

Latest ICES scientific advice on key pelagic stocks

Steven Mackinson
Chief Scientific Officer
Scottish Pelagic Fishermen's Association



International Council for the Exploration of the Sea

ICES Catch advice for 2023 (major pelagic stocks)

*Compared to
2022 TAC*

*Compared to
2022 ICES Advice*

*ICES
Advice*

*Figures
based on*



North Sea herring



**403,813 t
(A-fleet)**

MSY approach
($F=0.28$, $B<B_{trigger}$)



Western Scotland herring



1,212 t

MSY approach Cat 3 stock,
20%+ stability clause of
3yr-av. catch.



Irish Sea herring



7,309 t

MSY approach
($F=0.266$)



NE Atlantic mackerel



782,066 t

MSY approach
($F_{msy}=0.26$)



Atlanto-Scandian herring

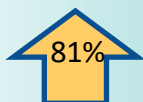


511,171 t

EU, Norway, Iceland, Faroes,
Russia Management Plan
($F=F_w=0.14$)



Blue whiting



1,359,629 t

MSY approach
($F_{msy}=0.32$)



Western horse mackerel



0 t

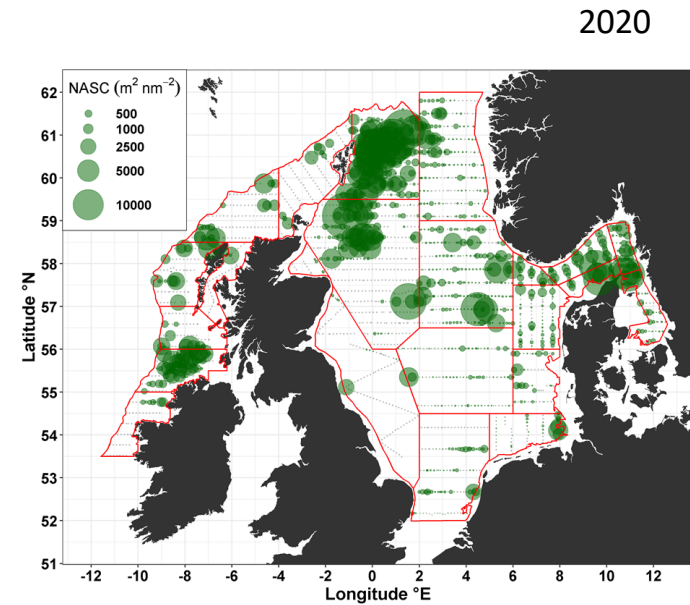
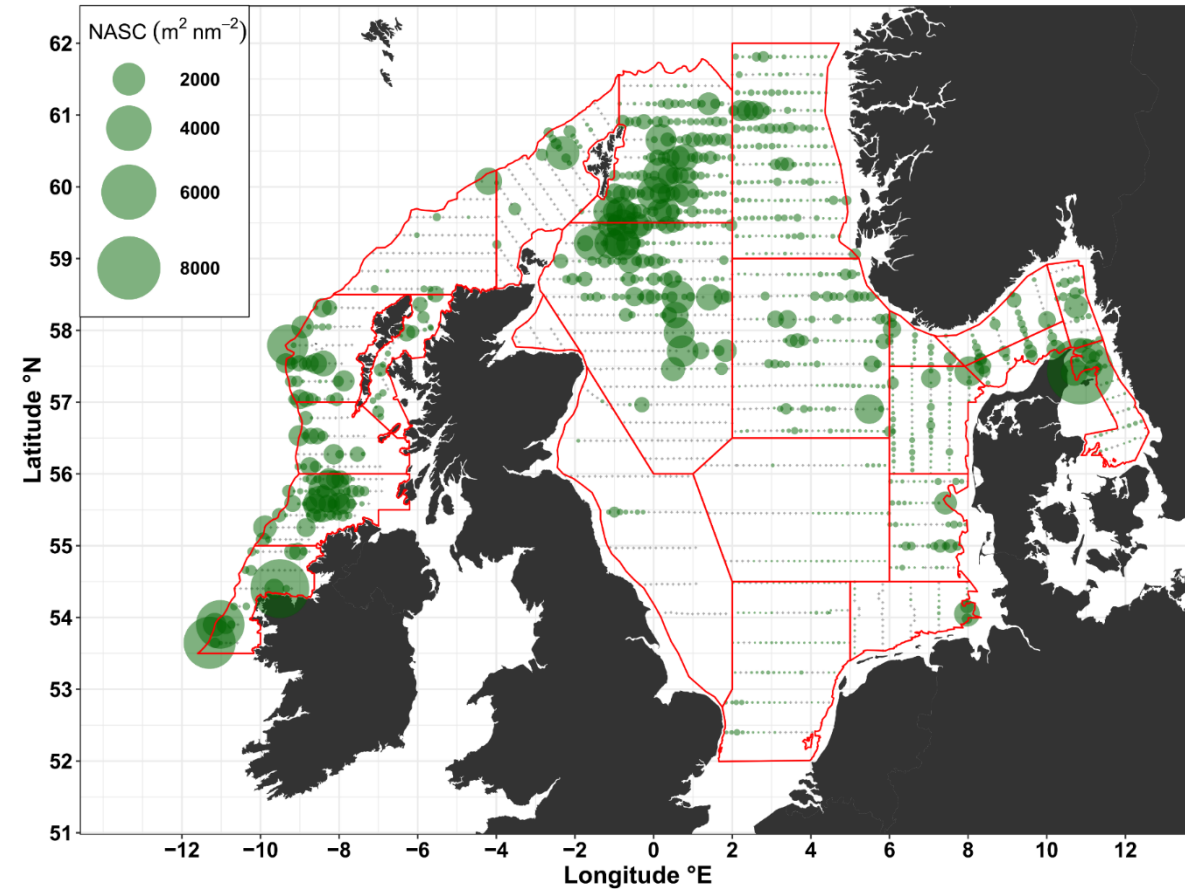
MSY approach
($F=0$)

North Sea Herring



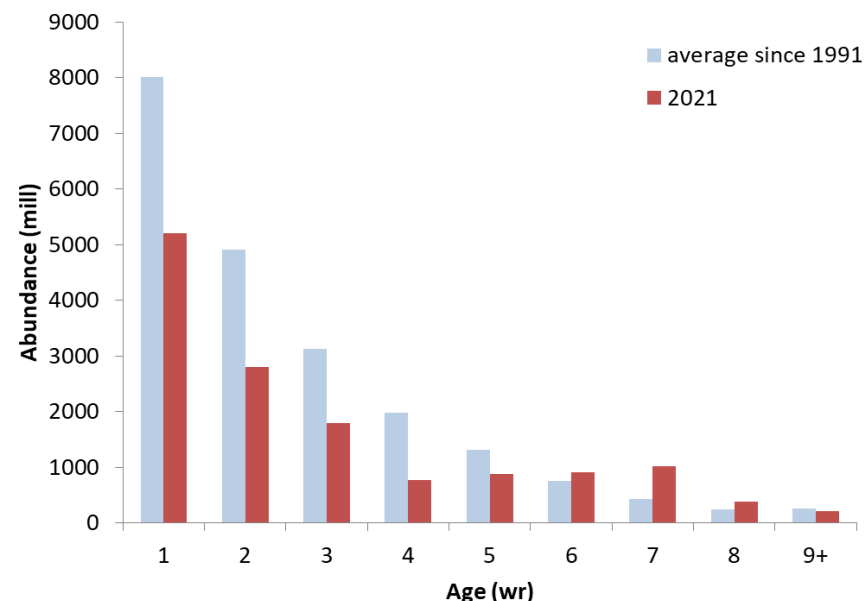
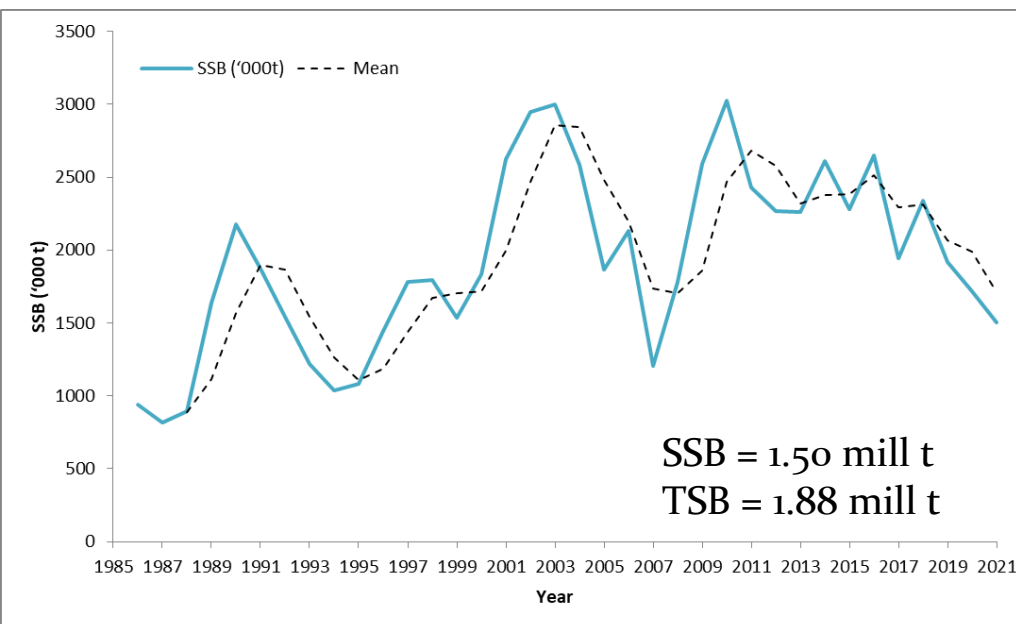
Latest advice: 30th June 2022

