	$MSY B_{trigger}$	✗	✗	✗	Below trigger
Precautionary approach	F_{pa}, F_{lim}	✓	○	○	Increased risk	B_{pa}, B_{lim}	✗	✗	✗	Reduced reproductive capacity
Management plan	F_{MGT}	-	-	-	Not applicable	B_{MGT}	-	-	-	Not applicable

Greater silver smelt in Faroes grounds and west of Scotland (5.b, 6.a)

Advice for 2020 and 2021, PA: Landings $\leq 7\,703$ t













		Fishing pressure			Stock size		
		2016	2017	2018	2016	2017	2018
Maximum sustainable yield	F_{MSY} proxy	✓	✓	✓ Below	$B_{trigger}$?	? Undefined
Precautionary approach	F_{pa} F_{lim}	✓	✓	✓ Below possible reference points	B_{pa} B_{lim}	?	? Undefined
Management plan	F_{MGT}	-	-	- Not applicable	B_{MGT}	-	- Not applicable
Qualitative evaluation	-	-	-	- Not applicable	-	↗ ↘ ↙	Decreasing

Index A (2017–2018)		23
Index B (2014–2016)		32
Index ratio (A/B)		0.74
Uncertainty cap	Applied	0.8
Advised landings for years 2018–2019		12 036 tonnes
Discard rate		Unknown
Precautionary buffer	Applied	0.8
Landings advice *		7703 tonnes
% Advice change **		-36%

- Landings have ranged from about 15, 000 to 22, 000 t in the last ten years.
- Divisions 5.b and 6.a stock unit was defined in 2015.
- Biomass index from the summer survey on the Faroe Plateau in Division 5.b has declined in 2017-2018

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

SUMMARY

Stock	Exploitation	State of stock	Advice 2020	Advice 2019	Catch 2018	TAC 2019
Haddock 4, 6.a, sub. 20			30228	33956	39525	33956
Haddock 6.b	Advice to be provided on 30 September					
cod 6.a			0	0	1890	1735
Saithe 3.a, 4, 6			88093	103327	94832	103327
Megrim 4.a, 6.a			6450-8350	8250	3258	8669
Greater silver smelt 5.b 6.a			7703	12036	16033	4661

Colours indicate that the value for the Advice for 2020 is either above (green) or below (red) the Advice for 2019. For TAC 2019 in blue, area or species differ from the advice.

Advice provided in previous years

Stock	Advice 2019 (t)	Advice 2020 (t)	Year advice provided
Whiting 6.a	0	0	2018
Whiting 6.b	9	9	2018
Cod 6.b	14	14	2017
Tusk 6.b	280	280	2018

Deep-sea stocks

SUMMARY

Stock	Exploitation	State of stock	Advice 2020	Advice 2019	Catch 2018	TAC 2019
G. Silver smelt 7-10, 12, 6.b	?	?	193	14(landings)	36	4661
Tusk 4,7-9,3.a, 5.b,6.a,12.b	✓	✓	8627	8984	4507	4551
Ling 6-9,12,14,3.a,4.a	✓	?	18516	17695	20688	25868

Colours indicate that the value for the Advice for 2020 is either above (green) or below (red) the Advice for 2019. For TAC 2019 in blue, area or species differ from the advice.

ICES advice provided in previous years

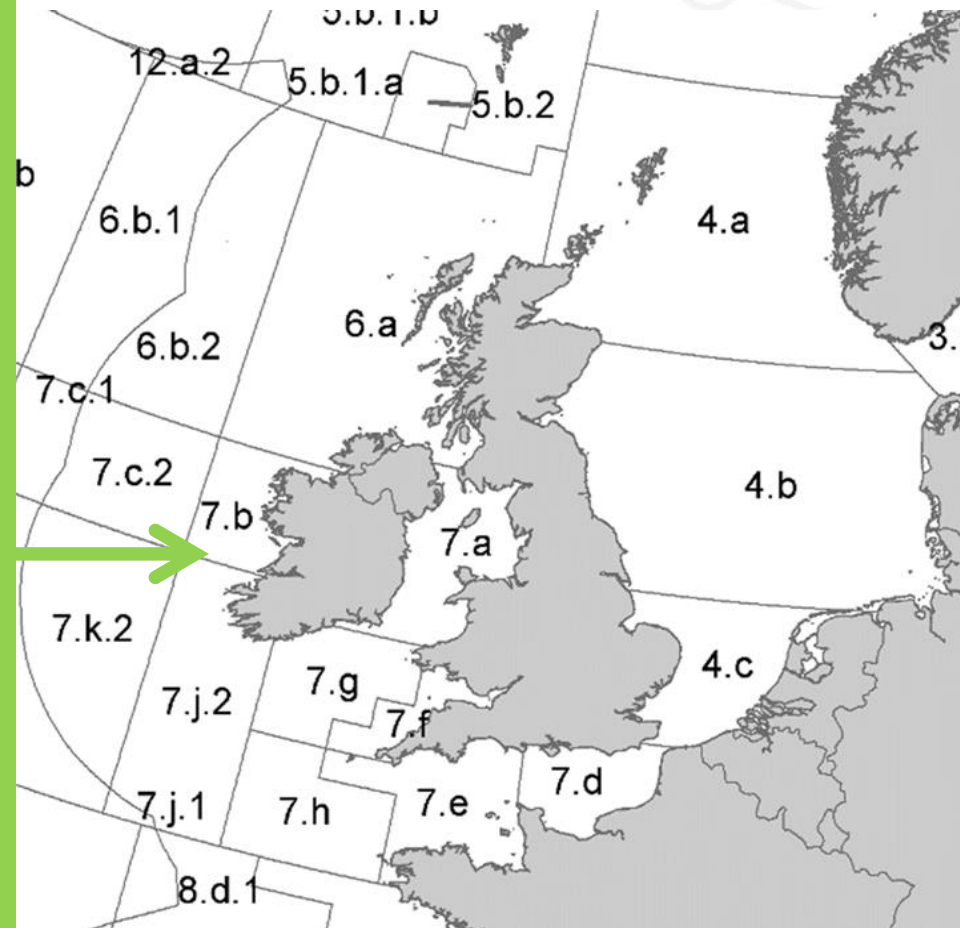
Stock	Advice 2019 (t)	Advice 2020 (t)	Year advice provided
Alfonsinos - NE Atlantic	224	224	2018
Black scabbardfish - NE Atlantic	5914	5914	2018
Greater forkbeard - NE Atlantic	1346	1346	2018
Blackspot seabream 6, 7, 8	0	0	2018
Roundnose grenadier 6, 7, 5.b, 12.b	3971	3971	2018
Blue ling 5.b, 6-7	11778	11500	2018

Celtic Sea & West, Southwest Ireland

- Cod (7.e-k)
- Haddock (7.b-k)
- Whiting (7.bc,e-k)
- Sole (7.bc; 7.fg; 7.h-k;)
- Plaice (7.bc, 7.fg; 7.h-k;)
- Pollack (6,7)
- Northern hake
- Sea bass (6.a, 7.b, 7.j; 4.bc, 7.a,d-h)
- Megrin (7.b-k, 8.abd)
- B-B Anglerfish (7.b-k, 8.abd)
- Four-spot megrim
- White anglerfish (7, 8.a-b,d)

IN AUTUMN:

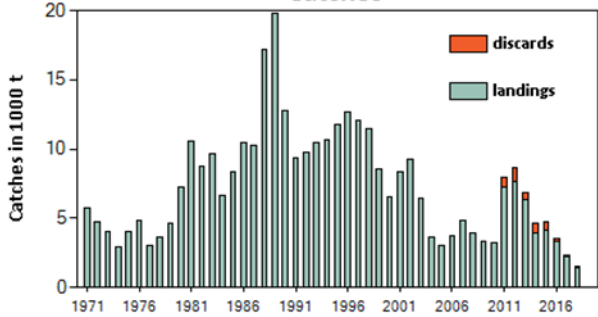
- *Nephrops* (FUs 16-17-20-22)
- Anglerfish (3.a,4,6)
- Skates and rays



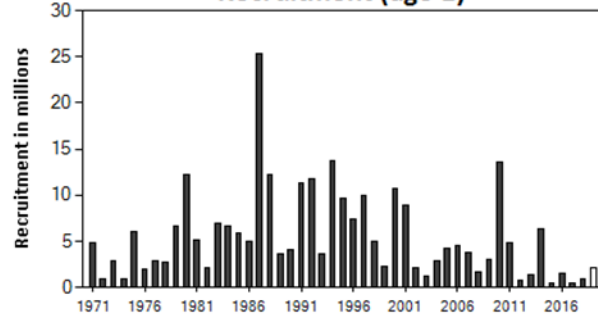
Cod in the western English Channel and southern Celtic Seas(7.e–k)

Advice for 2020: MSY: Catch = 0 t

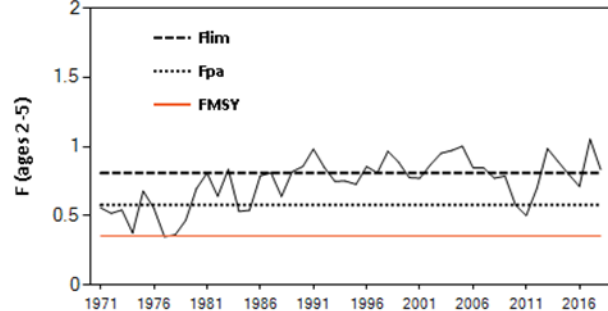
Catches



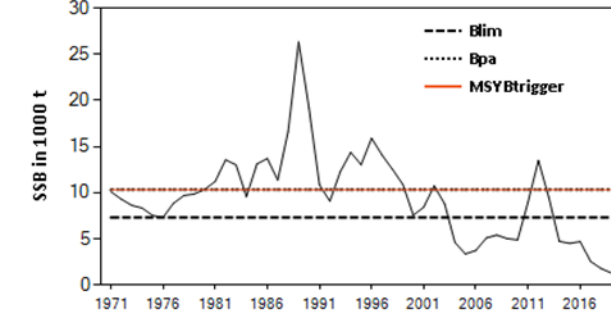
Recruitment (age 1)



F



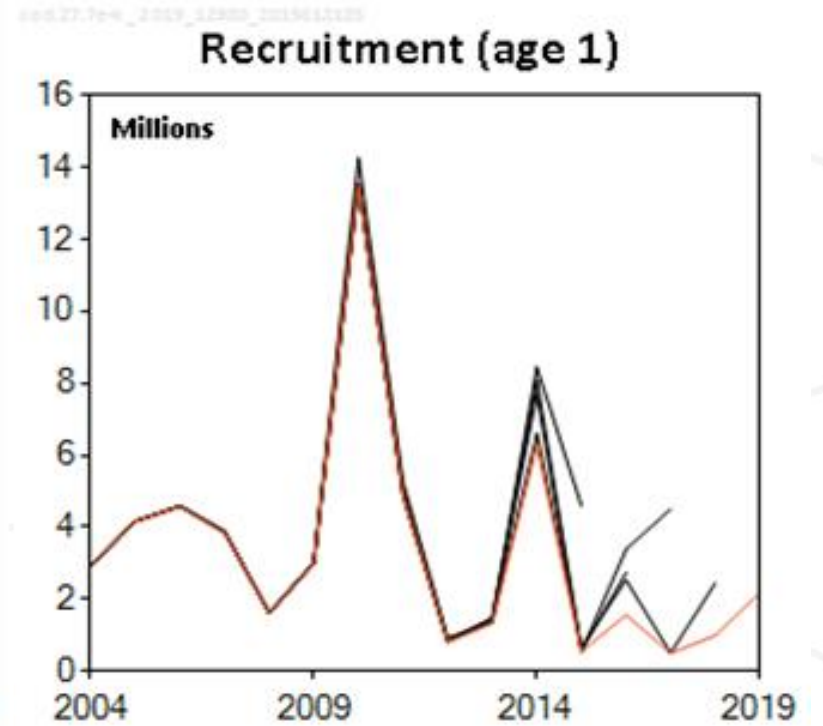
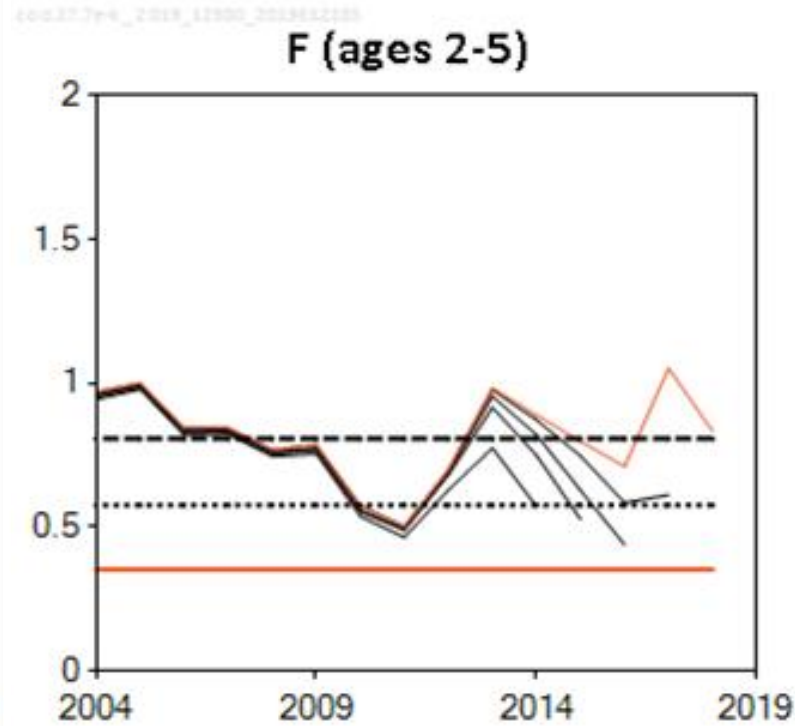
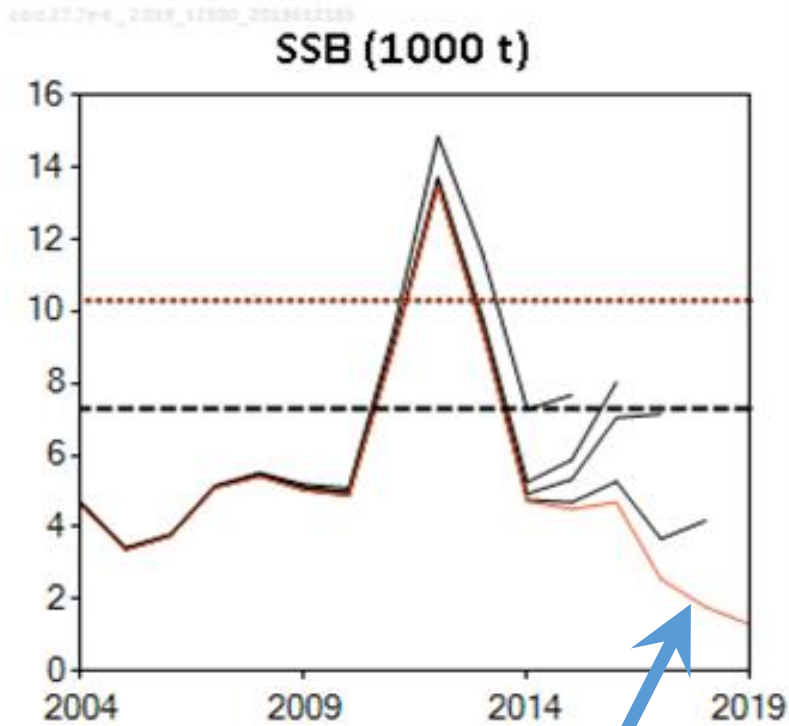
SSB



- Assessment results in large downward revision of the stock size.
- Spawning stock below B_{lim} in 2019 and not expected to reach B_{lim} even with 0 catch.
- Fishing pressure above F_{MSY}
- Recruitment variable, weak recently
- Catch in 2018 = 1 565 t

	Fishing pressure			Stock size				
		2016	2017	2018	2017	2018	2019	
Maximum sustainable yield	F_{MSY}	✗	✗	✗ Above	MSY	✗	✗	✗ Below trigger
Precautionary approach	F_{pa}, F_{lim}	⊕	✗	✗ Harvested unsustainably	B_{pa}, B_{lim}	✗	✗	✗ Reduced reproductive capacity
Management plan	F_{MGT}	✗	✗	✗ Above range	B_{MGT}	✗	✗	✗ Below trigger

Cod in the western English Channel and southern Celtic Seas(7.e-k)



- Assessment results in large downward revision of the stock size.
- Estimate of 2018 recruitment lower than assumption made last year
- 25th quantile of recruitment now considered more appropriate for predictions

Cod in the western English Channel and southern Celtic Seas(7.e–k)

Catch (2018) : 1565 t (12 % discards)

F(2019) = 0.87 ((Recent average fishing pressure (2016-2018));

SSB (2020)= 1 664 < B_{lim} (7 300 t) F_{MSY}= 0.35

Basis	Total catch (2020)	Wanted catch* (2020)	Unwanted catch* (2020)	F _{total} (2020)	F Wanted	F Unwanted (2020)	SSB (2021)	% SSB change **
ICES advice basis								
MSY approach: F=0	0	0	0	0	0	0	4447	167
Other scenarios								
F _{pa}	1560	1450	110	0.58	0.58	0	2820	69
F _{MSY} × SSB ₂₀₂₀ /MSY B _{trigger}	189	176	13	0.057	0.057	0	4246	155
F _{MSY lower} × SSB ₂₀₂₀ /MSY B _{trigger}	125	116	8.8	0.037	0.037	0	4314	159
F _{MSY upper} × SSB ₂₀₂₀ /MSY B _{trigger}	293	272	21	0.089	0.089	0	4136	149
F=F _{MSY}	1033	960	73	0.35	0.35	0	3361	102
F _{lim}	1977	1838	139	0.8	0.8	0	2402	44
SSB ₂₀₂₁ = B _{lim} [^]								
SSB ₂₀₂₁ =B _{pa} = MSY B _{trigger} [^]								
F = F ₂₀₁₉	2088	1941	147	0.87	0.87	0	2293	38

** SSB 2021 relative to SSB 2020.

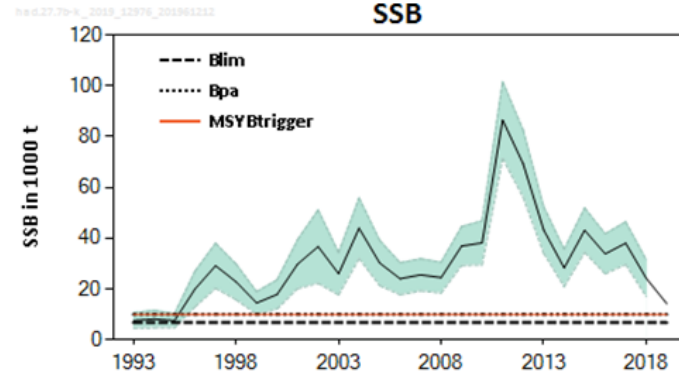
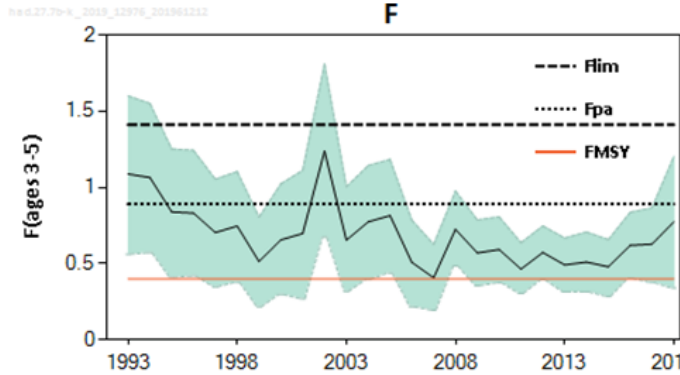
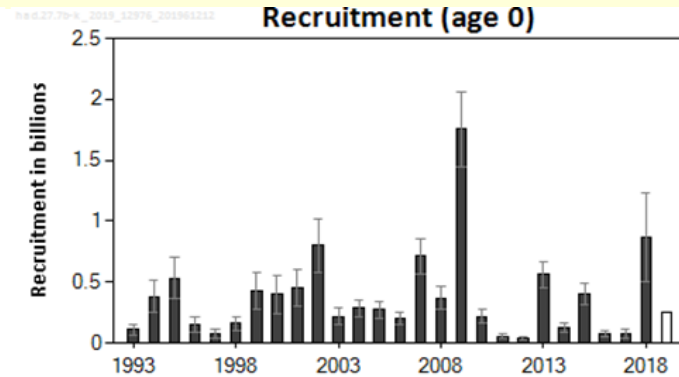
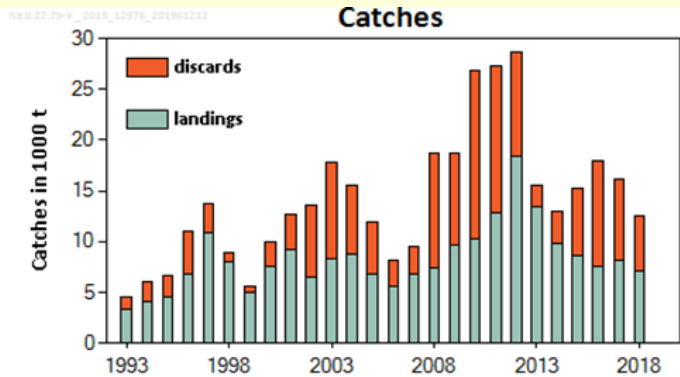
*** Total catch in 2020 relative to TAC 2019 (1610 tonnes).

^The Blim, Bpa, and MSY Btrigger options were left blank because Blim, Bpa, and MSYBtrigger cannot be achieved in 2021, even with zero advice

- **Caught in mixed fisheries with haddock and whiting.**
- **Stock includes the south of Division 7.a (rectangles 33E2-3)**

Haddock in the southern Celtic Seas and English Channel (7.b–k)

Advice for 2020: EU MAP Catch = 11 418 - 23 262 t



- Spawning stock declined since 2011 but remains above MSY $B_{trigger}$
- Recruitment in 2017 low but estimate for 2018 second highest.
- Fishing pressure above F_{MSY} and increasing.
- Discarding high $\sim 43\%$.

	Fishing pressure				Stock size					
	2016	2017	2018		2017	2018	2019			
Maximum sustainable yield	F_{MSY}	✗	✗	✗	Above	MSY $B_{trigger}$	✓	✓	✓	Above trigger
Precautionary approach	F_{pa} , F_{lim}	✓	✓	✓	Harvested sustainably	B_{pa} , B_{lim}	✓	✓	✓	Full reproductive capacity
Management plan	F_{MGT}	✗	✗	✗	Above range	B_{MGT}	✓	✓	✓	Above trigger

Assessment includes commercial index from the Irish fleet.

