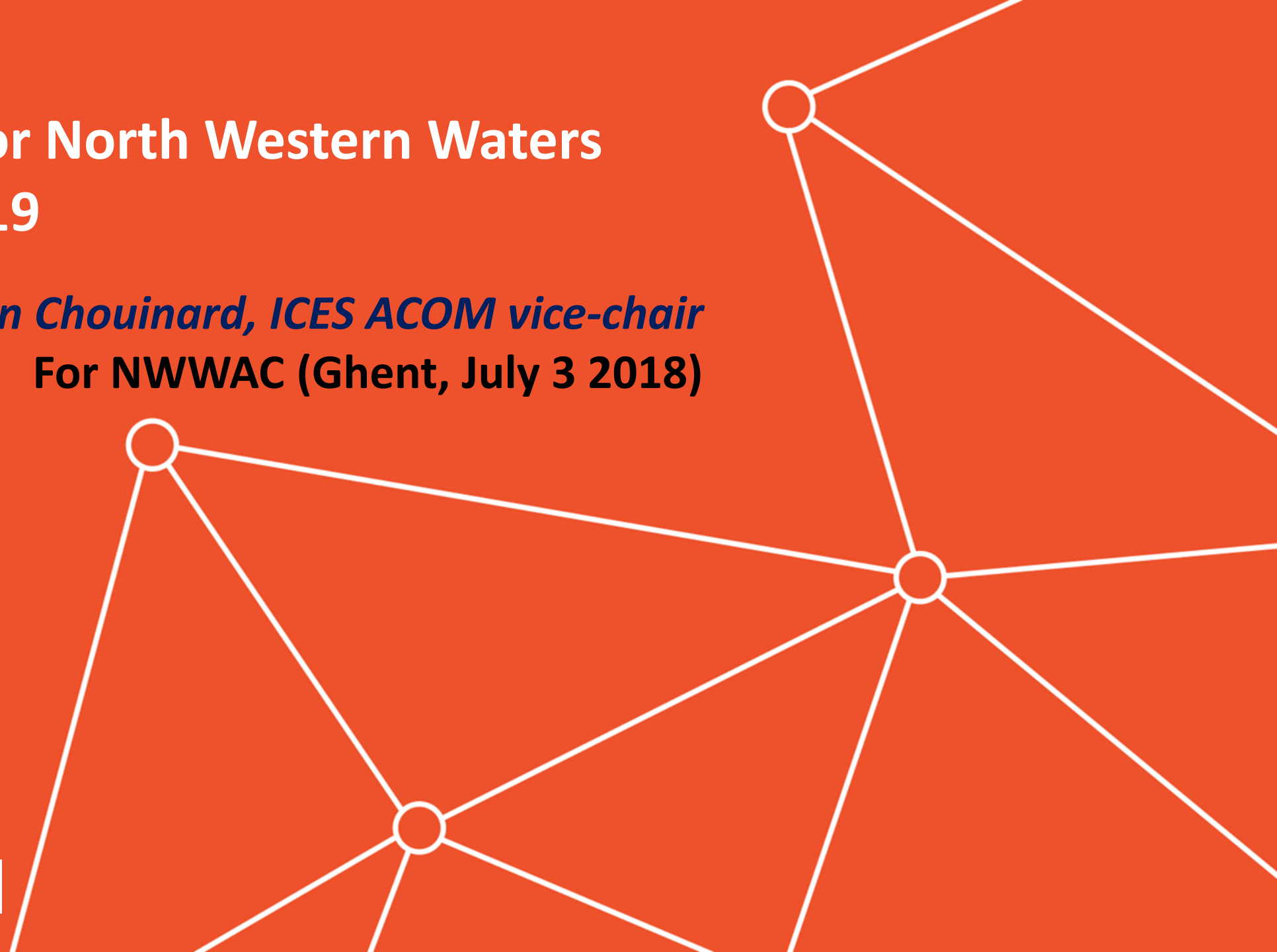
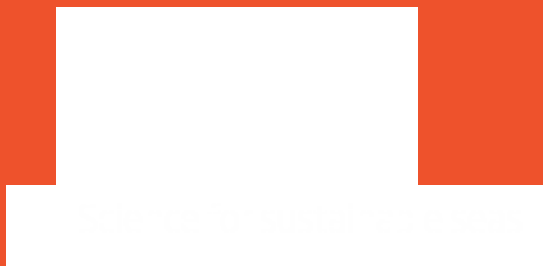
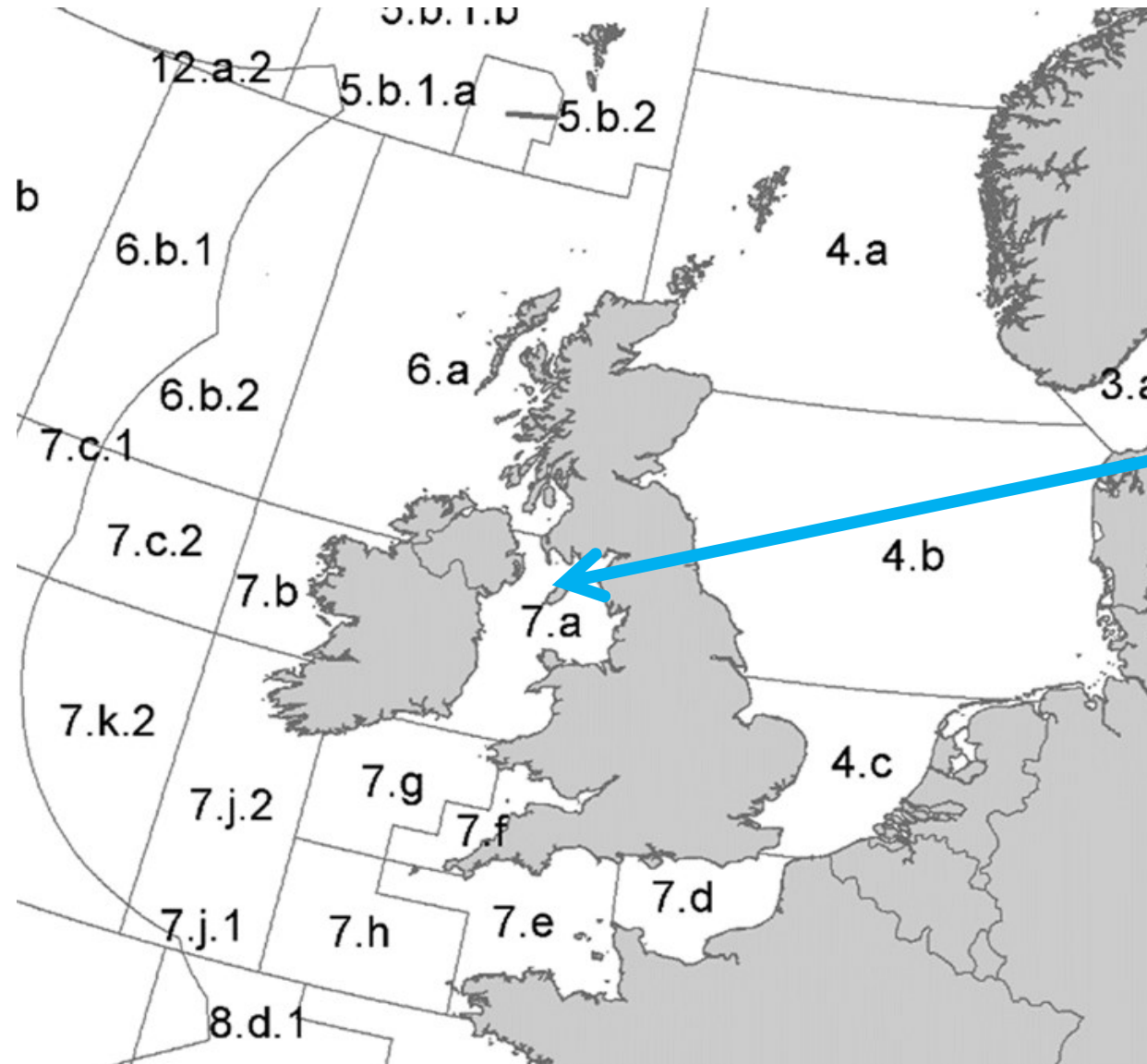