Acoustic survey results 2021



NSAS herring - results

Age (wr)	2020	2021	% change
1	44	47.7	8%
2	124	121.3	-2%
3	159	165.8	4%
4	191	191	0%
5	222	203.4	-8%
6	233	220.8	-5%
7	247	233.1	-6%
8	256	240	-6%
9+	268	272.1	1%





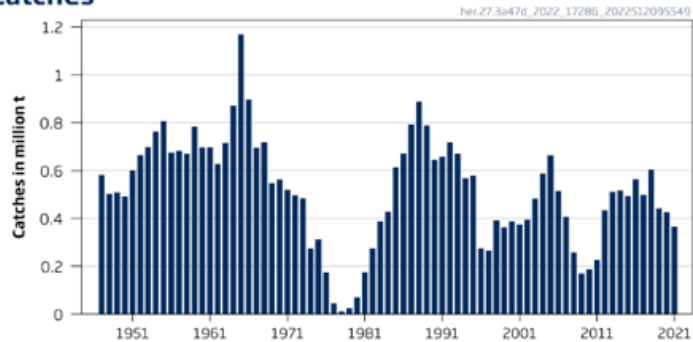
North Sea Herring – ICES Advice

ICES advice on fishing opportunities

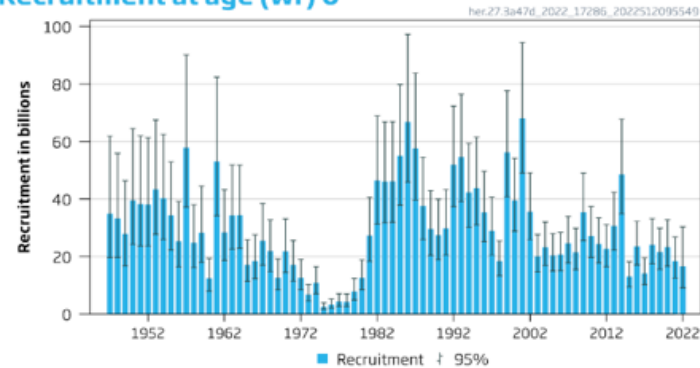
ICES advises that when the MSY approach is applied, catches in 2023 should be no more than 414 886 tonnes.

A-Fleet = 403,813 t

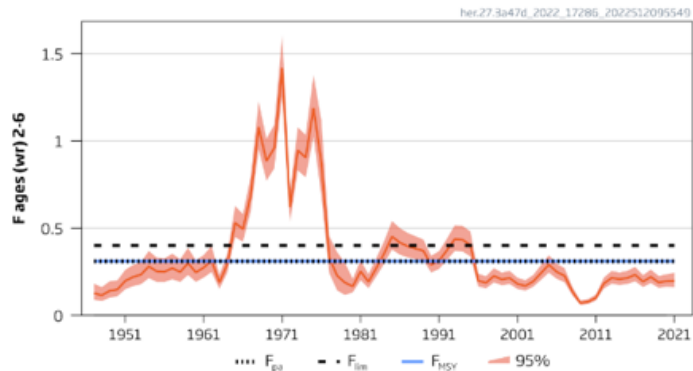
Catches



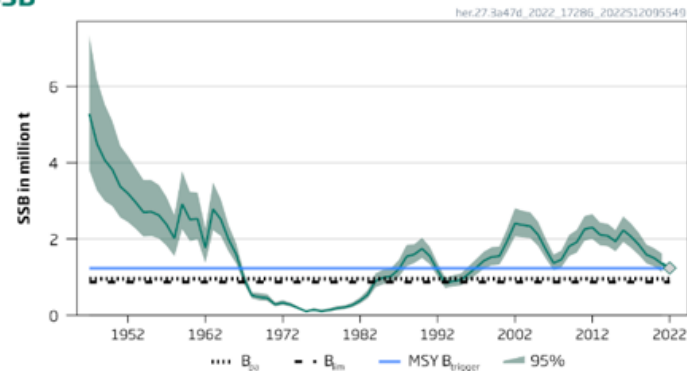
Recruitment at age (wr) 0



F



SSB



North Sea Herring

- Recall - Benchmark resulted in revision of reference points which had a big impact on 2022 advice despite the assessment of the stock being revised down.
 - Fmsy increase from 0.26 to 0.31
 - Bmsy decrease from 1.4 mt to 1.23 mt
- The decrease in catch advice is due to the decrease in stock level. It results in the spawning stock biomass being lower than MSY Btrigger in 2023 which causes the fishing pressure to be scaled down from the FMSY reference point (from 0.31 to 0.28).
- **Despite giving advice according to advice rule, stock expected to be below MSY Btrigger for short-medium term**

Western Herring



Latest advice: due 30 June 2022

Western herring

- Evidence from acoustic surveys by Marine Scotland, Irish Marine Institute and industry surveys still points to 6aN being in a poor shape.
- Simpler assessment: based on herring biology and relative trends from surveys and catches. Same in 6aS7bc.
- In 2022, the advice uses trends in the July acoustic surveys, biological samples from the industry survey work and average of 3-years catches to provide an estimated catch in 2023 = 8, 119 t BUT.....
- **Stability clause (+20%) is applied to average of last 3-years catch to get the advice of 1,212 t. in 2023**
- Next year, the acoustic surveys and catch from 2022 will be used to provide advice for 2024.
- Despite the new method, data for a full analytical assessment is being maintained with a view to this being implemented again.
- Industry surveys are important in maintaining this data set and making a full assessment possible in the future.
- Following the outcomes of the benchmark, the case has been made to Marine Scotland to maintain the industry survey to at least 2025 before reviewing.

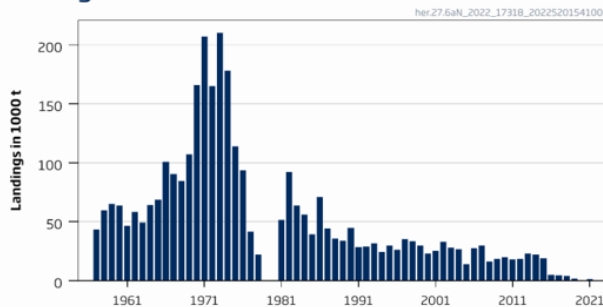
West of Scotland 6.a (North), autumn spawners



ICES advice on fishing opportunities

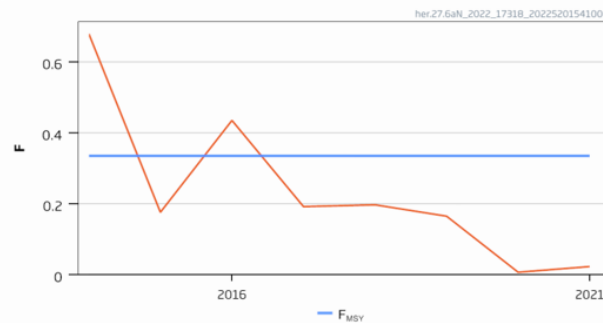
ICES advises that when the MSY approach is applied, catches in 2023 should be no more than 1 212 tonnes.

