

ICES advice for North Western Waters stocks for 2023

NWWAC meeting, July 3, 2023
Celtic Sea and WEST OF SCOTLAND

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ICES ACOM vice-chair

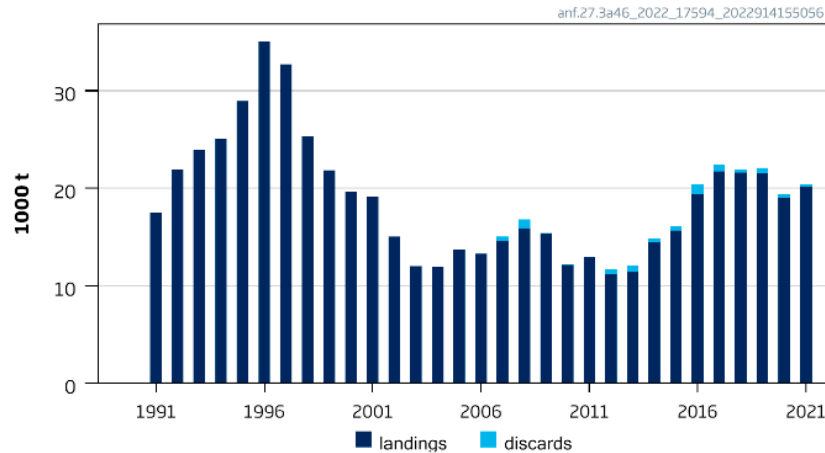


Image Dirk Vonten, Fotolia

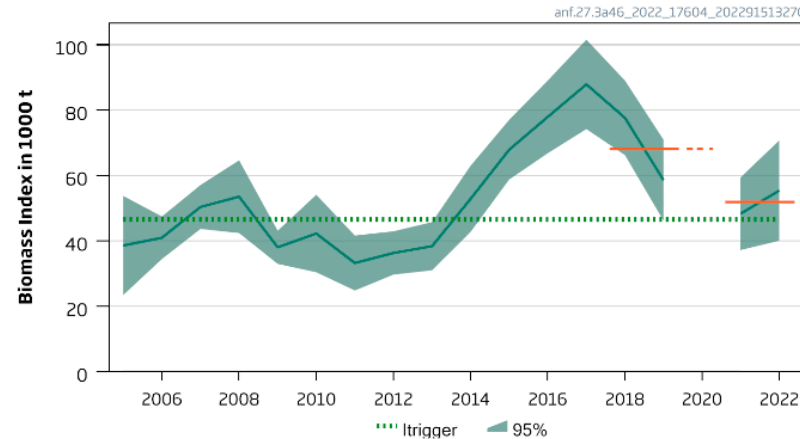
Anglerfish in Subareas 4 and 6 and divisions 3a

Advice for 2023 and 2024 : MSY: Catch \leq 9 881 advice -30%

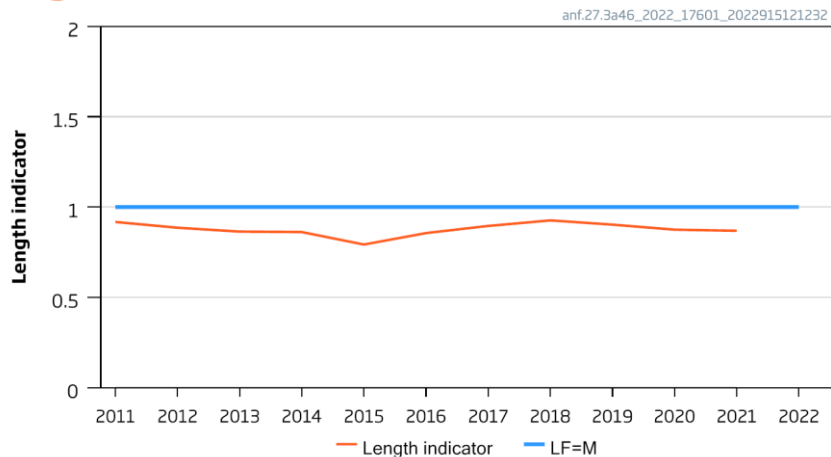
Catches



Stock size indicator



Length indicator



- Advice for black bellied and white combined
- F is above Fmsy (not inverse)
- Stock size above Itrigger
- Declining stock size – stability clause applied