ICES advice for North Western Waters stocks for 2019

Ghislain Chouinard, ICES ACOM vice-chair
For NWWAC (Ghent, July 3 2018)



Irish Sea (7.a)



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

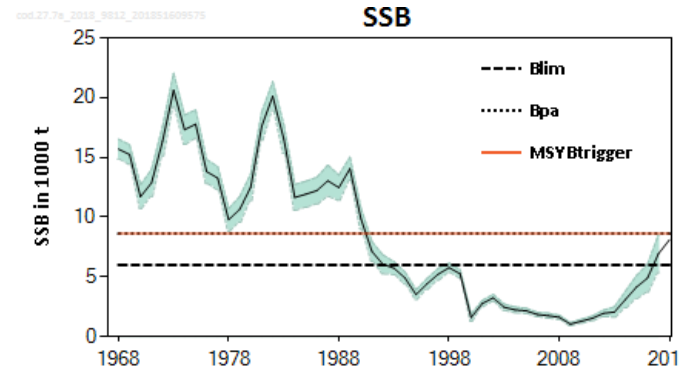
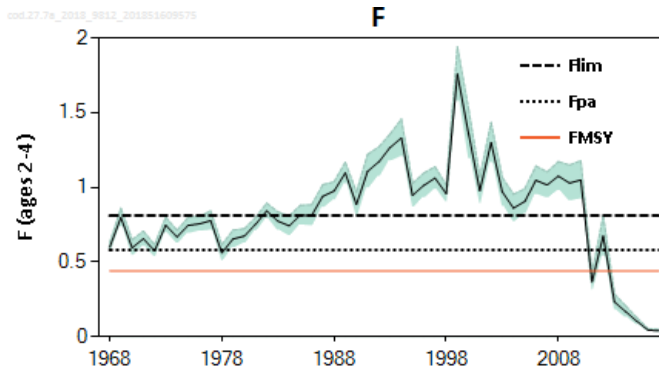
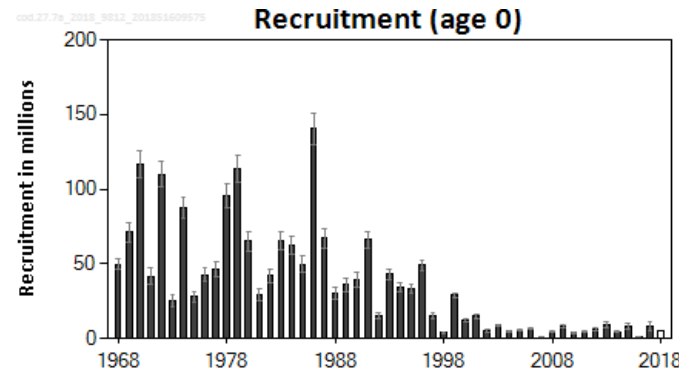
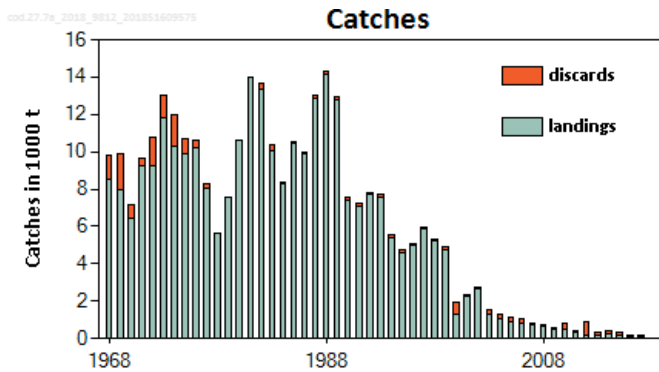
IN AUTUMN:

