

# ICES catch advice for 2022

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Marine Scotland - Science



North-East Scotland Fisheries Development Partnership  
Meeting via Microsoft Teams  
12 November 2021

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# Background

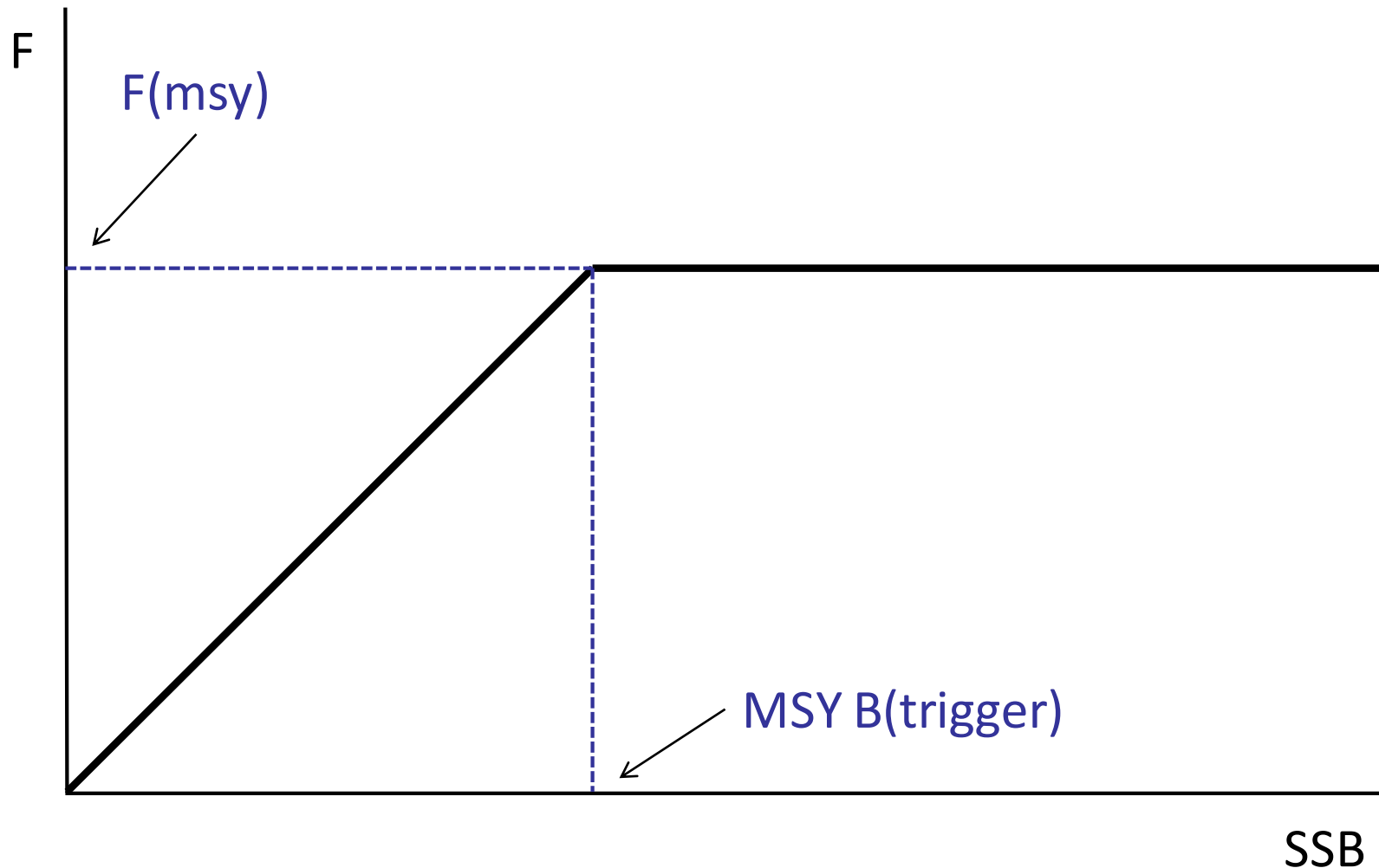
- Main advice released by ICES on **30 June**
- Further advice on **31 October** for:
  - Most pelagic stocks
  - Rockall megrim, monkfish, NS and west coast *Nephrops*
- For the main Scottish commercial stocks I'll cover:
  - Stock assessment
  - Stock distribution and historical assessments
  - ICES advice and updates
  - But not quota decisions (these are still under negotiation)

# Background

- Schedule for today:
  - **North Sea demersal**
  - **Northern Shelf and widely-distributed demersal**
  - **West of Scotland and Rockall demersal**
  - **Pelagic**

# Background

- Most advice is based on the ICES MSY approach
- EU-UK-Norway LTMS are in development, but are not yet agreed and were not used to provide advice for 2022





# North Sea demersal

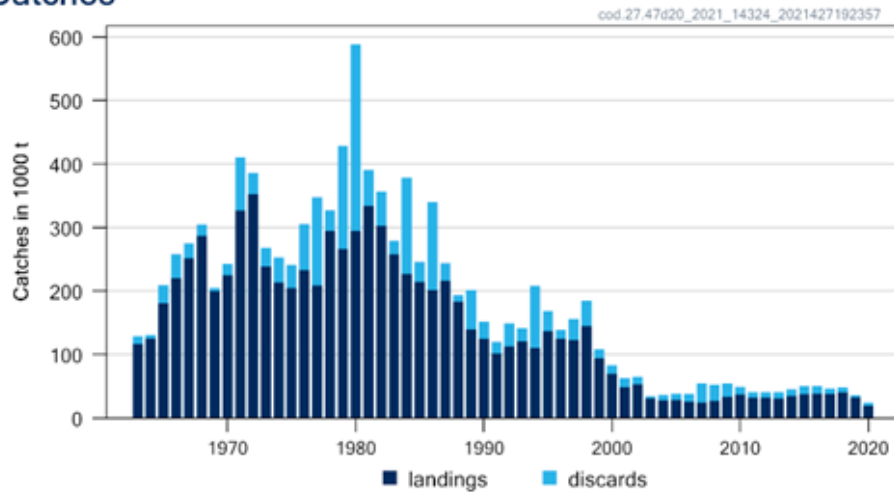


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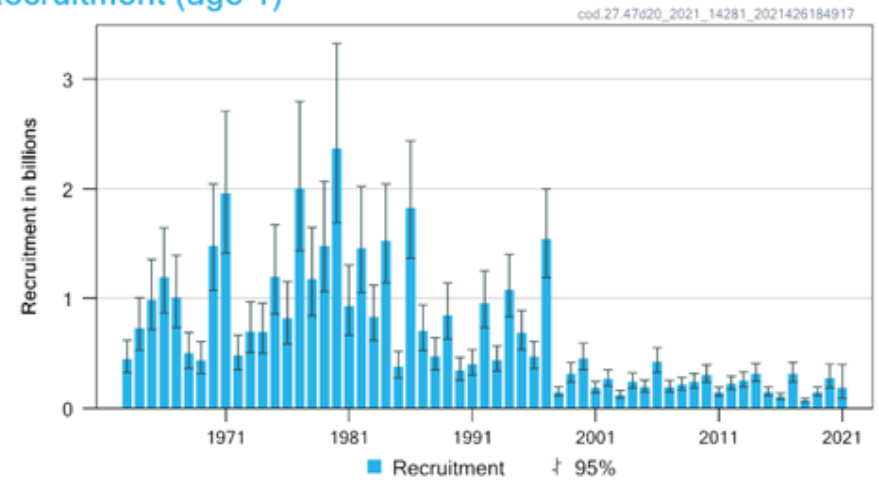
# North Sea cod: summary



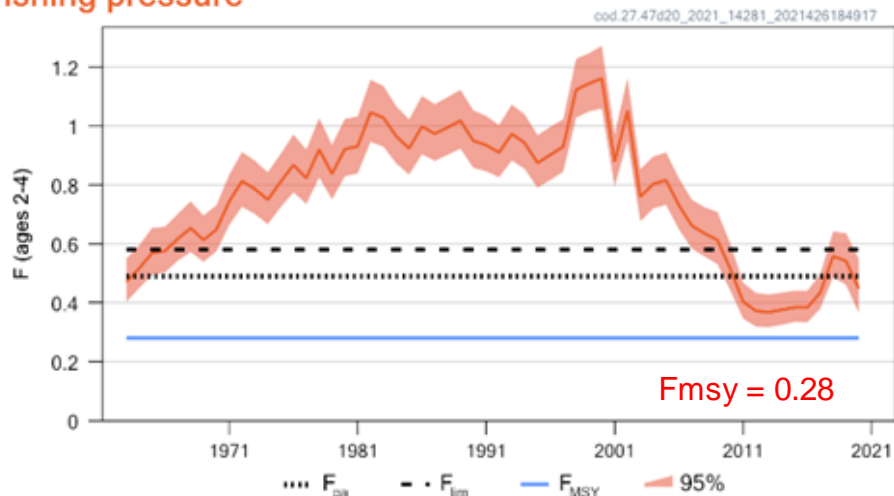
## Catches



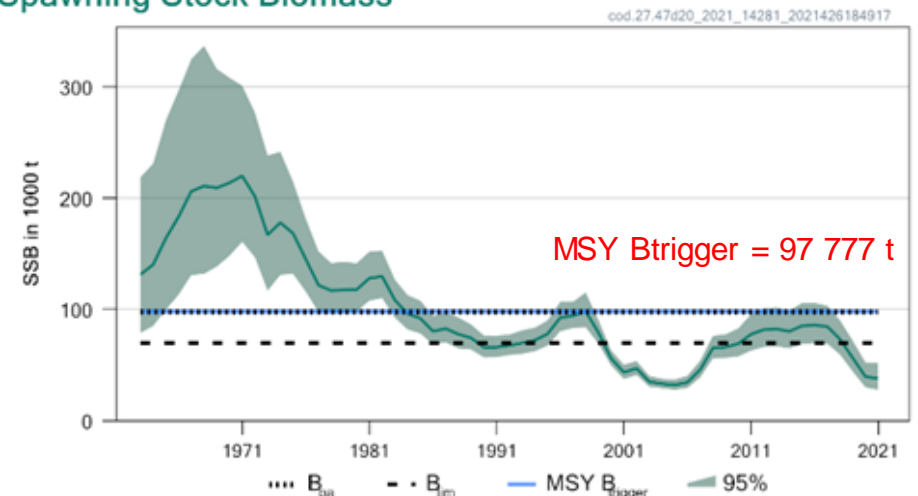
## Recruitment (age 1)



## Fishing pressure



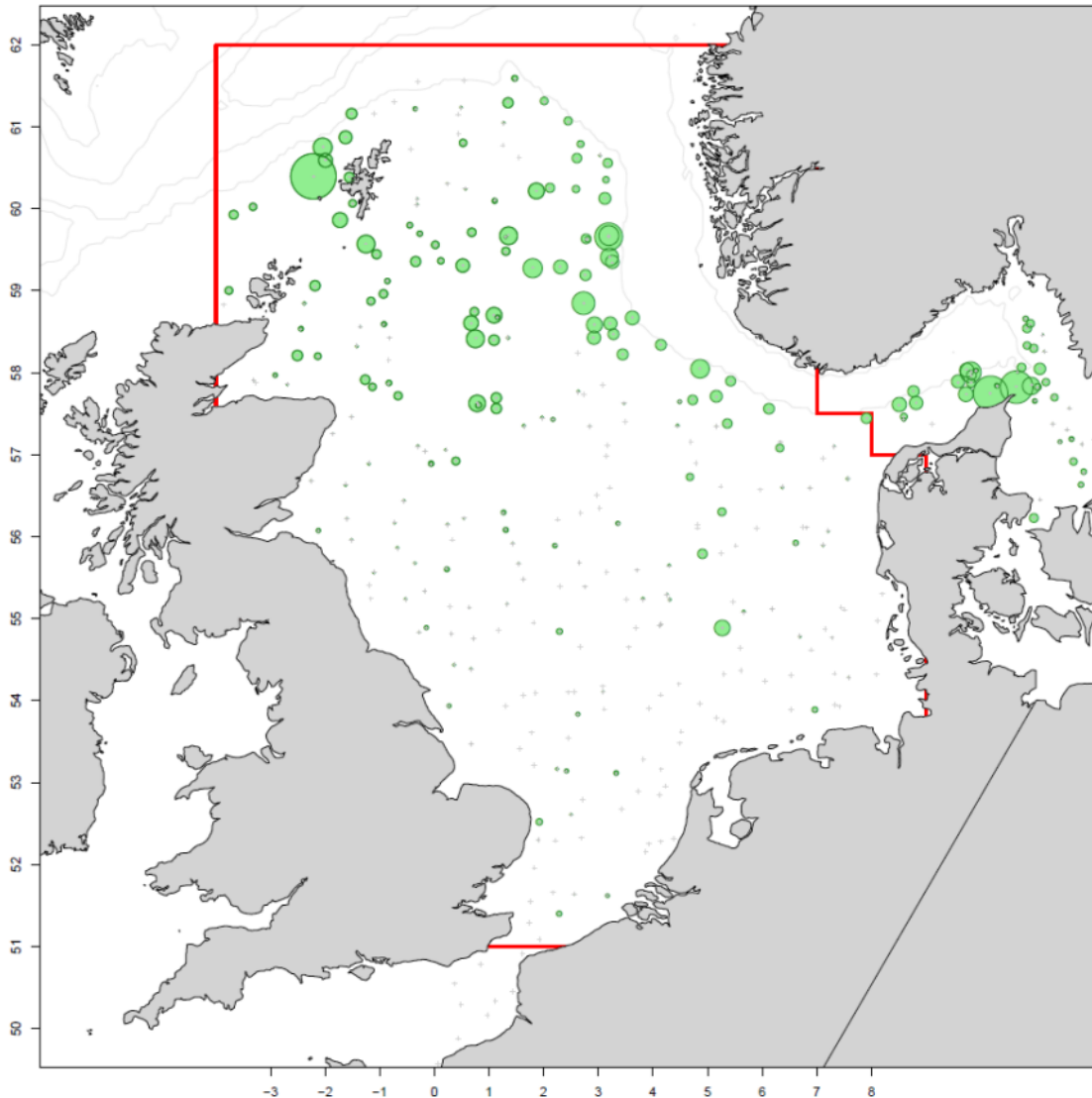
## Spawning Stock Biomass



# North Sea cod: distribution

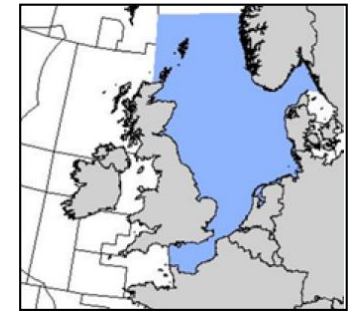


Cod 2021 Q1 NS-IBTS: biomass within area (4)