Haddock in the southern Celtic Seas and English Channel (7.b–k)

Catch (2018) : 12 545 (43% discards)

F(2019) = 0.77 (Recent average fishing pressure (2016-2018));

SSB (2020)= 49 821 > MSY_{Btrigger} (10 000 t) F_{MSY}= 0.40

Basis	Total catch (2020)	Wanted catch* (2020)	Unwanted catch* (2020)	Ftotal (2020)	F Wanted (2020)	F Unwanted (2020)	SSB (2021)	% SSB change **	% Advice change^
ICES advice basis									
EU MAP ^{^^} : F _{MSY}	16671	8068	8603	0.4	0.35	0.054	47629	-4.4	164
F=MAP F _{MSY lower}	11418	5548	5870	0.26	0.23	0.035	53090	6.6	81
F=MAP F _{MSY upper}	23262	11196	12066	0.6	0.52	0.08	40890	-17.9	270
Other scenarios									
F = 0	0	0	0	0			65183	31	-100
F _{pa}	31221	14909	16312	0.89	0.77	0.119	32954	-34	390
F _{lim}	41910	19747	22164	1.41	1.22	0.189	22766	-54	560
SSB ₂₀₂₁ = B _{lim}	61452	27772	33680	3.4	3	0.46	6700	-87	870
SSB ₂₀₂₁ = B _{pa} = MSY B _{trigger}	56879	26040	30839	2.7	2.3	0.36	10000	-80	800
F = F ₂₀₁₉	28208	13513	14696	0.77	0.67	0.104	35929	-28	350

** SSB 2021 relative to SSB 2020.

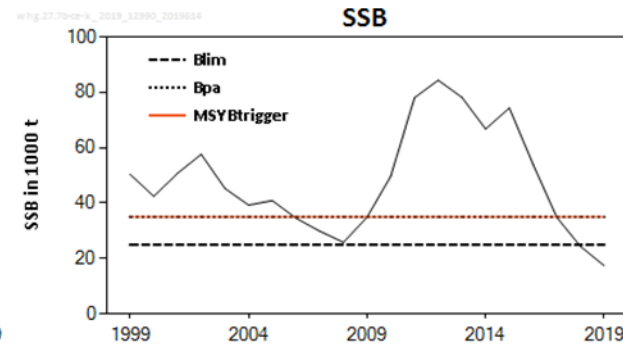
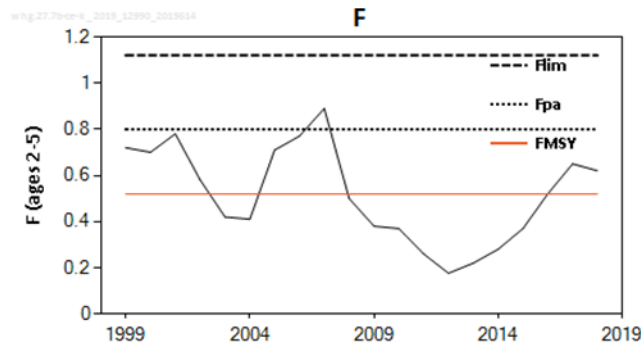
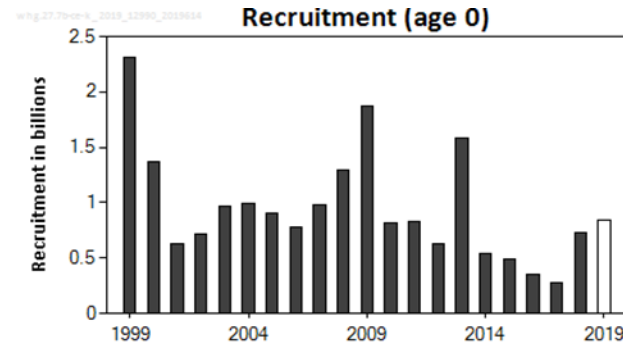
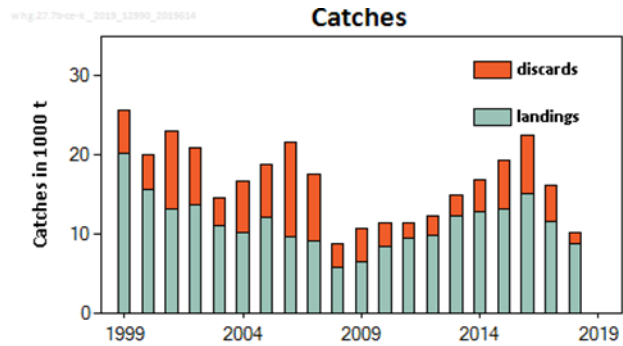
^ Advice value for 2020 relative to advice value for 2019 (6317 tonnes).

^^ EU multiannual plan (MAP) for the Western Waters (EU, 2019)

- Stock includes the south of Division 7.a (rectangles 33E2-3)

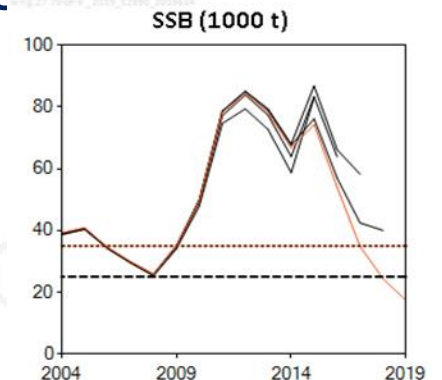
Whiting in the southern Celtic Seas and western English Channel (7.b–c and 7.e–k)

Advice for 2020 : EU MAP: Catch 4 157 - 6 481 t



- Stock size revised downwards.
- Spawning stock declined since 2012
- F increasing since 2008, above F_{MSY} in 2017.
- Recruitment stable with strong year-class in 2013 and 2017.
- Caught in mixed fisheries with cod and haddock

	Fishing pressure			Stock size		
	2016	2017	2018	2017	2018	2019
Maximum sustainable yield	F_{MSY} ✓	✗	✗ Above	$B_{trigger}$ ✗	✗	✗ Below trigger
Precautionary approach	F_{pa}, F_{lim} ✓	✓	✓ Harvested sustainably	B_{pa}, B_{lim} ⚠	✗	✗ Reduced reproductive capacity
Management plan	F_{MGT} ✓	✓	✓ Within the range	B_{MGT} ✗	✗	✗ Below trigger



Whiting in the southern Celtic Seas and western English Channel (7.b–c and 7.e–k)

Catch (2018) : 10268 t (15 % discards)

F(2020) = 0.62 (Recent average fishing pressure (2016-2018));

SSB (2020)= 23 615t < B_{lim} (25 000 t) FMSY= 0.52

Basis	Total catch (2020)	Wanted catch* (2020)	Unwanted catch* (2020)	F _{total} (2020)	F _{wanted} (2020)	F _{unwanted} (2020)	SSB (2021)	% SSB change **	% Advice change ***
ICES advice basis									
EU MAP^: F _{MSY} × SSB ₂₀₂₀ /MSY B _{trigger}	6481	3885	2597	0.35	0.25	0.1	33720	43	-59
EU MAP^: F _{MSY lower} × SSB ₂₀₂₀ /MSY B _{trigger}	4157	2513	1644	0.22	0.15	0.06	35680	51	-74
Other scenarios									
F _{MSY upper} × SSB ₂₀₂₀ /MSY B _{trigger}	8104	4826	3277	0.45	0.32	0.13	32365	37	-49
F = 0	0	0	0	0	0	0	39236	66	-100
F = F _{pa}	13006	7586	5420	0.8	0.56	0.24	28347	20	-18.3
F = F _{lim}	16762	9603	7159	1.12	0.79	0.33	25356	7.4	5.3
SSB ₂₀₂₁ = B _{lim}	17216	9841	7376	1.16	0.82	0.34	25000	5.9	8.2
SSB ₂₀₂₁ = B _{pa} = B _{trigger}	4960	2990	1970	0.26	0.18	0.08	35000	48	-69
F = F ₂₀₁₉	10641	6271	4370	0.62	0.44	0.18	30270	28	-33

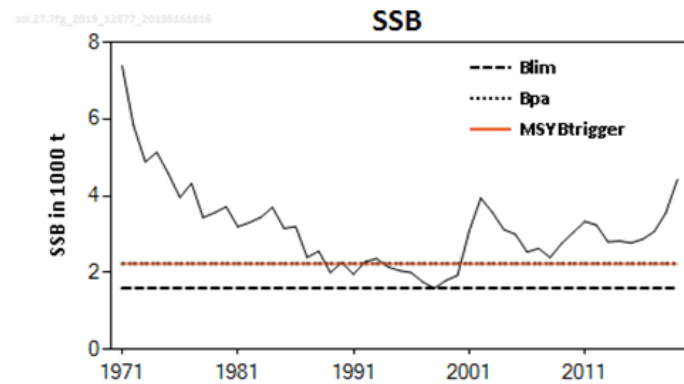
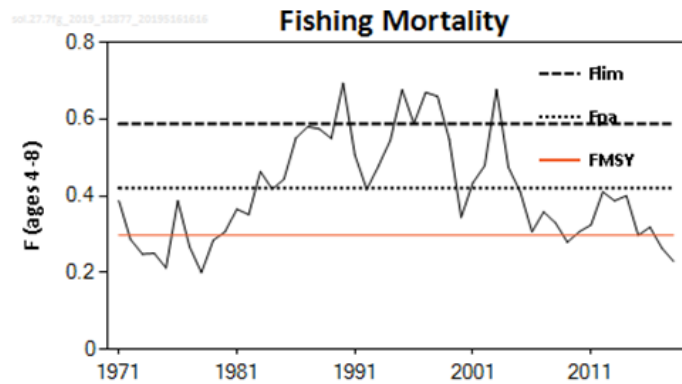
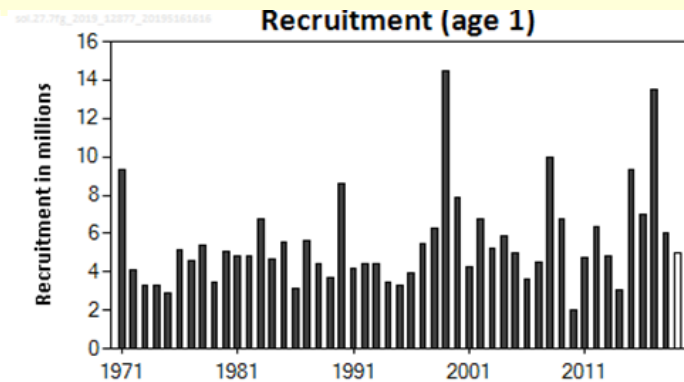
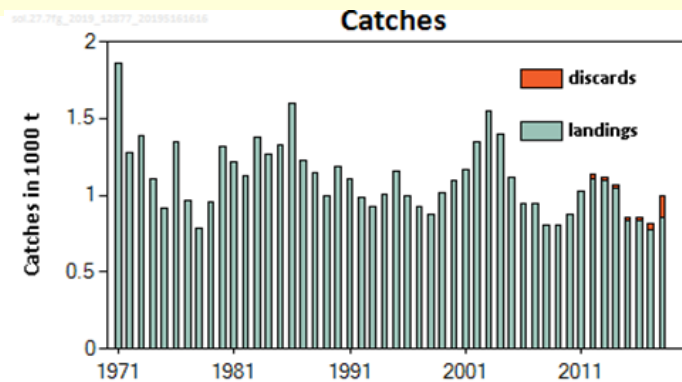
** SSB 2021 relative to SSB 2020.

*** Advice value for 2020 relative to advice value for 2019 (15 841 tonnes).

- Discards were reduced in 2018.
- Stock includes south of Division 7.a (33E2-3)
- Mismatch between the assessment area and TAC area – (7.d not part of stock)

Sole in the Bristol Channel, Celtic Sea (7.f and 7.g)

Advice for 2020: EU MAP: Catch = 1 020 - 2 665 t ($F_{MSY} = 1731$ t)



- Estimates of SSB revised upwards
- Spawning stock above MSY Btrigger.
- Fishing pressure has been fluctuating, below F_{MSY} since 2017.
- Recruitment in 2015 and 2017 estimated to be well above average.

		Fishing pressure			Stock size		
		2016	2017	2018	2017	2018	2019
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}	✔	✔	✔ Within the range	B_{MGT}	✔	✔ Above trigger

Sole in the Bristol Channel, Celtic Sea (7.f and 7.g)

Catch (2018) : 997 t (15 % discards)

F(2019) = 0.16 Catch constraint - TAC

SSB (2020)= 5 439 t > MSY_{Btrigger} (2 400 t) F_{MSY} = 0.297

Basis	Total catch * (2020)	Wanted catch** (2020)	Unwanted catch** (2020)	F Wanted (2020)	SSB (2021)	% SSB change ***	% TAC change ^	% Advice change^^
ICES advice basis								
EU MAP ^{^^^} : F _{MSY}	1731	1577	154	0.297	5202	-4.4	106	100
EU MAP F _{MSY lower}	1020	929	91	0.165	5842	7.4	21	18
EU MAP F _{MSY upper}	2665	2428	237	0.499	4366	-19.7	217	208
Other scenarios								
F = 0	0	0	0	0	6763	24	-100	-100
F _{pa}	2320	2114	206	0.42	4674	-14.1	176	169
F _{lim}	2987	2721	266	0.578	4080	-25	255	246
SSB ₂₀₂₁ = B _{lim}	5845	5325	520	1.75	1592	-71	595	576
SSB ₂₀₂₁ = B _{pa} = MSY B _{trigger}	5097	4644	453	1.31	2228	-59	506	490
F = F2019	981	894	87	0.158	5877	8.1	16.7	13.6

*** SSB 2021 relative to SSB 2020.

^ Total catch in 2020 relative to the TAC in 2019 (841 t).

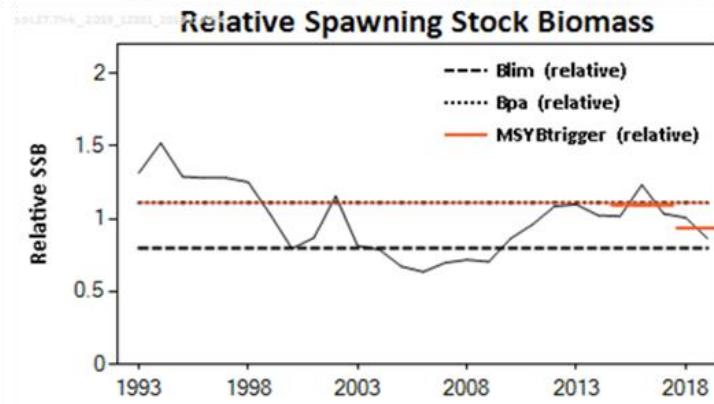
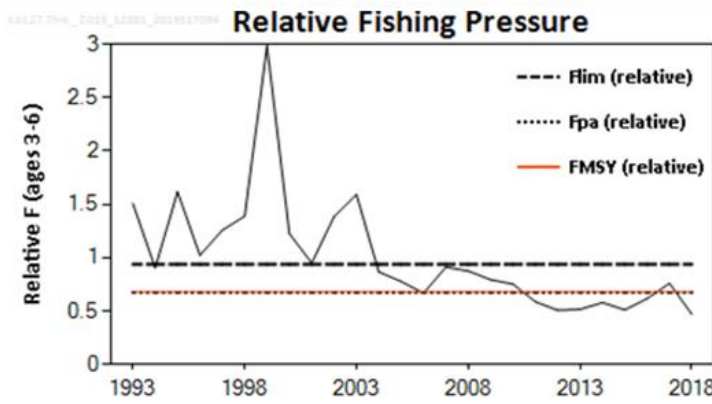
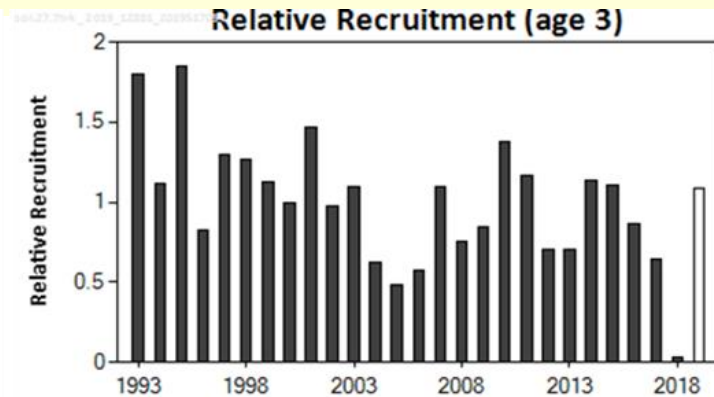
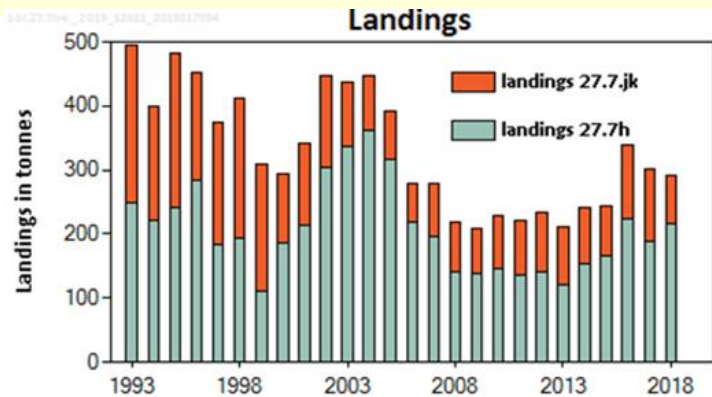
^^ Advice value for 2020 relative to the advice value for 2019 (864 t).

^^^ EU multiannual plan (MAP) for the Western Waters and adjacent waters (EU, 2019)

- Landings in the model; discards are then included to calculate a catch forecast

Sole in the Celtic Sea South, southwest of Ireland (7.h–k)

Advice for 2020: PA: Catch \leq 213 t



- Assessment based on commercial data (Irish trawlers) from 7.jk – used as trends for entire stock (Cat. 3).
- Spawning stock has increased since 2005 but declining recently - below MSY $B_{trigger}$ proxy.
- Very low estimate of recruitment in 2018
- F below F_{MSY} proxy in 2018.

	Fishing pressure			Stock size			
		2016	2017	2018	2017	2018	2019
Maximum sustainable yield	F_{MSY}	✓	✗	✓	✗	✗	Below proxy
Precautionary approach	F_{pa}, F_{lim}	✓	⦿	✓	⦿	⦿	Harvested sustainably / Increased risk
Management plan	F_{MGT}	?	?	?	✗	✗	Undefined / Below trigger

Sole in the Celtic Sea South, southwest of Ireland (7.h–k)

Catch (2018) = 296 t (negligible discards 5 t)

Index A (2018–2019)		0.94
Index B (2015–2017)		1.09
Index ratio (A/B)		0.86
Uncertainty cap	Not applied	-
Advised catch for 2019		311 tonnes
Discard rate		Negligible
Precautionary buffer	Applied	0.8
Catch advice**		213 tonnes
% Advice change***		-32%

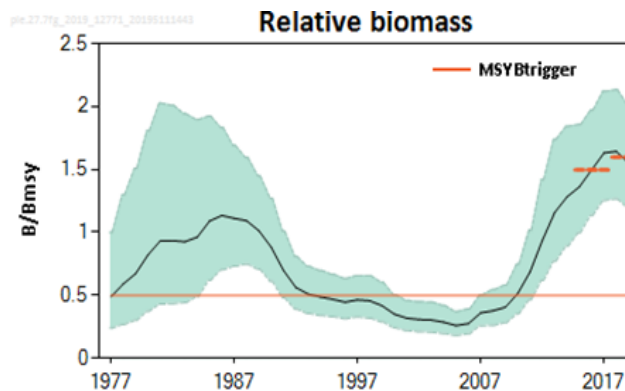
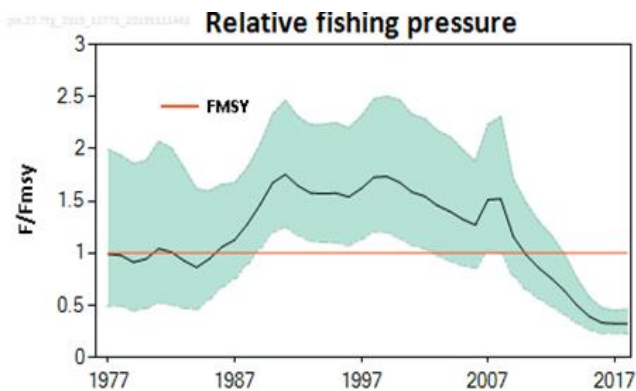
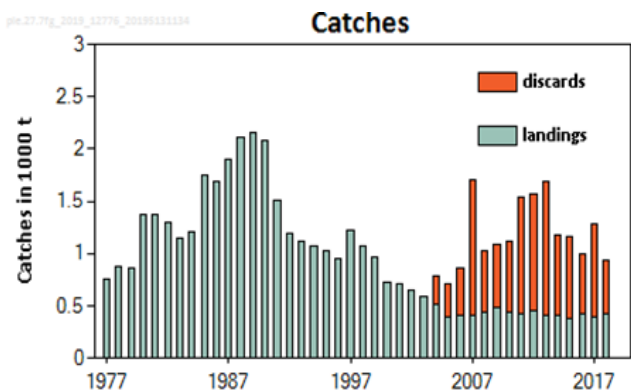
** [(advice for 2019 × index ratio) × precautionary buffer]

*** Advice value for 2020 relative to advice value for 2019.

- Precautionary buffer was applied because the SSB is estimated to be below the MSY reference point proxy.
- Discards are considered to be negligible.