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

Cod in the Irish Sea (7.a)

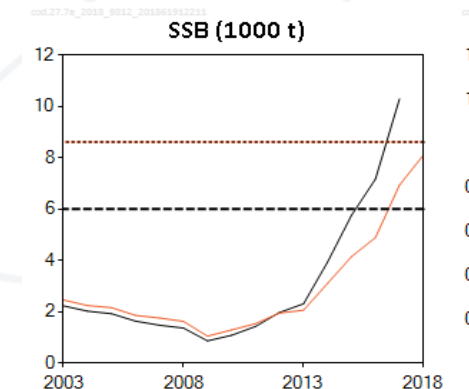


Advice for 2019 MSY: Catch ≤ 807 t



- Spawning stock below MSY $B_{trigger}$ in 2018.
- Fishing pressure has declined and well below F_{MSY} since 2013.
- Recruitment remains low, very low in both 2016 and 2017
- Downward revision of spawning stock estimates compared to previous year

	Fishing pressure			Stock size			
		2015	2016	2017	2016	2017	2018
Maximum sustainable yield	F_{MSY}	✓	✓	✓ Below	✗	✗	✗ Below trigger
Precautionary approach	F_{pa}, F_{lim}	✓	✓	✓ Harvested sustainably	✗	○	○ Increased risk
Management plan	F_{MGT}	—	—	— Not applicable	—	—	— Not applicable



Cod in the Irish Sea (7.a)



Catch (2017) : 143 t (41 % discards)

F(2018) = 0.25 (TAC constraint – 695 t)

SSB (2019)= 7 938 t < MSY_{Btrigger} (8 616 t) F_{MSY}= 0.44 (revised from 0.31)

Basis	Total catch (2019)	Wanted catch (2019)	Unwanted catch (2019)	F _{total} (2019)	F _{wanted} (2019)	F _{unwanted} [^] (2019)	SSB (2020)	% SSB change **	% TAC change ***	% Advice change ^{^^}
ICES advice basis										
MSY approach: F _{MSY} × SSB (2019)/MSY B _{trigger}	807	753	54	0.41	0.41	0	7671	-3.4	8.4	-25
Other scenarios										
F = 0	0	0	0	0	0	0	8841	11	-100	-100
F _{MSY}	866	808	58	0.44	0.44	0	7589	-4.4	16.3	-19
F = F _{MSY upper} × SSB (2019)/MSY B _{trigger}	807	753	54	0.41	0.41	0	7671	-3.4	8	-25
F = F _{MSY lower} × SSB (2019)/MSY B _{trigger}	677	633	44	0.33	0.33	0	7857	-1.0	-9	-37
TAC ₂₀₁₈	744	695	49	0.37	0.37	0	7762	-2.2	0	-31
TAC ₂₀₁₈ -15%	632	591	41	0.31	0.31	0	7922	-0.199	-15	-41
TAC ₂₀₁₈ +15%	857	799	59	0.43	0.43	0	7601	-4.2	15	-20
Fsq (F = F ₂₀₁₈)	534	499	34	0.25	0.25	0	8063	-5.4	-28	-50
F _{pa}	1095	1019	76	0.58	0.58	0	7265	-8.5	47	2
F _{lim}	1415	1311	104	0.81	0.81	0	6824	-14	89	32
SSB ₂₀₂₀ = B _{lim}	2034	1867	167	1.38	1.38	0	6000	-24	19	90
SSB ₂₀₂₀ = B _{pa} = MSY B _{trigger}	153	144	9	0.068	0.068	0	8616	8.5	-79	-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) → This needs to be considered when setting catch options for 7.a and 7.e-k.