Landings

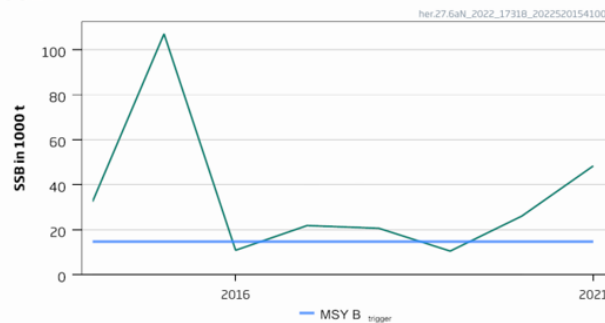


- Genetic splitting data constrains to shorter assessment (starts 2014, instead of 1957) reflecting recent fishery on autumn spawners in North Minch and largely removing issues related misreporting.
- Simpler assessment: based on herring biology and relative trends from surveys and catches. Same in 6a57bc.

F



SSB



Northwest and West of Ireland 6.a (South),7bc

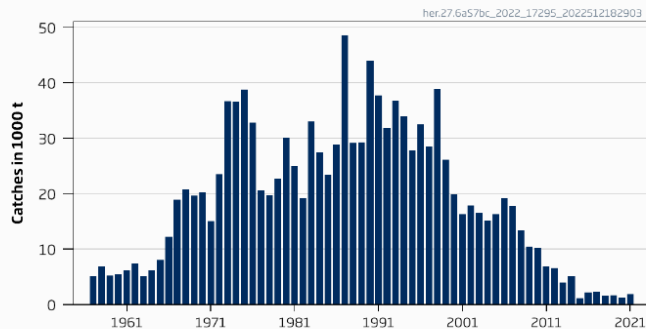


ICES advice on fishing opportunities

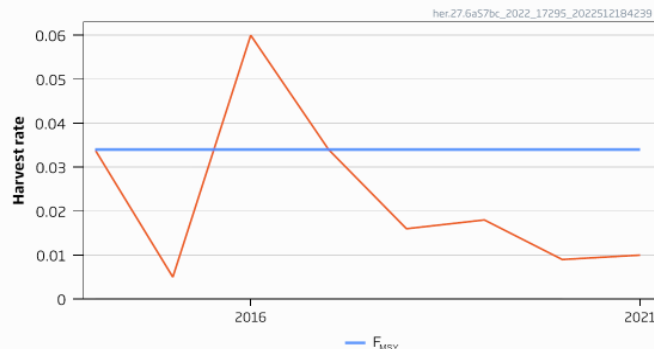
ICES advises that when the MSY approach is applied, catches in 2023 should be no more than 1 892 tonnes.

Fishing pressure on the stock is below $F_{\text{proxy MSY}}$ and the stock size index is above MSY B_{trigger} ($I_{\text{trigger}} = 1.4 * I_{\text{loss}}$).

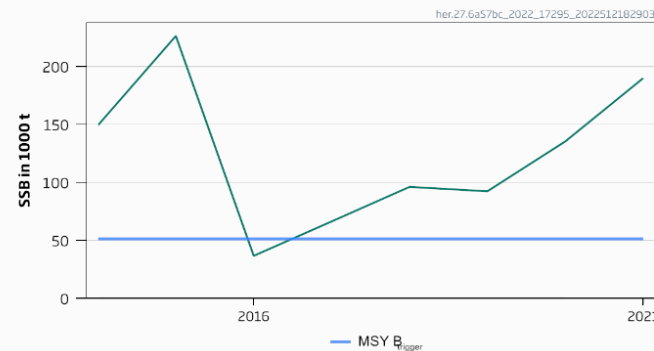
Catches



Harvest Rate



SSB



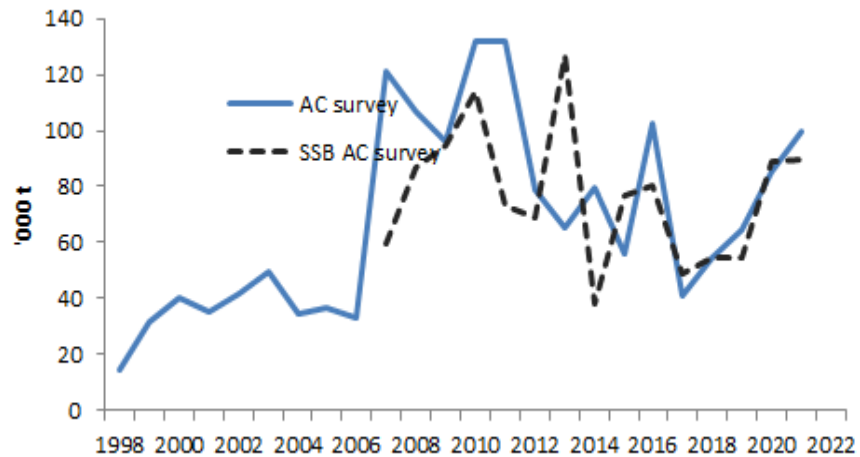
Irish Sea Herring



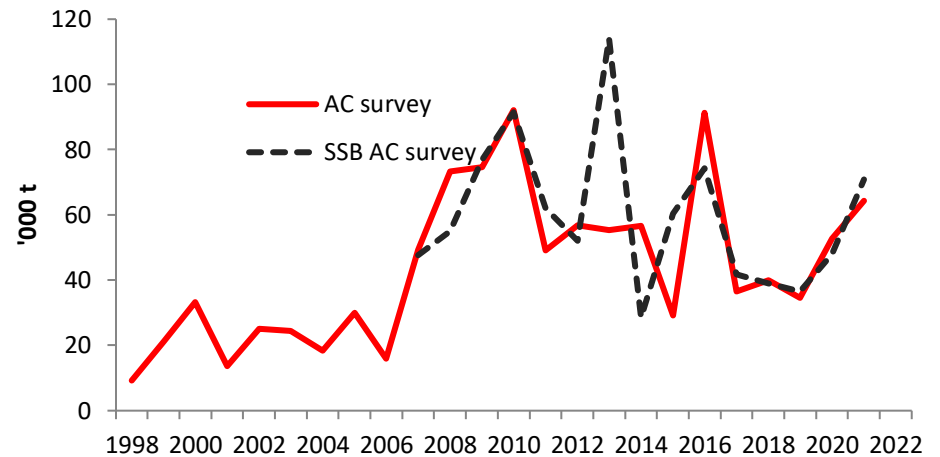
Latest advice: due 30 June 2022

Science acoustic survey (AC) vs Commercial survey (SSB)