Plaice in the Bristol Channel, Celtic Sea (7.f and 7.g)

Advice for 2020: PA: Catch \leq 2 295 t



- Fishing pressure has declined and well below F_{MSY} proxy.
- Spawning stock has increased since 2005 and is well above $MSY_{Btrigger}$ proxy.
- Caught in mixed fishery with sole, high discard rates (67% during 2014-2018)

	Fishing pressure			Stock size			
		2016	2017	2018	2017	2018	2019
Maximum sustainable yield	F_{MSY}	✓	✓	✓ Below proxy	$MSY_{Btrigger}$	✓	✓ Below proxy
Precautionary approach	F_{pa}, F_{lim}	✓	✓	✓ Below possible reference points	B_{pa}, B_{lim}	✓	✓ Below possible reference points
Management plan	F_{MGT}	—	—	—	B_{MGT}	—	—

Plaice in the Bristol Channel, Celtic Sea (7.f and 7.g)

Catch (2018) = 930 t (55 % discards)

Index A (2018–2019)		1.6
Index B (2015–2017)		1.5
Index ratio (A/B)		1.06
Uncertainty cap	Not applied	-
Recent advised catch (for 2019)		2160 tonnes
Precautionary buffer	Not applied	-
Catch advice**		2295 tonnes
% Advice change***		6%

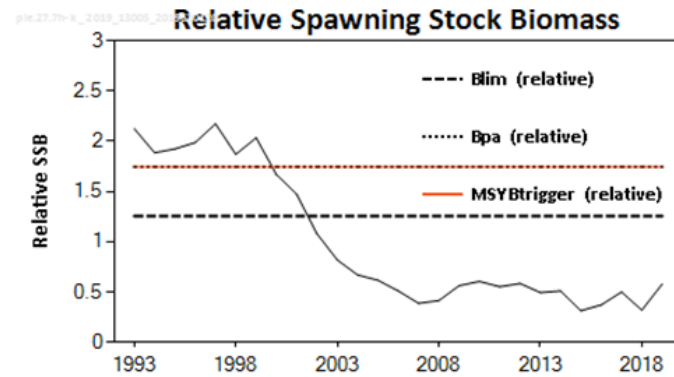
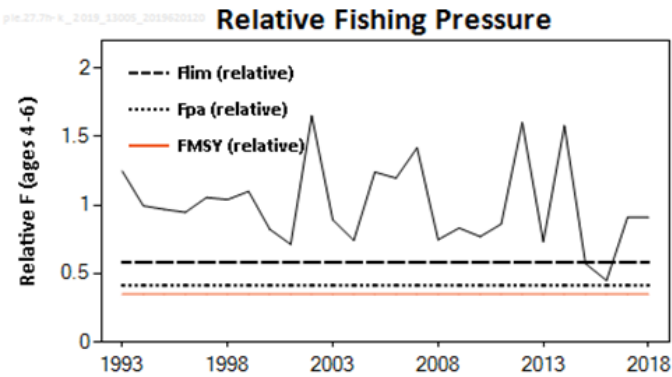
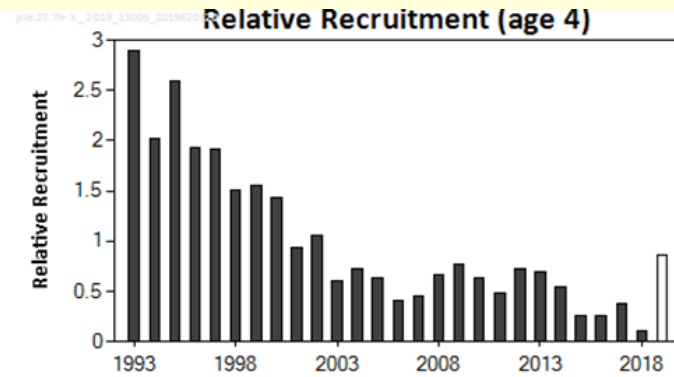
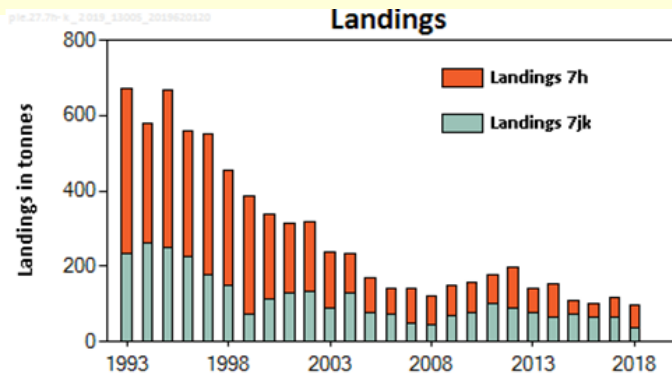
** [recent advised catch] × [index ratio].

*** Advice value for 2020 relative to the advice value for 2019.

- Increase in advice due to recent increase in spawning stock
- High discards of plaice in mixed sole and plaice fishery: mismatch between selectivity and minimum landing size & relatively low market value of plaice.

Plaice in the Celtic Sea South, southwest of Ireland (7.h-k)

Advice for 2020 and 2021: PA: Catch = 0 t



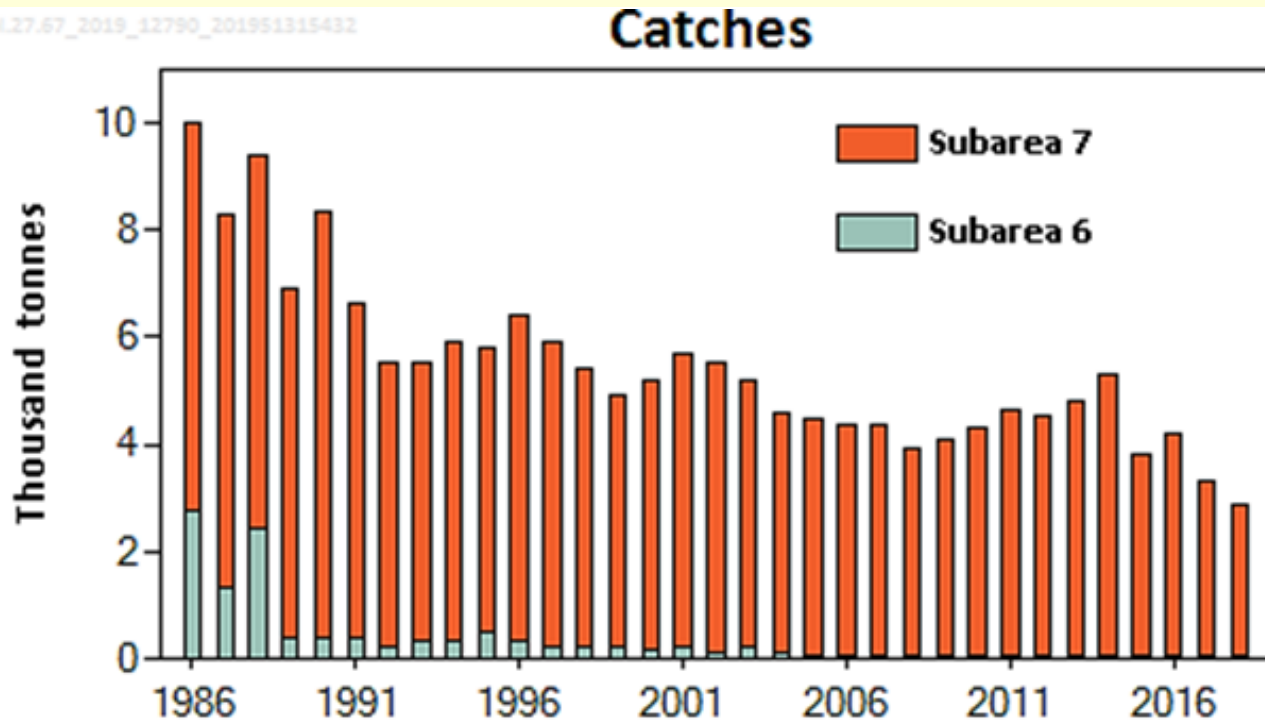
- Assessment based on commercial data (Irish trawlers) from 7.jk – used as trends for entire stock
- Spawning stock below B_{lim} since 2002 and likely to remain in 2020-2021.
- Recruitment low since 2003.
- Fishing pressure above F_{MSY} , highly variable with no trend.
- Because plaice is caught in distinct areas, restricting effort in areas where plaice are caught could be effective.
- Landings in 2018 – 97 tonnes
- No Catch scenarios presented.

	Fishing pressure			Stock size			
		2016	2017	2018	2017	2018	2019
Maximum sustainable yield	F_{MSY}	✘	✘	✘ Above	MSY	✘	✘ Below trigger
Precautionary approach	F_{pa}, F_{lim}	⦿	✘	✘ Harvested unsustainably	B_{pa}, B_{lim}	✘	✘ Reduced reproductive capacity
Management plan	F_{MGT}	—	—	—	B_{MGT}	—	—

- Advice for Northern hake scheduled to be provided on 5 July 2019, pending decision from clients on the basis for the advice (MSY or EU MAP for Western Waters).

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

Advice for 2020 : PA: Catch $\leq 3\ 360$ t



- Limited information available on pollack in this area.
- Catches have declined since the late 1980's, lowest in 2018
- Recreational catch unknown, but thought to be significant.

	Fishing pressure				Stock size					
		2016	2017	2018		2016	2017	2018		
Maximum sustainable yield	F_{MSY}	?	?	?	Unknown	MSY	?	?	?	Unknown
Precautionary approach	$F_{pa} \cdot F_{lim}$?	?	?	Unknown	$B_{pa} \cdot B_{lim}$?	?	?	Unknown
Management plan	F_{MGT}	-	-	-	Undefined	B_{MGT}	-	-	-	Undefined
Qualitative evaluation	-	✓	✓	✓	Below possible reference points	-	?	?	?	Unknown

- Fishing pressure considered to be below reference points

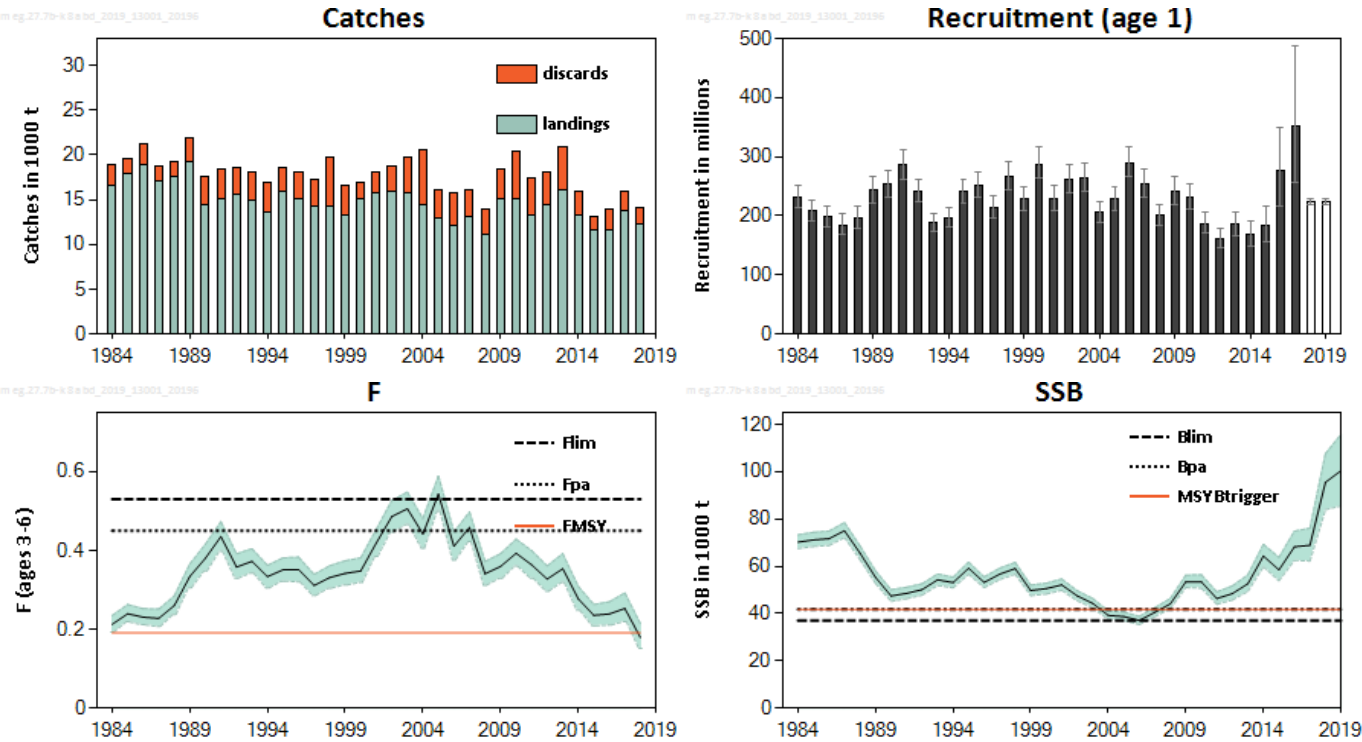
Catch (2018) = 2 911 t (discards negligible but recreational catch unknown)

Advised commercial landings for 2019	3360 tonnes
Discard rate	< 1%
Precautionary buffer	Not applied -
Commercial catches advice for 2020	3360 tonnes
% Advice change	0

- **Advice unchanged**

Megrim in the west and southwest of Ireland, Bay of Biscay (7.b–k, 8.a–b, and 8.d)

Advice for 2020: EU MAP: Catch $\leq 13\,218 - 28\,838$ t ($F_{MSY} = 19\,982$ t)



- Spawning stock has been above $MSY B_{trigger}$ since 2008.
- The fishing pressure has decreased since 2004 and below F_{MSY} in 2018.
- Recruitment has been relatively stable but higher in the last 2 years.

	Fishing pressure			Stock size			
		2016	2017	2018	2017	2018	2019
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}	✓	✓	✓ Within the range	B_{MGT}	✓	✓ Above trigger

Assessment includes Spanish and Irish commercial indices.

Megrim in the west and southwest of Ireland, Bay of Biscay (7.b–k, 8.a–b, and 8.d)

Catch (2018) : 14 133 t (13 % discards)

F(2019) = 0.18 (Recent fishing pressure (2016-2018, rescaled to 2018));

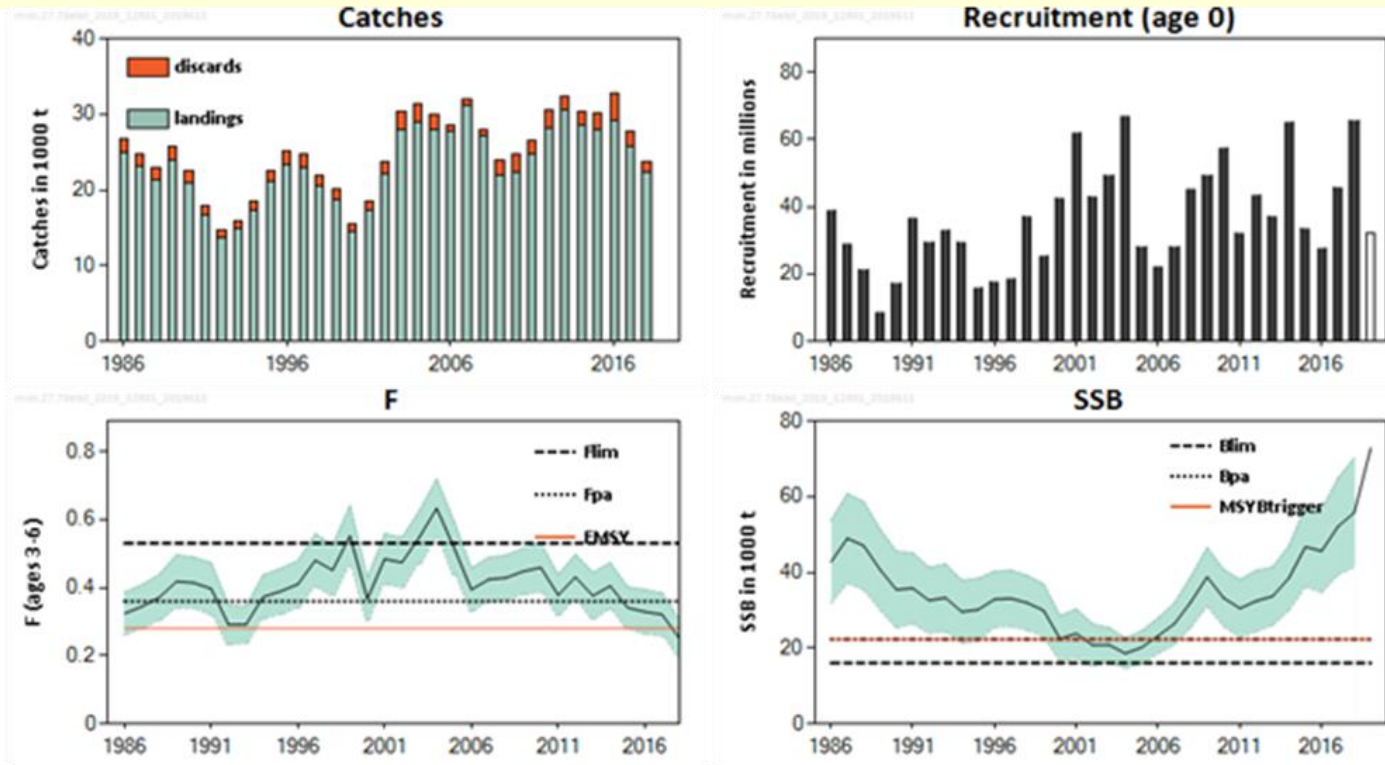
SSB (2020)= 112 798 t > MSY_{Btrigger} (41 800 t) F_{MSY} = 0.191

Basis	Total catch (2020)	Wanted catch	Unwanted catch	F _{total} (2020)	SSB (2021)	% SSB change *	% Advice change **
ICES advice basis							
EU MAP [^] : F _{MSY}	19982	16174	3808	0.191	118129	5%	6%
F = MAP F _{MSY lower}	13218	10720	2498	0.122	125760	11%	-30%
F = MAP F _{MSY upper}	28838	23285	5553	0.29	108262	-4%	53%
Other scenarios							
MSY approach = F _{MSY}	19982	16174	3808	0.191	118129	5%	6%
F = 0	0	0	0	0	140732	25%	-100%
F _{pa}	41586	33447	8139	0.45	94097	-17%	120%
F _{lim}	47214	37892	9323	0.53	87862	-22%	150%
SSB (2021) = B _{lim}	94951	73980	20970	1.74	37100	-67%	400%
SSB (2021) = B _{pa}	90276	70657	19619	1.54	41800	-63%	380%
SSB (2021) = MSY B _{trigger}	90276	70657	19619	1.54	41800	-63%	380%
F = F ₂₀₁₉	18959	15351	3608	0.18	119286	6%	0%

- The ICES advice is for *L. whiffiagonis*, whereas the TAC is for *L. whiffiagonis* and *L. boscii* combined and includes 7.a and 8.e..

White anglerfish in Subarea 7 and div. 8.a-b,d (Celtic Sea, Bay of Biscay)

Advice for 2020 : EU MAP: Catch: 21 428 to 42 331 t ($F_{MSY}=31\ 798\ t$)



- Spawning stock increasing since 2005 and highest in time-series.
- Fishing pressure decreasing, below F_{MSY} in 2018.
- Recruitment variable but above average in 2017-2018.
- 2 anglerfish species not totally separated in landings
- Under combined TAC with BB anglerfish.

	Fishing pressure				Stock size					
	2017	2018	2019		2017	2018	2019			
Maximum sustainable yield	F_{MSY}	✘	✔	✔	Appropriate	$B_{trigger}$	✔	✔	✔	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

White anglerfish in Subarea 7 and div. 8.a-b,d (Celtic Sea, Bay of Biscay)

Catch (2018) : 23 768 t (6 % discards)

$F(2019) = 0.25$ (Recent fishing pressure (2016-2018, rescaled to 2018));

$SSB(2020) = 74\,923\text{ t} > MSY_{B_{trigger}} (22\,278\text{t}) \quad F_{MSY} = 0.28$

Basis	Total catch (2020)	Wanted catch (2020)	Unwanted catch* (2020)	F_{total} (2020)	F_{wanted} (2020)	$F_{unwanted}$ (2020)	SSB (2021)	% SSB change **	% Advice change ***
ICES advice basis									
EU MAP^: F_{MSY}	31798	29510	2288	0.28	0.27	0.0087	74595	-0.44	3
$F = MAP F_{MSY\ lower}$	21428	19894	1534	0.181	0.175	0.0056	81095	8.2	-31
$F = MAP F_{MSY\ upper}$	42331	39268	3063	0.39	0.37	0.0121	68045	-9.2	37
Other scenarios									
MSY approach = F_{MSY}	31798	29510	2288	0.28	0.27	0.0087	74595	-0.44	3
$F = 0$	0	0	0	-	-	-	94679	26	-100
F_{pa}	39556	36698	2858	0.36	0.34	0.0112	69765	-6.9	28
F_{lim}	54386	50426	3961	0.53	0.51	0.0164	60618	-19.1	76
$SSB(2021) = B_{lim}$	124127	114623	9504	2	1.93	0.062	19523	-74	300
$SSB(2021) = B_{pa} = MSY B_{trigger}$	119217	110131	9086	1.81	1.76	0.056	22278	-70	290
$F = F_{2019}$	28773	26706	2067	0.25	0.24	0.0077	76486	2.1	-6.8

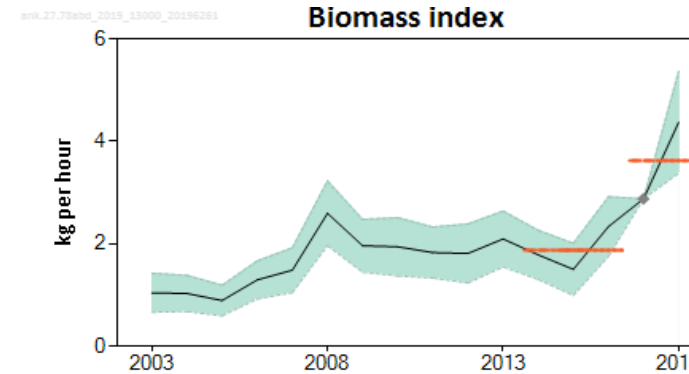
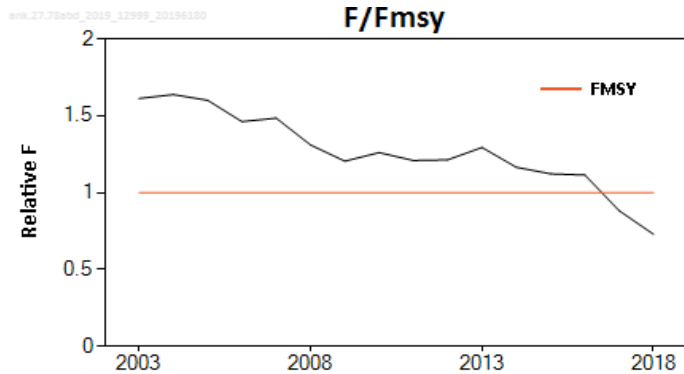
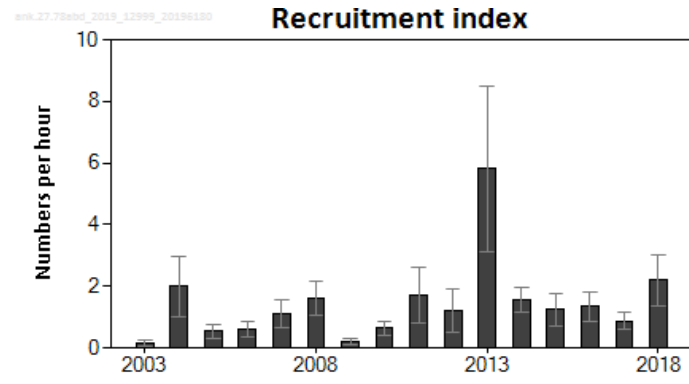
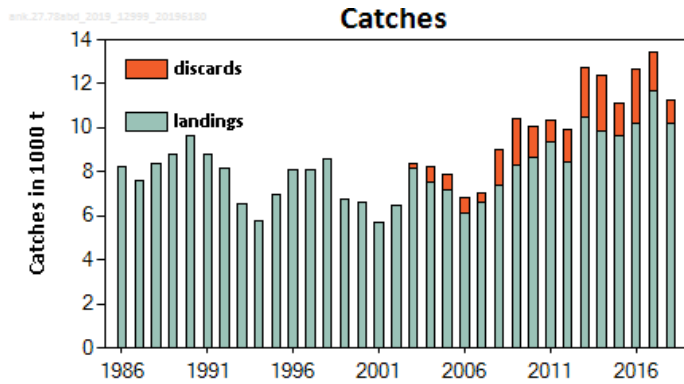
**SSB 2021 relative to SSB 2020.