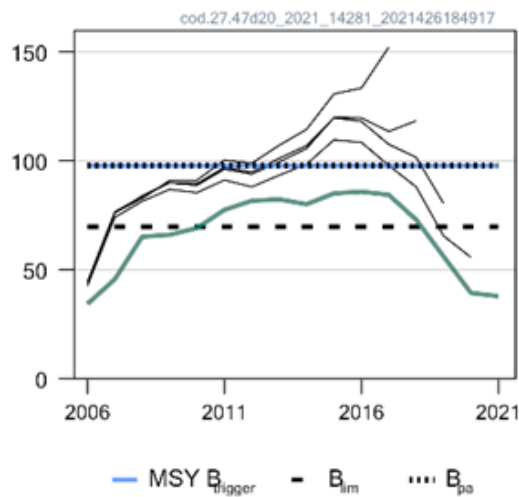


- Significantly northern distribution
- Good evidence of substock structure
- ICES have implemented a 2-year process to account for this (WKCOD), following initial work last year
- Draft “spatial” model from Cefas and DTU-Aqua

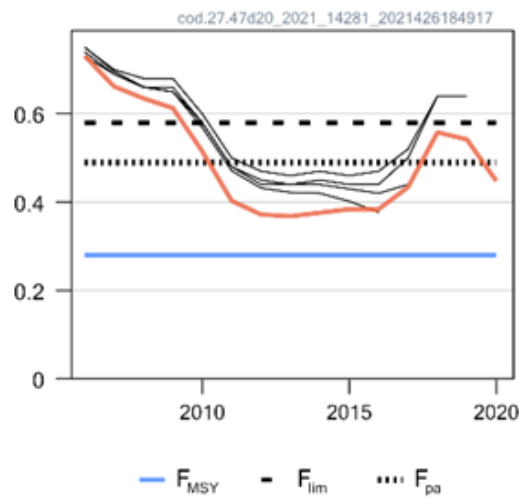
# North Sea cod: historical assessments



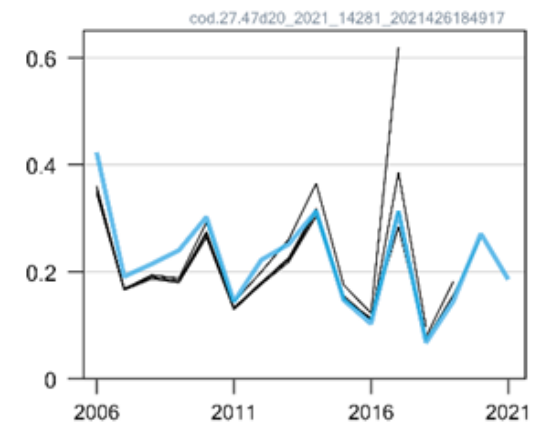
SSB (000 tonnes)



Fishing pressure



Rec (age 1; Billions)



- 2021 benchmark scaled SSB and F down and revised reference points
- Analytical retrospective bias much reduced and a more robust assessment



## North Sea cod: advice

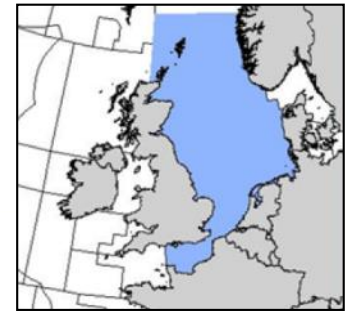


- Recruitment remains low
- $F$  is falling but remains above  $F_{msy}$
- SSB low and continuing to fall away from MSY  $B$ (trigger)

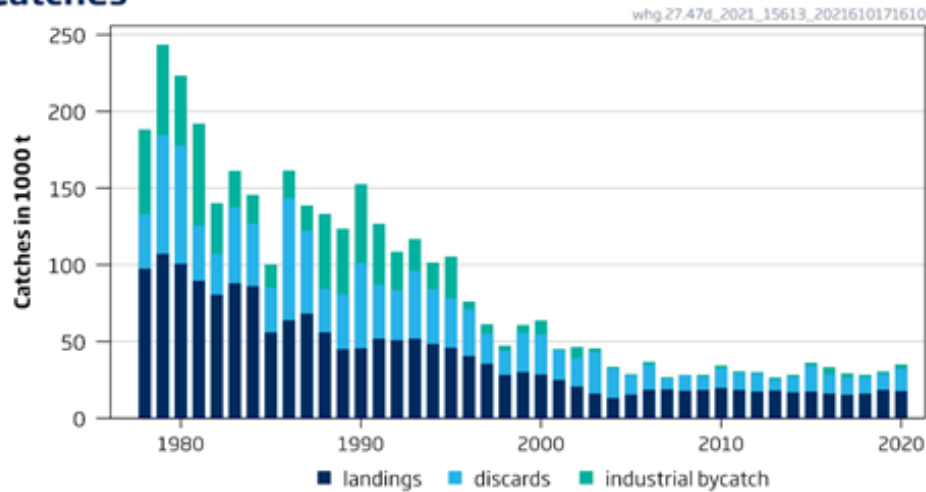
	Advice	% change from TAC for 2021
Total catch 2022	14 276	-10.3%
SSB 2023	75 484 (+53%)	

- MSY advice basis
- Rollover TAC implies +50% SSB
- Advice not reopened in October
- **Advice dependent on assumptions about fishery during 2021**

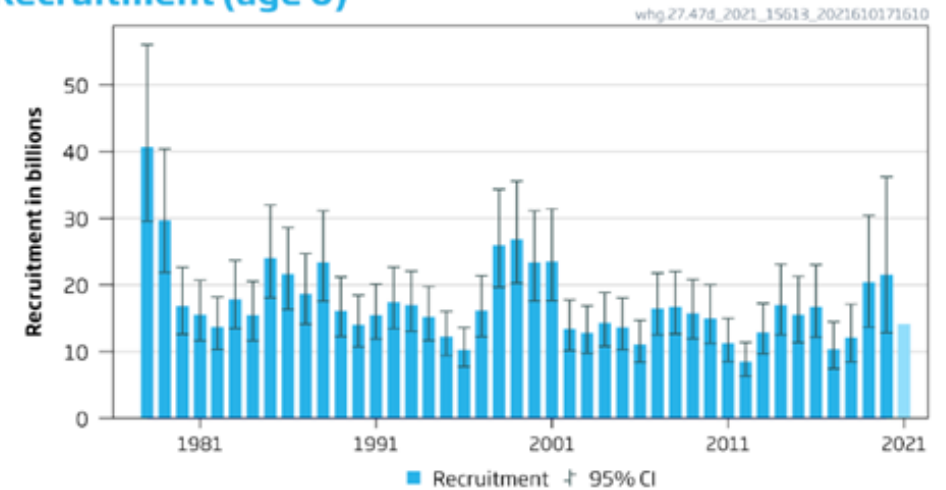
# North Sea whiting: summary



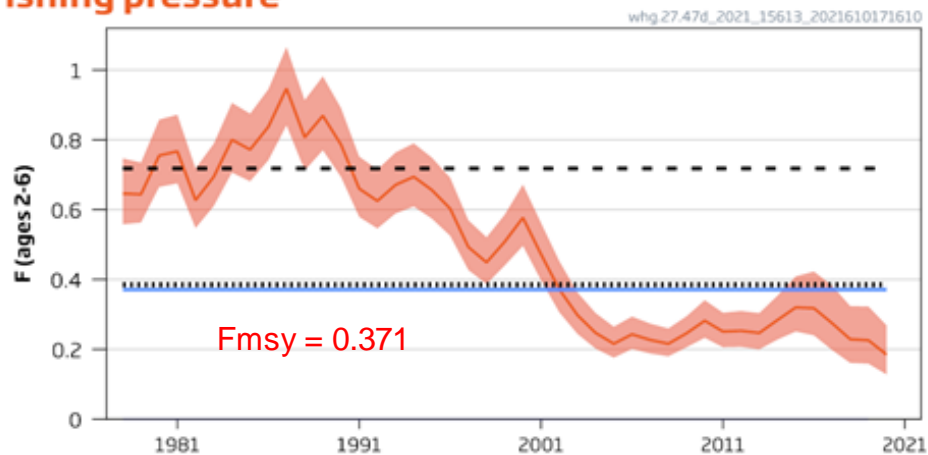
## Catches



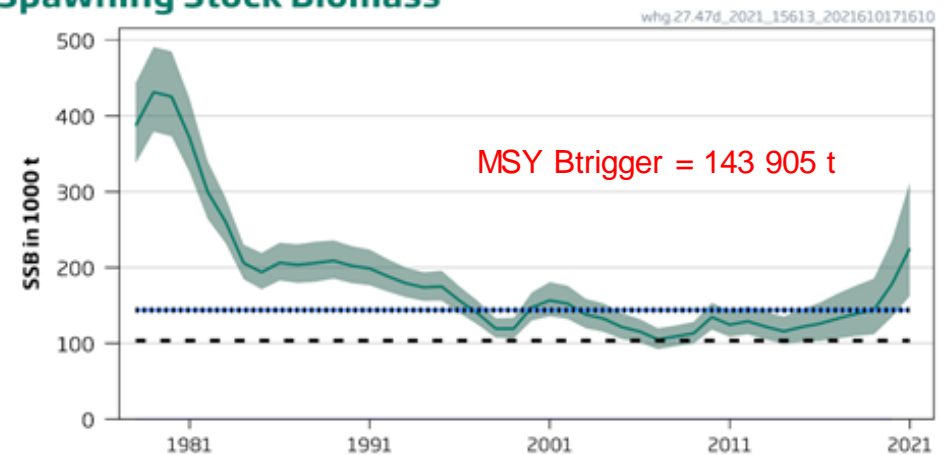
## Recruitment (age 0)



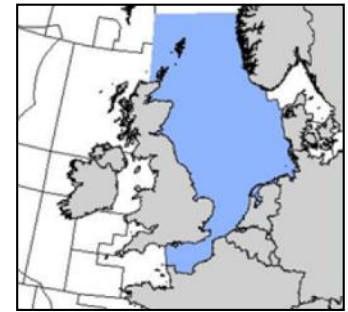
## Fishing pressure



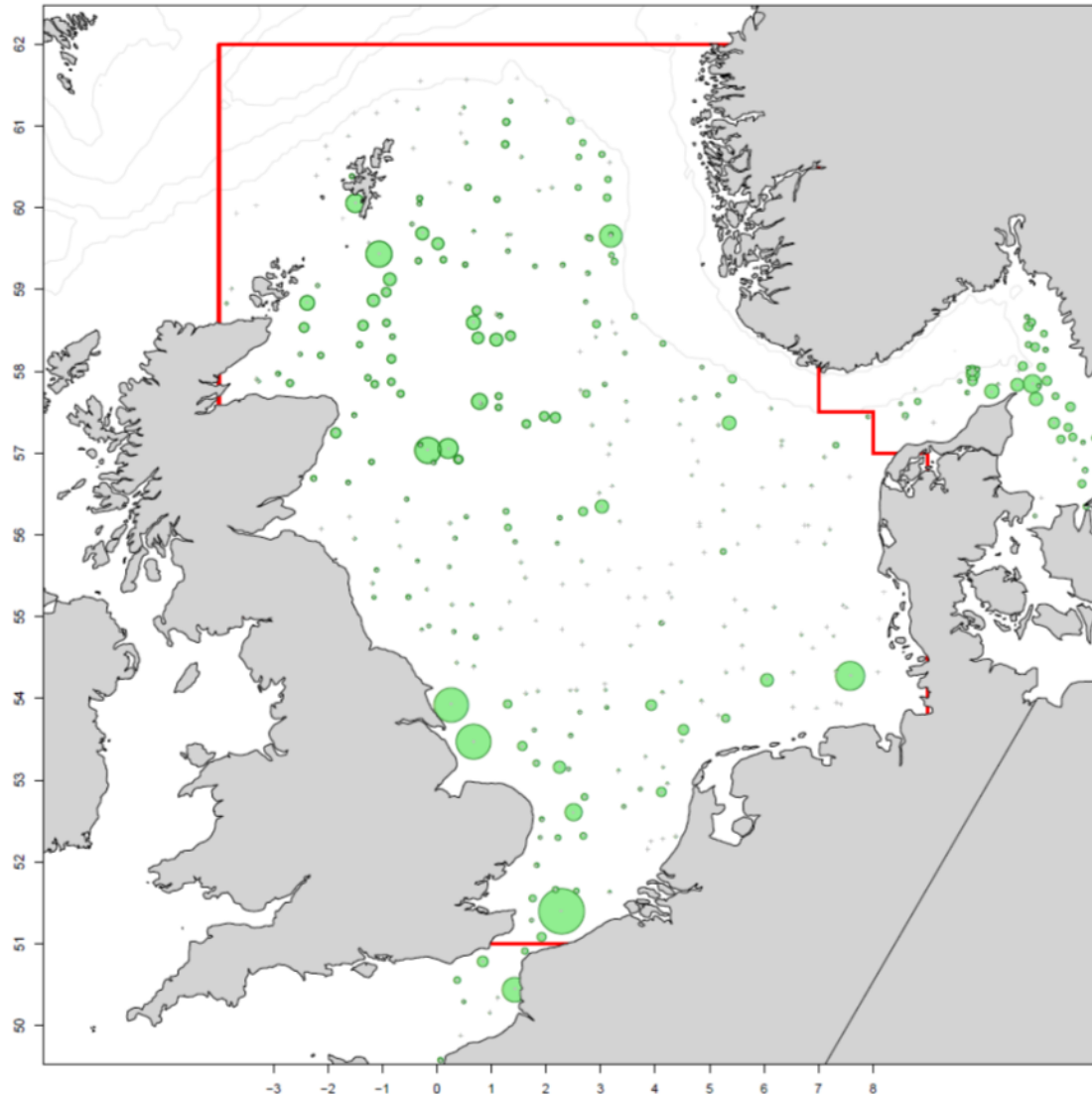
## Spawning Stock Biomass



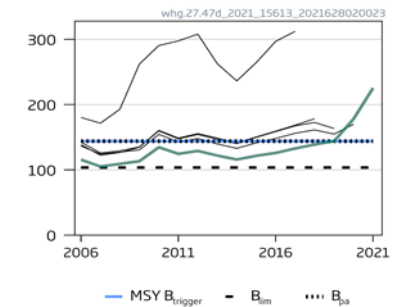
# North Sea whiting: distribution and historical assessments



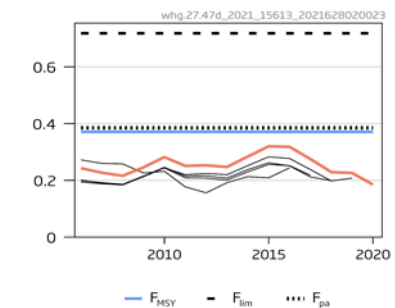
Whiting 2021 Q1 NS-IBTS: biomass within area (4)



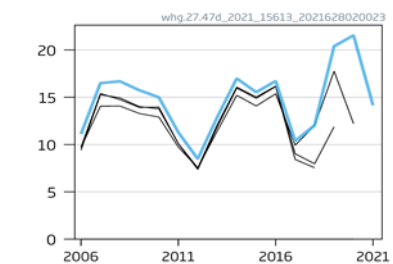
SSB (1000t)



F (ages 2-6)



Rec (age 0; Billions)