** SSB 2020 relative to SSB 2019.

*** Wanted catch in 2019 relative to TAC in 2018 (695 tonnes).

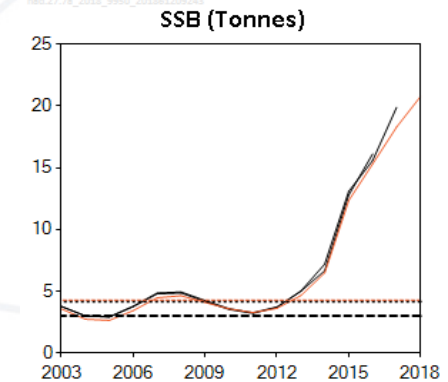
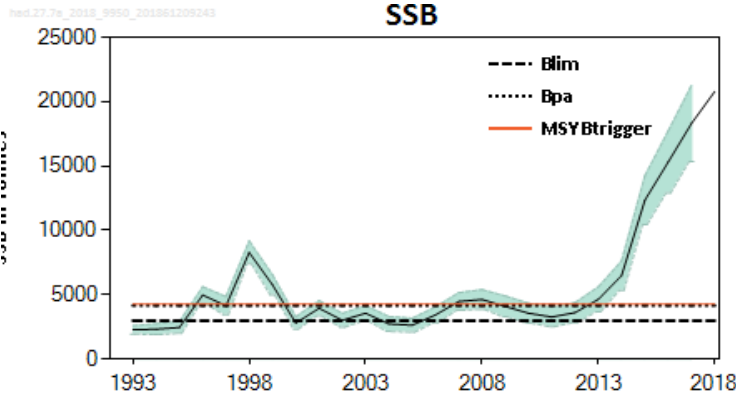
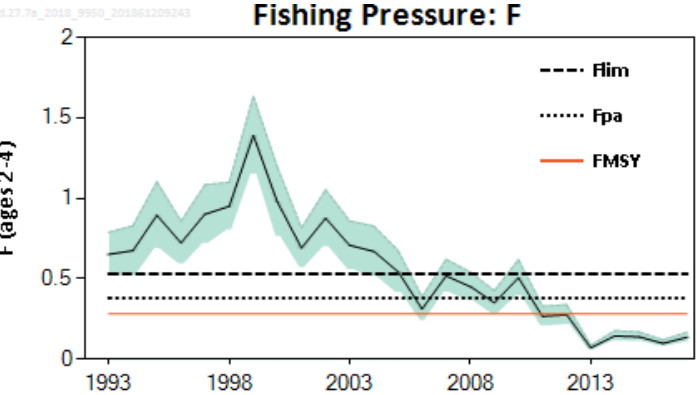
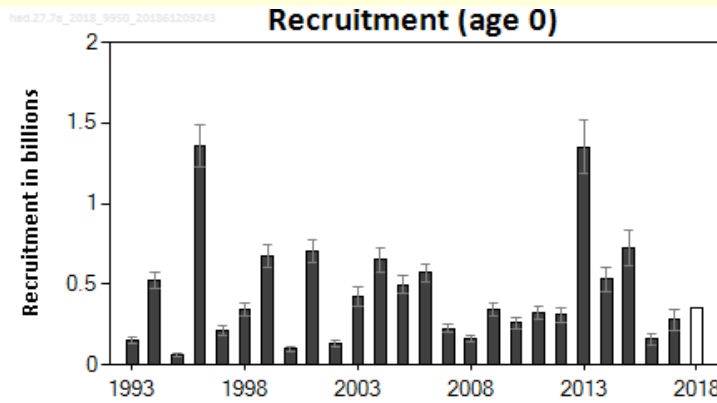
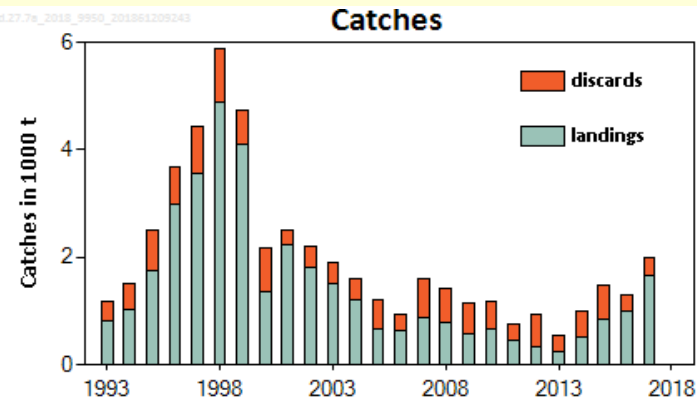
^^ Advice value (total catch) for 2019 relative to the advice value for 2018 (1073 tonnes).

Haddock in the Irish Sea (7.a)



Advice for 2019: MSY: Catch \leq 3 739 t

- Spawning stock at highest level in 2018.
- Fishing pressure has declined and below F_{MSY} since 2012.
- Recruitment variable but below average in 2016-2017.