*** Advice value 2020 relative to the advice value 2019.

^ The EU multiannual plan (MAP; EU, 2019).

Black-bellied anglerfish in divisions 7.b–k, 8.a–b, and 8.d

Advice for 2020 : PA: Catch $\leq 12\,959$ t



- Fishing mortality declined below F_{MSY} .
- Spawning stock increase since 2015
- Recruitment index above average in the last year.

	Fishing pressure			Stock size						
		2016	2017	2018	2016	2017	2018			
Maximum sustainable yield	F_{MSY} proxy	✘	✔	✔ Below proxy	$MSY B_{trigger}$?	?	?	Undefined	
Precautionary approach	F_{pa}, F_{lim}	?	?	?	Undefined	B_{pa}, B_{lim}	?	?	?	Undefined
Management plan	F_{MGT}	✘	✔	✔ *Below F_{MSY} proxy	B_{MGT}	?	?	?	Undefined	
Qualitative evaluation	-	↔	↘	↘ Decreasing	-	↗	↗	↗	Increasing	

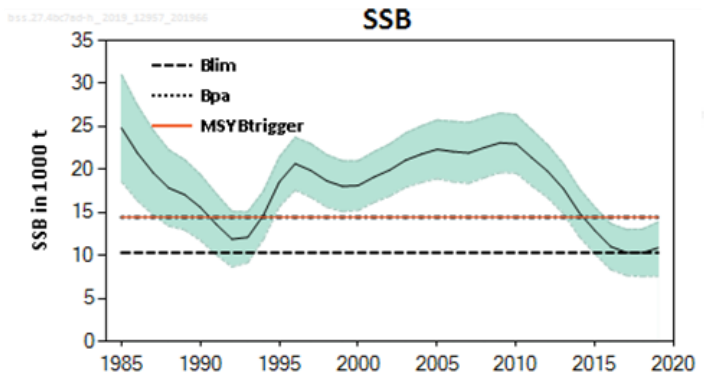
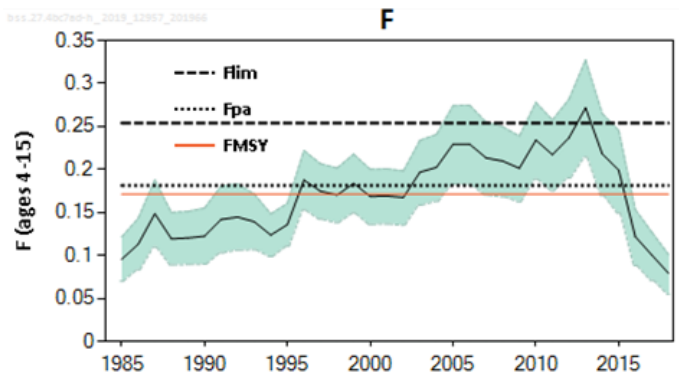
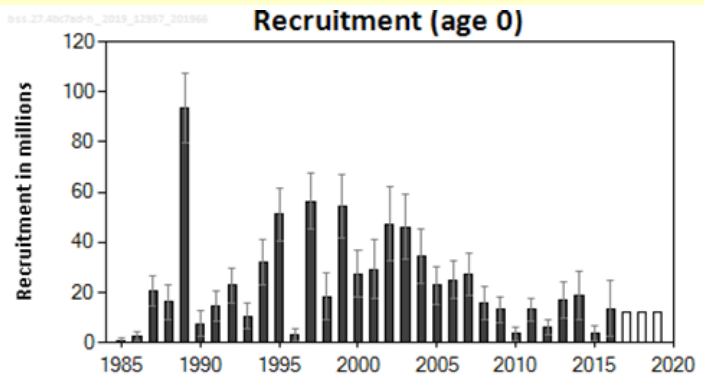
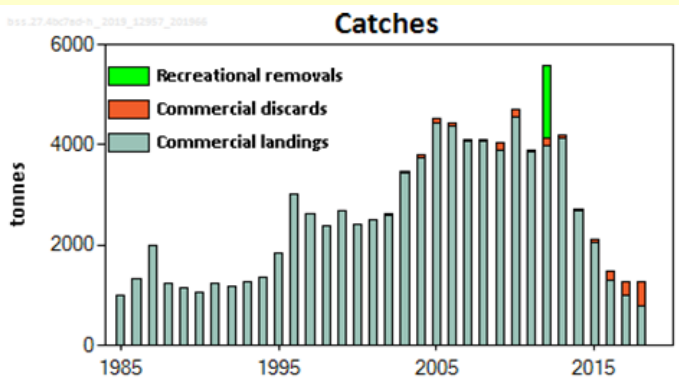
Black-bellied anglerfish in divisions 7.b–k, 8.a–b, and 8.d

Catch (2018) = 11 283 t (10 % discards)

Index A (2017–2018)	3.6 kg/hr	
Index B (2014–2016)	1.87 kg/hr	
Index ratio (A/B)	1.93	
Uncertainty cap	Applied	1.2
Advised catches in 2018	10 799 tonnes	
Unwanted catch rate	14% (average of the last three years)	
Precautionary buffer	Not applied	-
Catch advice **	12 959 tonnes	
% Advice change ^	20%	

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

Revised Advice for 2019, MSY: Catch \leq 1806 t
Advice for 2020, EU MAP: Catch: 1 634 – 1 946 t



- Correction of 2019 advice
 - LPUE index revised
 - Reference points recalculated
 - Increase in advice for 2019 from 1788 advised in 2018 to 1806 t.
- Spawning stock slightly above B_{lim} in 2019.
- Fishing pressure is below F_{MSY}.
- Recruitment poor except for 2013-2014.

	Fishing pressure				Stock size					
	2016	2017	2018		2017	2018	2019			
Maximum sustainable yield	F _{MSY}	✓	✓	✓	Below	MSY B _{trigger}	✗	✗	✗	Below trigger
Precautionary approach	F _{pa} , F _{lim}	✓	✓	✓	Harvested sustainably	B _{pa} , B _{lim}	○	○	○	Increased risk
Management plan	F _{MGT}	✓	✓	✓	Below	B _{MGT}	✗	✗	✗	Below trigger

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

Catch 2018: 1 439 t (801 t commercial, 482 t discards and 156 t recreational)

























F (2019)= 0..088 (Fsq for commercial fishery and full compliance in recreational)

SSB(2020) = 11 413 t > B_{lim} 10 313 t F_{MSY} -= 0.1713



Basis	Total catch* (2020)	Commercial landings (2020)	Commercial discards (2020)	Recreational removals (2020)	Total F (2020)	F Commercial landings (2020)	F Commercial discards (2020)	F Recreational removals 2020	SSB (2021)	% SSB change **	% Advice change ***
ICES advice basis											
EU MAP [#] : F _{MSY} × SSB ₂₀₂₀ / MSY B _{trigger}	1946	1445	89	412	0.135	0.102	0.0038	0.029	10861	-4.8	7.8
F = MAP F _{MSY} lower × SSB ₂₀₂₀ / MSY B _{trigger}	1634	1213	74	346	0.112	0.085	0.0031	0.024	11114	-2.6	-9.5
Other scenarios											
MSY approach = F _{MSY} × SSB ₂₀₂₀ / MSY B _{trigger}	1946	1445	89	412	0.135	0.102	0.0038	0.029	10861	-4.8	7.8
F = F _{MSY}	2428	1802	111	514	0.171	0.13	0.0048	0.037	10473	-8.2	34
F = 0	0	0	0	0	0	0	0	0	12444	9	-100
F _{pa}	2560	1900	118	543	0.182	0.138	0.0051	0.039	10367	-9.2	42
F _{lim}	3462	2567	161	734	0.254	0.192	0.0071	0.054	9644	-15.5	92
SSB ₂₀₂₁ = B _{lim}	2627	1949	121	557	0.187	0.141	0.0052	0.04	10313	-9.6	45
SSB ₂₀₂₁ = B _{pa} [^]											
SSB ₂₀₂₁ = MSY B _{trigger} [^]											
F = F ₂₀₁₉	1296	963	59	275	0.088	0.067	0.0025	0.019	11388	-0.22	-28

SUMMARY

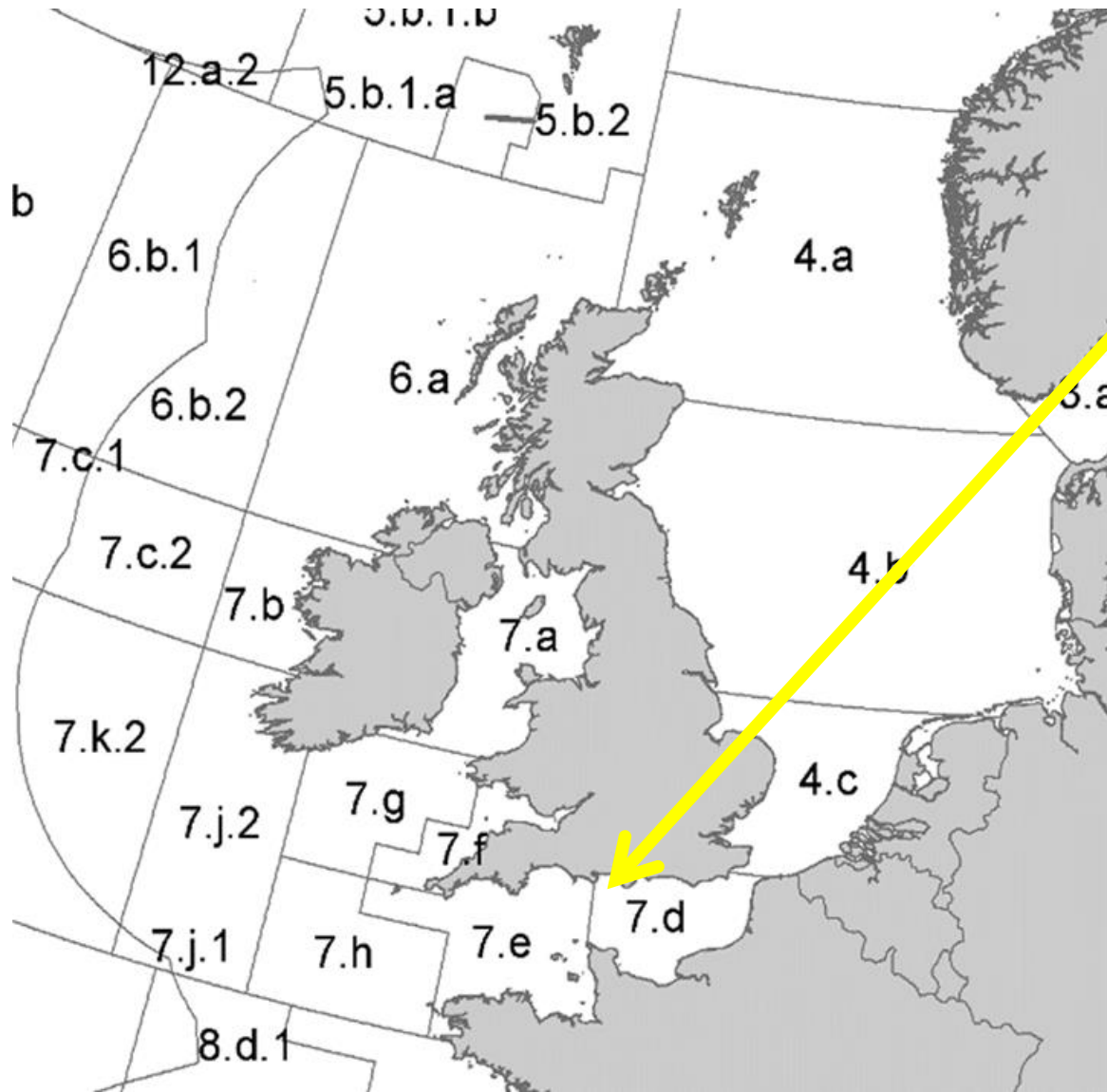
Stock	Exploitation	State of stock	Advice 2020	Advice 2019	Catch 2018	TAC 2019
Cod 7.e-k			0	0	1565	1610
Haddock 7.b-k			11418-23262	6317	12545	8329
Whiting 7.bc,e-k			4157-6481	15841	10268	19184
Sole 7.fg			1020-2665	864	997	841
Sole 7.h-k			213	311	296	382
Plaice 7.fg			2295	2160	930	1662
Plaice 7.h-k			0	0	97	109
Hake 4,6,7, 3.a, 8.ab,d	Advice to be provided on 5 July					
Megrim 7.b-k, 8.ab,d			13218-28838	18976	14133	19836
Pollack 6-7			3360	3360	2911	12560
W.anglerfish 7, 8.a-b, 8.d			21428-42331	31042	23768	41370
B-B Anglerfish 7, 8.a-b, 8.d			12959	10799	11283	41370
Sea bass 4.b-c,7.a,7.d-h			1634-1946	1806	1439	-

Colours indicate that the value for the Advice for 2020 is either above (green) or below (red) the Advice for 2019. For TAC 2019 in blue, area or species differ from the advice.

ICES advice provided in previous years

Stock	Advice 2019 (t)	Advice 2020 (t)	Year advice provided
Seabass 6.a, 7.b, and 7.j	4	4	2017
Sole 7.bc	24	24	2017
Plaice 7.bc	24	24	2017

English Channel (Divisions 7.d and e)



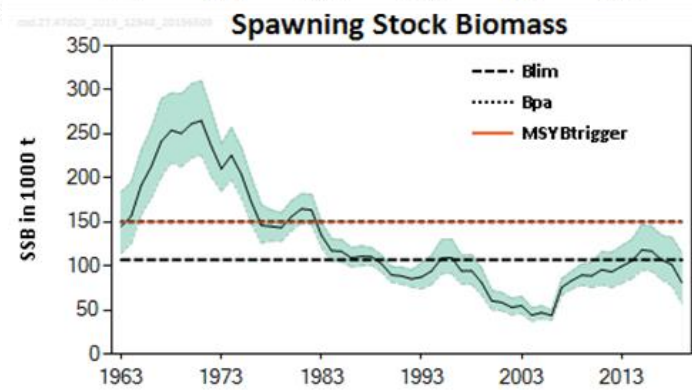
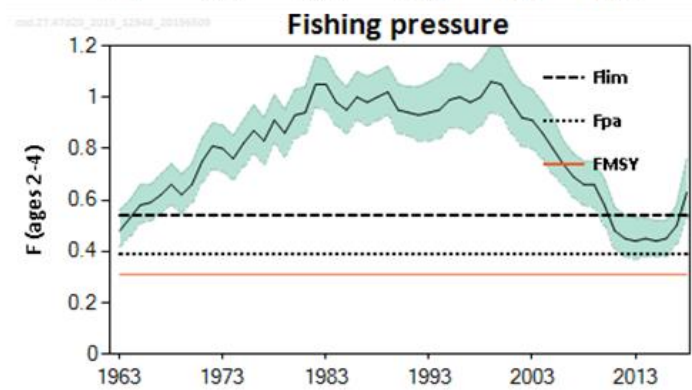
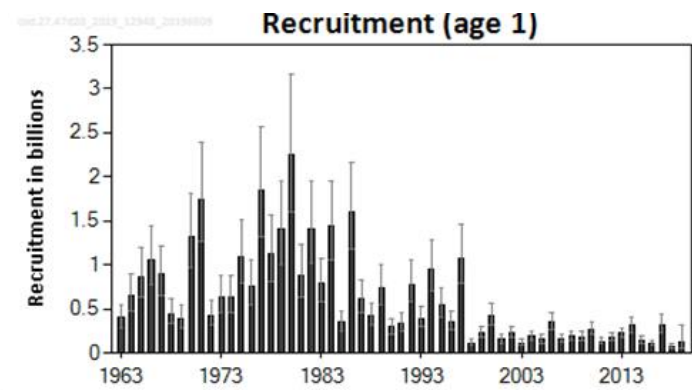
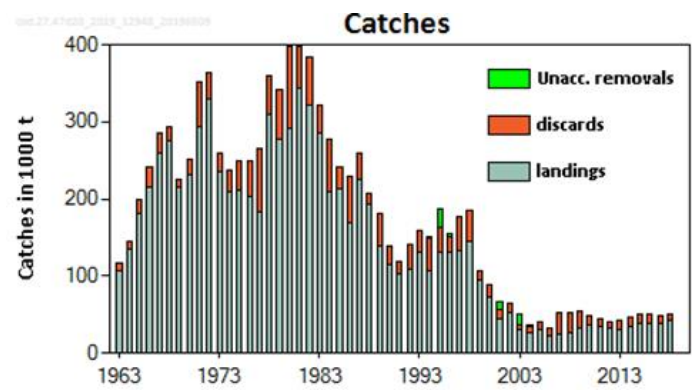
- Cod (4, 7.d, Skagerrak)
- Sole (7.e)
- Plaice (7.d)
- Plaice (7.e)
- Whiting (4,7.d)
- Witch (3a,4,7d)
- Lemon sole (3a,4,7d)
- Brill (3a, 4, 7d)

IN AUTUMN:

- Sole (7.d)

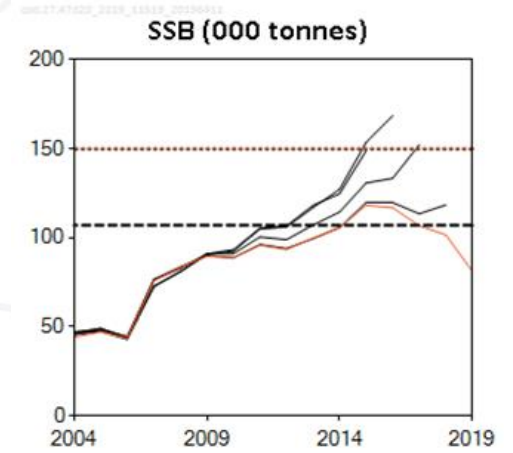
Cod in Subarea 4 and Divisions 7.d and subdivision 20

Advice for 2020, MSY: Catch \leq 10 457 t



- Revised perception of the stock.
- Spawning stock has decreased since 2015 and is now below B_{lim} .
- Fishing pressure has increased since 2016, and is above F_{lim} in 2018
- Recruitment remains poor.

	Fishing pressure			Stock size		
	2016	2017	2018	2017	2018	2019
Maximum sustainable yield	F_{MSY}	⊗	⊗	⊗	Above	
Precautionary approach	F_{pa}, F_{lim}	⊙	⊙	⊗	Harvested unsustainably	
Management plan	F_{MGT}	—	—	—	Not applicable	
				MSY	⊗	⊗
				$B_{trigger}$	⊗	⊗
				B_{pa}, B_{lim}	⊗	⊗
				B_{MGT}	—	—
					⊗	Below trigger
					⊗	Reduced reproductive capacity
					—	Not applicable



Cod in Subarea 4 and Divisions 7.d and subdivision 20

Catch (2018) : 48 620 t (16 % discards); 85 t in 7.d

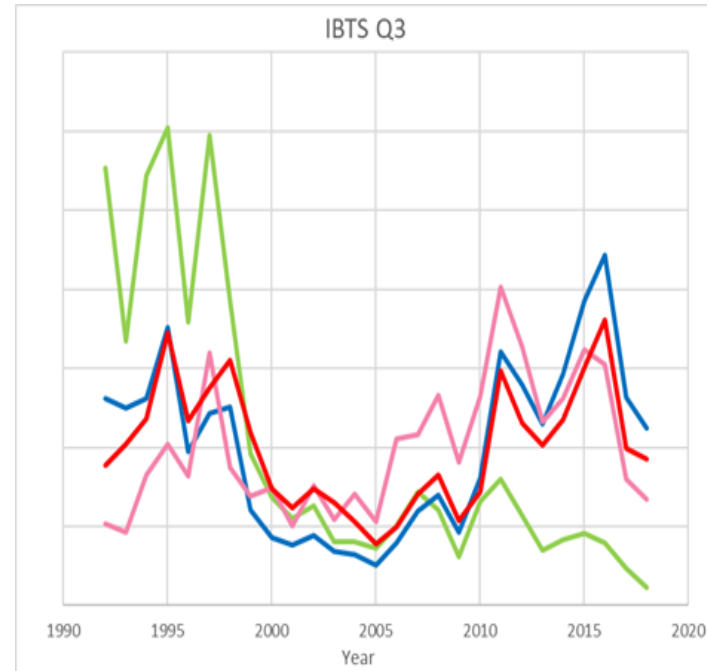
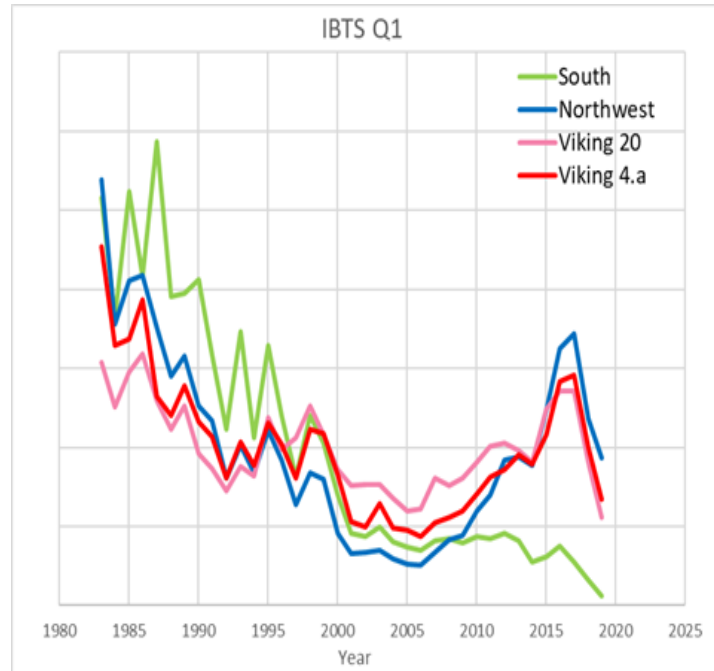
F(2019) = 0.49 (Average exploitation pattern (2016-2018) scaled to 2018);