1+ herring biomass

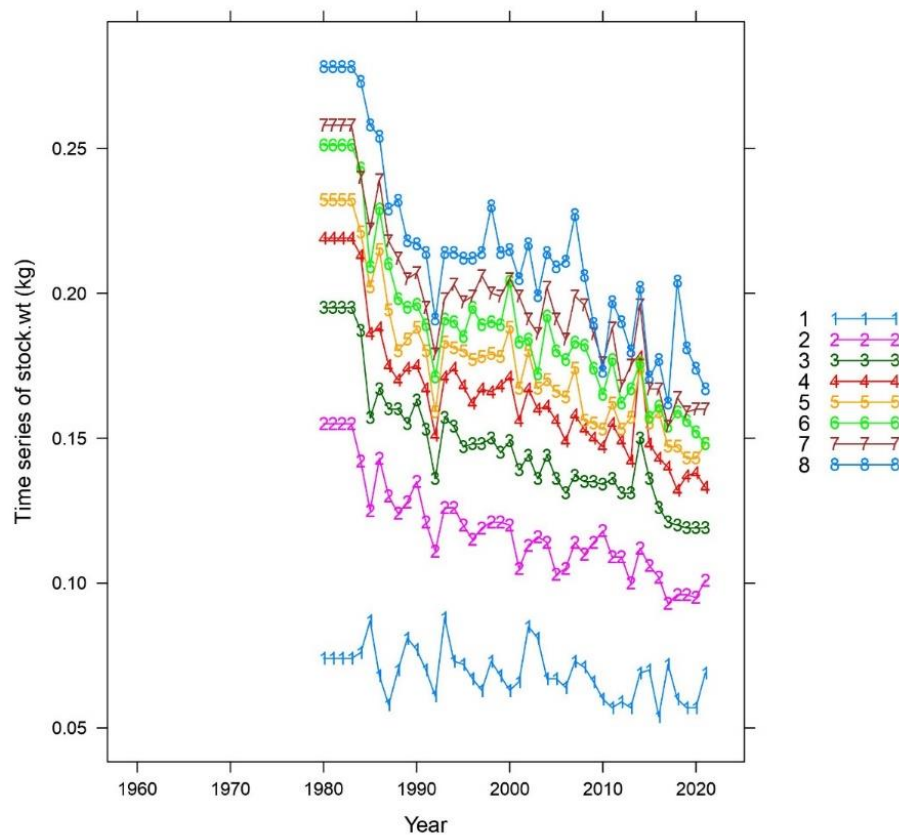


SSB

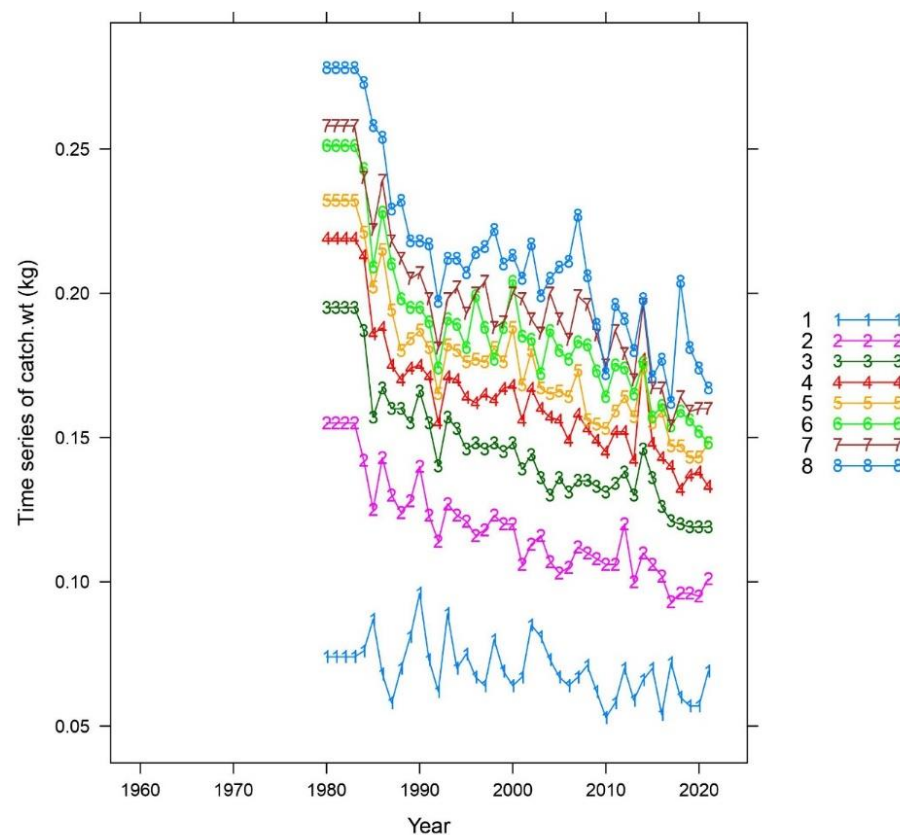


Catch and stock weights

Irish Sea herring timeseries of stock.wt



Irish Sea herring timeseries of catch.wt



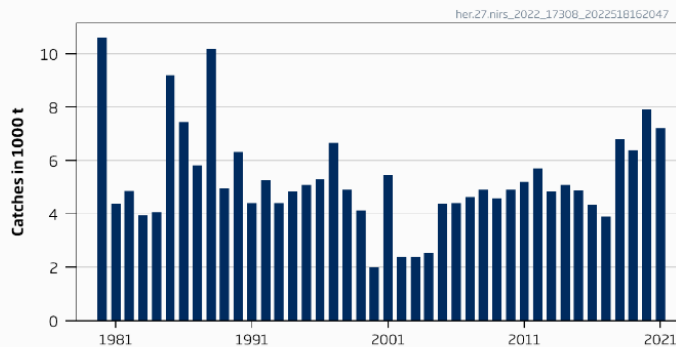
Latest advice

ICES advice on fishing opportunities

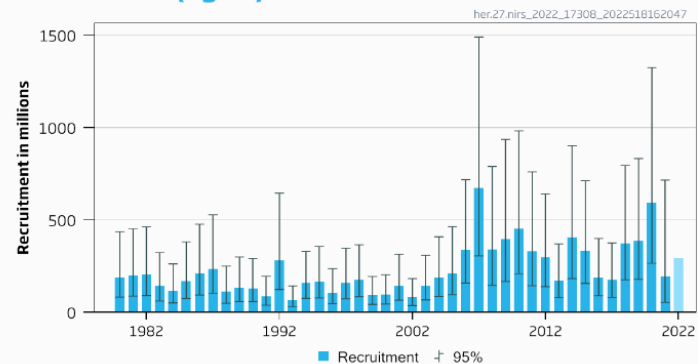


ICES advises that when the MSY approach is applied, catches in 2023 should be no more than 7309 tonnes.

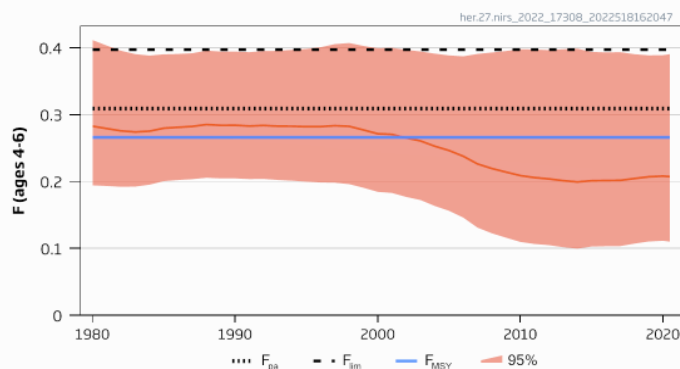
Catches



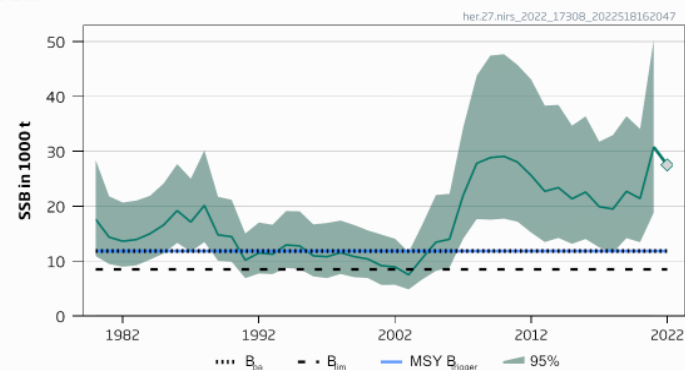
Recruitment (age 1)