	Fishing pressure			Stock size			
		2015	2016	2017	2016	2017	2018
Maximum sustainable yield	F_{MSY}	✓	✓	✓ Below	MSY $B_{trigger}$	✓	✓ Above trigger
Precautionary approach	F_{pa} , F_{lim}	✓	✓	✓ Harvested sustainably	B_{pa} , B_{lim}	✓	✓ Full reproductive capacity
Management plan	F_{MGT}	—	—	— Not applicable	B_{MGT}	—	— Not applicable

Haddock in the Irish Sea (7.a)

Catch (2017) : 1 995 t (17 % discards)

$F(2018) = 0.18$ (Catch constraint =(TAC 2018 – rectangles 33E2-3));

SSB (2019)= 17 356 t > $MSY_{Btrigger}$ (4 281 t ↑ (2944)) $F_{MSY} = 0.28 \uparrow (0.27)$



Basis	Total catch (2019)	Wanted catch* (2019)	Unwanted catch* (2019)	F_{total} (2019)	F_{wanted} (2019)	$F_{unwanted}$ (2019)	SSB (2020)	% SSB change **	% TAC change ***	% Advice change ^
ICES advice basis										
MSY approach: F_{MSY}	3739	3334	405	0.28	0.21	0.07	13095	-25	16.6	9
Other options										
$F_{MSYLOWER}$	2764	2468	296	0.2	0.15	0.05	14137	-18.5	-13.8	-19.7
$F_{MSYUPPER}$	4536	4041	495	0.35	0.27	0.08	12248	-29	41	32
$F = 0$	0	0	0	0	0	0	17127	-1.32	-100	-100
F_{pa}	4863	4330	533	0.38	0.29	0.09	11902	-31	52	41
F_{lim}	6088	5411	677	0.5	0.38	0.12	10614	-39	90	77
SSB (2020) = B_{lim}	13863	12075	1788	1.85	1.41	0.44	2994	-83	332	303
SSB (2020) = B_{pa}	12564	11001	1564	1.49	1.14	0.35	4160	-76	292	265
SSB (2020) = $MSY_{Btrigger}$	12434	10891	1542	1.46	1.12	0.34	4281	-75	288	261
$F = F_{2018}$	1773	1585	188	0.12	0.09	0.03	15204	-12.4	-45	-49

** SSB 2020 relative to SSB 2019.

*** Total catch in 2019 relative to TAC in 2018 (3207 t).

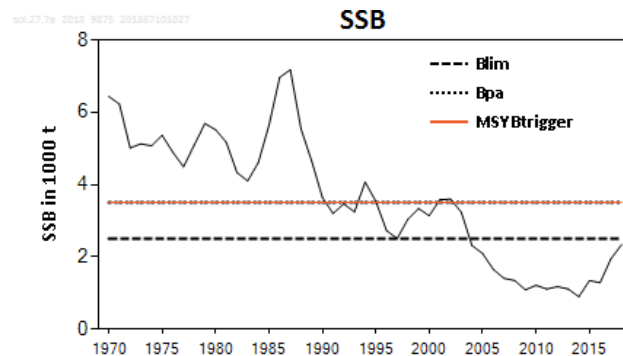
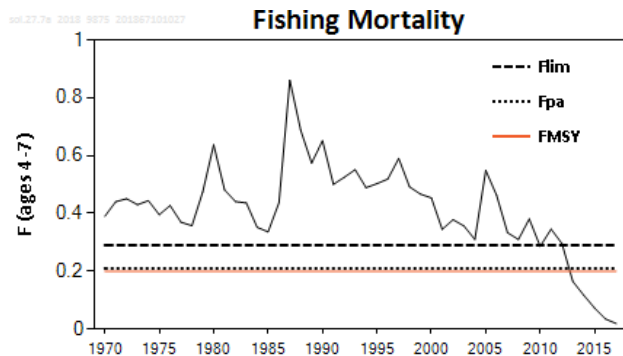
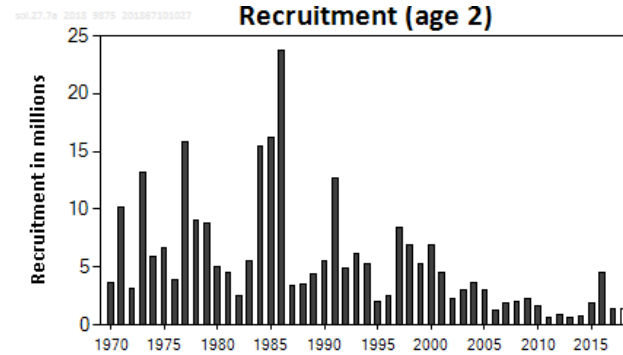
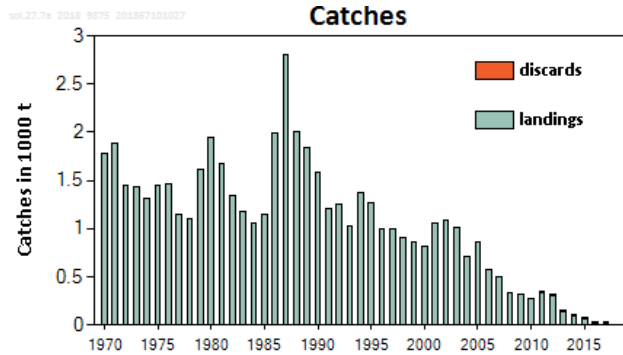
^Advice value for 2019 relative to advice value for 2018 (3444 t).