SSB (2020)= 81 755 t < B_{lim} (107 000 t) F_{MSY} = 0.31



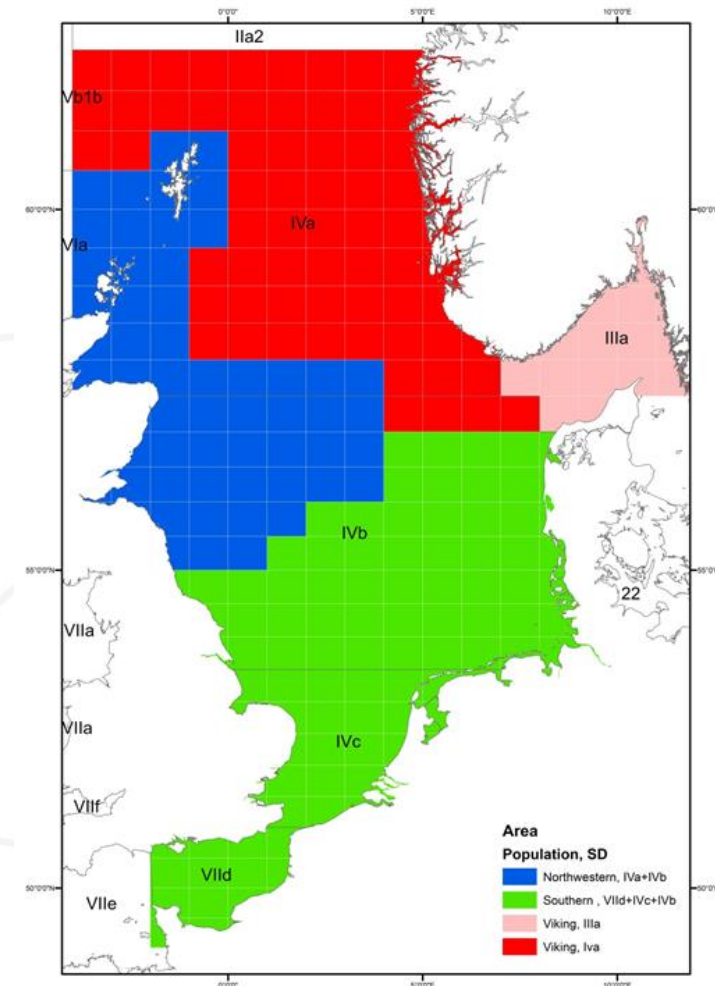
Basis	Total catch (2020)	Wanted catch* (2020)	Unwanted catch* (2020)	F _{total} (2020)	F _{wanted} (2020)	F _{unwanted} (2020)	SSB (2021)	% SSB change **	% TAC change ***	% Advice change^
ICES advice basis										
MSY approach: SSB (2021) = B_{lim}	10457	8613	1844	0.131	0.101	0.03	107000	31	-70	-63
Other scenarios^^^										
MSY approach: F _{MSY} ×SSB(2020) /MSY B _{trigger}	13289	10933	2356	0.169	0.13	0.039	104036	27	-62	-53
F = MAP^^ F _{MSY-lower} ×SSB(2020) /MSY B _{trigger}	8699	7178	1521	0.108	0.083	0.025	108827	33	-75	-69
F = 0	0	0	0	0	0	0	118230	45	-100	-100
F _{pa}	28056	22944	5112	0.39	0.3	0.09	88516	8.3	-21	-0.52
F _{lim}	36634	29848	6786	0.54	0.42	0.124	79709	-2.5	3.6	30
SSB (2021) = B _{lim}	10457	8613	1844	0.131	0.101	0.03	107000	31	-70	-63
SSB (2021) = B _{pa}	0	0	0	0	0	0	118230	45	-100	-100
SSB (2021) = MSY B _{trigger}	0	0	0	0	0	0	118230	45	-100	-100
TAC (2019) – 20%	28286	23131	5155	0.39	0.3	0.091	88253	7.9	-20.0	0.29
Constant TAC	35357	28803	6554	0.52	0.4	0.119	80950	-0.98	0	25
TAC (2019) + 20%	42428	34494	7934	0.65	0.5	0.15	73575	-10.0	20	50
F = F ₂₀₁₉	33714	27472	6242	0.49	0.38	0.112	82598	1.03	-4.6	19.5
F=F _{MSY lower}	15374	12646	2728	0.198	0.152	0.046	101873	25	-57	-45
F = F _{MSY}	23024	18870	4154	0.31	0.24	0.071	93892	14.8	-35	-18.4

Cod in Subarea 4 and Divisions 7.d and subdivision 20



Biomass indices by sub region

- **General decline in all areas in the last 2 years.**
- **Very low abundance in the southern area**

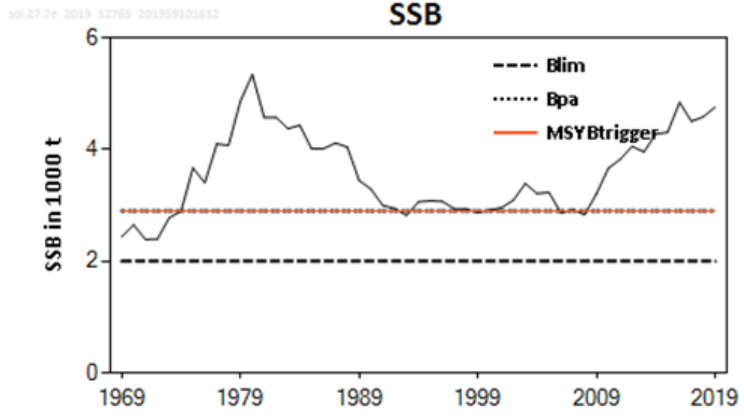
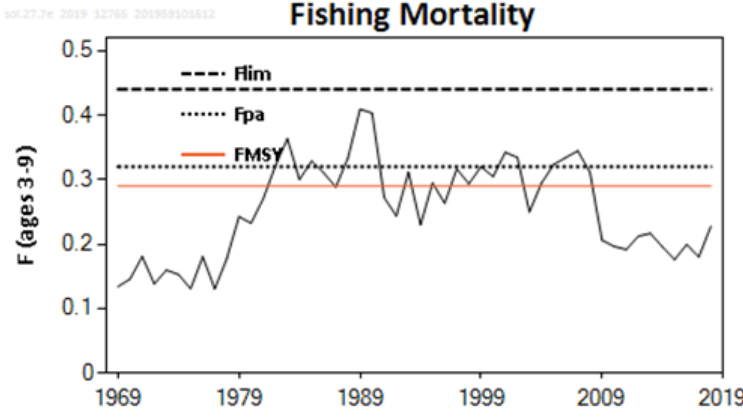
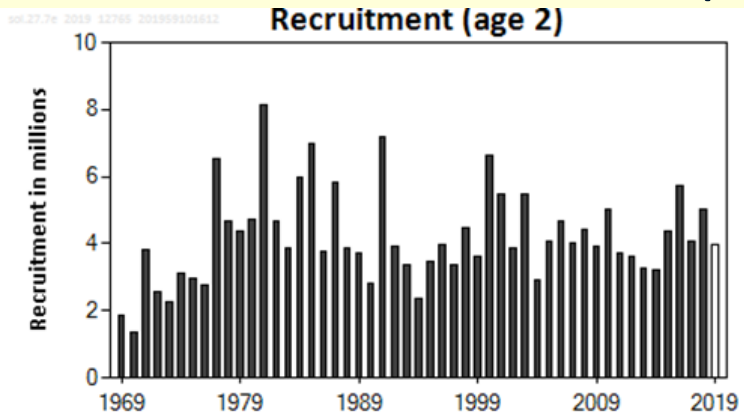
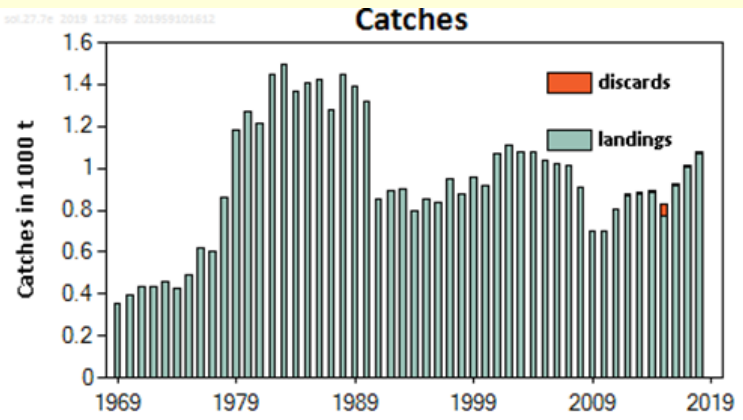


Advice for 2020: Postponed until the autumn

- Issues with the assessment that requires further investigation.
- Advice to be released on 14 November.

Sole in the western English Channel (7.e)

Advice for 2020: EU MAP: Catch :878 TO 1 685 t (F_{MSY} :1 478 t)



- Spawning-stock biomass (SSB) has been above $B_{trigger}$ since 2009.
- Fishing mortality (F) has been below F_{MSY} since 2009.
- Recruitment has been variable without an overall trend.

	Fishing pressure			Stock size						
	2016	2017	2018	2017	2018	2019				
Maximum sustainable yield	F_{MSY}	✓	✓	✓	Below	MSY	✓	✓	✓	Above trigger
Precautionary approach	F_{pa}, F_{lim}	✓	✓	✓	Harvested sustainably	B_{pa}, B_{lim}	✓	✓	✓	Full reproductive capacity
Management plan	F_{MGT}	✓	✓	✓	Within the range	B_{MGT}	✓	✓	✓	Above trigger

Assessment includes UK beam trawl and otter trawl commercial indices.

Sole in the western English Channel (7.e)

Catch (2018) : 1 078 t (<1 % discards)

F(2019) = 0.23 (Recent average fishing pressure (2016-2018, scaled to 2018);

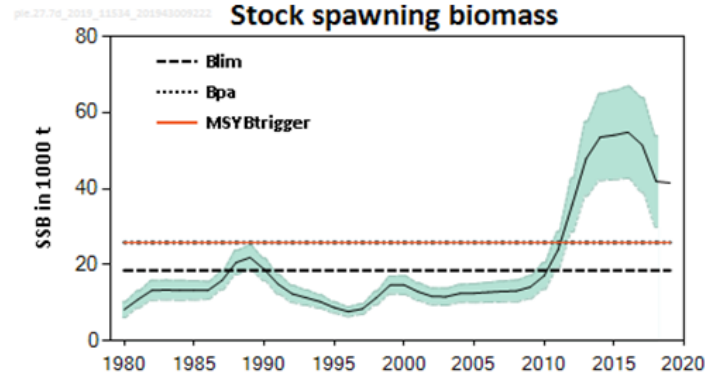
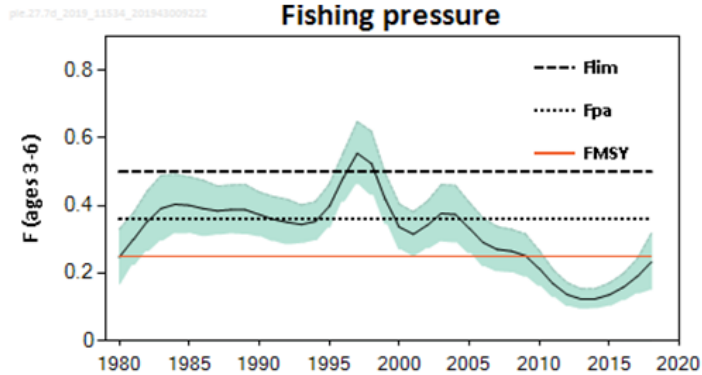
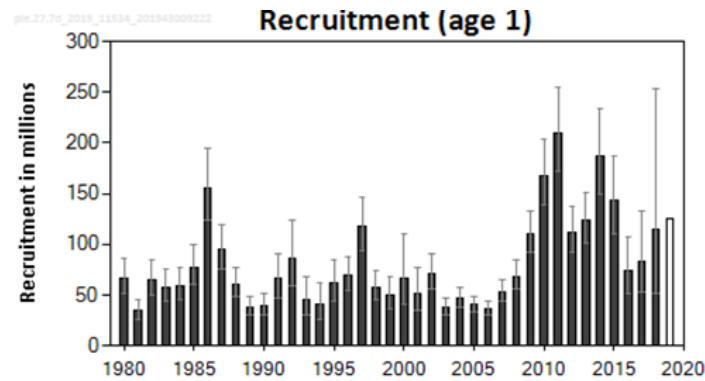
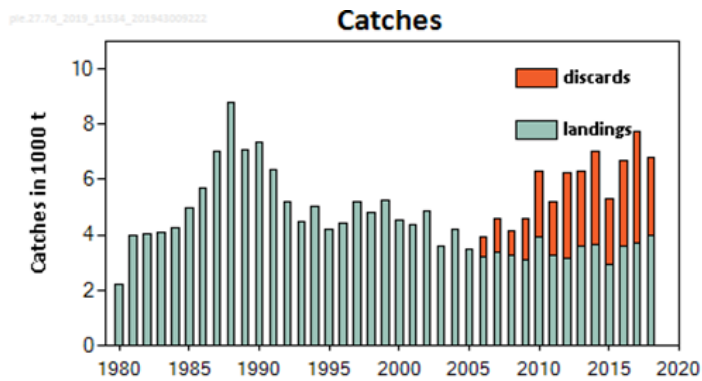
SSB (2019)= 4 731 t > MSY_{Btrigger} (2 900 t) F_{MSY}= 0.29



Basis	Total catch * (2020)	Wanted catch ** (2020)	Unwanted catch ** (2020)	F _{wanted} (2020)	SSB (2021)	% SSB change ***	% TAC change ^	% Advice change ^^
ICES advice basis								
EU MAP ^^: F _{MSY}	1478	1469	9	0.29	4334	-8.4	19	16.2
F = MAP F _{MSY lower}	878	873	5	0.16	4915	3.9	-29	-31
F = MAP F _{MSY upper}	1685	1675	10	0.34	4134	-12.6	36	32
Other scenarios								
F = 0	0	0	0	0	5772	22	-100	-100
F _{pa}	1603	1594	10	0.32	4213	-11.0	29	26
F _{lim}	2065	2053	13	0.44	3767	-20	66	62
SSB ₂₀₂₁ = B _{lim}	3930	3906	24	1.2	2000	-58	216	209
SSB ₂₀₂₁ = B _{pa} = MSY B _{trigger}	2972	2954	18	0.74	2900	-39	139	134
F = F ₂₀₁₉	1201	1194	7	0.23	4602	-2.7	-3.3	-5.6

Plaice in the eastern English Channel (7.d)

Advice for 2020, EU MAP Catch: 6 545 - 12 029 (F_{MSY} : 9 073 t)



- Part of the catches of plaice in Division 7.d are from the Western Channel and North Sea stocks.
 - 7 710 – 14 170 t when taking other stocks taken in 7.d into account
- Spawning stock has increased during 2008-2015 and well above $B_{trigger}$
- Fishing mortality has declined since the early 2000s and has been below F_{MSY} since 2009 but increasing.
- Recruitment lower in recent years but about average
- Caught in mixed fishery with sole – high discards of plaice

	Fishing pressure			Stock size			
		2016	2017	2018	2017	2018	2019
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}	✓	✓	✓ Within range	MAP $MSY B_{trigger}$	✓	✓ Above trigger

*Plaice catches in Div. 7.d in Quarter 1 from various stocks: 35% from 7.d; 15% from 7.e; 50% from N Sea

Plaice in the eastern English Channel (7.d)

Catch (2018) : 6 826 t - for the plaice 7d stock (42% discards); 8 429 t in 7d
 F(2019) = 0.23 (Average exploitation pattern (2016-2018) scaled to 2018);
 SSB (2020)= 40 933 t > MSY_{Btrigger} (25 826 t) $F_{MSY} = 0.25$

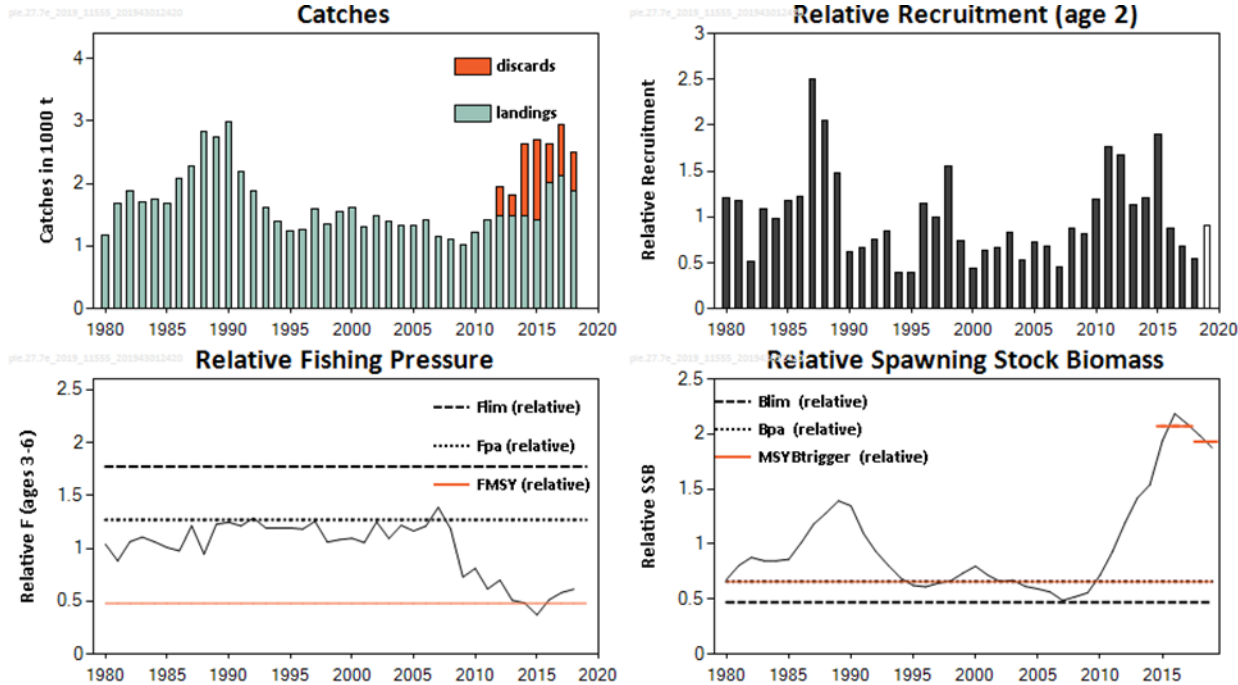
Basis	Division 7.d plaice stock										Plaice in Division 7.d #					
	Total catch (2020) [^]	Wanted catch * (2020)	Unwanted catch * (2020)	F _{total} (ages 3-6) (2020)	F _{wanted} (ages 3-6) (2020)	F _{unwanted} (ages 3-6) (2020)	SSB (2021)	% SSB change **	% change in wanted catch ***	% advice change ^{\$}	Total catch (2020)	Wanted catch* (2020)	Unwanted catch* (2020)	% change in wanted catch ^{^^}	% change in the 7.d portion of the TAC ^{##}	% advice change ^{###}
ICES advice basis																
EU MAP ^{^^} : F _{MSY}	9073	4697	4376	0.25	0.115	0.135	41084	0.37	18	15.4	10687	5533	5155	10.6	36	15.9
F= MAP F _{MSY} lower	6545	3389	3156	0.175	0.081	0.094	43874	7.2	-14.8	-16.8	7710	3992	3718	-20	-1.92	-16.4
F= MAP F _{MSY} upper	12029	6225	5804	0.344	0.159	0.185	37864	-7.5	56	53	14170	7333	6837	47	80	54
Other scenarios																
MSY approach: F _{MSY}	9073	4697	4376	0.25	0.115	0.135	41084	0.37	18	15.4	10687	5533	5155	10.6	36	15.9
F = 0	0	0	0	0	0	0	51248	25	-100	-100	0	0	0	-100	-100	-100
F _{pa}	12510	6473	6037	0.36	0.166	0.194	37344	-8.8	63	59	14737	7625	7112	52	87	60
F _{lim}	16468	8514	7954	0.5	0.23	0.27	33127	-19.1	114	109	19399	10029	9370	100	147	110
SSB (2021) = B _{lim}	31231	16016	15215	1.22	0.56	0.66	18447	-55	300	300	36790	18867	17923	280	370	300
SSB (2021) = B _{pa}	23575	12156	11420	0.8	0.37	0.43	25826	-37	210	200	27771	14319	13452	186	250	200
SSB (2021) = MSY B _{trigger}	23575	12156	11420	0.8	0.37	0.43	25826	-37	210	200	27771	14319	13452	186	250	200
F = F ₂₀₁₉	8498	4400	4099	0.23	0.107	0.125	41715	1.91	10.5	8.1	10011	5183	4828	3.6	27	8.5

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

Plaice in the western English Channel (7.e)

Advice for 2020, PA: Catch $\leq 2\,721$ t (stock)

Catch of plaice in Div. 7.e* $\leq 2\,456$ t



- Assessment indicative of trends: discards not in assessment, but taken into account when producing advice.
- Spawning stock has increased since 2008, at high level but decline in last few years
- F declined substantially after 2007 but increased again since 2015 and is currently above F_{MSY} .
- Recruitment has been fluctuating without trend, lower in recent years.