Missing survey 2020 – no stock size indicator that year. Also part of area not surveyed 2022 . 3a, 4b, 4c not included in the survey area in any year

Anglerfish in Subareas 4 and 6 and divisions 3a

Catch (2022) = 20 392 t (1 % discards)

| | |
|--|---------------|
| Division 3a46 Anglerfish stock | |
| Previous catch advice A_y (advised catch for 2022) | 14 116 tonnes |
| Stock biomass trend | |
| Index A (2021, 2022) | 53 222 tonnes |
| Index B (2018, 2019; 2020 not available) | 68 118 tonnes |
| r: stock biomass trend (index ratio A/B) | 0.78 |
| Fishing pressure proxy | |
| Mean catch length ($L_{\text{mean}} = L_{2021}$) | 53 cm |
| MSY proxy length ($L_{F=M}$) | 61 cm |
| f: Fishing pressure proxy relative to MSY proxy ($L_{2021}/L_{F=M}$) | 0.87 |
| Biomass safeguard | |
| Last index value (I_{2021}) | 55 423 |
| Index trigger value ($I_{\text{trigger}} = I_{\text{loss}} \times 1.4$) | 46 554 |
| b: Index relative to trigger value, $\min \{I_{2021}/I_{\text{trigger}}, 1\}$ | 1 |
| Precautionary multiplier to maintain biomass above B_{lim} with 95% probability | |
| m: multiplier (generic multiplier based on life history) | 0.95 |
| RFB calculation ** | 9 100 tonnes |
| Stability clause (+20%/-30% compared to A_y , only applied if $b = 1$) | Applied 0.70 |
| Discard rate | 1.2% |
| Catch advice for 2023 ($A_y \times$ stability clause) | 9 881 tonnes |
| Projected landings corresponding to advice *** | 9 610 tonnes |
| % advice change ^ | -30% |

Chr rule

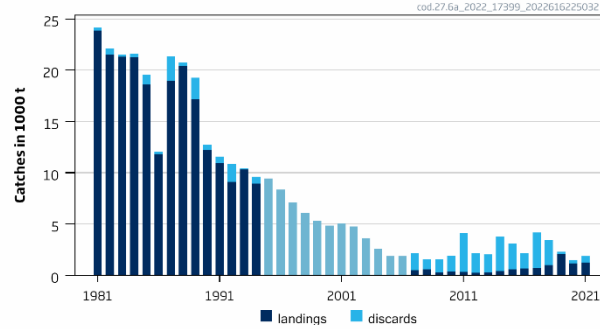
$$A_{y+1} = A_y \times r \times f \times b \times m.$$

Stability clause applied as change in advice greater than 30%

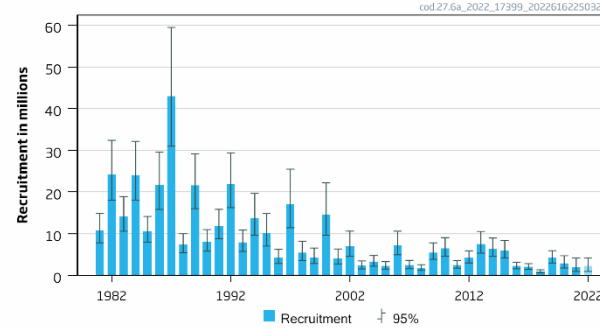
Cod in the West of Scotland (6.a)