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 2019: MSY: Catch \leq 414 t



- Spawning stock below Blim since 2004 but expected to be above at the beginning of 2019.
- Fishing pressure has declined since the late 1980s.
- Recruitment in 2015 and 2016 are above recent average

	Fishing pressure			Stock size				
		2015	2016	2017	2016	2017	2018	
Maximum sustainable yield	F _{MSY}	✓	✓	✓ Below	MSY B _{trigger}	✗	✗	✗ Below trigger
Precautionary approach	F _{pa} , F _{lim}	✓	✓	✓ Harvested sustainably	B _{pa} , B _{lim}	✗	✗	✗ Reduced reproductive capacity
Management plan	F _{MGT}	—	—	— Not applicable	B _{MGT}	—	—	— Not applicable

Sole in the Irish Sea (7.a)



Catch (2017) : 36 t (6 % discards)

$F(2018) = 0.0165$ (Catch constraint $= (TAC\ 2018 + \text{discards})$);

$SSB(2019) = 2\ 691\ t < MSY_{Btrigger} (3\ 500)$ but $> B_{Lim} (2\ 400\ t)$ $F_{MSY} = 0.20$

Basis	Total catch* (2019)	Wanted catch** (2019)	Unwanted catch** (2019)	Fwanted (2019)	SSB (2020)	% SSB change *	% TAC change^	% Advice change ^^
ICES advice basis								
MSY approach: FMSY × SSB (2019)/MSY Btrigger	414	395	19	0.154	2636	-2	936	-
Other scenarios								
F= FMSY lower × SSB (2019)/MSY Btrigger	336	320	16	0.123	2707	0.59	739	-
F= FMSY upper × SSB (2019)/MSY Btrigger	490	467	23	0.185	2567	-4.6	1125	-
F= FMSY	527	502	25	0.2	2533	-5.9	1217	-
F = FMSY upper	621	592	29	0.24	2447	-9.1	1453	-
F = FMSY lower	429	409	20	0.16	2622	-2.6	973	-
F = 0	0	0	0	0	3014	12	-100	-
F _{pa}	551	525	26	0.21	2511	-6.7	1277	-
F _{lim}	733	699	34	0.29	2345	-12.9	1734	-
SSB (2020) = B _{lim}	563	537	26	0.22	2500	-7.1	1309	-
SSB (2020) = B _{pa} = MSY B _{trigger} ^^^	-	-	-	-	-	-	-	-
F = F ₂₀₁₈	47	45	2	0.0165	2971	10.4	18	-

*** SSB 2020 relative to SSB 2019.

^ Total catch in 2019 relative to TAC 2018 (40 tonnes).

^^Advice value 2019 relative to advice value 2018.

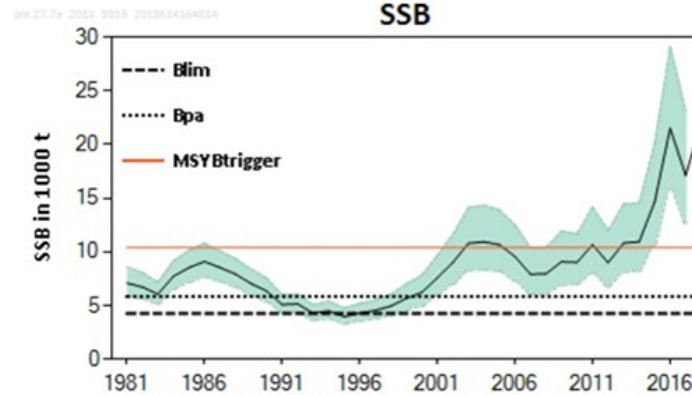
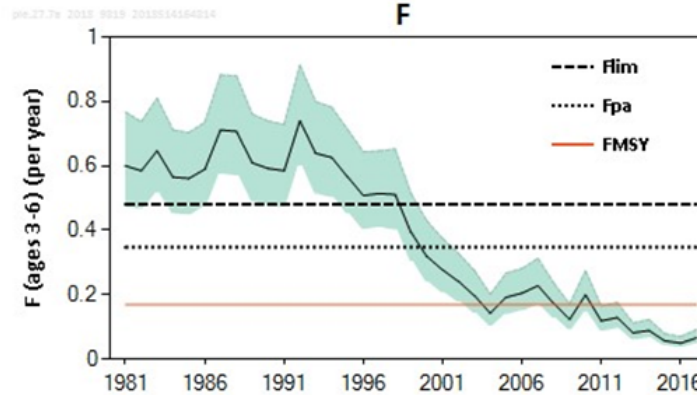
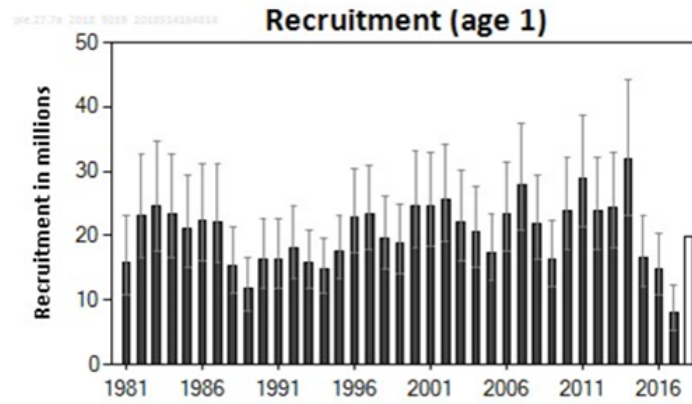
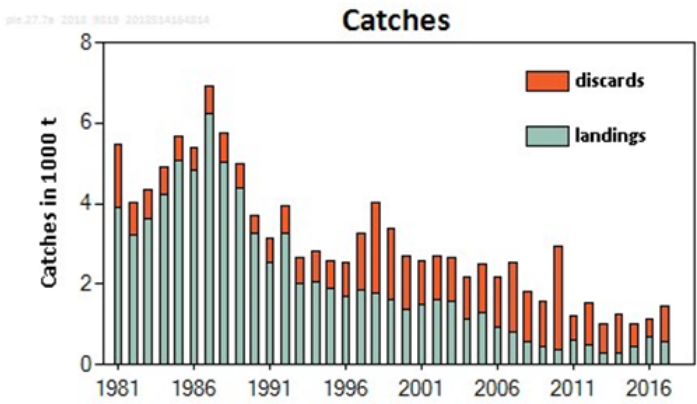
This is not provided because advice in 2017 was zero.