*Plaice catches in Div. 7.d in Quarter 1 from various stocks: 35% from 7.d; 15% from 7.e; 50% from N Sea

	Fishing pressure			Stock size				
	2016	2017	2018	2017	2018	2019		
Maximum sustainable yield	F_{MSY} proxy	✗	✗	✗	Above proxy			
Precautionary approach	F_{pa}, F_{lim}	✓	✓	✓	Harvested sustainably			
Management plan	F_{MGT}	?	?	?	Undefined			
				$MSY B_{trigger}$ proxy	✓	✓	✓	Above proxy
				B_{pa}, B_{lim}	✓	✓	✓	Full reproductive capacity
				B_{MGT}	✓	✓	✓	Above trigger

Plaice in the western English Channel (7.e)

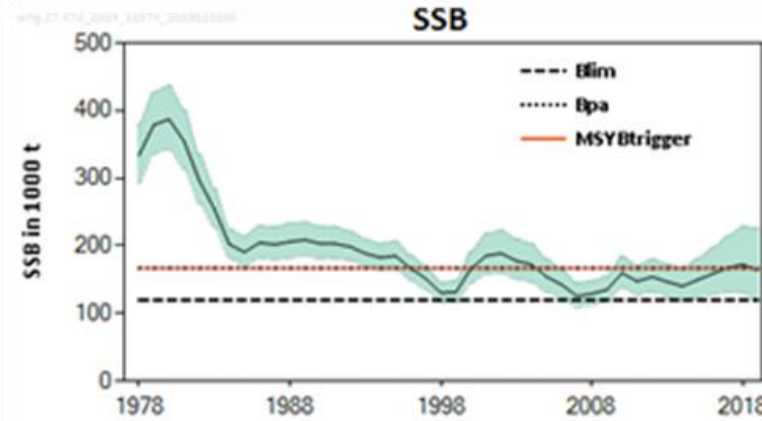
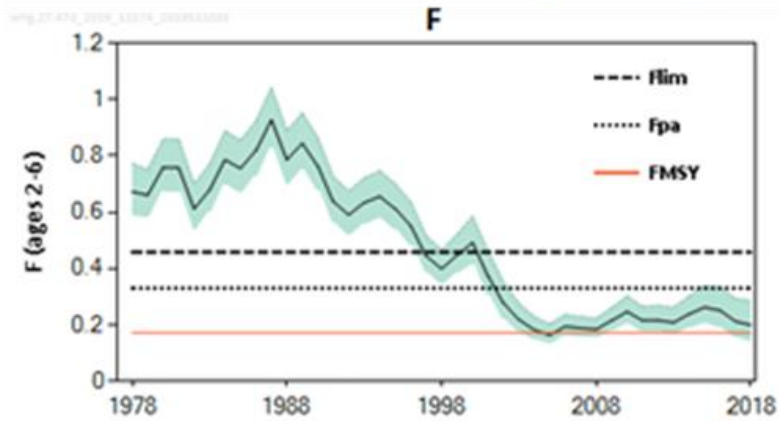
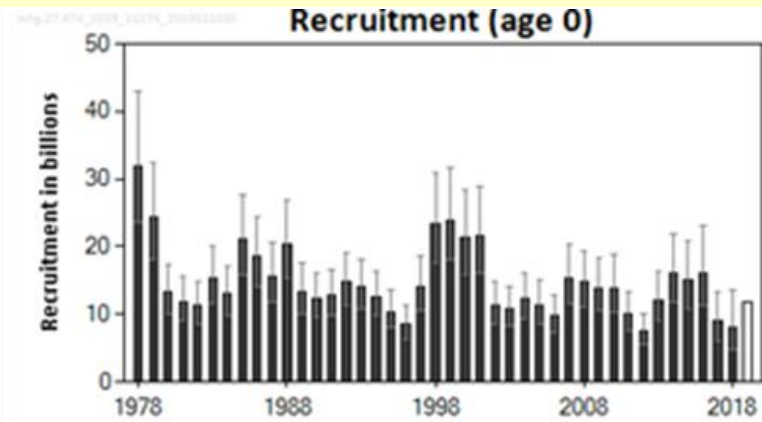
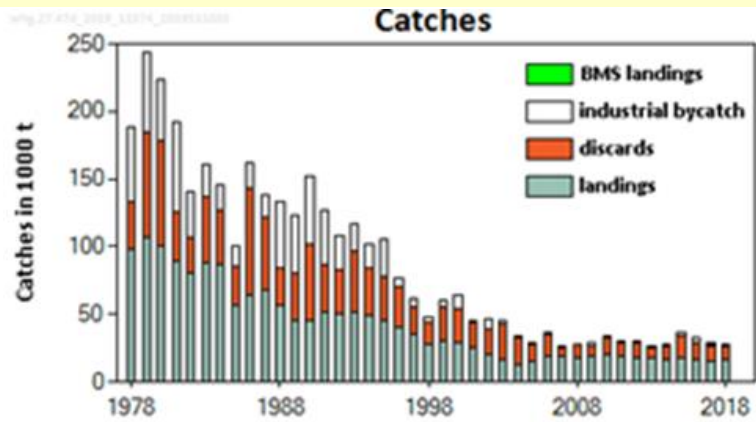
Catch (2018) : 2 370 t (21% discards)

Division 7.e plaice stock	
Index A (2018–2019)	1.93
Index B (2015–2017)	2.1
Index ratio (A/B)	0.93
Uncertainty cap	Not applied -
Advised catch for 2019 issued in 2018	3648
Discard rate (2012–2018)	0.3
Precautionary buffer	Applied 0.8
Catch advice**	2721 tonnes
Wanted catch corresponding to catch advice [^]	1909 tonnes
% Advice change (plaice Division 7.e stock)***	-25
Plaice in Division 7.e	
Proportion of Division 7.e stock landings caught in Division 7.e (2003–2018)	0.9
Catch of plaice in Division 7.e corresponding to the advice for the stock	2456 tonnes
Wanted catch of plaice in Division 7.e corresponding to the advice for the stock [^]	1722 tonnes

Note: Part of the advised catch is assumed to be taken in 7.d in Quarter 1

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

Advice for 2020, MSY: Catch \leq 22 082 t



- About 20% of the catches taken in the Eastern Channel area.
- Spawning stock near MSY $B_{trigger}$.
- Fishing pressure remains above F_{MSY} .
- Recruitment in the last two years is below average.

	Fishing pressure				Stock size					
	2016	2017	2018		2017	2018	2019			
Maximum sustainable yield	F_{MSY}	✘	✘	✘	Above	$MSY B_{trigger}$	✔	✔	✘	Below trigger
Precautionary approach	F_{pa}, F_{lim}	✔	✔	✔	Harvested sustainably	B_{pa}, B_{lim}	✔	✔	⚠	Increased risk
Management plan	F_{MGT}	—	—	—	Not applicable	B_{MGT}	—	—	—	Not applicable

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

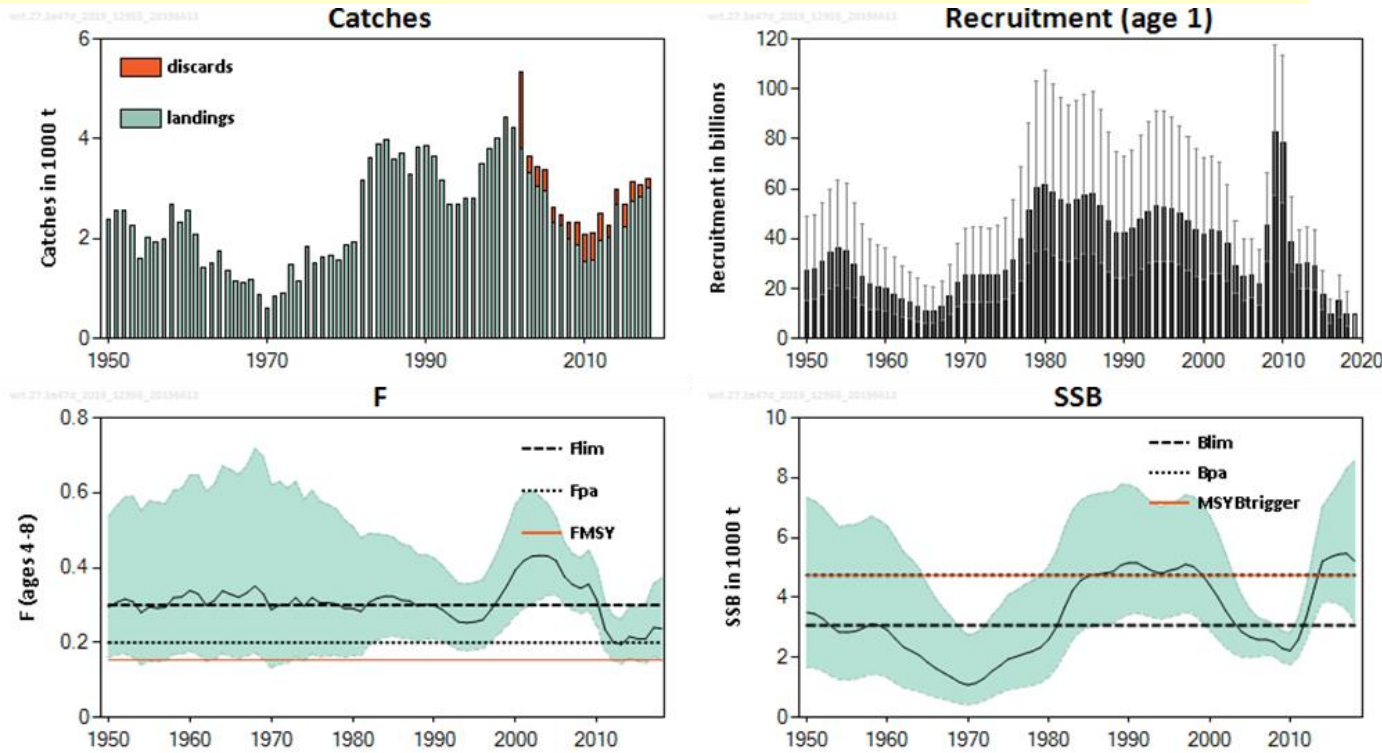
Catch (2018): 28 083 t (35% unwanted and 6 % IBC); 5 875 t in 7.d
F (2019)=0.199 (Average exploitation pattern(2016-2018), scaled to 2018;
SB(2020) = 157 kt < MSY_{Btrigger} 167 kt F_{MSY}=0.172



Basis	Total catch 2020	Total wanted catch 2020	Total unwanted catch 2020 *	Total IBC 2020 **	HCF catch 4+7.d 2020	HCF catch 4 2020 ***	HCF catch 7.d 2020 ***	Total F (ages 2-6) 2020 +	F (wanted catch, ages 2-6) 2020	F (unwanted catch, ages 2-6) 2020	F (IBC, ages 2-6) 2020 ++	SSB 2021	% SSB change ^	% TAC change	% Advice change ^^^
ICES advice basis															
MSY approach: F_{MSY} × SSB (2020)/MSY B_{trigger}	22082	12737	6617	2728	19354	15036	4318	0.162	0.098	0.044	0.02	156981	0.25%	-12.5%	-8.7%
Other scenarios															
F = F _{MSY} = F _{MSY upper} ##	23413	13611	7086	2716	20697	16079	4617	0.172	0.105	0.047	0.02	156045	-0.35%	-6.5%	-3.2%
F = F _{MSY lower}	21628	12438	6458	2732	18896	14680	4216	0.158	0.095	0.043	0.02	157301	0.45%	-14.6%	-10.6%
F = MAP F _{MSY lower} × SSB (2020)/MSY B _{trigger} #	20406	11635	6028	2743	17663	13722	3941	0.148	0.088	0.04	0.02	158160	1.00%	-20%	-15.7%
F ₂₀₂₀ = 0 (IBC only)	2899	0	0	2899	0	0	0	0.02	0	0	0.02	170621	9.00%	-100%	-88%
F ₂₀₂₀ = F ₂₀₁₉	26855	15873	8297	2685	24169	18777	5392	0.199	0.123	0.056	0.02	153624	-1.89%	9.20%	11.00%
Roll-over TAC	24831	14543	7585	2703	22131	17191	4937	0.183	0.112	0.051	0.02	155048	-0.98%	0%	2.60%
15% TAC decrease (27.4 only)	21542	12380	6428	2733	18817	14612	4196	0.157	0.095	0.043	0.02	157363	0.49%	-15.0%	-11.0%
15% TAC increase (27.4 only)	28121	16705	8742	2674	25445	19770	5677	0.21	0.13	0.059	0.02	152733	-2.5%	15.00%	16.20%
0.75 × F ₂₀₁₉ +++	21130	12111	6282	2737	18393	14290	4103	0.154	0.092	0.042	0.02	157651	0.68%	-16.9%	-12.7%
1.25 × F ₂₀₁₉ +++	32535	19605	10295	2634	29900	23230	6671	0.24	0.154	0.07	0.02	149628	-4.4%	35%	34%
F _{pa}	43554	26846	14172	2535	41018	31867	9151	0.33	0.21	0.097	0.02	141876	-9.4%	85%	80%
F _{lim}	59870	37568	19914	2389	57482	44657	12824	0.46	0.3	0.136	0.02	130397	-16.7%	160%	147%
SSB (2021) = B _{pa} = MSY B _{trigger}	8298	3679	1767	2852	5446	4231	1215	0.053	0.023	0.01	0.02	166708	6.40%	-75%	-66%
SSB (2021) = B _{lim}	74583	47236	25091	2256	72327	56190	16136	0.57	0.38	0.172	0.02	119970	-23%	227%	208%

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

Advice for 2020, PA: Catch $\leq 1,651$



- Benchmarked in 2018.
- Stock considered bycatch.
- Landings declined to the late 2000 but have increased since.
- Biomass below B_{lim} in 2010 increased and above MSY_{Btrigger}.
- F above F_{MSY}.

	Fishing pressure				Stock size					
	2016	2017	2018		2016	2017	2018			
Maximum sustainable yield	F _{MSY}	✘	✘	✘	Above	MSY B _{trigger}	✔	✔	✔	Above trigger
Precautionary approach	F _{pa} , F _{lim}	○	○	○	Increased risk	B _{pa} , B _{lim}	✔	✔	✔	Full reproductive capacity
Management plan	F _{MGT}	—	—	—		B _{MGT}	—	—	—	

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

Catch (2018): 3 209 t (6% discard); no catch reported in 7.d

$F(2019)=0.237$ ($F=F_{2018}$);

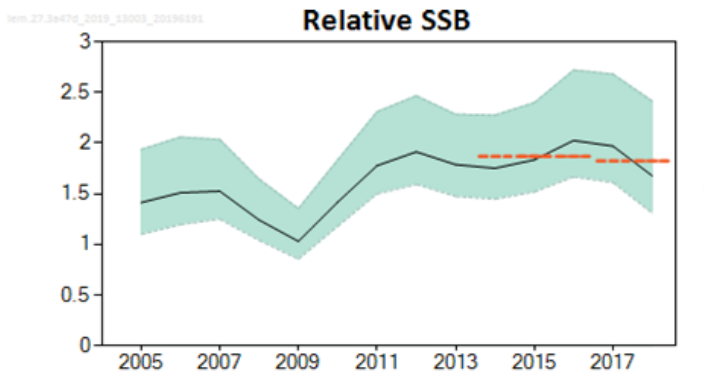
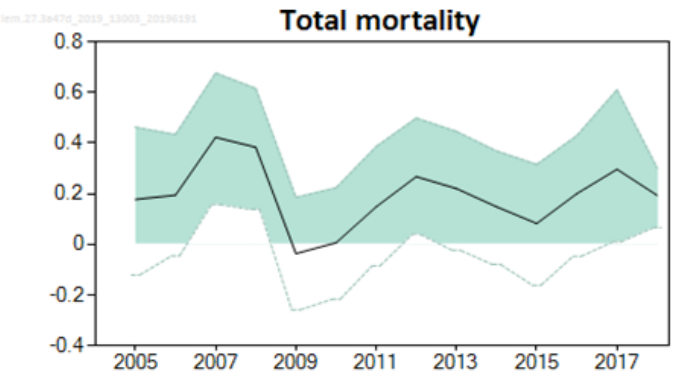
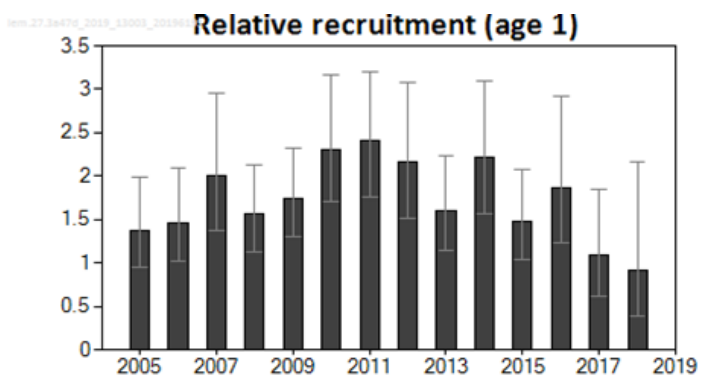
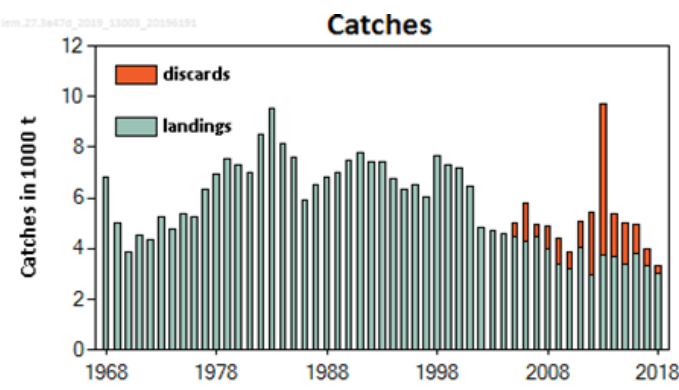
$SB(2020) = 4101 \text{ t} < MSY_{B_{trigger}} 4745 \text{ t}; F_{pa}=0.2$ ($F_{MSY}=0.154$)



Basis	Total catch (2020)	Wanted catch (2020) *	Unwanted catch (2020)	F_{total} ages	SSB -2020	SSB -2021	% SSB change	% Advice
ICES advice basis								
Precautionary approach: F_{pa}	1651	1608	43	0.2	4101	3622	-11.7	-31
Other scenarios								
MSY approach: F_{MSY}	1301	1266	35	0.154	4206	3915	-6.9	-46
$F_{MSY-upper}$	1651	1608	43	0.2	4101	3622	-11.7	-31
$F_{MSY-lower}$	938	913	25	0.108	4315	4229	-2	-61
$F = 0$	0	0	0	0	4578	5027	9.8	-100
F_{pa}	1651	1608	43	0.2	4101	3622	-11.7	-31
F_{lim}	2350	2286	64	0.3	3880	3061	-21	-1.66
F_{sq}	1924	1866	59	0.24	4011	3393	-15.4	-19.5
$SSB(2021) = B_{lim}$	2339	2275	64	0.3	3883	3069	-21	-2.1
$SSB(2021) = B_{pa}$	312	304	7	0.035	4492	4745	5.6	-87
$SSB(2021) = MSY B_{trigger}$	312	304	7	0.035	4492	4745	5.6	-87
Roll-over advice	2390	2326	64	0.31	3866	2846	-26	0

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

Advice for 2020 and 2021, PA: Catch \leq 4 279 t



- Landings lower than those in late 1980's
- Biomass increased in late 2000s and relatively stable recently.
- Fishing mortality has fluctuated within trend.
- Recruitment has declined since 2011.

		Fishing pressure			Stock size				
		2016	2017	2018	2016	2017	2018		
Maximum sustainable yield	F_{MSY}	?	?	?	MSY $B_{trigger}$?	?	?	Undefined
Precautionary approach	F_{pa}, F_{lim}	?	?	?	B_{pa}, B_{lim}	?	?	?	Undefined
Management plan	F_{MGT}	-	-	-	B_{MGT}	-	-	-	-
Qualitative evaluation	-	↗	↗	↘	-	↗	→	↘	Decreasing

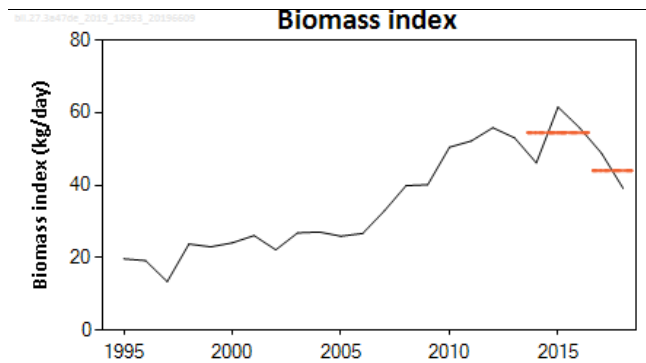
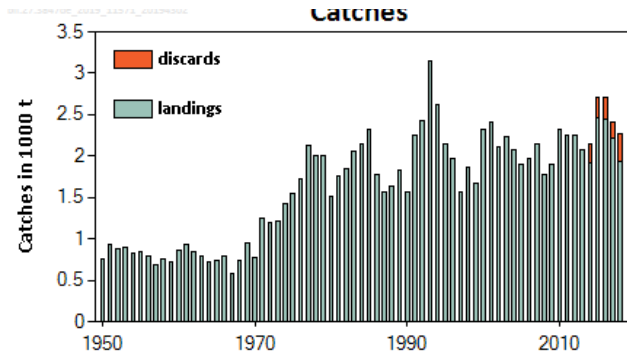
Lemon sole in the North Sea, Skagerrak and Kattegat, E-English Channel (4, 3.a, 7.d)

Catch (2018) = 3 377 t (10% discards); 141 t in 7.d

Index A (2017–2018)	1.823 (relative SSB index)	
Index B (2014–2016)	1.869 (relative SSB index)	
Index ratio (A/B)	0.975	
Uncertainty cap	Not applied	-
Advised catch for 2018–2019	5 484 tonnes	
Discard rate (2016–2018)	15.72%	
Precautionary buffer	Applied	0.8
Catch advice **	4 279 tonnes	
Landings corresponding to the catch advice ***	3 607 tonnes	
% advice change^	-21.97%	

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

Advice for 2020 and 2021, PA: Catch \leq 2 559 t; 659 t in 7.de



	Fishing pressure			Stock size		
	2016	2017	2018	2016	2017	2018
Maximum sustainable yield	F_{MSY}	?	?	?	?	?
Precautionary approach	F_{pa} / F_{lim}	?	?	?	?	?
Management plan	F_{MGT}	-	-	-	-	-
Qualitative evaluation	-	→	→	→	→	→
			Stable			Decreasing
			Unknown			Undefined
			Unknown			Undefined

















Catch (2018) = 2 277 t (15 % discards) – 659 t in 7.d.e

Index A (2017–2018)	44 kg d ⁻¹
Index B (2014–2016)	55 kg d ⁻¹
Index ratio (A/B)	0.81
Uncertainty cap	Not applied -
Advised catch for 2018–2019	3170 tonnes
Discard ratio (2016–2018)	11.20%
Precautionary buffer	Not applied -
Catch advice **	2559 tonnes
Wanted catch corresponding to the advice ***	2273 tonnes
% Advice change [^]	-19.3%

- Catches averaged about 2500 t over last 5 years.
- Biomass index (Dutch beam trawl commercial index) has been gradually increasing, decrease over last 2 years.

English Channel (Divisions 7.d and e)

SUMMARY

Stock	Exploitation	State of stock	Advice 2020	Advice 2019	Catch 2018	TAC 2019
Cod 3.a.20, 7.d. 4			10457	28204	48620	35357
Sole 7.d	Advice to be provided on 14 November					
Sole 7.e			878-1685	1272	1078	1242
Plaice 7.d			6545-12029	7864	6826	10354
Plaice 7.e			2721	3648	2370	10354
Whiting 4, 7.d			22082	24195	28083	39404
Witch 3.a, 4, 7.d			1651	2390	3209	7874
Lemon sole 4 ,7.d and 3.a			4279	5484	3377	7874
Brill 4 ,7.d and 3.a			2559	3170	2277	8122

Colours indicate that the value for the Advice for 2020 is either above (green) or below (red) the Advice for 2019. For TAC 2019 in blue, area or species differ from the advice.