## North Sea whiting: advice



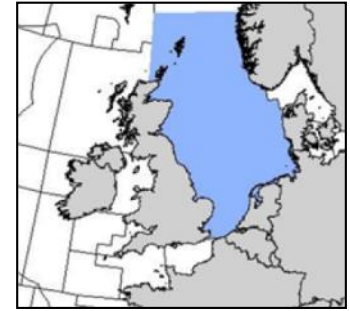
- Improved 2019 and 2020 year-classes
- Fmsy increased and MSY Btrigger decreased at benchmark
- F below Fmsy, SSB above MSY Btrigger

	Advice	% change from advice for 2021
Total catch 2022 (all areas)	88 426	+236%
SSB 2023	238 600 (-9.0%)	

- MSY advice basis
- Rollover TAC implies +7.2% SSB
- Change in advice due to changed ref pts, increased SSB, and higher recruitment



## North Sea *Nephrops*: advice



	Advice (4)	% change from 2021 advice
Total catch 2022	25 460 t	+25%

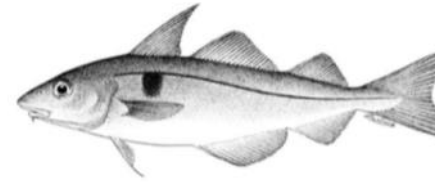
- MSY advice basis

# Northern Shelf and widely distributed demersal

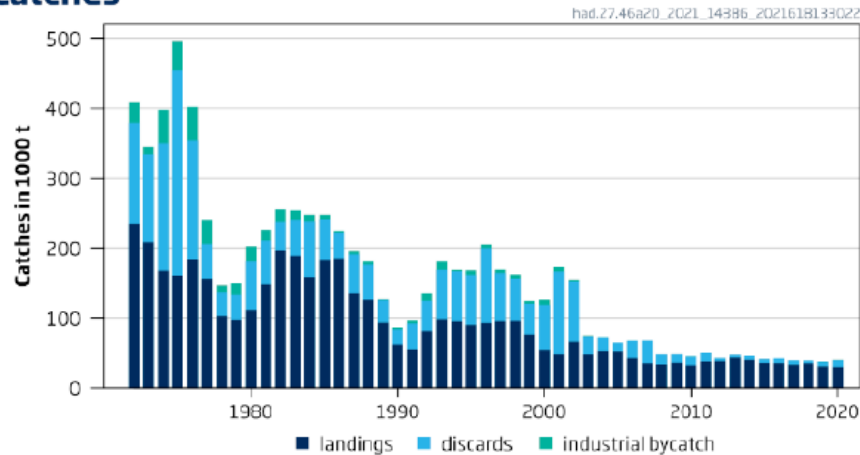


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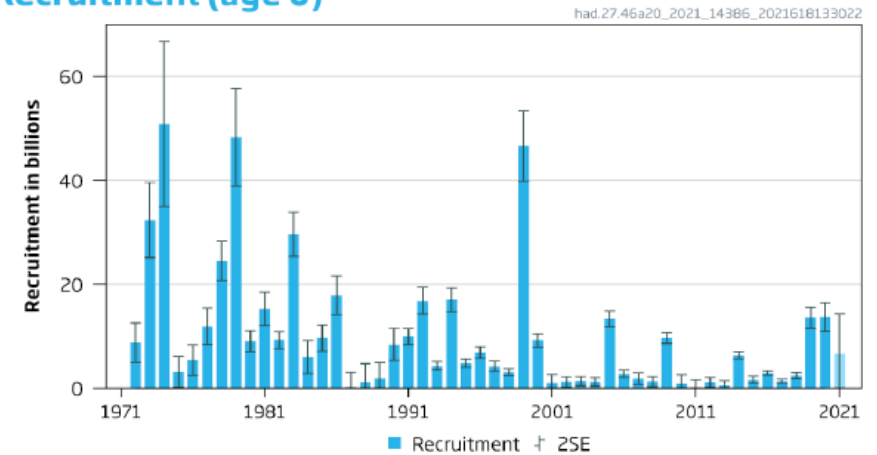
# Northern Shelf haddock: summary



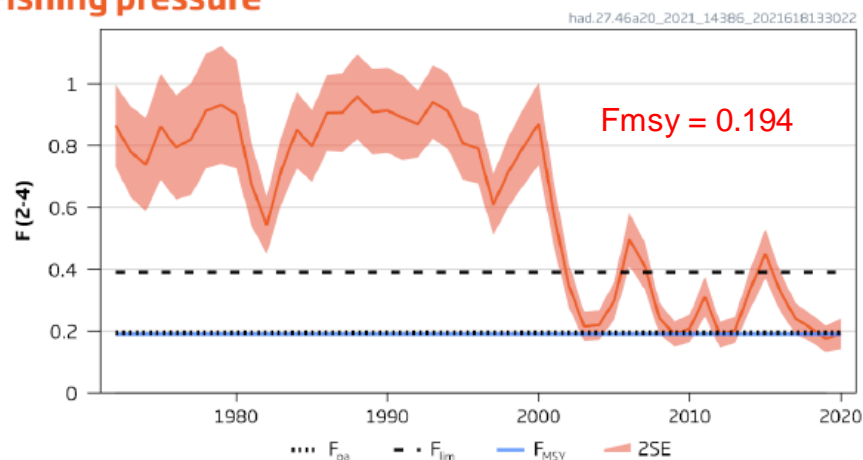
## Catches



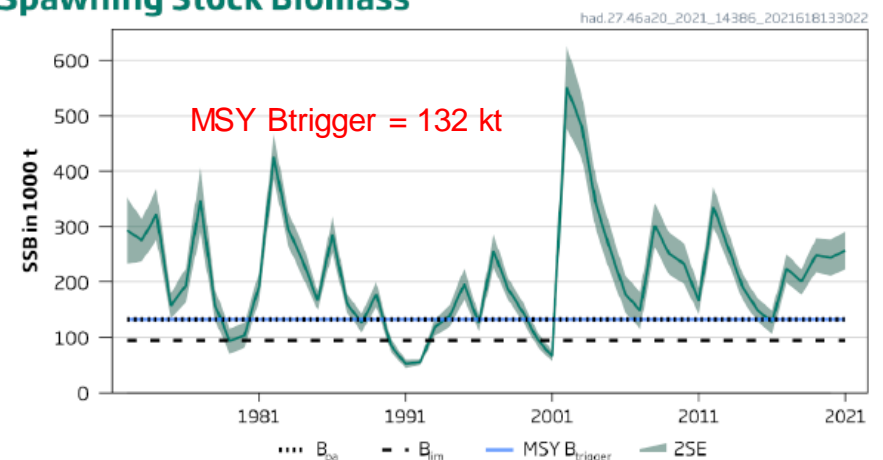
## Recruitment (age 0)



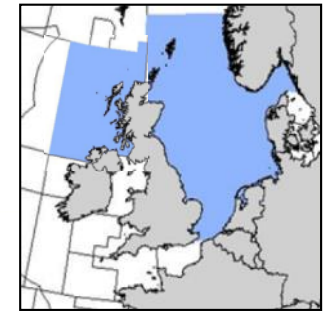
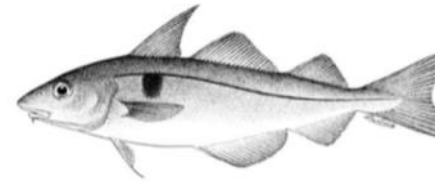
## Fishing pressure



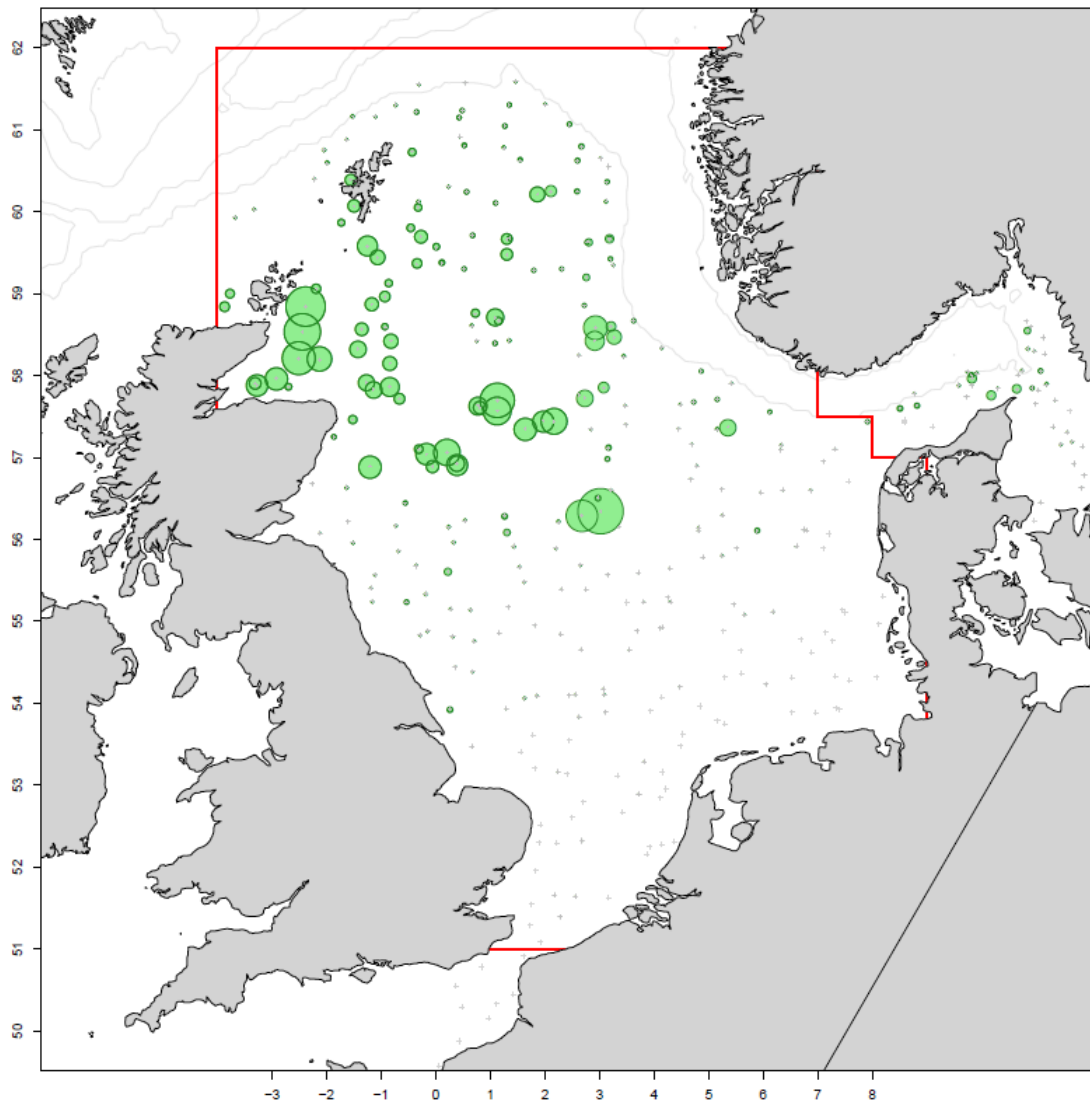
## Spawning Stock Biomass



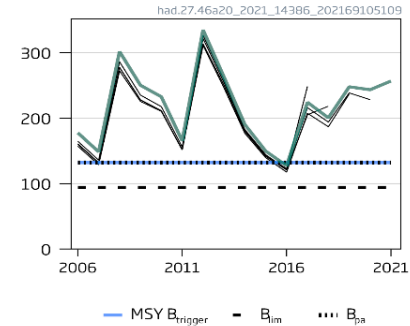
# Northern Shelf haddock: distribution and historical assessments



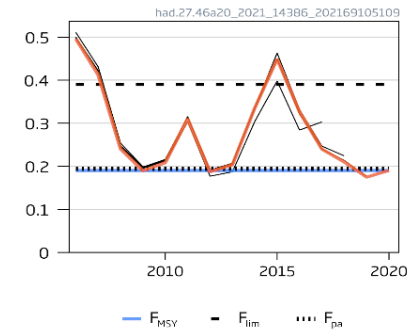
Haddock 2021 Q1 NS-IBTS: biomass within area (4)



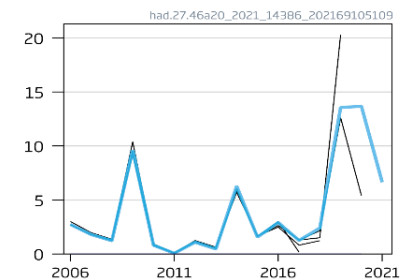
SSB (1000 t)



Fishing pressure



Rec (age 0; Billions)





## Northern Shelf haddock: advice

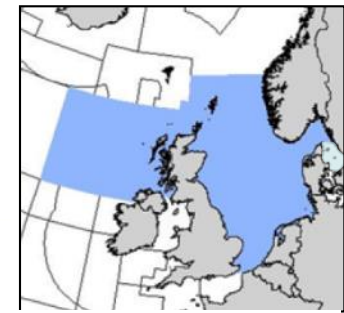


- 2019 and 2020 year-classes largest since 1999
- F at F(msy)
- SSB above MSY B(trigger) and forecast to increase to largest in time series

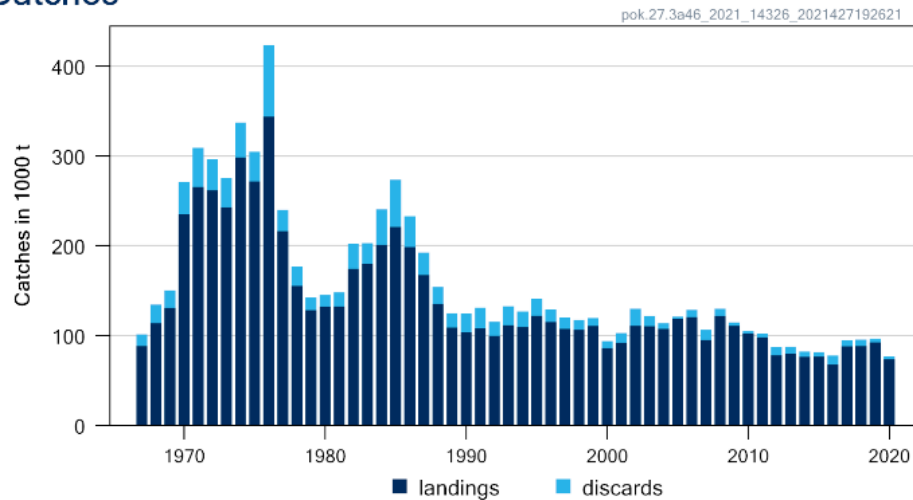
	Advice	% change from TAC for 2021
Total catch 2022	128 708	+154%
SSB 2023	723 334 (+26%)	

- MSY advice basis
- Rollover TAC implies +40% SSB
- Change in advice is due to two large incoming year-classes
- Benchmark in 2022