F



SSB



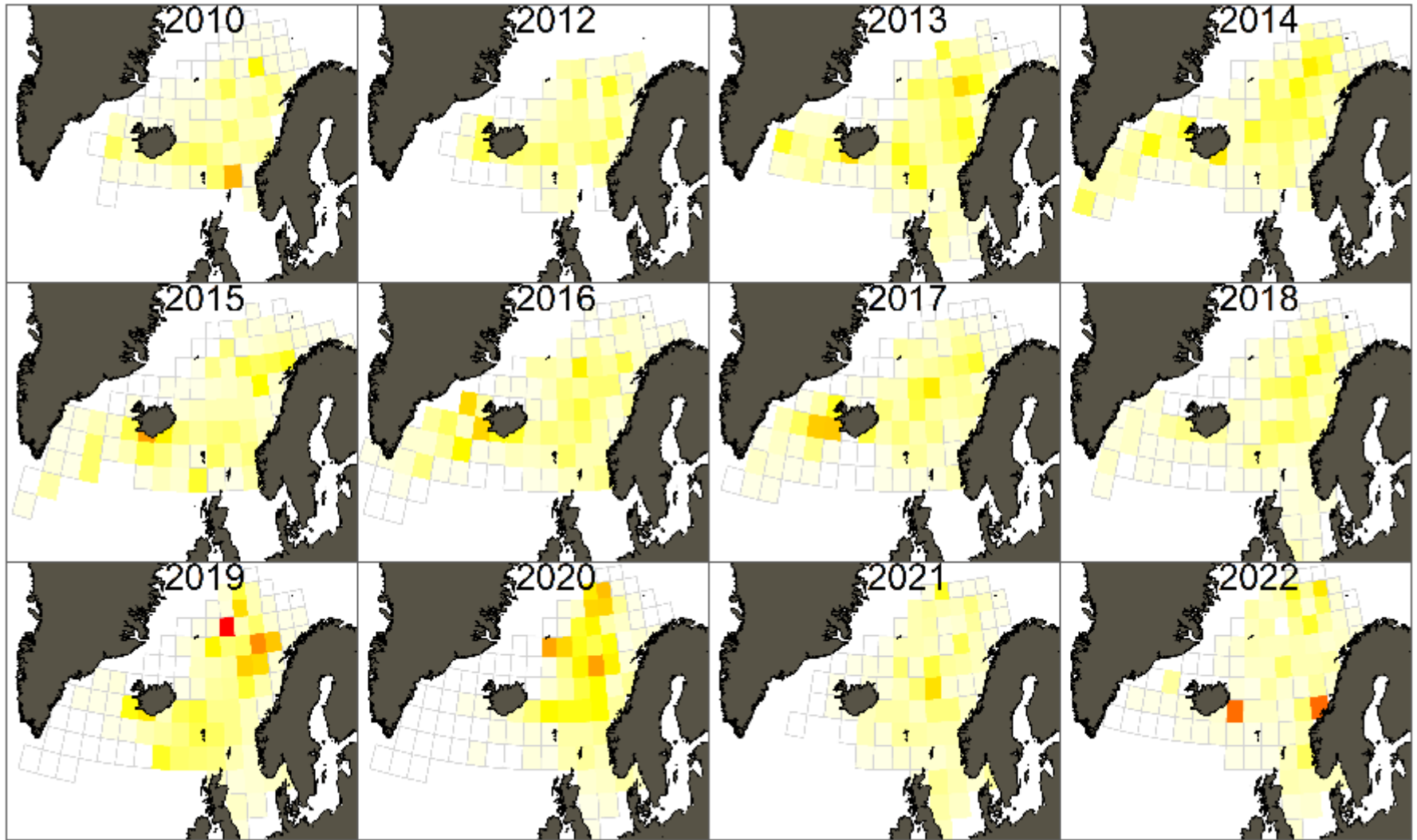


North East Atlantic Mackerel



Latest advice: 30 Sep 2022

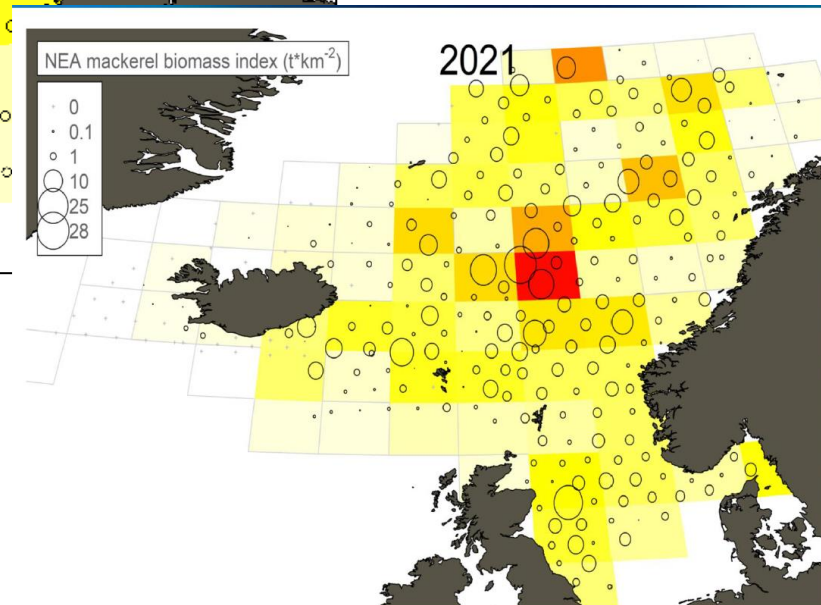
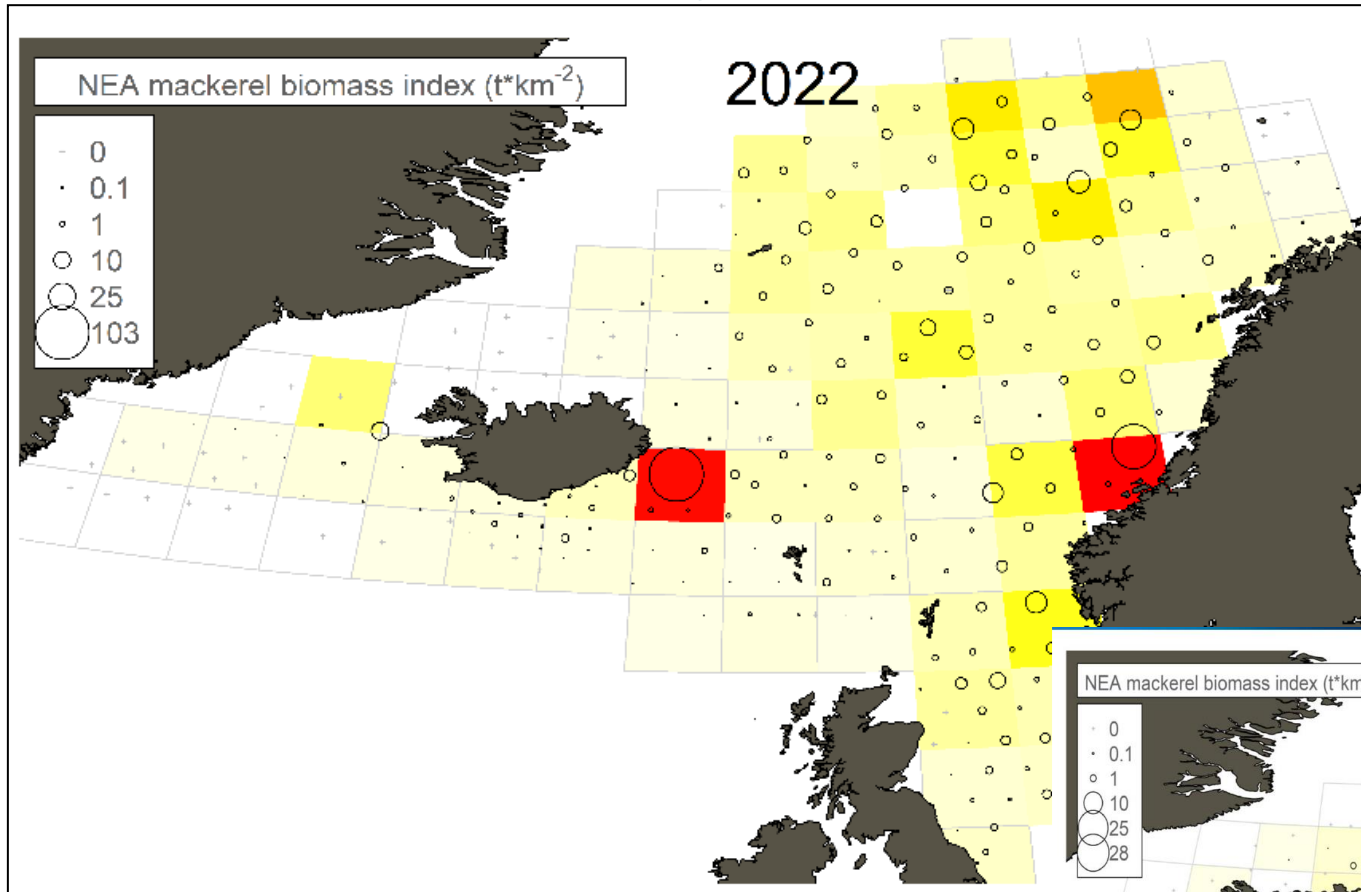
Shift east and north 2017-2020, now north and west



Summer Trawl survey (IESSNS).