Deep-sea stocks

SUMMARY

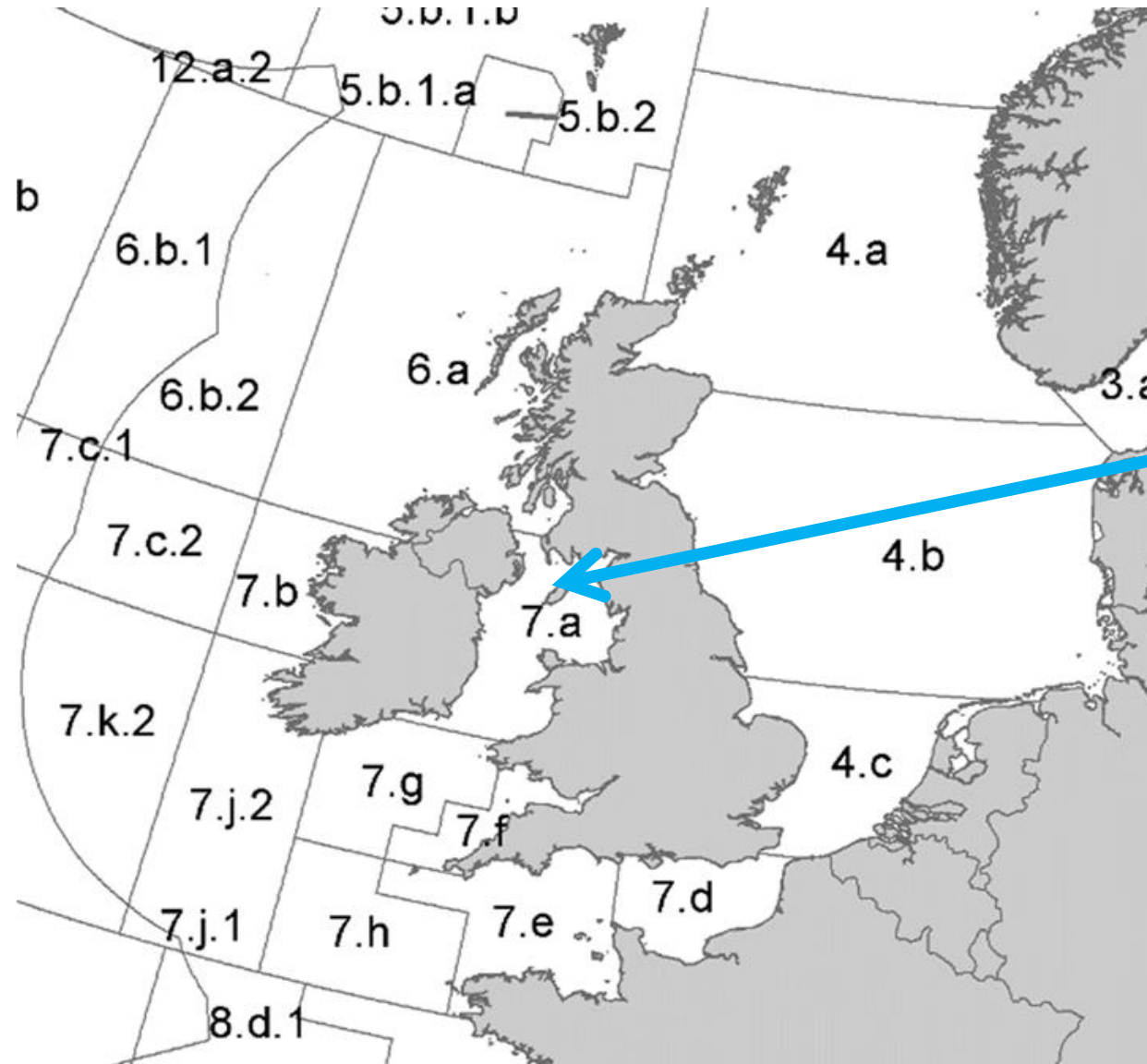
Stock	Exploitation	State of stock	Advice 2020	Advice 2019	Catch 2018	TAC 2019
G. Silver smelt 7-10, 12, 6.b	?	?	193	14(landings)	36	4661
Tusk 4,7-9,3.a, 5.b,6.a,12.b	✓	✓	8627	8984	4507	4551
Ling 6-9,12,14,3.a,4.a	✓	?	18516	17695	20688	25868

Colours indicate that the value for the Advice for 2020 is either above (green) or below (red) the Advice for 2019. For TAC 2019 in blue, area or species differ from the advice.

ICES advice provided in previous years

Stock	Advice 2019 (t)	Advice 2020 (t)	Year advice provided
Alfonsinos - NE Atlantic	224	224	2018
Black scabbardfish - NE Atlantic	5914	5914	2018
Greater forkbeard - NE Atlantic	1346	1346	2018
Blackspot seabream 6, 7, 8	0	0	2018
Roundnose grenadier 6, 7, 5.b, 12.b	3971	3971	2018
Blue ling 5.b, 6-7	11778	11500	2018

Irish Sea (7.a)



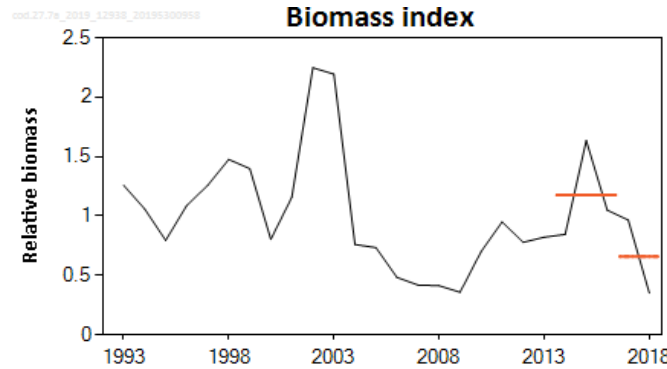
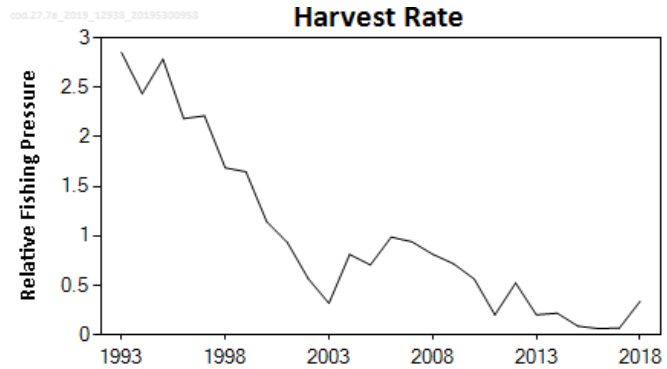
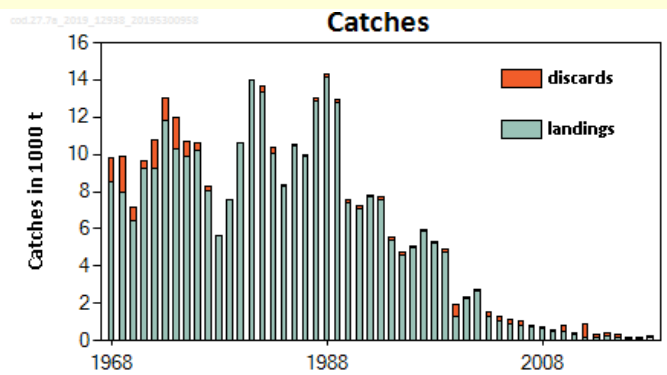
- Cod
- Haddock
- Sole
- Plaice
- Whiting (Advice from 2017)

IN AUTUMN:

- *Nephrops* (FUs 14-15-19)

Cod in the Irish Sea (7.a)

Advice for 2020 PA: Catch \leq 116 t



- Analytical assessment no longer considered reliable
- Harvest rate is low but has increased in recent years.
- Biomass index has been declining sharply since 2015

	Fishing pressure				Stock size					
		2016	2017	2018		2016	2017	2018		
Maximum sustainable yield	F_{MSY}	?	?	?	Undefined	MSY	?	?	?	Undefined
Precautionary approach	F_{pa}, F_{lim}	?	?	?	Undefined	B_{pa}, B_{lim}	?	?	?	Undefined
Management plan	F_{MGT}	?	?	?	Undefined	B_{MGT}	?	?	?	Undefined
Qualitative evaluation	-	✓	✓	✓	Below possible reference points	-	↘	↘	↘	Decreasing

Cod in the Irish Sea (7.a)

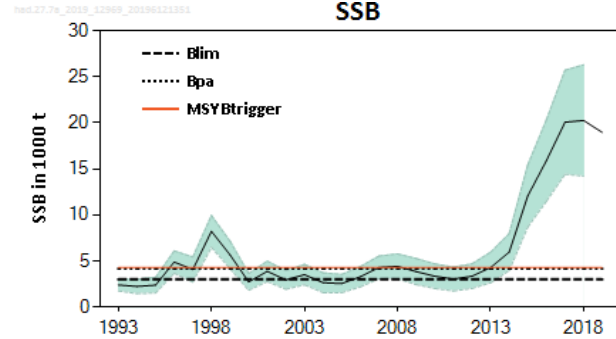
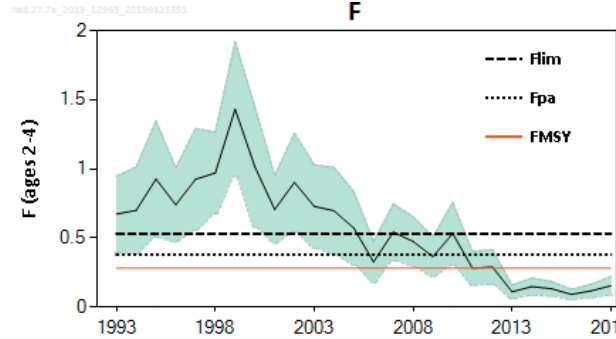
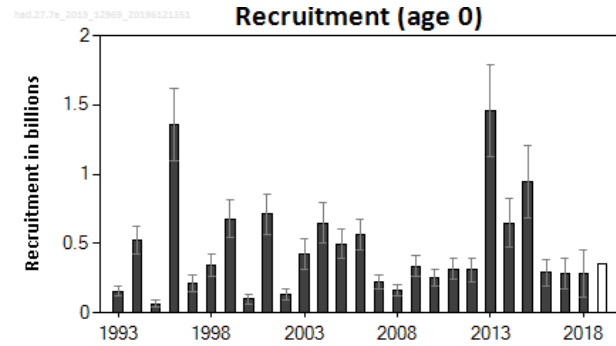
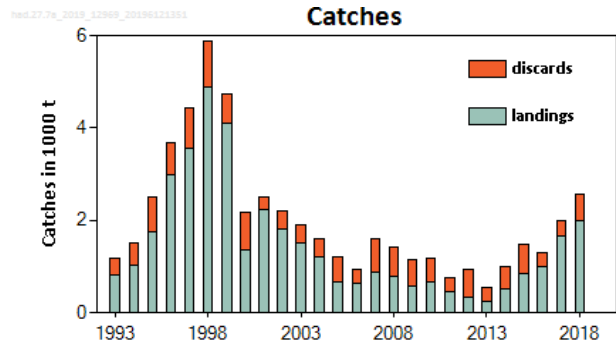
Catch (2018) : 257 t (16 % discards)

Index A (2017, 2018)		0.66
Index B (2014, 2015, 2016)		1.18
Index ratio (A/B)		0.56
Uncertainty cap	Applied	0.8
Catch average (2016–2018)		181 tonnes
Precautionary buffer	Applied	0.8
Catch advice **		116 tonnes
% change in advice ^		-86%

Landings from south of Division 7.a (rectangles 33E2-3) are not considered part of this stock (included in cod 7.e-k stock) → To be considered when setting catch options for 7.a and 7.e-k.

Haddock in the Irish Sea (7.a)

Advice for 2020: EU MAP : Catch: 2 333 -3 830 t (F_{MSY} : 3 156 t)



- Spawning stock at high level in 2019.
- Fishing pressure has declined and below F_{MSY} since 2012.
- Recruitment variable but below average in 2016-2018.
- Stock anticipated to decline

	Fishing pressure			Stock size			
		2016	2017	2018	2017	2018	2019
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}	✓	✓	✓ Below range	B_{MGT}	✓	✓ Above trigger

Haddock in the Irish Sea (7.a)

Catch (2018) : 2 561 t (22 % discards)

$F(2019) = 0.25$ (Catch constraint =(TAC 2019 – rectangles 33E2-3));

$SSB(2020) = 14\,160\text{ t} > MSY_{B_{trigger}} (4\,281\text{ t}) \quad F_{MSY} = 0.28$

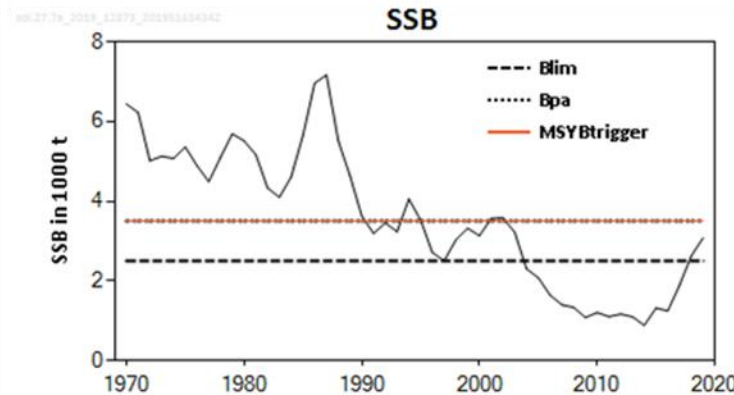
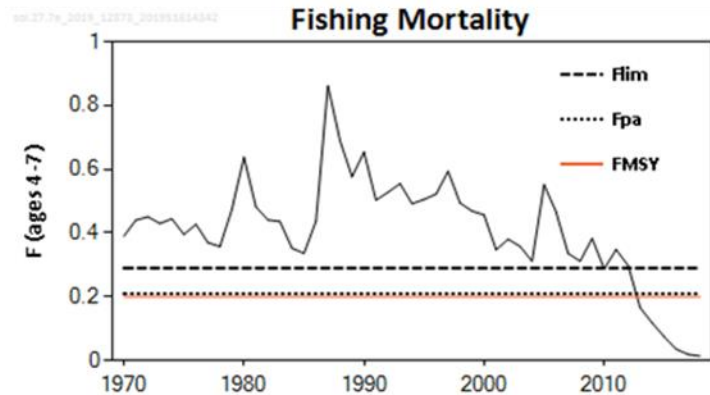
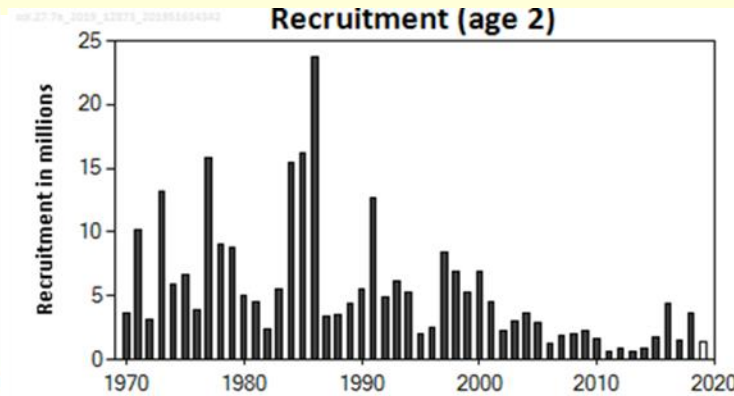
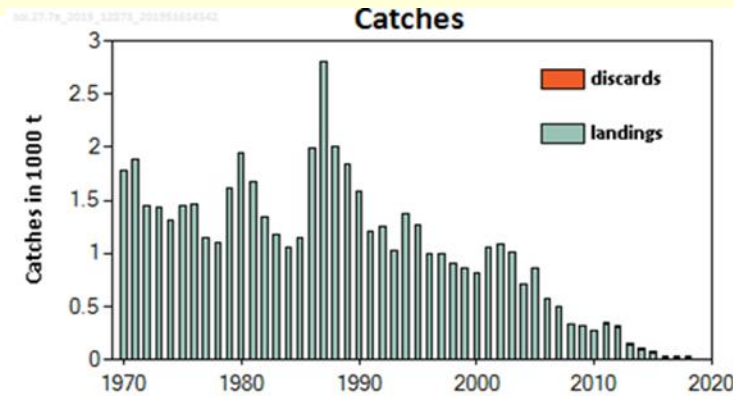


Basis	Total catch (2020)	Wanted catch * (2020)	Unwanted catch * (2020)	F_{total} (2020)	F_{wanted} (2020)	$F_{unwanted}$ (2020)	SSB (2021)	% SSB change **	% Advice change ^
ICES advice basis									
EU MAP ^: F_{MSY}	3156	2667	489	0.28	0.19	0.086	10493	-26	-15.6
$F = MAP F_{MSY\ lower}$	2333	1975	358	0.2	0.14	0.061	11317	-20	-38
$F = MAP F_{MSY\ upper}$	3830	3232	598	0.35	0.24	0.11	9824	-31	2.4
Other scenarios									
$F = 0$	0	0	0	0	0	0	13678	-3.4	-100
F_{pa}	4106	3463	644	0.38	0.26	0.12	9550	-33	9.8
F_{lim}	5141	4324	817	0.5	0.35	0.15	8533	-40	38
$SSB_{2020} = B_{lim}$	11133	9142	1991	1.64	1.14	0.5	2994	-79	198
$SSB_{2021} = B_{pa}$	9788	8099	1690	1.28	0.89	0.39	4160	-71	162
$SSB_{2021} = MSY B_{trigger}$	9653	7992	1661	1.24	0.86	0.38	4281	-70	158
$F = F_{2019}$	2887	2441	446	0.25	0.18	0.07	10762	-24	-23

Landings from south of Division 7.a (rectangles 33E2-3) are not considered part of this stock

Sole in the Irish Sea (7.a)

Advice for 2020: MSY: Catch \leq 561 t



- Spawning stock below B_{lim} until 2017 but above at the beginning of 2019.
- Fishing pressure has declined since the late 1980s.
- Recruitment in 2016 and 2018 are above recent average

	Fishing pressure				Stock size					
	2016	2017	2018		2017	2018	2019			
Maximum sustainable yield	F_{MSY}	✓	✓	✓	Below	$MSY_{B_{trigger}}$	✗	✗	✗	Below trigger
Precautionary approach	F_{pa}, F_{lim}	✓	✓	✓	Harvested sustainably	B_{pa}, B_{lim}	✗	○	○	Increased risk
Management plan	F_{MGT}	—	—	—	Not applicable	B_{MGT}	—	—	—	Not applicable

Sole in the Irish Sea (7.a)

Catch (2018) : 38 t (5 % discards)

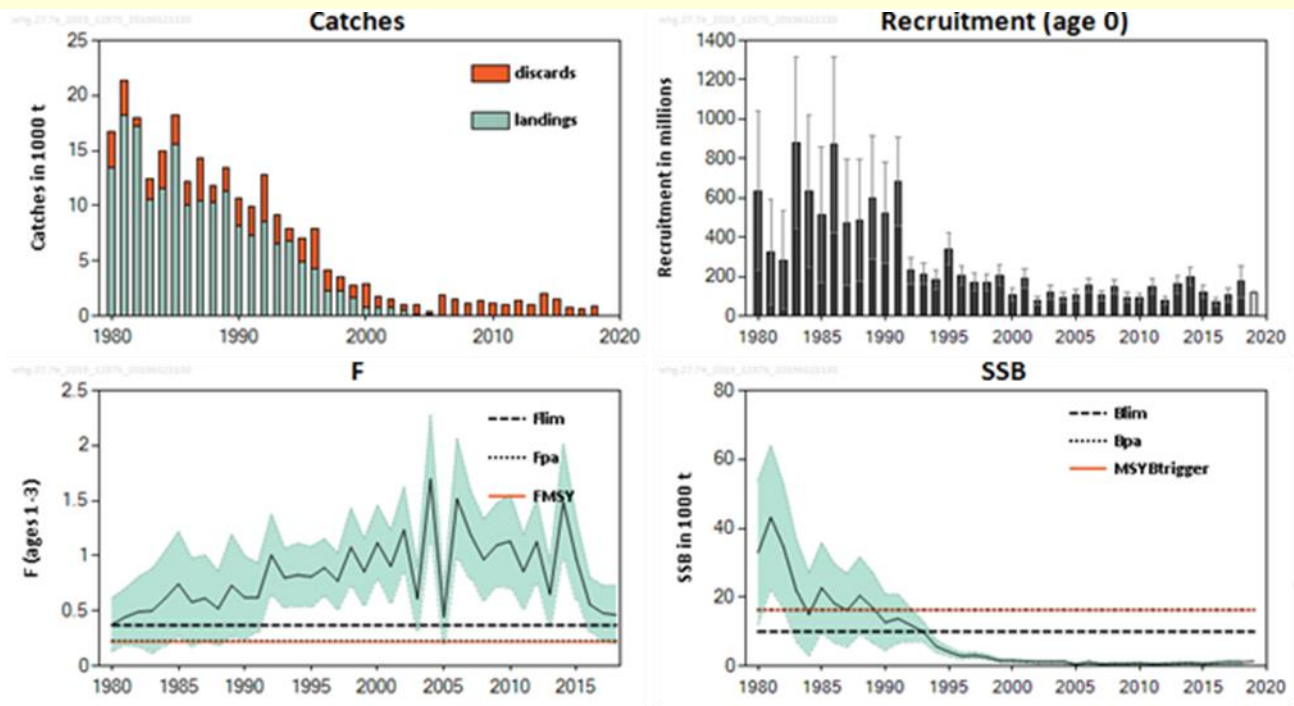
F(2019) = 0.133 (Catch constraint =(TAC 2019));

SSB (2020)= 3 218t <MSY_{Btrigger} (3 500) but >B_{Lim} (2 500 t) F_{MSY}= 0.20

Basis	Total catch * (2020)	Wanted catch** (2020)	Unwanted catch** (2020)	F _{wanted} 2020	SSB 2021	% SSB change ***	% TAC change^	% Advice change ^^
ICES advice basis								
MSY approach: F _{MSY} × SSB ₂₀₂₀ /MSY B _{trigger}	561	542	19	0.184	3028	-5.9	36	36
Other scenarios								
F = F _{MSY lower} × SSB ₂₀₂₀ /MSY B _{trigger}	457	441	16	0.147	3126	-2.9	10.3	10.3
F = F _{MSY upper} × SSB ₂₀₂₀ /MSY B _{trigger}	663	640	23	0.22	2934	-8.8	60	60
F = F _{MSY}	606	585	21	0.2	2987	-7.2	46	46
F = 0	0	0	0	0	3552	10.3	-100	-100
F _{pa}	634	612	22	0.21	2961	-8.0	53	53
F _{lim}	844	815	29	0.29	2766	-14	104	104
SSB ₂₀₂₁ = B _{lim}	1130	1091	39	0.41	2500	-22	173	173
SSB ₂₀₂₁ = B _{pa} = MSY B _{trigger}	55	53	2	0.0168	3500	8.8	-87	-87
F = F ₂₀₁₉	414	400	14	0.133	3165	-1.7	0	0

Whiting in the Irish Sea (7.a)

Advice for 2020 and 2021: MSY: Catch = 0



- Stock size is extremely low.
- Spawning-stock biomass (SSB) has been well below B_{lim} since the mid-1990s.
- Recruitment has been low since the early 1990s.
- Fishing pressure (F) above F_{MSY} and F_{lim} in 2018.
- Discarding high.