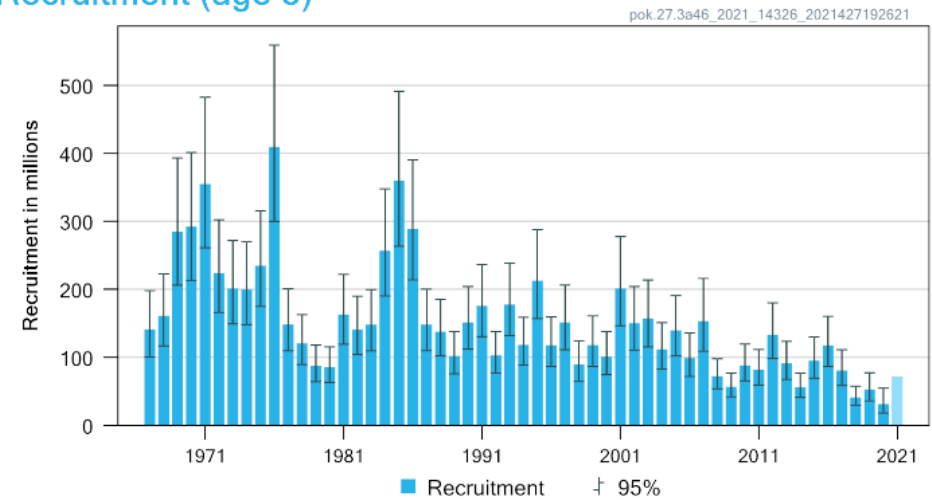
# Northern Shelf saithe: summary



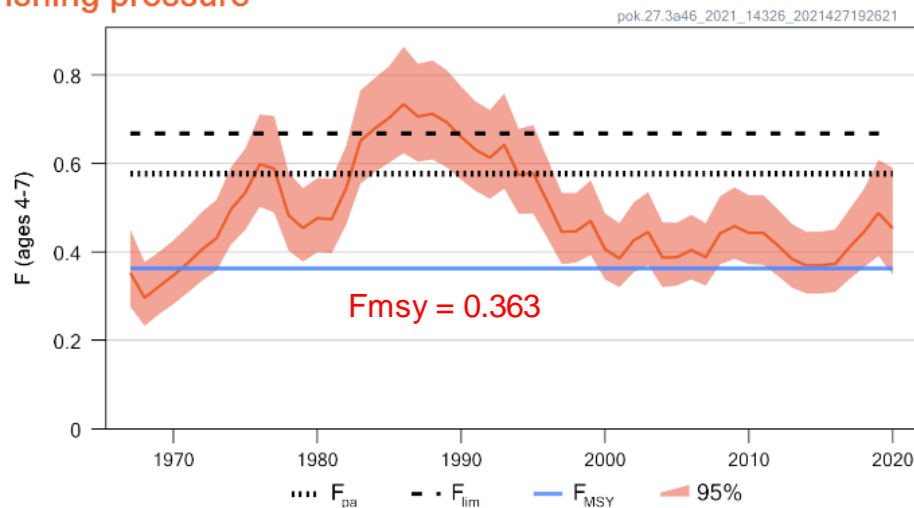
Catches



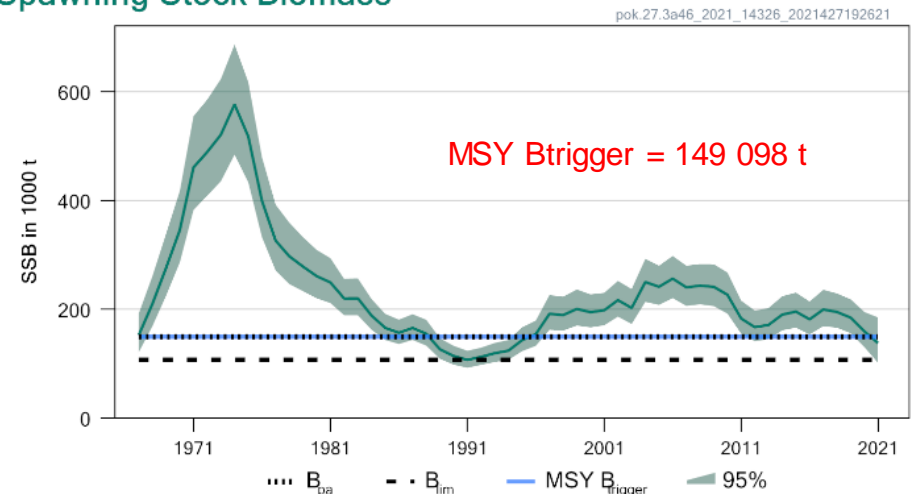
Recruitment (age 3)



Fishing pressure



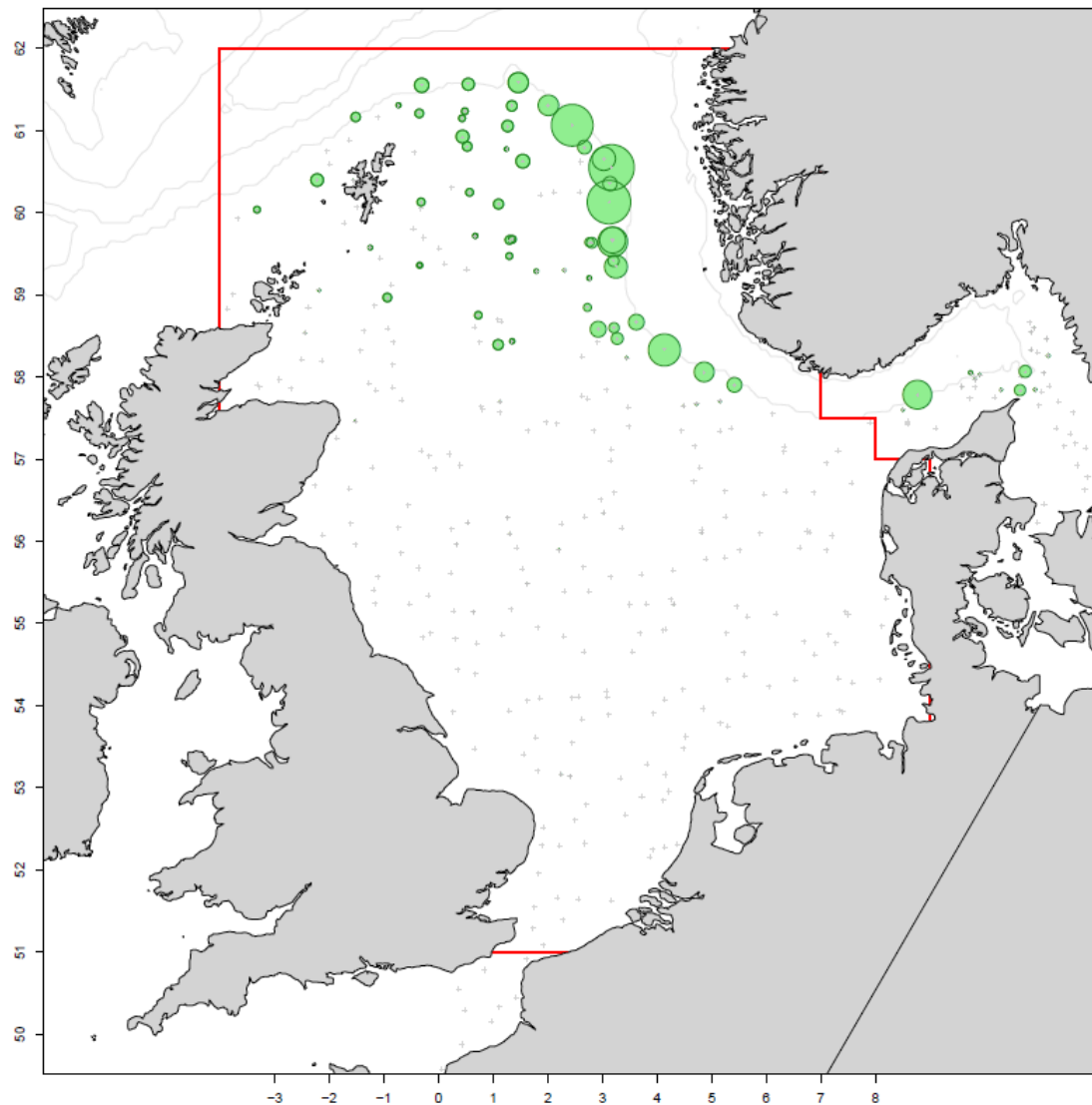
Spawning Stock Biomass



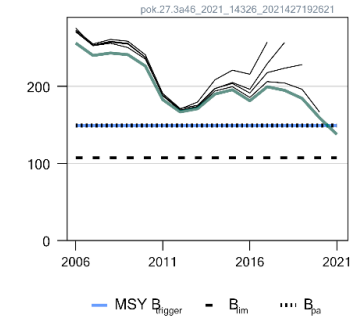
# Northern Shelf saithe: distribution and historical assessments



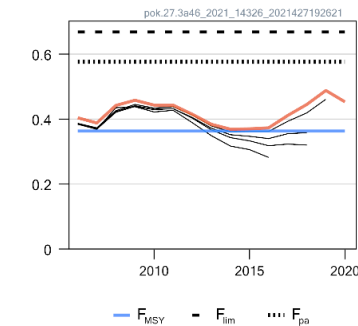
Saithe 2021 Q1 NS-IBTS: biomass within area (4)



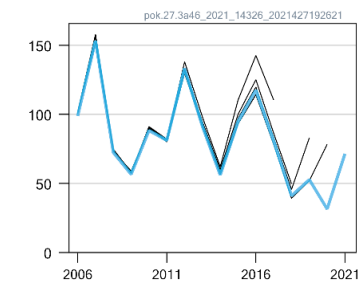
SSB (1000 t)



F (ages 4-7)



Rec (age 3; Millions)



## Northern Shelf saithe: advice



- Recruitment remains low to moderate (2020 lowest in series)
- $F$  increasing above  $F_{msy}$
- SSB falling at or below MSY  $B$  (trigger)

	Advice	% change from TAC for 2021
Total catch 2022	49 614	-24%
SSB 2023	153 272 (+21%)	

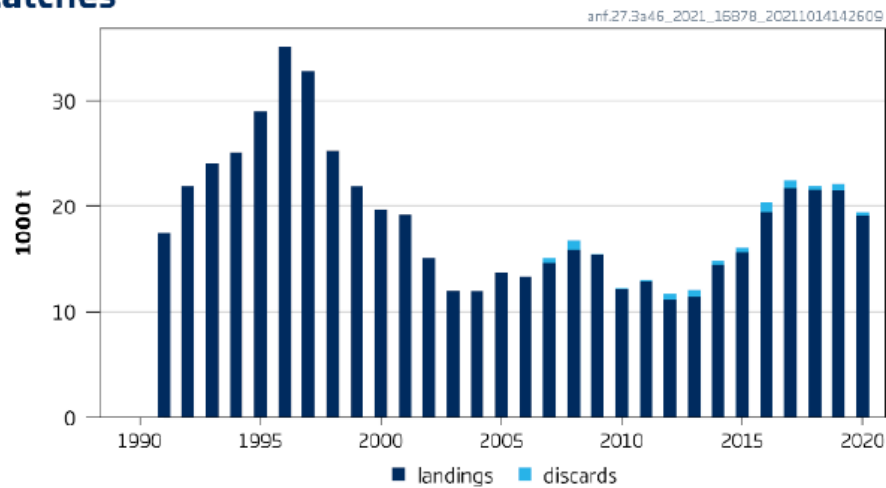
- MSY advice basis
- Rollover TAC implies +9.2% SSB
- Change in advice is due to low incoming recruitment



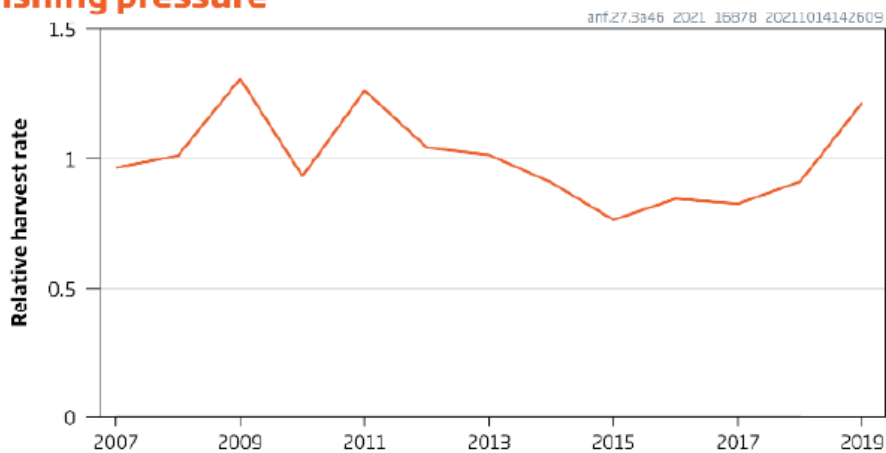
# Northern Shelf monkfish: summary



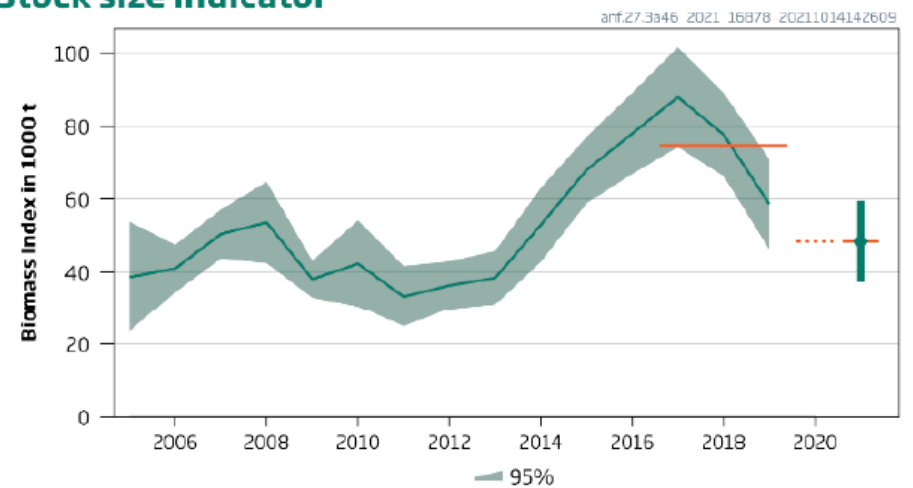
## Catches



## Fishing pressure



## Stock size indicator



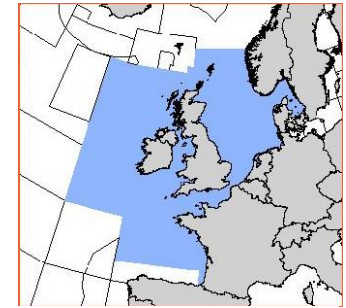
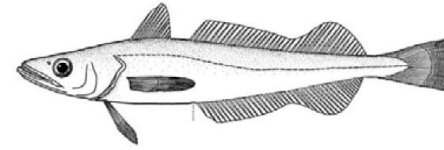
# Northern Shelf monkfish: advice