(scaled to maximum value for the highest year)

Summer Trawl survey (IESSNS)



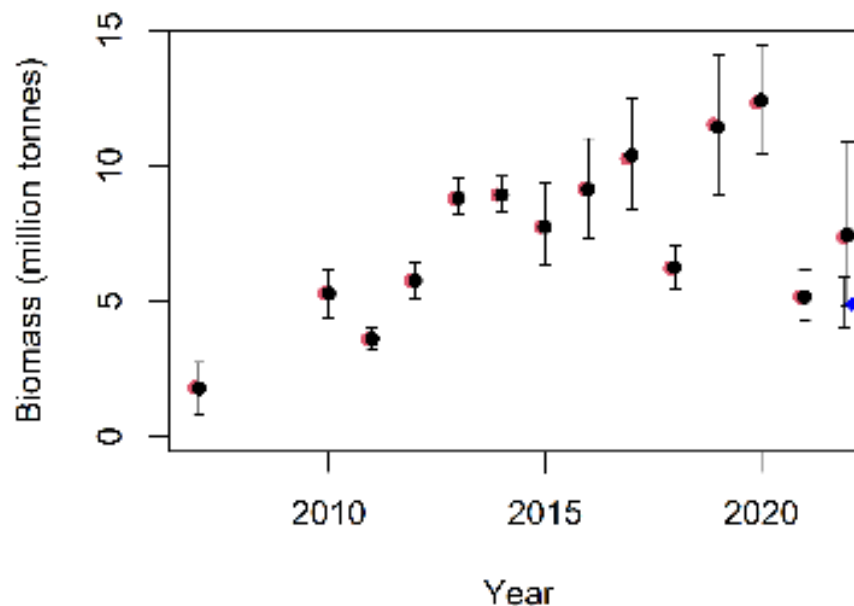
6 vessels

32% greater area covered

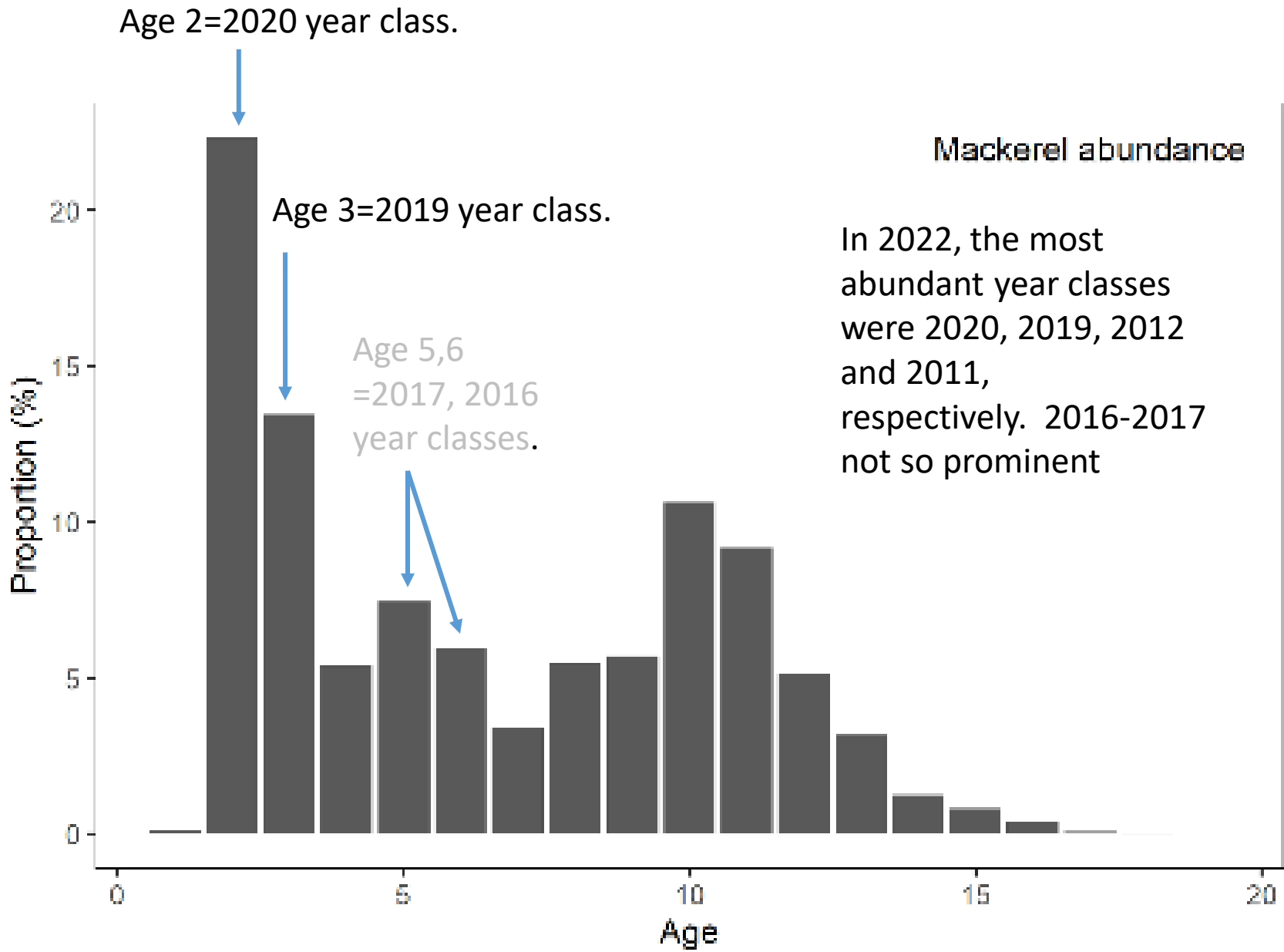
43% increase biomass compared to 2021 (but recall -58% for 2021)

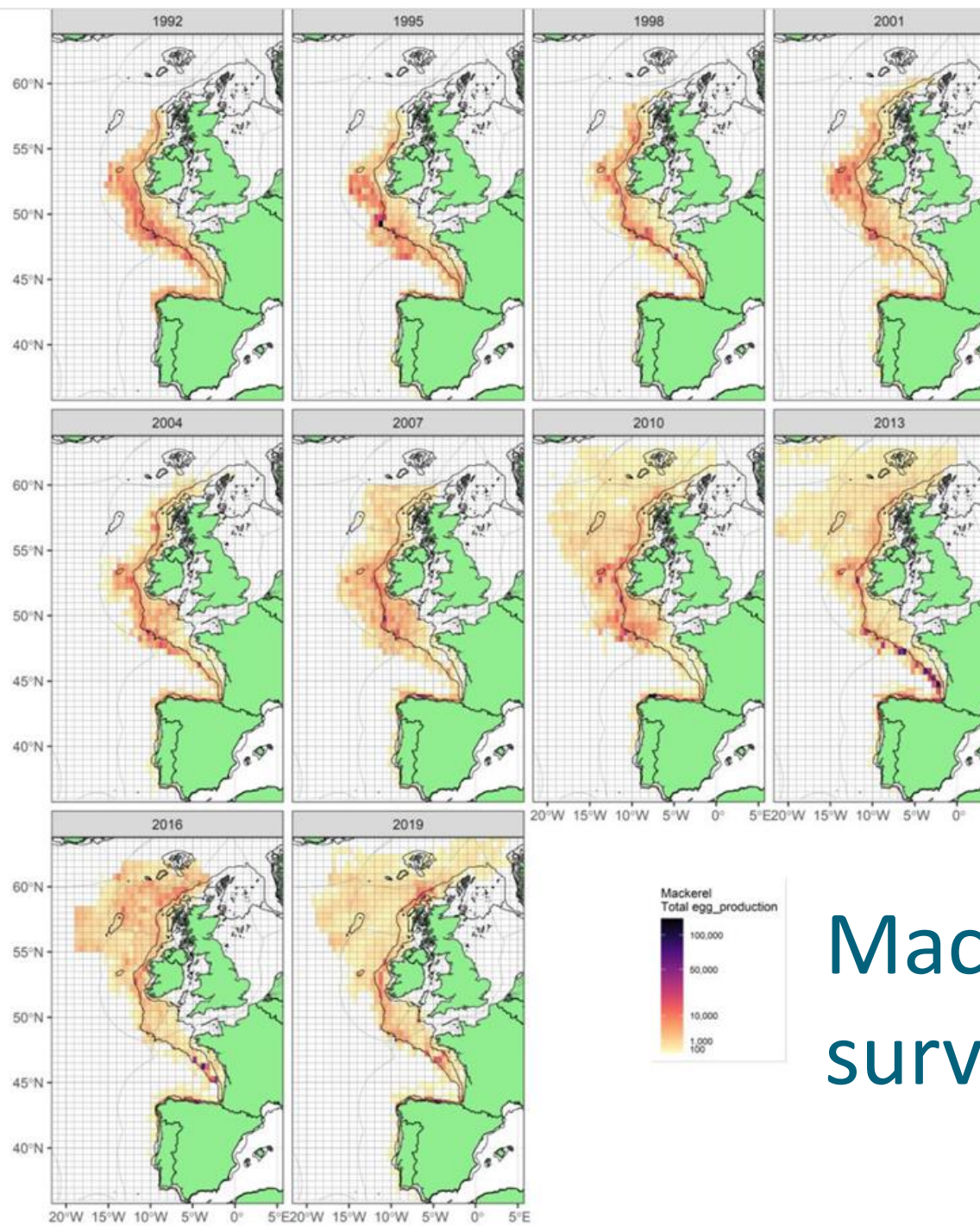
Impact of large individual hauls

- In 2021, concerns were raised about how the presence (or absence) of large survey hauls may affect the estimates, particularly if such events relate to the distribution of mackerel.
- There were no large hauls in 2021, and the survey biomass estimate that year was down 58%.
- In 2022 there were two large mackerel hauls.
- In order to investigate the effect of these on the StoX estimates, an additional run of StoX was made without these hauls (Figure below).
- If the two stations with the highest catches (slightly above 20 tons on each) are removed, the baseline estimate of total abundance is reduced by 34 % and the baseline estimate of total biomass is reduced by 33 % (from 7.37 to 4.91 million tons).