^^^The MSY Btrigger option was left blank because MSY Btrigger cannot be achieved in 2020, even with zero advice.

Plaice in the Irish Sea (7.a)



Advice for 2019: MSY: Catch \leq 3 503 t



- 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			
		2015	2016	2017	2016	2017	2018
Maximum sustainable yield	F_{MSY}	✓	✓	✓ Below	MSY $B_{trigger}$	✓	✓ Above trigger
Precautionary approach	F_{pa}, F_{lim}	✓	✓	✓ Harvested sustainably	B_{pa}, B_{lim}	✓	✓ Full reproductive capacity
Management plan	F_{MGT}	—	—	— Not applicable	B_{MGT}	—	— Not applicable

Plaice in the Irish Sea (7.a)

Catch (2017) : 1 438 t (60 % discards, but 40% of these survive)

$F(2018) = 0.06$ (Recent average fishing pressure (2015-2017));

$SSB(2019) = 23\ 088\ t > MSY_{B_{trigger}} (10\ 392\ t) \quad F_{MSY} = 0.169$



Basis	Total catch (2019)	Wanted catch (2019)	Total unwanted catch* (2019)	F_{total} (2019)	F_{wanted} (2019)	$F_{unwanted}^{**}$ (2019)	SSB (2020)	% SSB change ***	% TAC change ^	% advice change ^^
ICES advice basis										
MSY approach: F_{MSY}	3503	2131	1372	0.17	0.04	0.128	22398	-3	19	5
Other scenarios										
$F = 0$	0	0	0	0	0	0	25584	11	-100	-100
$F = F_{pa}$	6763	4123	2640	0.35	0.08	0.27	19446	-16	130	103
$F = F_{lim}$	8831	5391	3440	0.48	0.116	0.36	17582	-24	201	165
$SSB(2020) = B_{lim}$	24072	14806	9266	2.4	0.58	1.8	4250	-82	726	622
$SSB(2020) = B_{pa}$	22183	13642	8541	2	0.47	1.5	5825	-75	661	565
$SSB(2020) = MSY B_{trigger}$	16901	10368	6533	1.17	0.28	0.89	10392	-55	478	407
$F = F_{2018}$	1253	761	492	0.06	0.01	0.04	24443	6	-58	-62

* Dead + surviving unwanted catch.

** $F_{unwanted}$ concerns dead unwanted catch only.

*** SSB 2020 relative to SSB 2019.

^ Wanted catch advice value for 2019 relative to TAC in 2018 (1793 t).

^^ Catch advice value for 2019 relative to catch advice value for 2018 (3336 t).

Irish Sea (7.a)



SUMMARY

Stock	Advice 2019	Advice 2018	Catch 2017	TAC 2018
Cod 7.a	807	1073	143	695
Haddock 7.a	3739	3444	1995	3207
Sole 7.a	414	0	36	40
Plaice 7.a	3503	3336	1438	1793