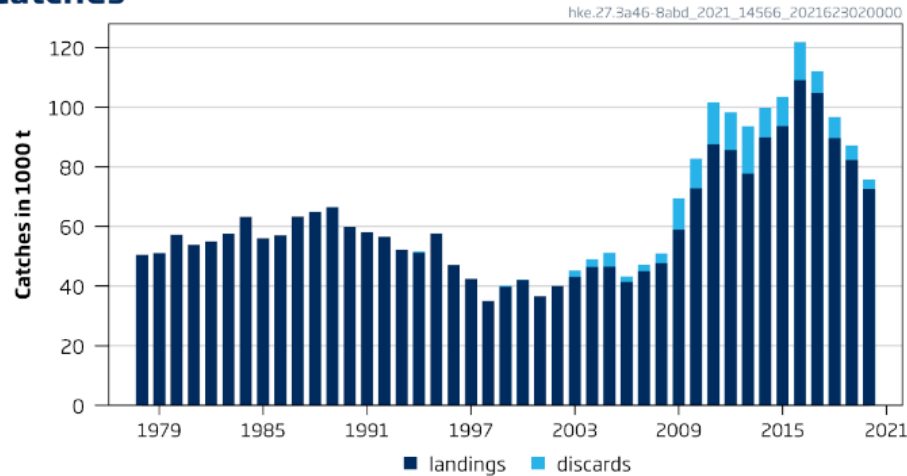
	Advice (4, 3a, 6)	% change from 2021 advice
Total catch 2022	14 116 t	-20%
SSB 2023	Not provided	

- Data limited stock advice
- 2020 survey not conducted
- Fishing pressure in increasing, biomass decreasing
- Uncertainty cap applied

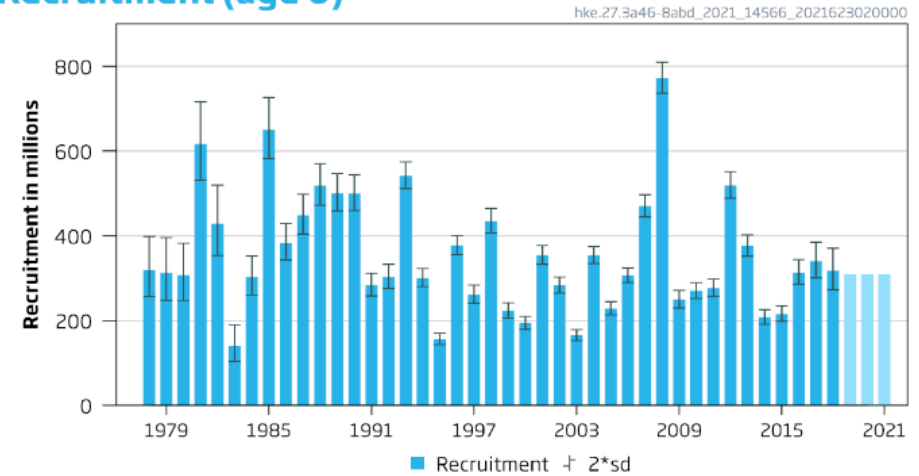
# NE Atlantic hake (Northern): summary



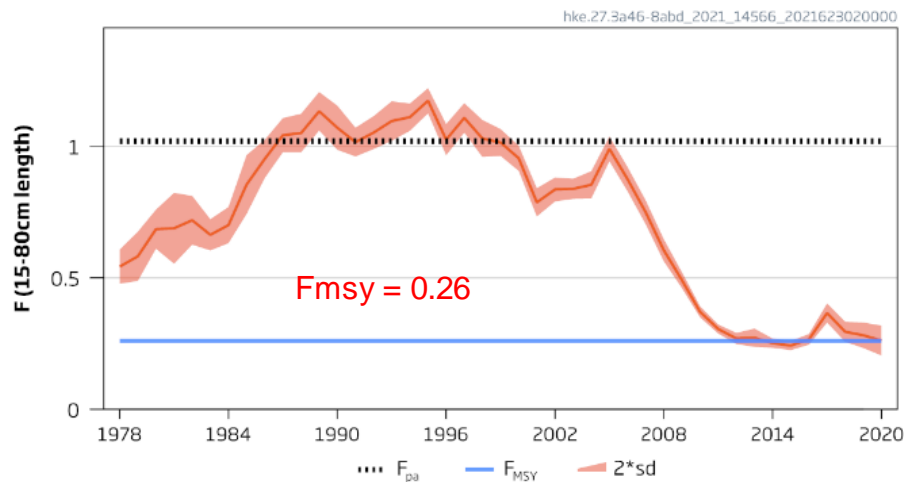
## Catches



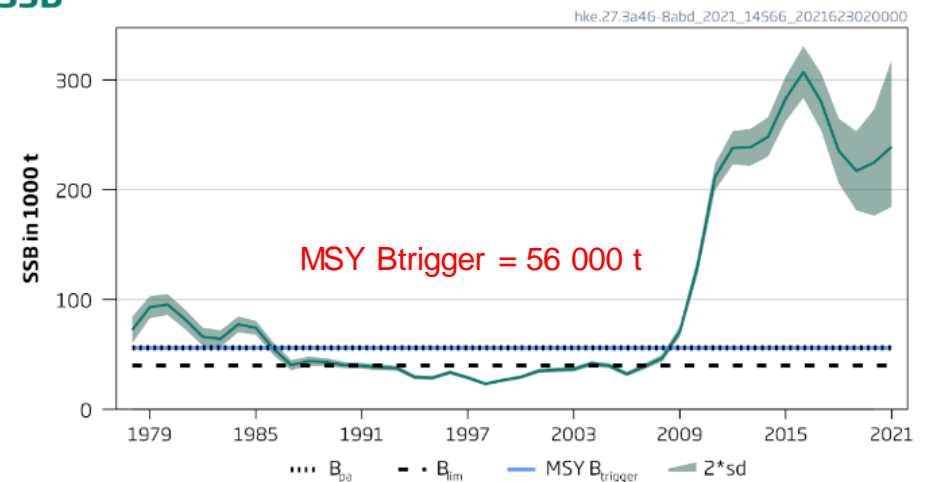
## Recruitment (age 0)



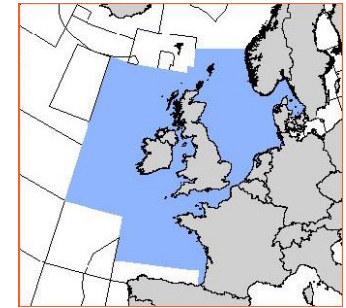
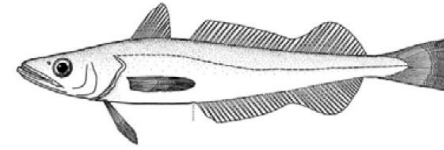
## F



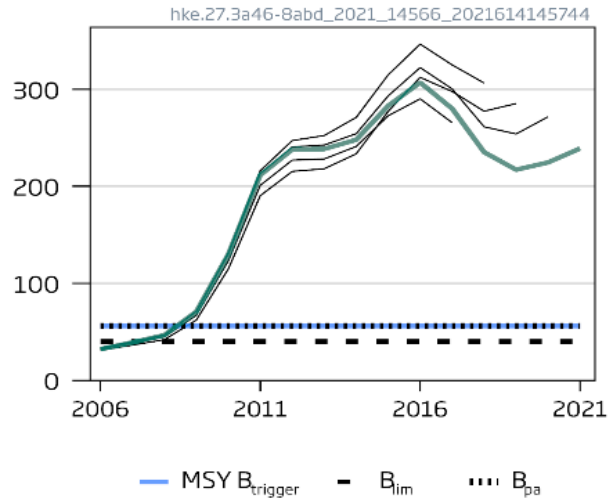
## SSB



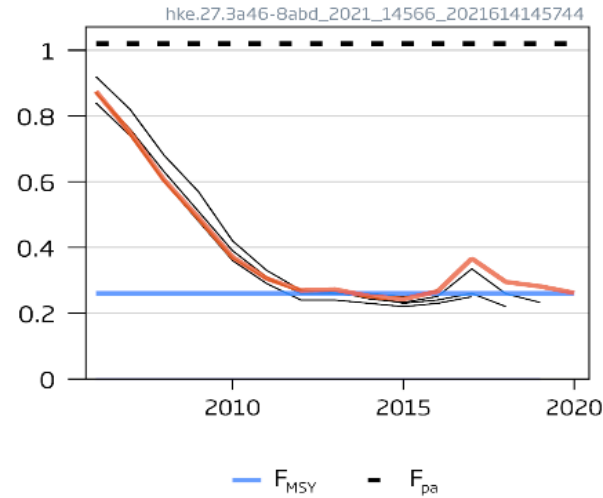
# NE Atlantic hake (Northern): historical assessments



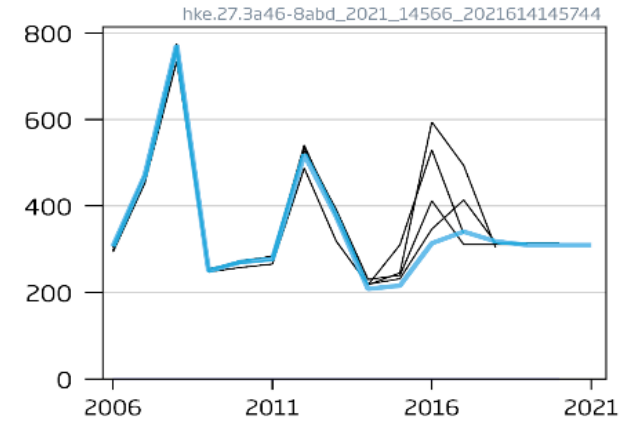
## SSB (1000 t)



## F

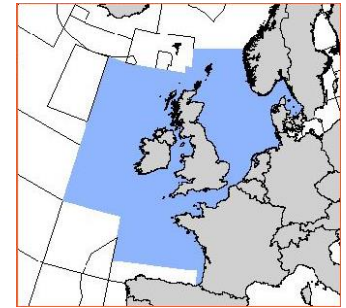
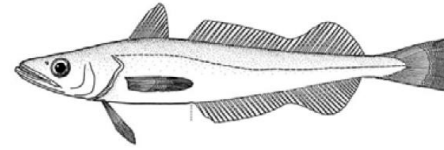


## Rec (age 0; Millions)





# NE Atlantic hake (Northern): advice



- Recruitment remains moderate to high
- $F$  at  $F(msy)$
- SSB well above MSY  $B(trigger)$

	Advice	% change from advice for 2021
Total catch 2022	75 052	-27%
SSB 2023	207 398 (-5.3%)	

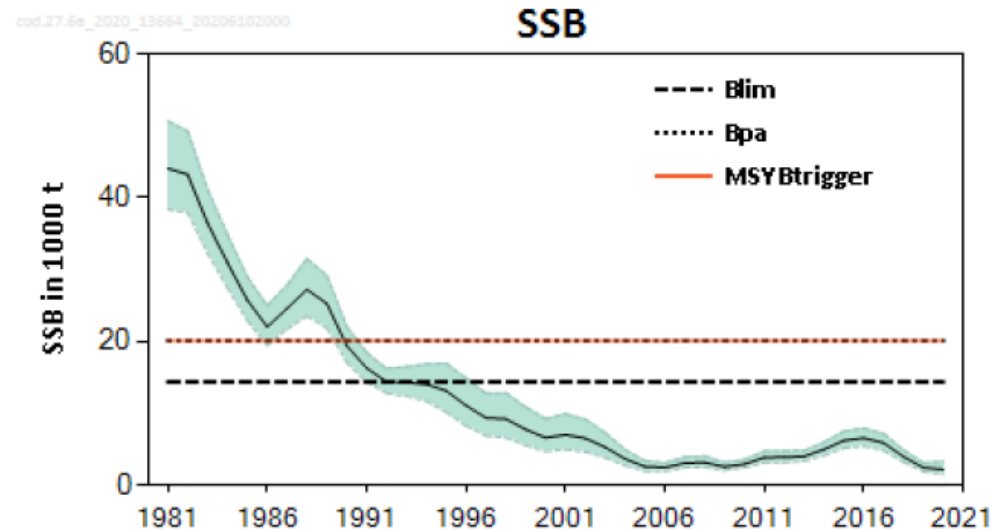
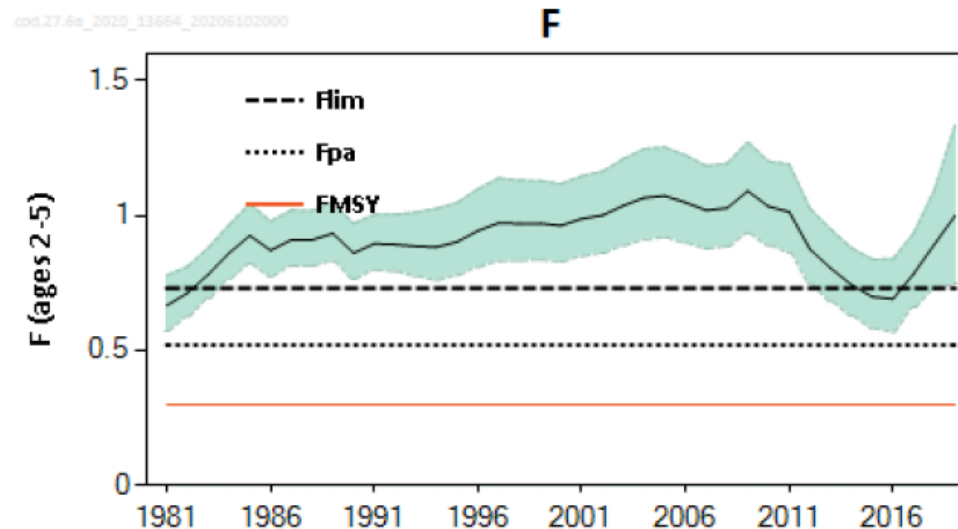
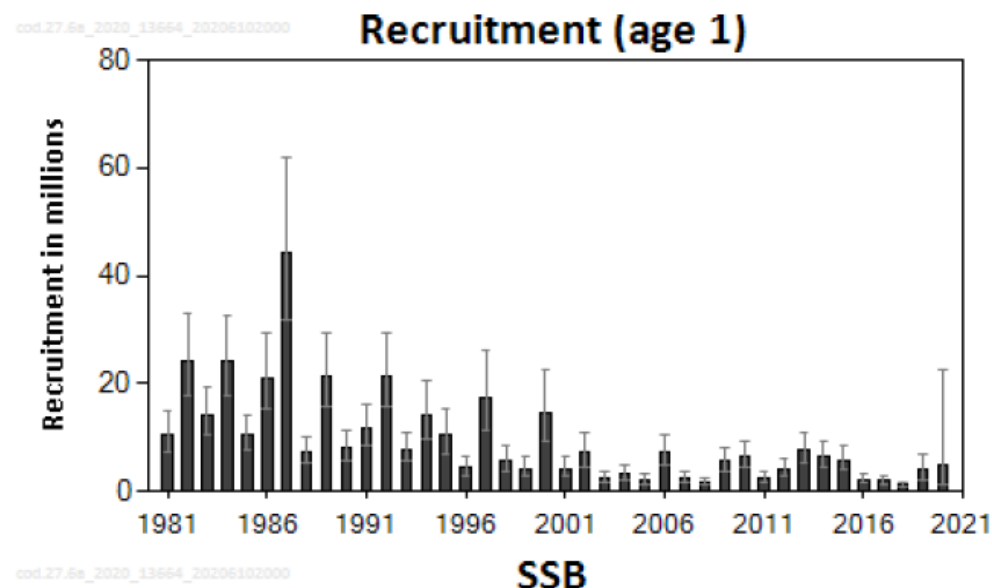
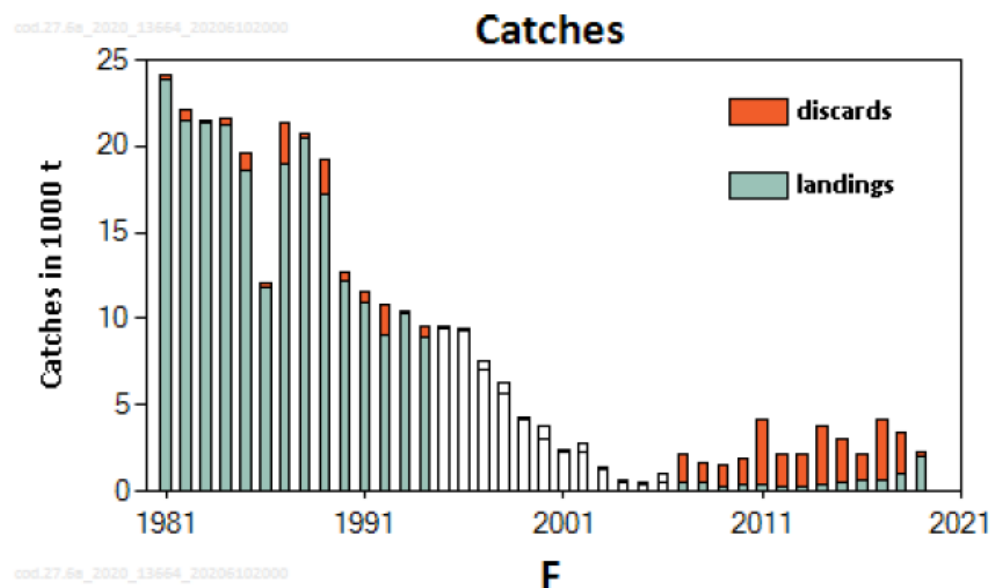
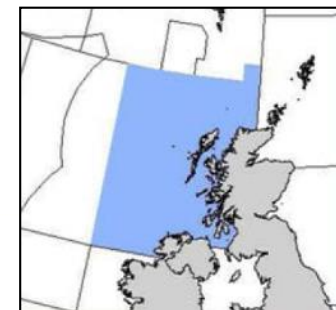
- MSY advice basis
- TAC areas do not correspond with advice area
- Change in advice is due to a downwards revision in stock abundance