	Fishing pressure			Stock size			
		2016	2017	2018	2017	2018	2019
Maximum sustainable yield	F_{MSY}	✗	✗	✗ Above	$B_{trigger}$	✗	✗ 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

Whiting in the Irish Sea (7.a)

Catch (2018) : 899 t (95 % discards)

$F(2019) = 0.50$ (Recent average fishing pressure (2016-2018));

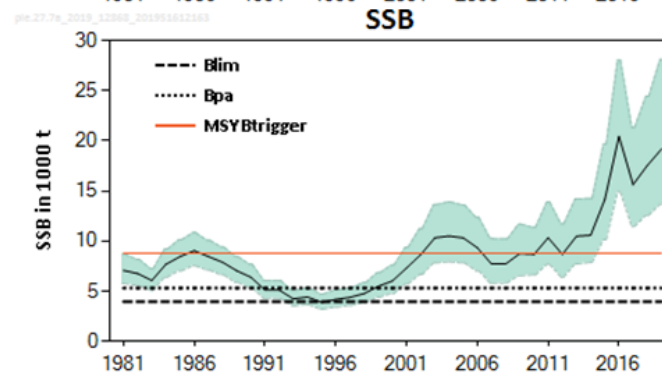
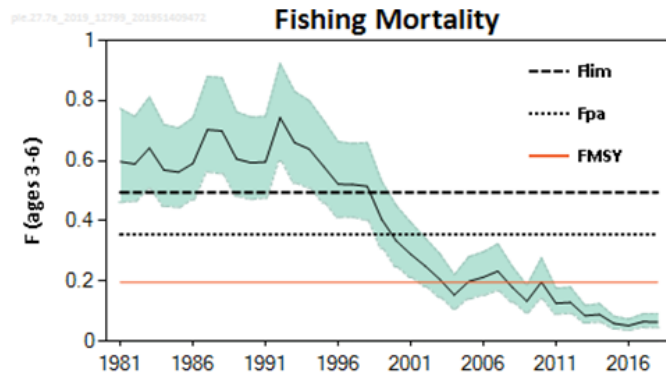
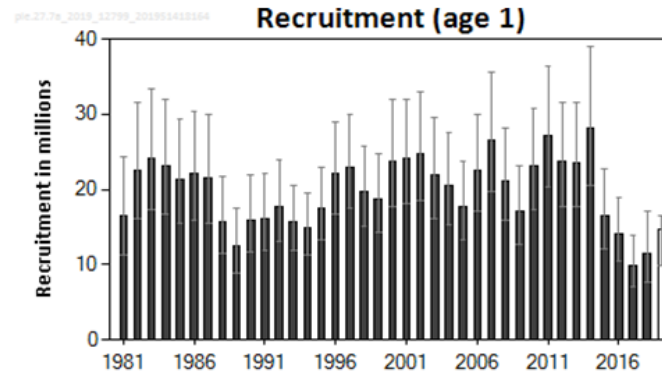
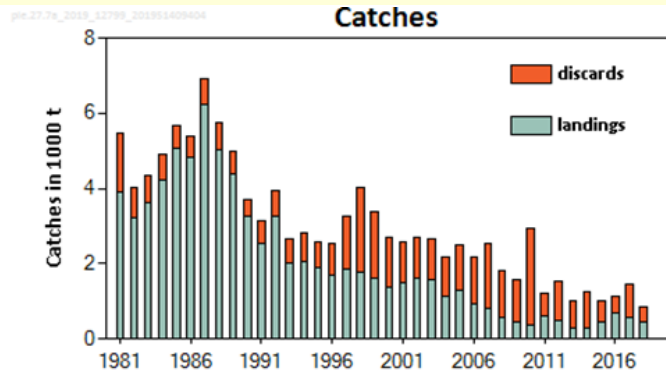
$SSB(2020) = 877 \text{ t} < B_{Lim} (10\,000 \text{ t})$ $F_{MSY} = 0.22$

Basis	Total catch (2020)	Wanted catch	Unwanted catch	F total (2020)	F Wanted catch (2020)	F Unwanted catch (2020)	SSB (2021)	% SSB change *	% TAC change **
ICES advice basis									
MSY approach	0	0	0	0	0	0	2971	62	-100
Other scenarios									
$F_{MSY} = F_{pa}$	595	72	523	0.22	0.009	0.21	2391	30	-90
$F = 0$	0	0	0	0	0	0	2971	62	-100
$F_{MSY \text{ lower}}$	440	54	386	0.158	0.0065	0.151	2540	38	-93
$F_{MSY \text{ upper}}$	776	94	682	0.29	0.0121	0.28	2219	21	-87
$F_{MSY} \times SSB_{2020} / MSY B_{trigger}$	73	9	64	0.025	0.00102	0.024	2899	58	-99
$F_{MSY \text{ lower}} \cdot F_{MSY \text{ lower}} \times SSB_{2020} / MSY B_{trigger}$	53	6	46	0.018	0.00073	0.0171	2919	59	-99
$F_{MSY \text{ upper}} \cdot F_{MSY \text{ upper}} \times SSB_{2020} / MSY B_{trigger}$	97	12	85	0.033	0.00137	0.032	2875	56	-98
F_{lim}	948	114	834	0.37	0.0152	0.35	2058	11.9	-84
$F = F_{2019}$	1222	146	1076	0.5	0.021	0.48	1808	-1.69	-80

Landings from rectangles 33E2-3 not considered part of this stock (included in whiting 7.bce-k stock).

Plaice in the Irish Sea (7.a)

Advice for 2020: PA: Catch \leq 5 640 t



- EU requested advice based on the precautionary approach
- Spawning stock increased since 2012 and is well above MSY $B_{trigger}$.
- Fishing pressure has declined and below F_{MSY} since 2011.
- Recruitment has fluctuated but decreasing since 2014.
- Discarding high and variable.

	Fishing pressure			Stock size				
		2016	2017	2018		2017	2018	2019
Maximum sustainable yield	F_{MSY}	✓	✓	✓ Below	MSY	✓	✓	✓ Above trigger
Precautionary approach	F_{pa}, F_{lim}	✓	✓	✓ Harvested sustainably	B_{pa}, B_{lim}	✓	✓	✓ Full reproductive capacity
Management plan	F_{MGT}	—	—	—	B_{MGT}	—	—	—

Plaice in the Irish Sea (7.a)











Catch (2018) : 830 t (48 % discards, but 40% of these esimated to survive)

$F(2019) = 0.06$ (Recent average fishing pressure (2016-2018));

$SSB(2020) = 19\ 160\ t > MSY_{Btrigger} (8\ 758\ t) \quad F_{MSY} = 0.196$

Basis	Total catch (2020)	Wanted catch (2020)	Total unwanted catch * (2020)	F_{total} (2020)	F_{wanted} (2020)	$F_{unwanted}^{**}$ (2020)	SSB (2021)	% SSB change ***	% TAC change ^	% Advice change ^^
ICES advice basis										
Precautionary approach: F_{pa}	5640	3300	2340	0.36	0.1	0.26	16371	-15	83	61
Other scenarios										
MSY approach: F_{MSY}	3299	1931	1368	0.196	0.054	0.142	18354	-4	7	-6
$F_{MSY\ lower}$	2288	1341	947	0.133	0.036	0.097	19240	0.42	-26	-35
$F_{MSY\ upper}$	4772	2779	1993	0.29	0.08	0.21	17057	-11	55	36
$F = 0$	0	0	0	0	0	0	0	11	-100	-100
$F = F_{lim}$	7467	4375	3092	0.5	0.136	0.36	14812	-23	143	113
$SSB_{2021} = B_{lim}$	20103	12253	7850	2.5	0.69	1.83	3958	-79	554	474
$SSB_{2021} = B_{pa}$	18728	11285	7443	2.1	0.57	1.49	5294	-72	509	435
$SSB_{2021} = MSY\ B_{trigger}$	14839	8839	6000	1.29	0.35	0.93	8757	-54	383	324
$F = F_{2019}$	1070	625	445	0.06	0.017	0.043	20323	6	-65	-69

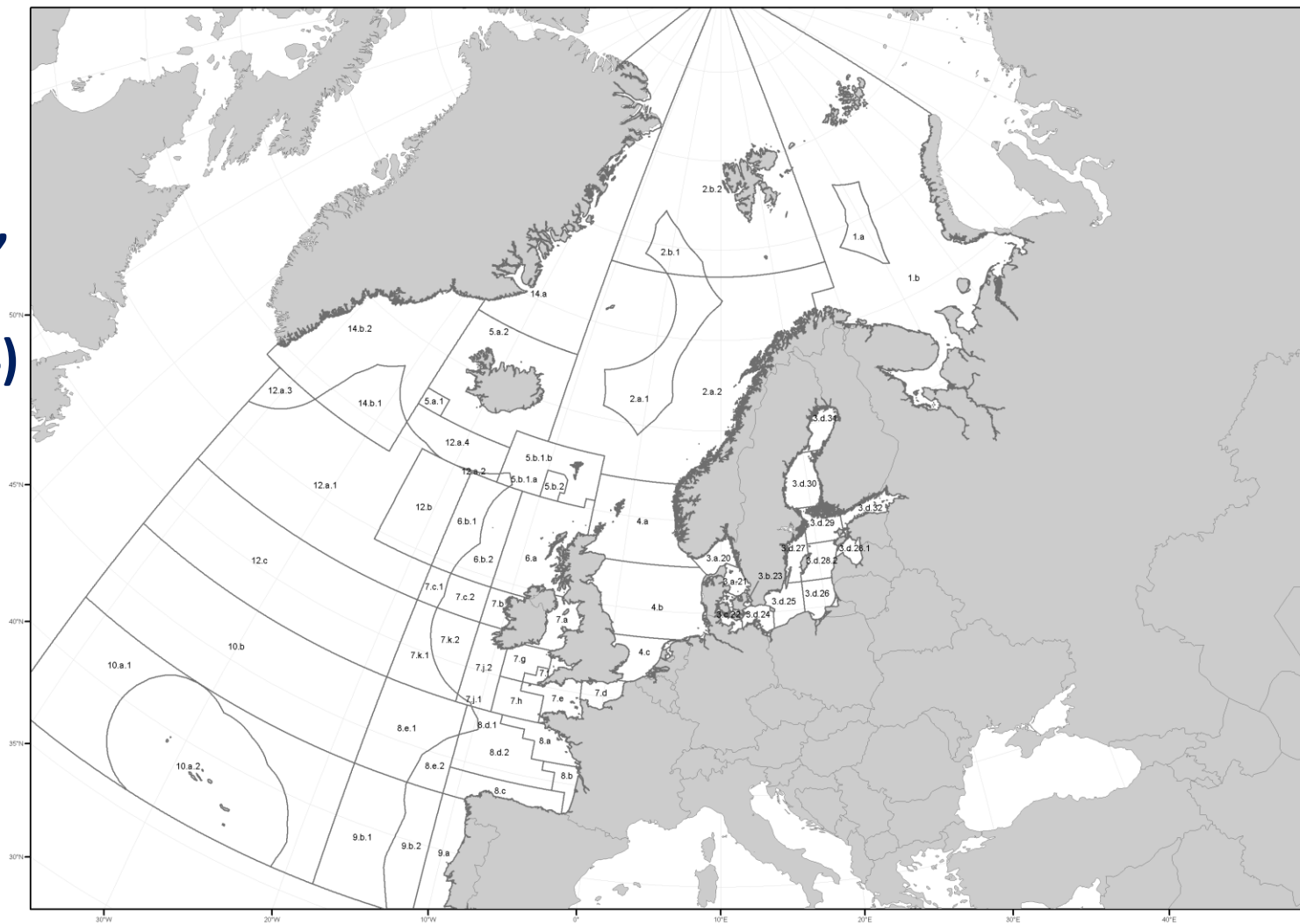
SUMMARY

Stock	Exploitation	State of stock	Advice 2020	Advice 2019	Catch 2018	TAC 2019
Cod 7.a			116	807	257	807
Haddock 7.a			2333-3830	3739	2561	3739
Sole 7.a			561	414	38	414
Whiting 7.a			0	0	899	727
Plaice 7.a			5640	3503	830	3075

Colours indicate that the value for the Advice for 2019 is either above (green) or below (red) the Advice for 2018 and above (green shade) or below (red shade) the Catch in 2017

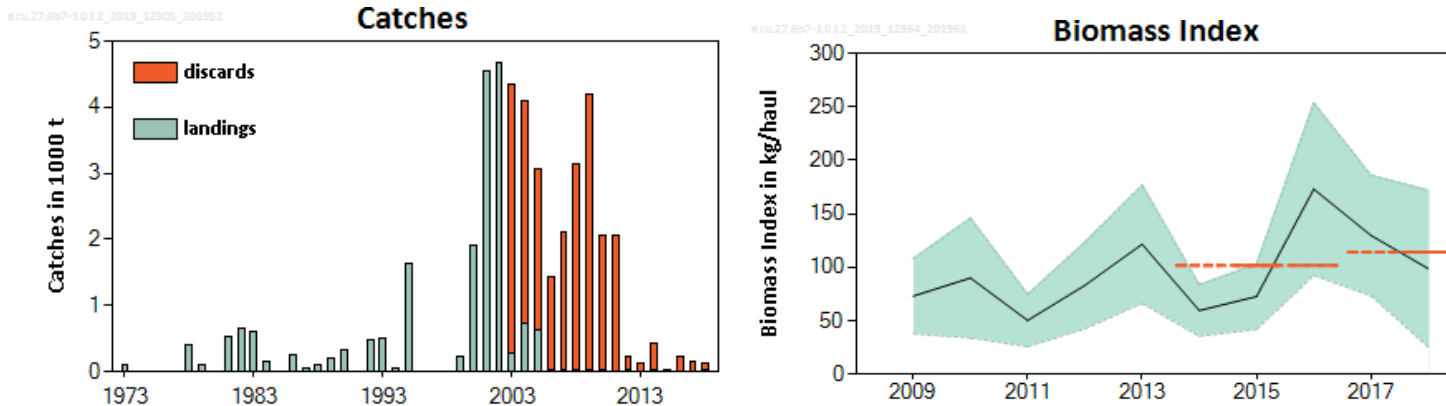
Deep-sea stocks

- **Alfonsinos (1–10, 12, and 14)**
- **Black scabbardfish (1, 2, 4–8, 10, 14, 3.a, 9.a, and 12.b)**
- **Greater forkbeard (1–10, 12, and 14)**
- **Blackspot seabream (6, 7, and 8)**
- **Roundnose grenadier (6 and 7, 5.b and 12.b)**
- **Blue ling (6–7 and 5.b)**
- **Tusk (6.b)**



Greater silver smelt in other areas (7–10 and 12, 6.b)

Advice for 2020 and 2021, PA: Catches \leq 193 t



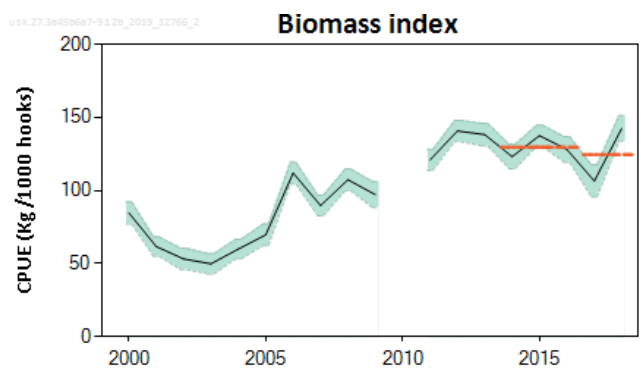
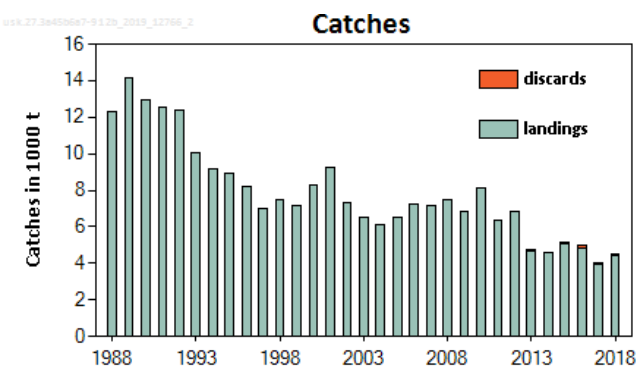
		Fishing pressure			Stock size					
		2016	2017	2018	2016	2017	2018			
Maximum sustainable yield	F_{MSY}	?	?	?	Unknown	$MSY B_{trigger}$?	?	?	Undefined
Precautionary approach	F_{pa}, F_{lim}	?	?	?	Unknown	B_{pa}, B_{lim}	?	?	?	Undefined
Management plan	F_{MGT}	-	-	-	Not applicable	B_{MGT}	-	-	-	Not applicable
Qualitative evaluation	-	?	?	?	Unknown	-	↗	↘	↘	Decreasing

Index A (2017–2018)		114 kg per haul
Index B (2014–2016)		102 kg per haul
Index ratio (A/B)		1.12
Uncertainty cap	Not applied	-
Advised landings for 2018 and 2019		14 tonnes
Discard rate (2016–2018)		0.92
Precautionary buffer	Not applied	-
Catch advice *		193 tonnes

- Previous advice was for landings, current advice is for catches
- Catches in 2018 = 140 t (74 % discards)
- Landings have been less than 50 t over the last 10 years.
- Spanish survey on the Porcupine Bank indicates a decline in the last two years.

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

Advice for 2020 and 2021, PA: Catch \leq 8 627 t



		Fishing pressure			Stock size			
		2016	2017	2018	2016	2017	2018	
Maximum sustainable yield	F_{MSY} proxy	✓	✓	✓ Below	MSY $B_{trigger}$ proxy	✓	✓	✓ Above
Precautionary approach	F_{pa} F_{lim}	✓	✓	✓ Below possible reference points	B_{pa} B_{lim}	✓	✓	✓ Above possible reference points
Management plan	F_{MGT}	-	-	- Not applicable	B_{MGT}	-	-	- Not applicable
Qualitative evaluation	-	-	-	- Not applicable	-	→	↘	↗ Increasing

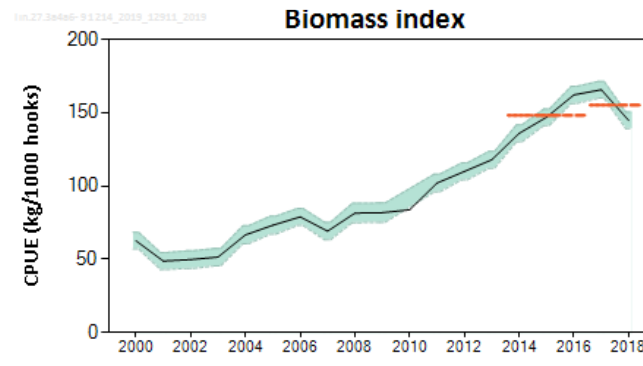
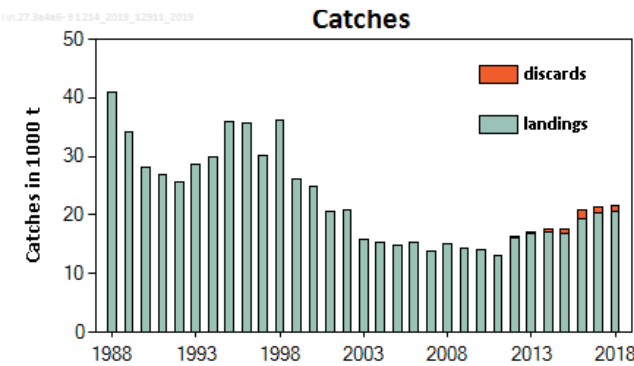
Catch (2018) = 4 411 t (2% discards)

Index A (2017–2018)	124
Index B (2014–2016)	130
Index ratio (A/B)	0.96
Uncertainty cap	Not applied
Advised catch for (2018–2019)	8984 tonnes
Discard rate	Negligible
Precautionary buffer	Not applied
Catch advice *	8627
% Advice change **	-4%

- Catches lower in the last 4 years.
- Catch per unit effort based of the Norwegian longline fleet remains high.

Ling in the Northeast Atlantic and Arctic Oceans (6–9, 12, and 14, 3.a and 4.a)

Advice for 2020 and 2021, PA: Catch \leq 18 516 t



		Fishing pressure			Stock size		
		2016	2017	2018	2016	2017	2018
Maximum sustainable yield	F_{MSY} proxy	✓	✓	✓ Below	$MSY_{B_{trigger}}$?	? Undefined
Precautionary approach	F_{pa} , F_{lim}	✓	✓	✓ Below possible reference points	B_{pa} , B_{lim}	?	? Undefined
Management plan	F_{MGT}	-	-	- Not applicable	B_{MGT}	-	- Not applicable
Qualitative evaluation	-	?	?	? Unknown	-	↗ ↘ ↙	Decreasing

Catch (2018) = 21 700 t (Discards = 1 012 t)

Index A (2017-2018)	155	155
Index B (2014-2016)	148	148
Index ratio (A/B)	1.05	1.05
Uncertainty cap	Not applied	-
Advised catch for (2018-2019)		17 695 tonnes
Discard rate		5.90%
Precautionary buffer	Not applied	-
Catch advice*		18 516 tonnes
Landings corresponding to the catch advice**		17 424 tonnes

- Landings have been lightly higher in the last 3 years.
- Discards have declined in 2017-2018
- Catch per unit effort (cpue) based on the Norwegian longline fleet is high but declined in 2018

Deep-sea stocks

SUMMARY

Stock	Exploitation	State of stock	Advice 2020	Advice 2019	Catch 2018	TAC 2019
G. Silver smelt 7-10, 12, 6.b	?	?	193	14(landings)	36	4661
Tusk 4,7-9,3.a, 5.b,6.a,12.b	✓	✓	8627	8984	4507	4551
Ling 6-9,12,14,3.a,4.a	✓	?	18516	17695	20688	25868

Colours indicate that the value for the Advice for 2020 is either above (green) or below (red) the Advice for 2019. For TAC 2019 in blue, area or species differ from the advice.

ICES advice provided in previous years

Stock	Advice 2019 (t)	Advice 2020 (t)	Year advice provided
Alfonsinos - NE Atlantic	224	224	2018
Black scabbardfish - NE Atlantic	5914	5914	2018
Greater forkbeard - NE Atlantic	1346	1346	2018
Blackspot seabream 6, 7, 8	0	0	2018
Roundnose grenadier 6, 7, 5.b, 12.b	3971	3971	2018
Blue ling 5.b, 6-7	11778	11500	2018



**Thank you
for your
attention!**



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