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

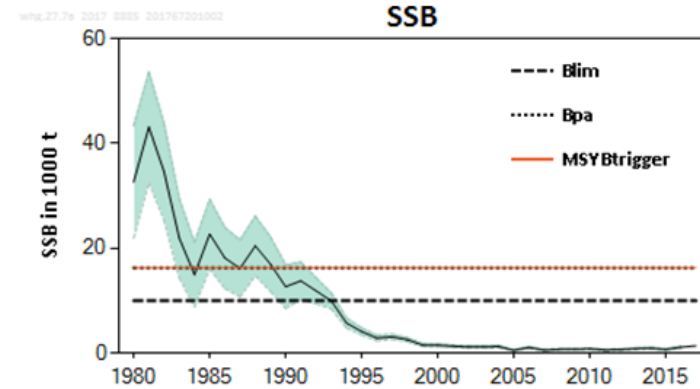
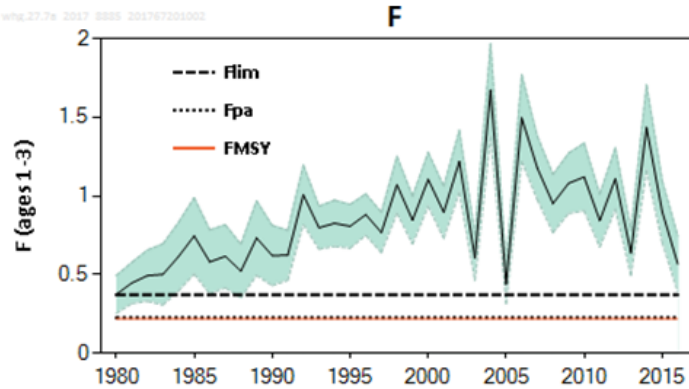
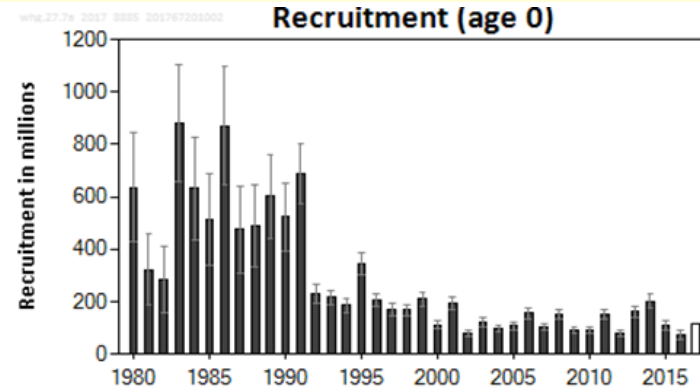
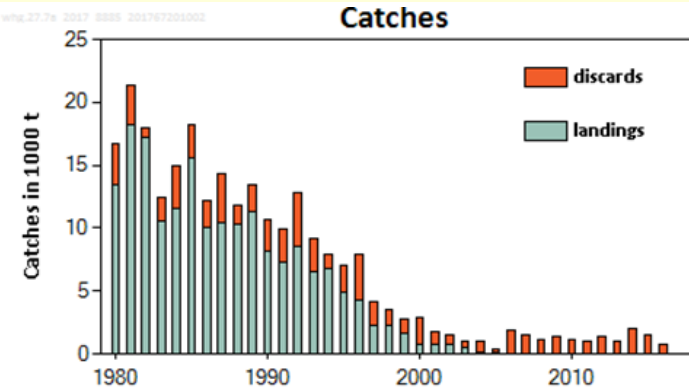
ICES advice provided in 2017

Area	Stock	Advice 2018 (tonnes)	Advice 2019 (tonnes)
Irish Seas	Whiting in the Irish Sea (7.a)	Catch = 0	Catch = 0

Whiting in the Irish Sea (7.a)



Advice for 2018 and 2019 : MSY: Catch = 0 t



- Benchmark in 2017 (WKIRISH) – upgraded to category 1.
- Spawning stock well below B_{lim} since the mid 1990's.
- Fishing pressure above F_{Lim} .
- Recruitment has been low since the early 1990's.
- The majority of whiting caught are discarded.

	Fishing pressure			Stock size			
		2014	2015	2016	2015	2016	2017
Maximum sustainable yield	F_{MSY}	✗	✗	✗ Above	MSY $B_{trigger}$	✗	✗ Below trigger
Precautionary approach	F_{pa}, F_{lim}	✗	✗	✗ Harvested unsustainably	B_{pa}, B_{lim}	✗	✗ Reduced reproductive capacity
Management plan	F_{MGT}	—	—	— Not applicable	B_{MGT}	—	— Not applicable

Whiting in the Irish Sea (7.a)



Catch (2016) : 780 t (98 % discards)

$F(2017) = 0.97$ (Recent average fishing pressure (2014-2016));

$SSB(2018) = 877 \text{ t} < B_{Lim} (10\,000 \text{ t})$ $F_{MSY} = 0.22$

Basis	Total catch (2018)	Landings (2018)	Discards (2018)	F_{total} (2018)	$F_{Landings}$ (2018)	$F_{Discards}$ (2018)	SSB (2019)	% SSB change *	% TAC change **
ICES advice basis									
MSY approach	0	0	0	0	0	0	2103	140	-100
Other options									
$F_{MSY} = F_{pa}$	413	46	367	0.22	0.0085	0.21	1702	94	-43
$F = 0$	0	0	0	0	0	0	2103	140	-100
F_{lim}	657	72	585	0.37	0.0144	0.36	1473	68	-10
$SSB(2019) = B_{lim}^{\wedge}$									
$SSB(2019) = B_{pa} = MSY B_{trigger}^{\wedge}$									
$F = F_{2017}$	1406	147	1259	0.97	0.038	0.93	831	-5.2	84

* SSB 2019 relative to SSB 2018.

** Landings in 2018 relative to TAC in 2017 (80 t).

\wedge The B_{lim} , B_{pa} , and $MSY B_{trigger}$ options were left blank because B_{lim} , B_{pa} , and $MSY B_{trigger}$ cannot be achieved in 2019, even with zero advice.

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