# West of Scotland and Rockall Demersal

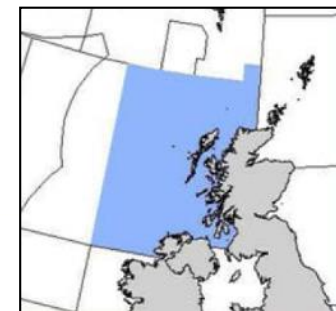


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# West of Scotland cod (Division 6a): summary



## West of Scotland cod: advice

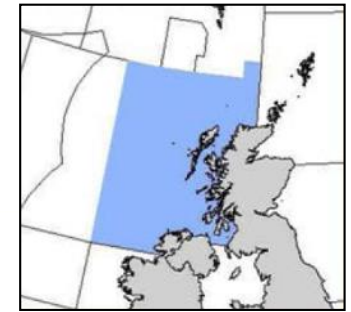


- F remains high (above  $F_{msy}$ )
- SSB remains at a very low level (below MSY Btrigger)
- Recruitment also low for several years

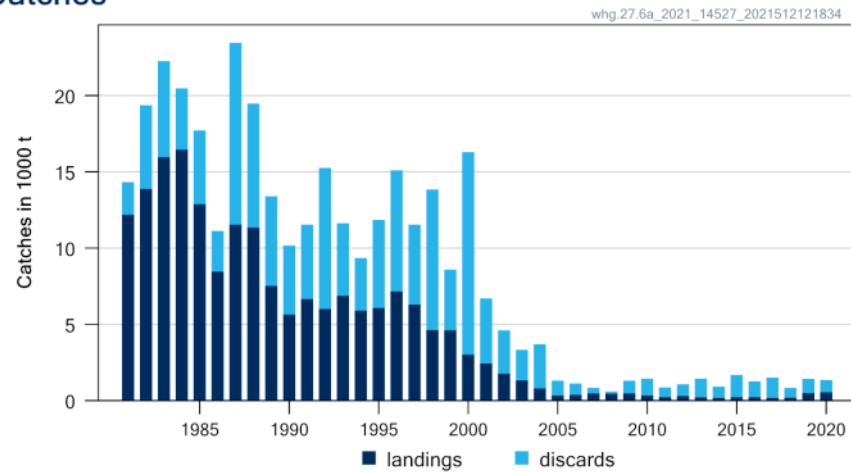
	Advice	% change from 2021 advice
Total catch 2022	Zero catch	NA (previously zero catch advice)
SSB 2022	6 070 t (+101%)	

- Advice basis: MSY approach
- Advice published in June 2020 for 2021 and 2022
- WoS cod also part of the WKCOD benchmark process

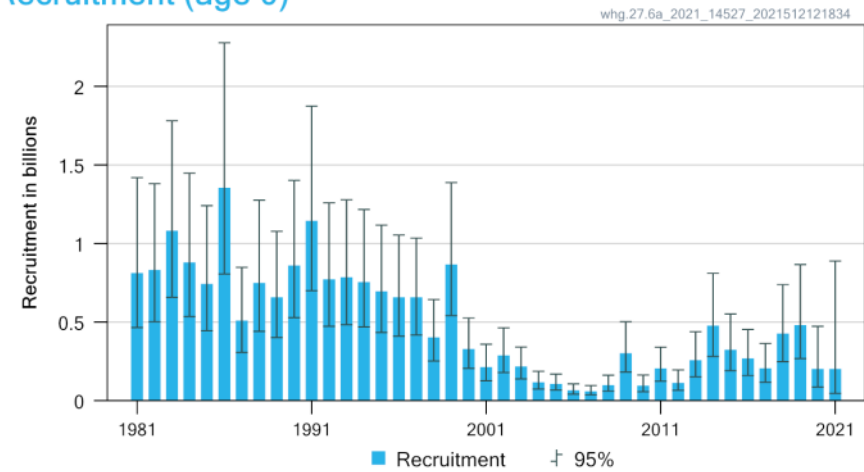
# West of Scotland whiting (Division 6a): summary



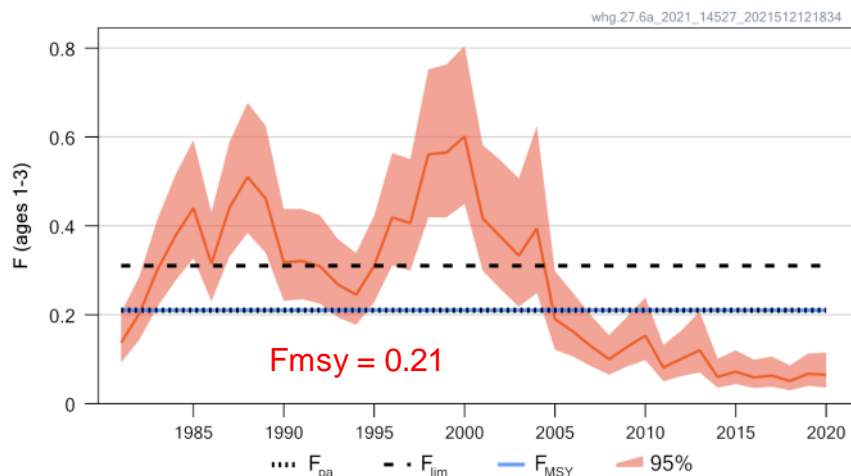
## Catches



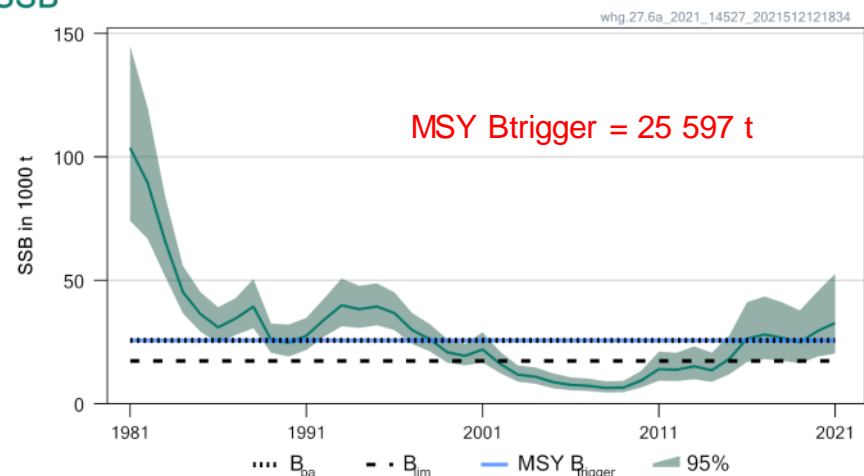
## Recruitment (age 0)



## F

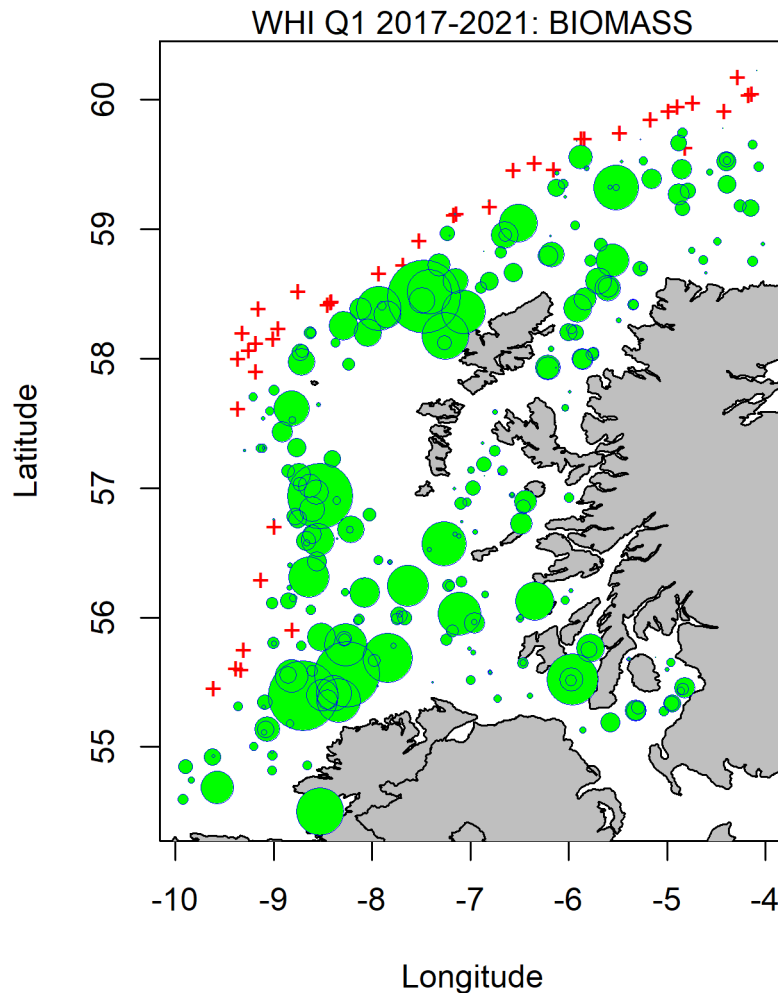
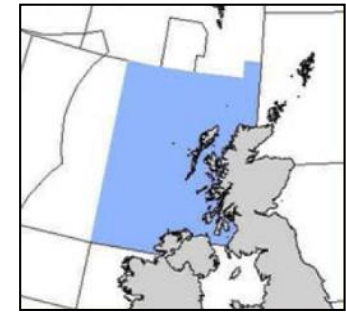


## SSB

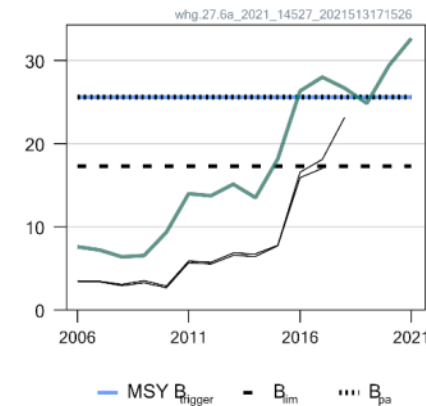




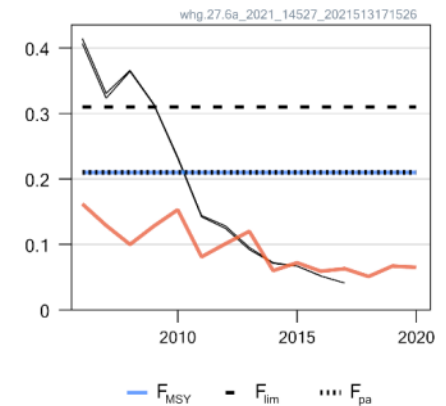
# West of Scotland whiting: distribution and historical assessments



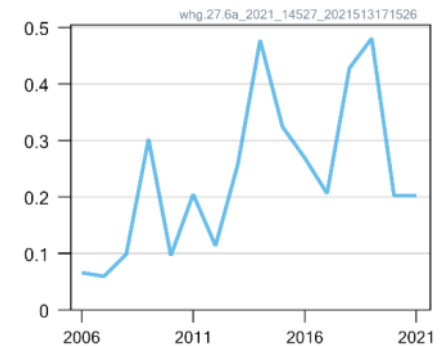
SSB (1000 t)



Fbar



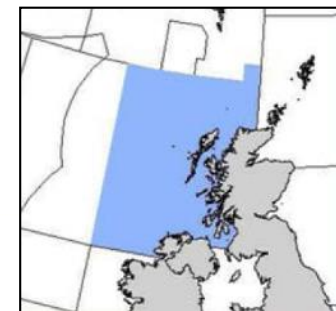
Rec (age 0; Billions)



- ICES benchmark earlier this year
  - New stock assessment & reference points



# West of Scotland whiting

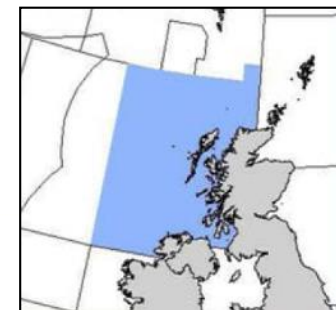


- F stable at a low level (below  $F_{msy}$ )
- SSB has increased to above MSY Btrigger
- Recruitment in 2020 (and 2021) is very low

	Advice	% change from 2021 advice
Total catch 2022	4114 t	NA (previously zero catch advice)
SSB 2023	26 294 t (-16.7%)	

- Advice basis: MSY approach
- All advice scenarios result in a decline in SSB in 2023

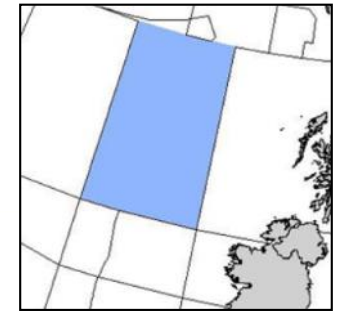
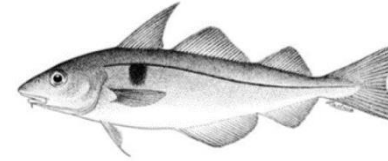
## West of Scotland *Nephrops*: advice