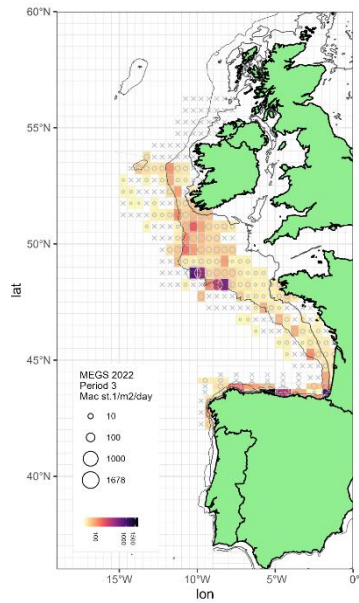
Age 3 when enter the fishery.



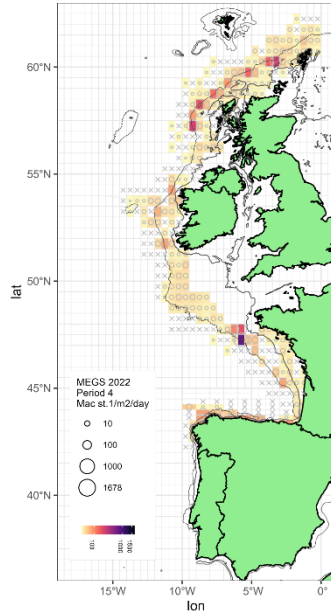


Mackerel egg survey 1992-2019

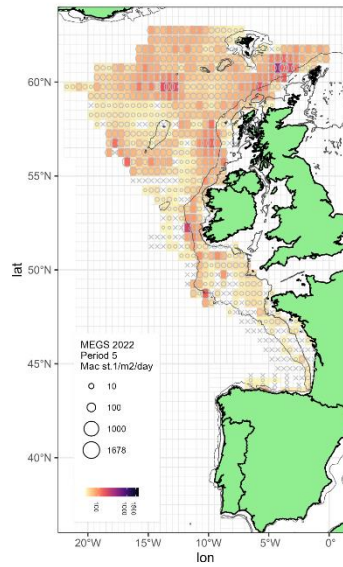
Mackerel egg survey 2021



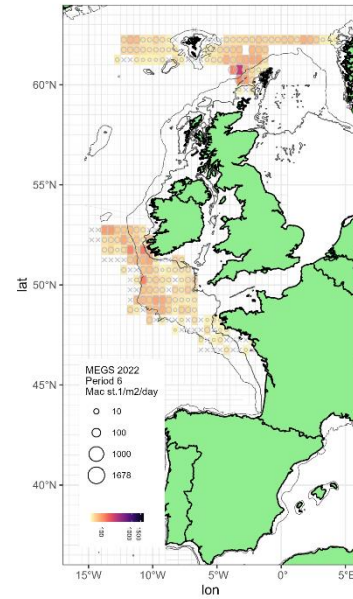
March



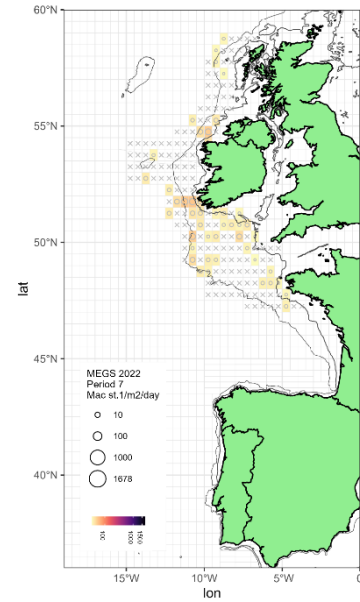
April



May



June



July



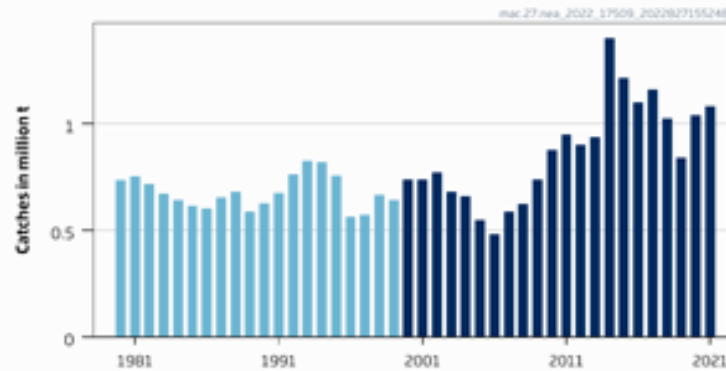
Mackerel – ICES Advice



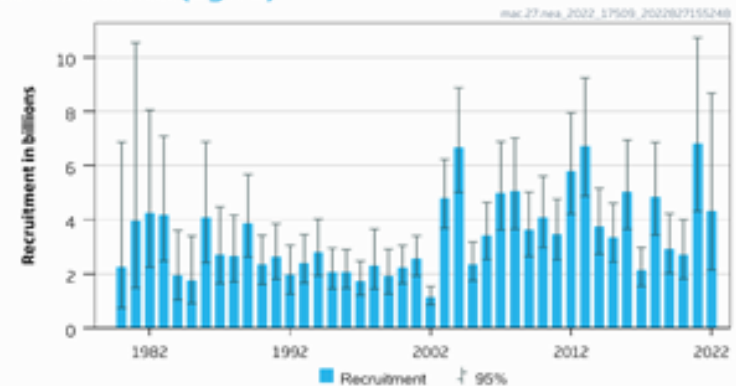
ICES advice on fishing opportunities

ICES advises that when the MSY approach is applied, catches in 2023 should be no more than 782 066 tonnes.

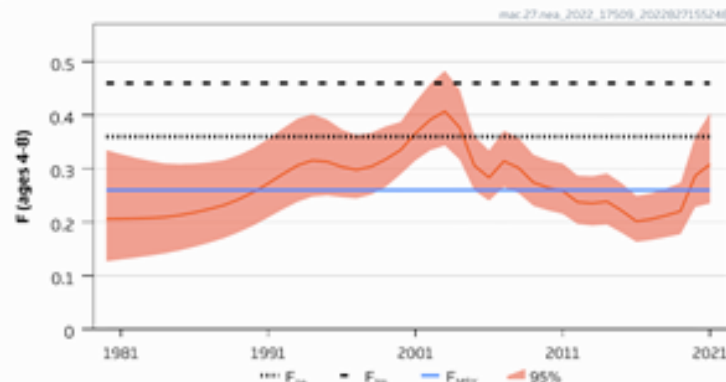
Catches



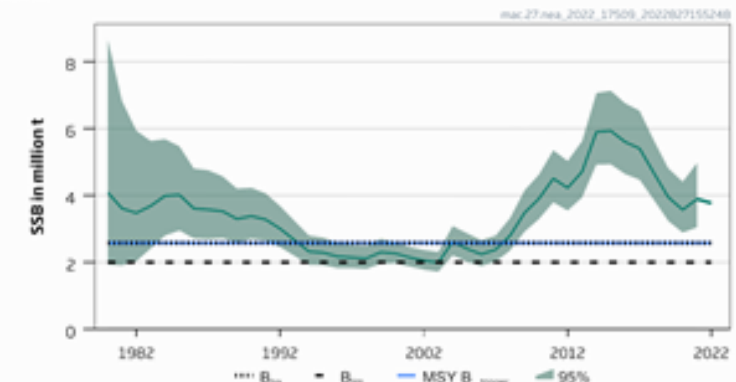
Recruitment (age 2)