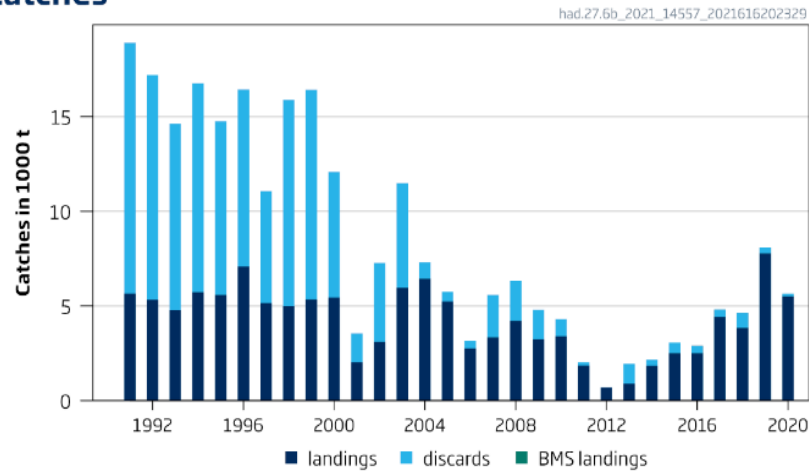
	Advice (6a)	% change from 2021 advice
Total catch 2022	12 274 t	-21%

- MSY advice basis

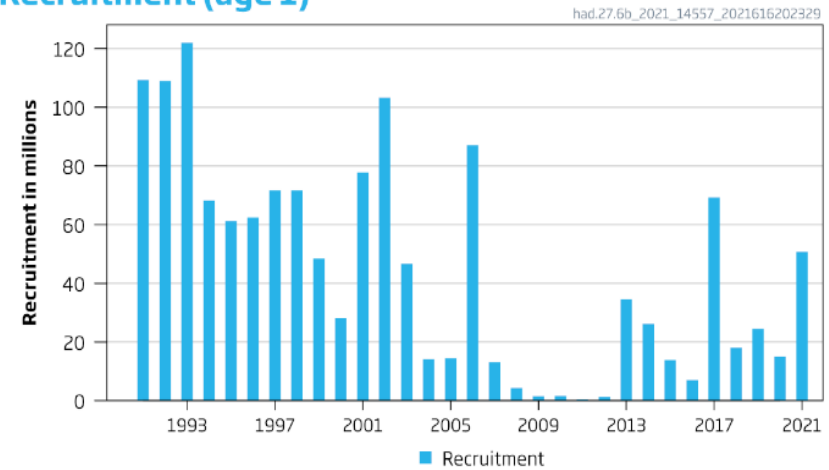
# Rockall haddock (Division 6b): summary



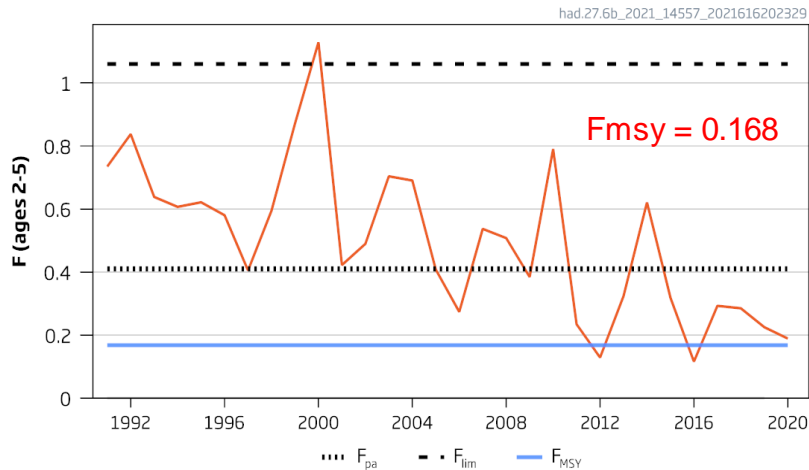
## Catches



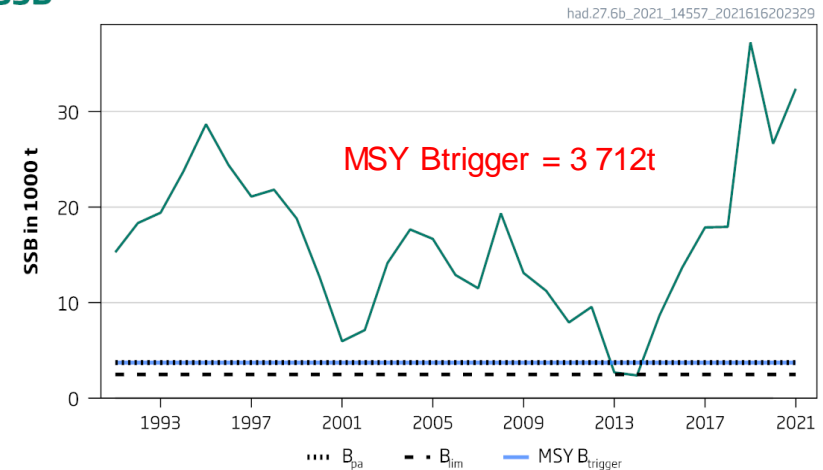
## Recruitment (age 1)



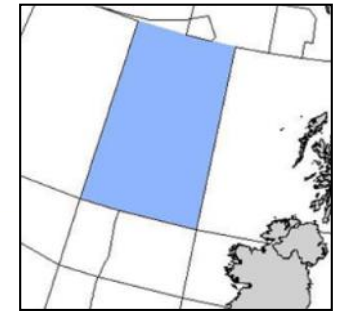
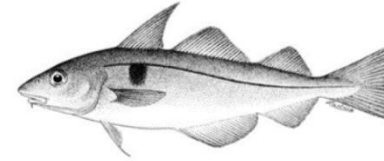
## F



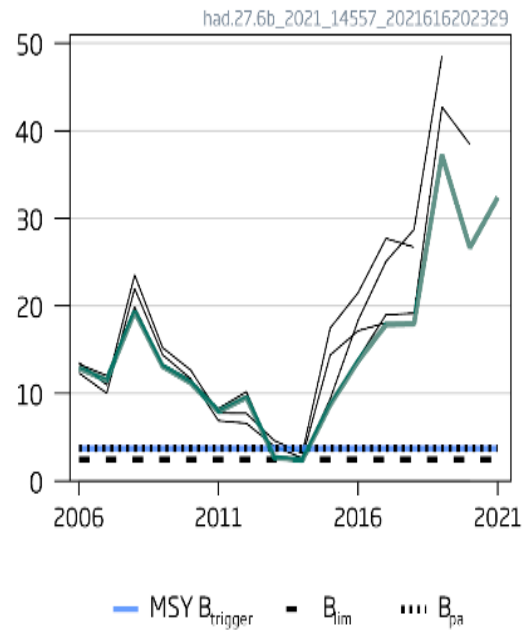
## SSB



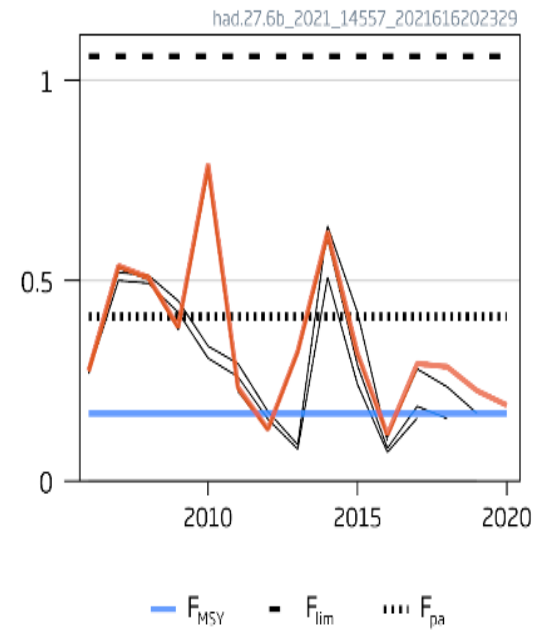
# Rockall haddock: historical assessments



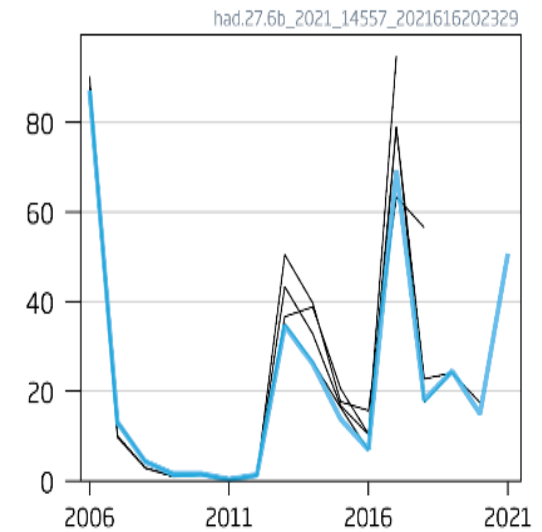
## SSB (1000 t)



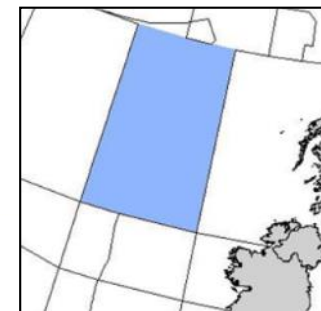
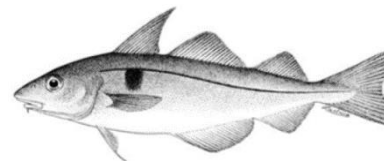
## F (ages 2-5)



## Rec (age 1; Millions)



## Rockall haddock: advice



- F has declined – just above  $F_{msy}$  in 2020
- SSB well above MSY Btrigger
- Recruitment in 2021 estimated to be above average

	Advice	% change from 2021 advice
Total catch 2022	5 825 t	-6.6%
SSB 2023	44 783 t (+51%)	

- Advice basis: MSY approach
- Reduction in advice due to
  - SSB scaled down in this year's assessment
  - Stock predicted to decline in 2022



# Pelagic



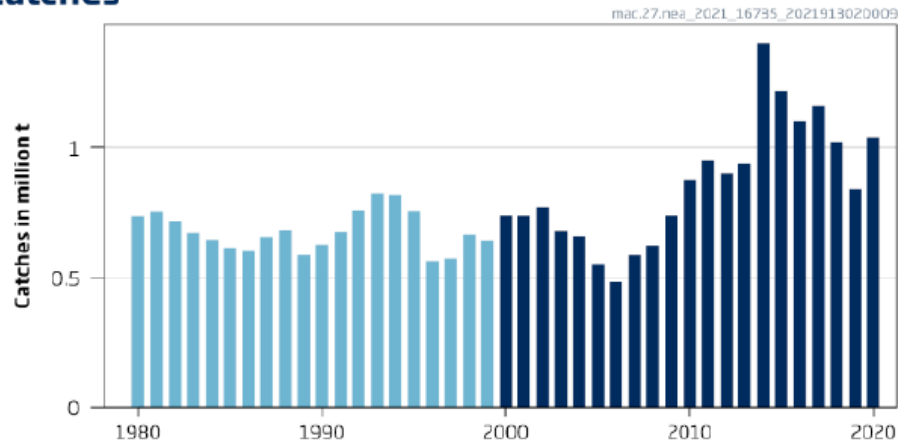
The Scottish  
Government

marinescotland  
science

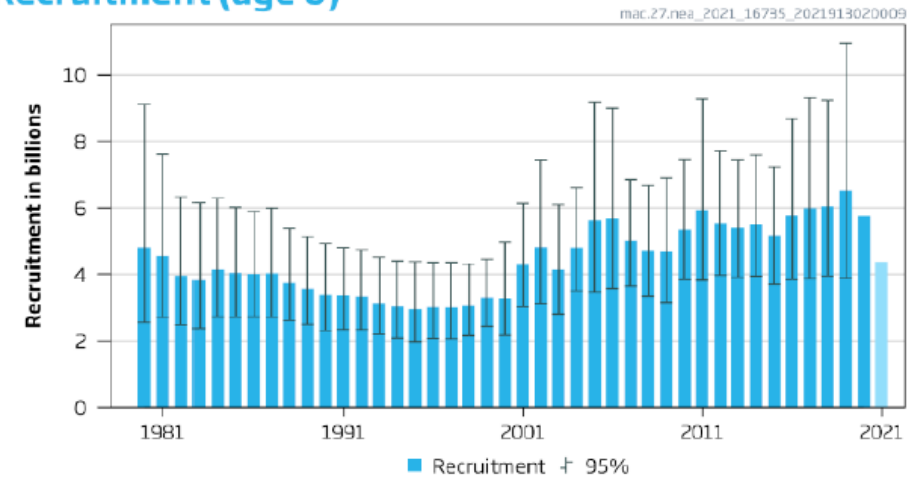
# Atlantic mackerel: summary



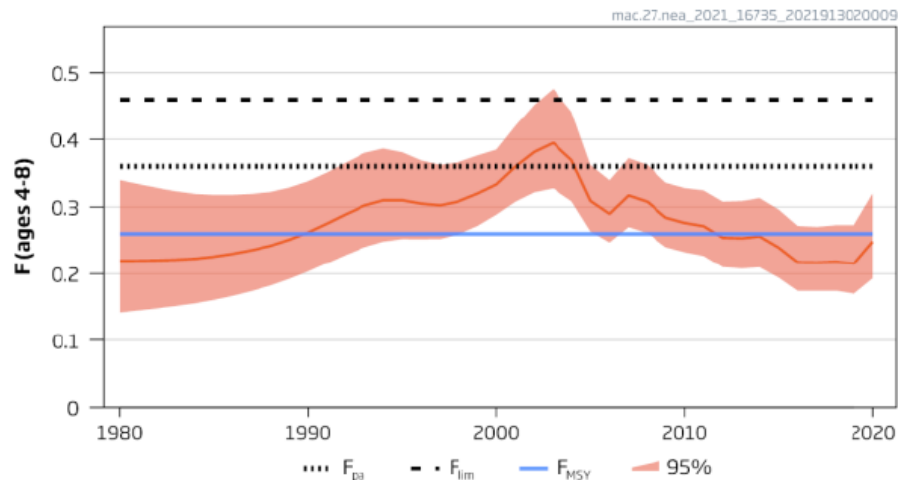
## Catches



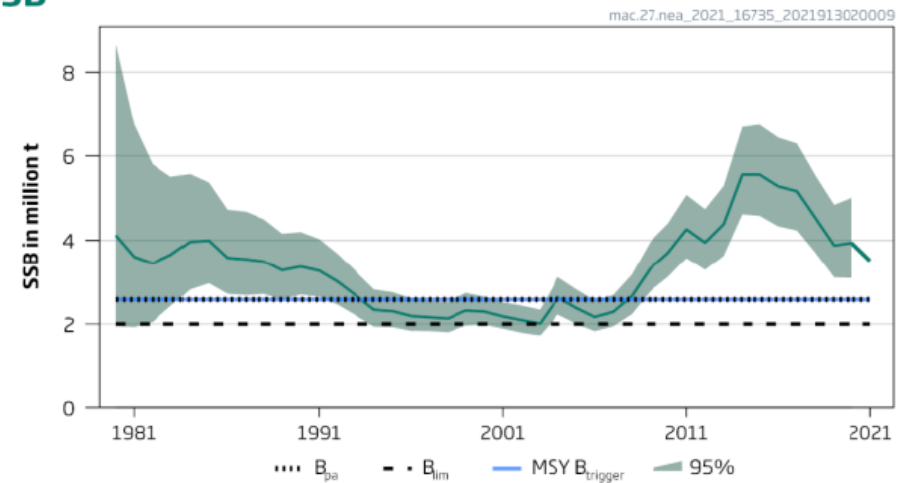
## Recruitment (age 0)



## F



## SSB



## Atlantic mackerel: advice

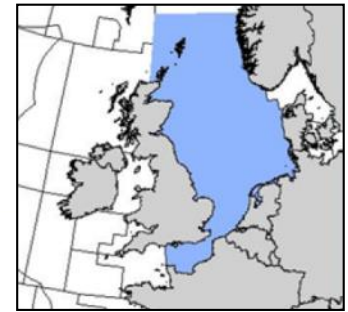


- Recruitment good but may be falling
- Fishing mortality below  $F_{msy}$
- SSB falling but still above MSY  $B_{trigger}$

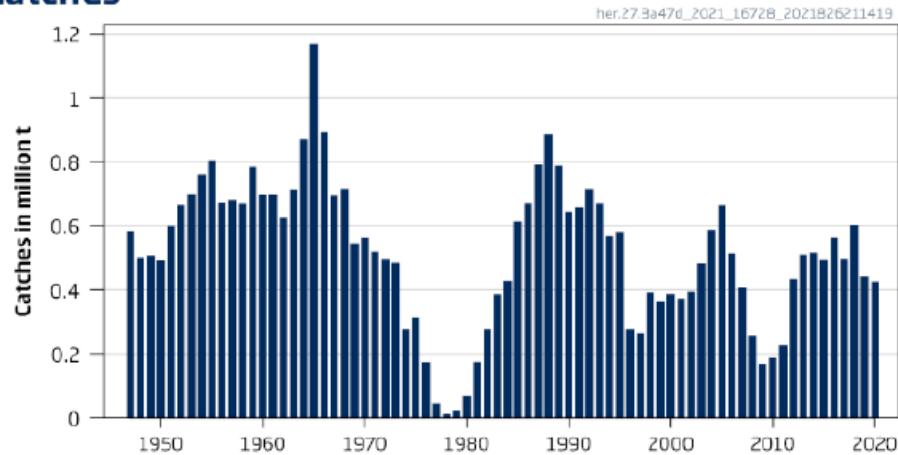
	Advice	% change from 2021 advice
Total catch 2022	794 920 t	-7%
SSB 2023	3 269 273 t (-1%)	

- MSY approach basis
- Reduction in advice due to continued decline in stock size

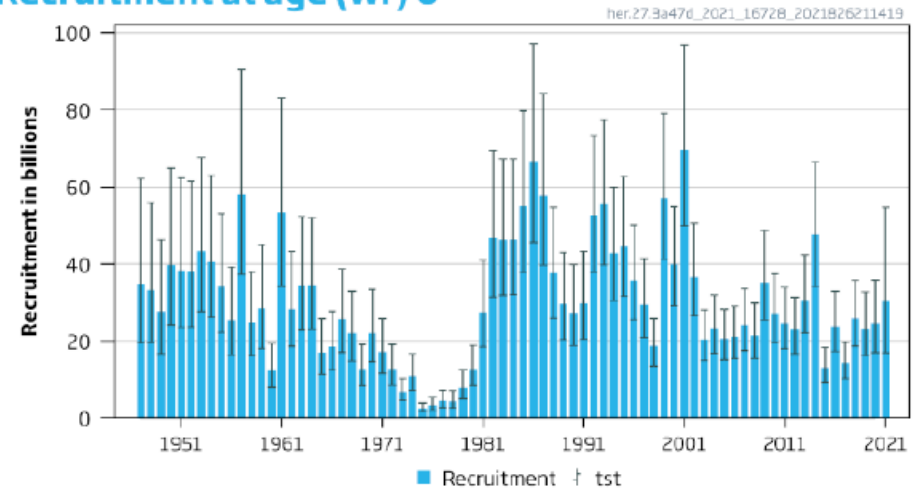
# North Sea herring: summary



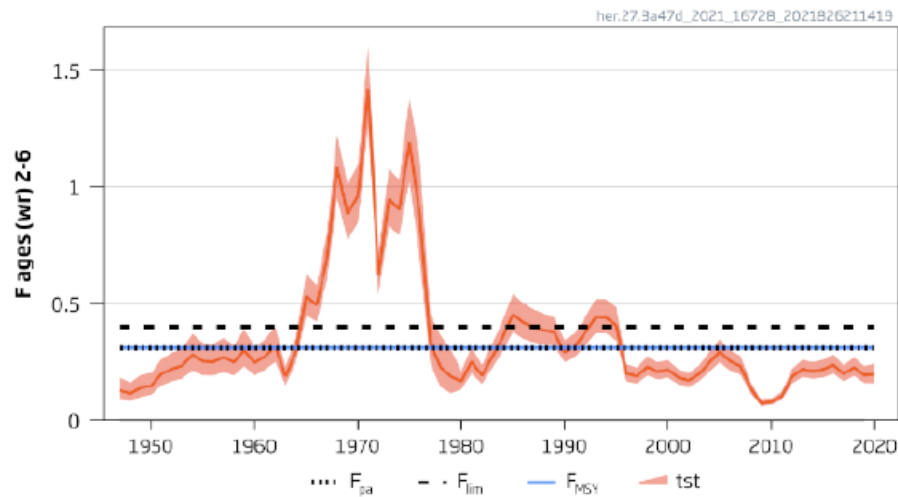
## Catches



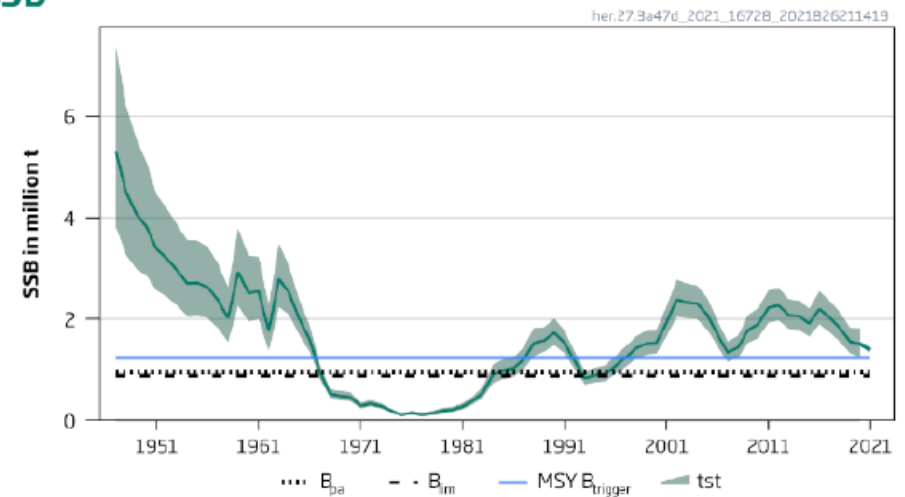
## Recruitment at age (wr) 0



## F



## SSB



## North Sea herring: advice



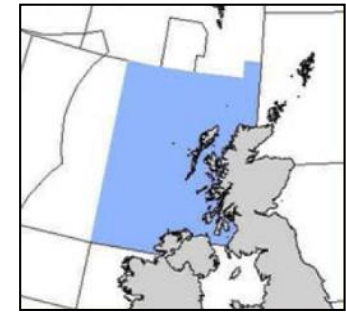
- Recruitment fluctuating around a recent average
- Fishing mortality remains low, and below  $F_{msy}$
- SSB declining, but remains above MSY  $B_{trigger}$

	Advice	% change from 2021 advice
Total catch 2022	532 183 t	+45%
SSB 2023	1 286 757 t (-7.4%)	

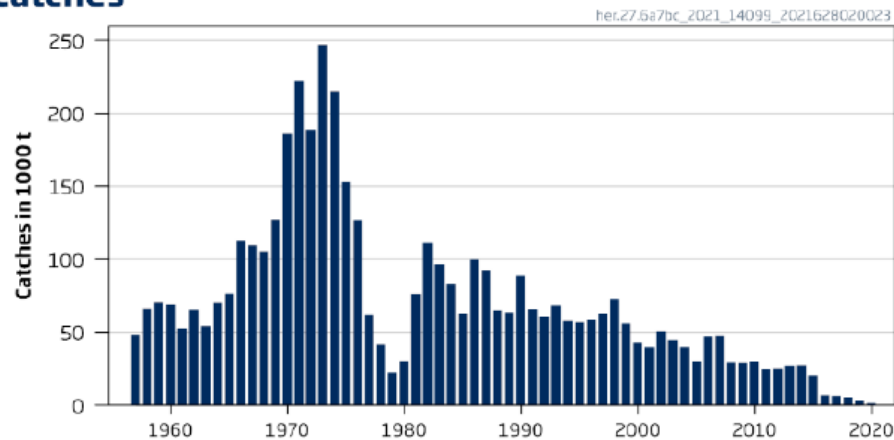
- MSY approach basis
- Increase in advice is due to
  - Recent interbenchmark analysis
  - Lower rate of stock decline



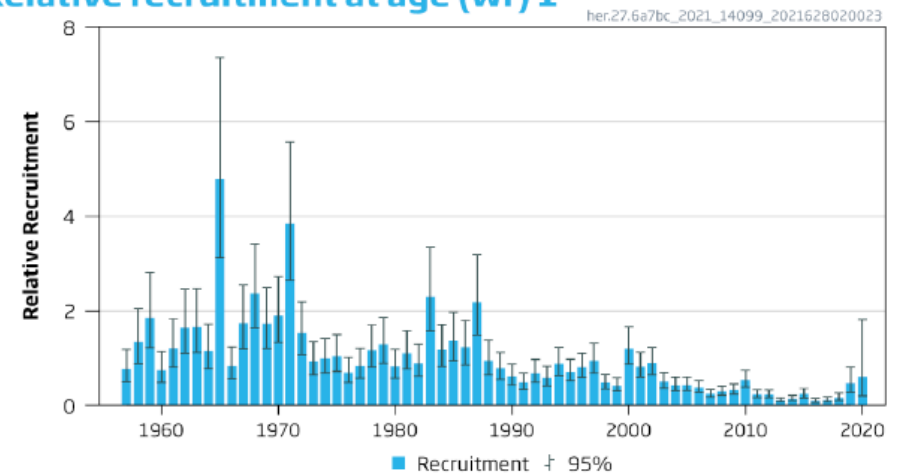
# West of Scotland herring: summary



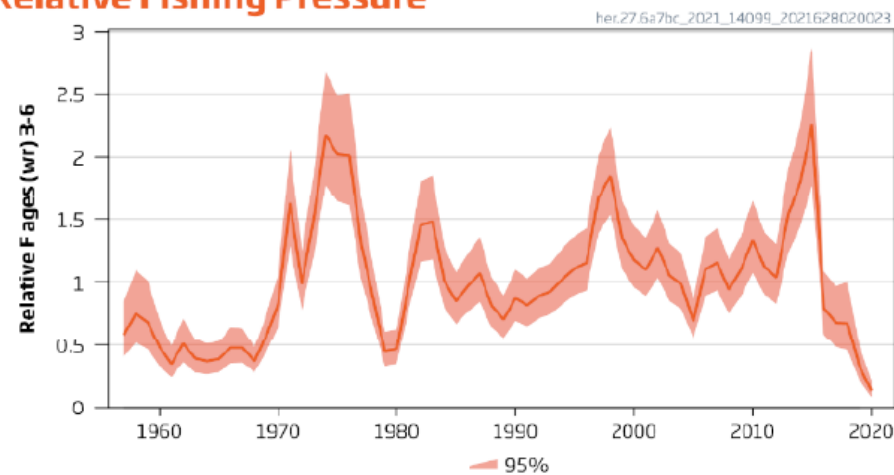
## Catches



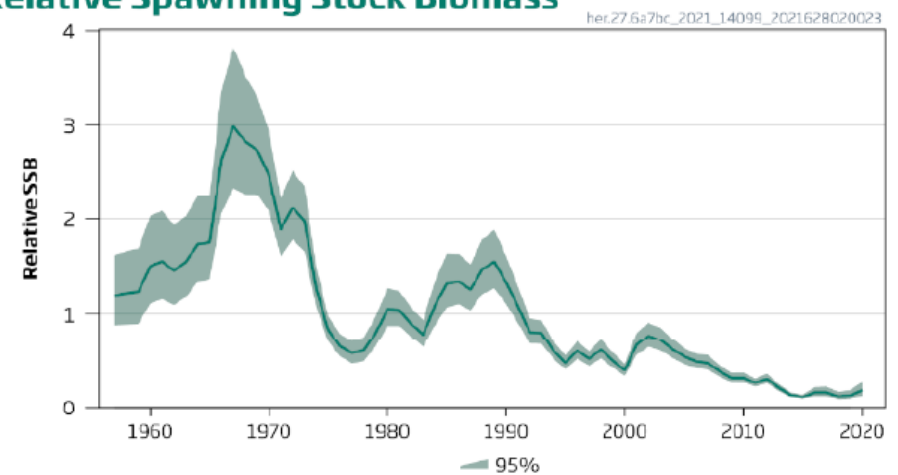
## Relative recruitment at age (wr) 1



## Relative Fishing Pressure

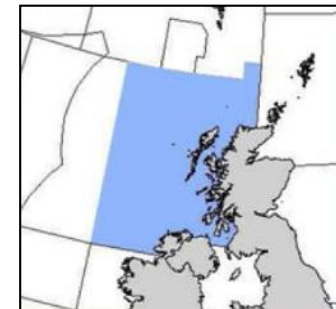


## Relative Spawning Stock Biomass





## West of Scotland herring: advice



- Recruitment remains low
- Fishing mortality has declined rapidly
- SSB remains very low
- No reference points are defined

	Advice	% change from 2021 advice
Total catch 2022	Zero	NA (zero advice since 2016)
SSB 2023	Not provided	

- Relative assessment for trends only
- Precautionary approach basis
- Small TAC permitted for scientific monitoring purposes only

# Changes in TAC (or advice\*) from 2021 to 2022:

Species	North Sea	West of Scotland	Rockall	Northern Shelf	Widely distributed
Cod	-10.3%	Zero catch	0%		
Haddock			-6.6% *	+154%	
Whiting	+236% *	[Zero catch 2021]	-20%		
Plaice	-15.1% *				
Sole	-28%				
Saithe				-24%	
Hake					-27% *
Monkfish				-20% *	
Megrim			+94% *	+0.68% *	
Ling				-18% *	
Blue ling					+3.3% *
Herring	+45% *	Zero catch			
ASH					-8.0% *
Mackerel					-7% *
Blue whiting					-19%
Nephrops	+25% *	-21% *			