F

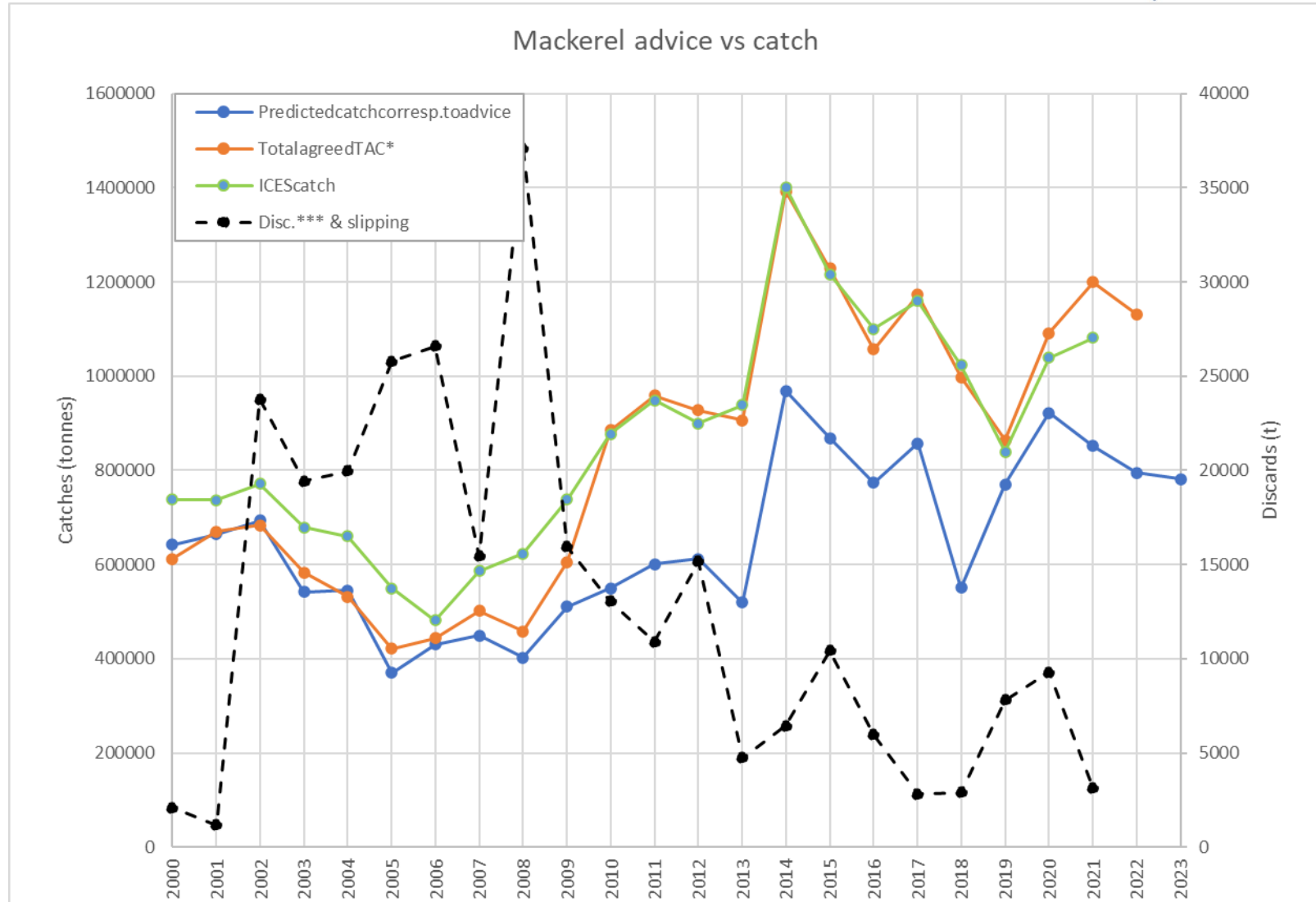


SSB





Catch vs Advice



Blue whiting



Latest advice: 30 Sep 2022

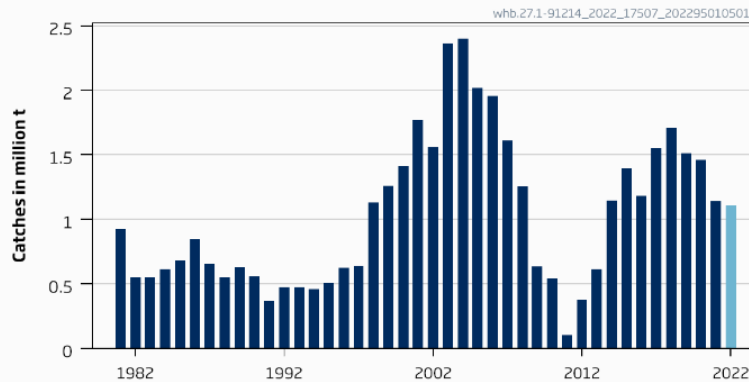


Blue Whiting – ICES advice

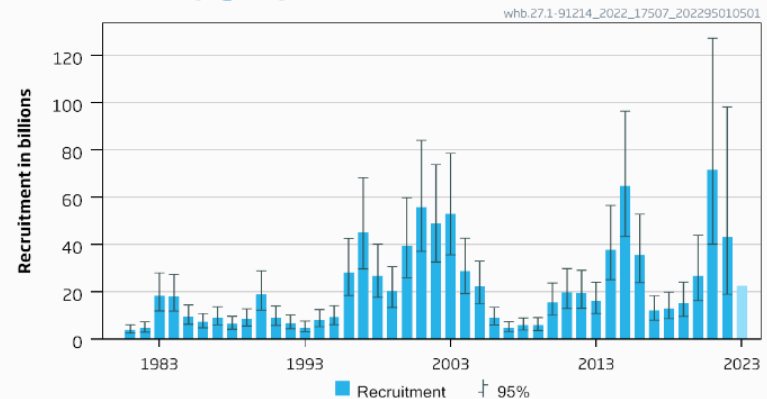
ICES advice on fishing opportunities

ICES advises that when the long-term management strategy agreed by the European Union, the Faroe Islands, Iceland, and Norway is applied, catches in 2023 should be no more than 1 359 629 tonnes.

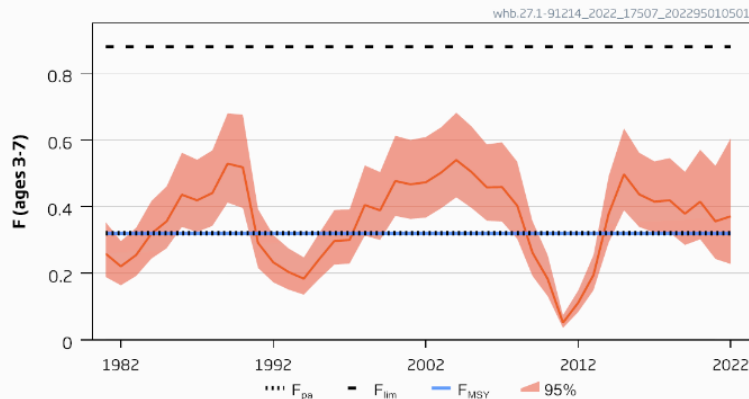
Catches



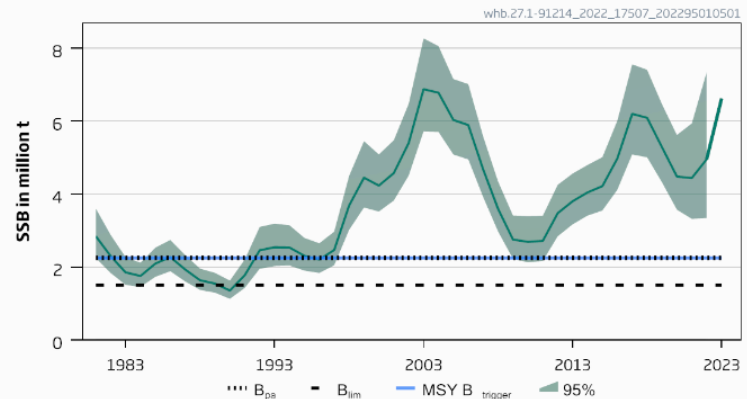
Recruitment (age 1)



F



SSB



Agreed TACs for major pelagic stocks 2023

*see [UK Quota Determination document](#)

based on 2% and av. price 2020

*Compared
to 2022 TAC*

*UK quota
2022 to 2023*

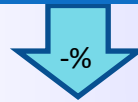
*Agreed TAC
& UK quota*

*TAC basis**

*~ Scientific
quota# UK [£]*



Atlanto-Scandian herring



511,171 t
x t

Stock in one Party's waters.



Blue whiting



1,359,629 t
x t

Coastal states.