Advice for 2023 and 2024, MSY: Catch = 0 t

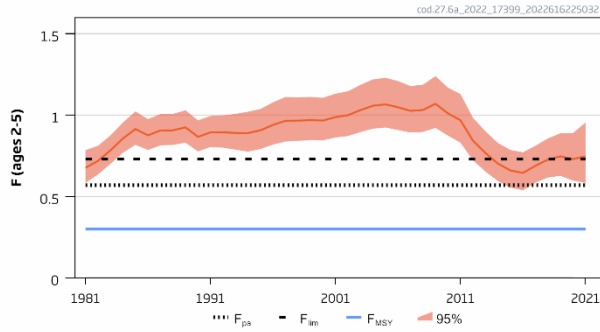
Catches



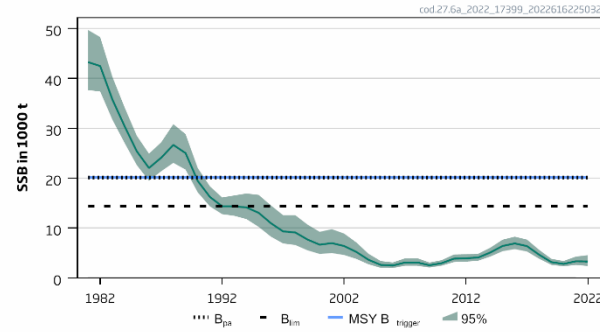
Recruitment (age 1)



F



SSB

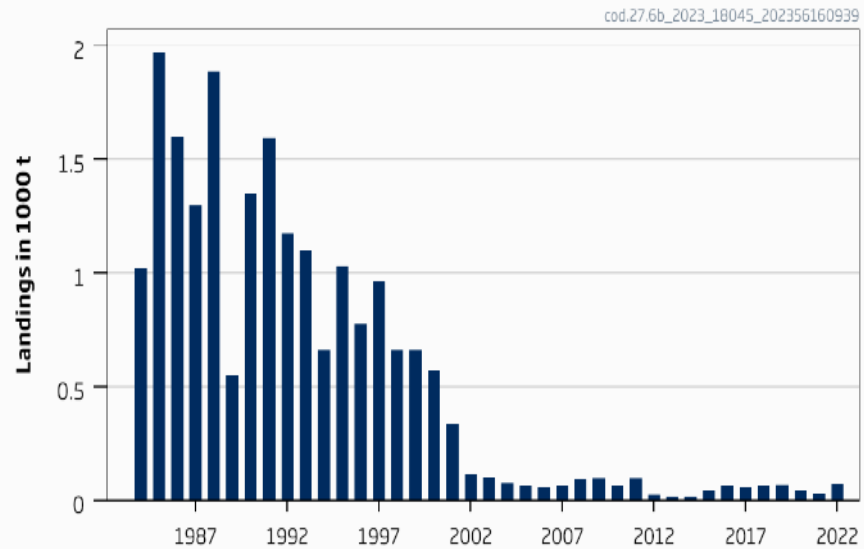


- Advice delayed until September - benchmark

Cod in Rockall (6b)

Advice for 2024, 2025, 2026: PA: Catch =11 t -20%

Landings

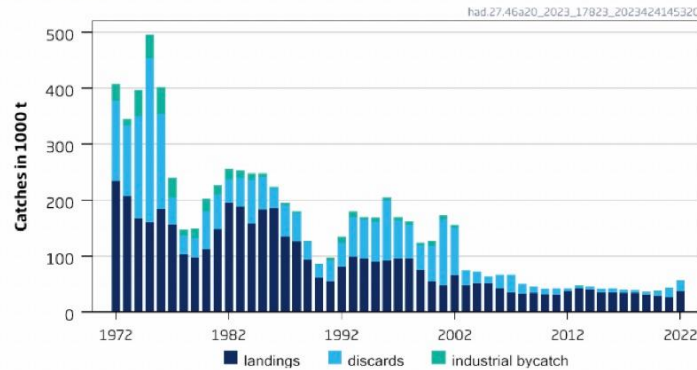


- Category 6
- PA buffer applied as last applied in 2017
- Discarding takes place but can not be quantified
- Catch (without discards) 2022 71 t
- Stock ID uncertain

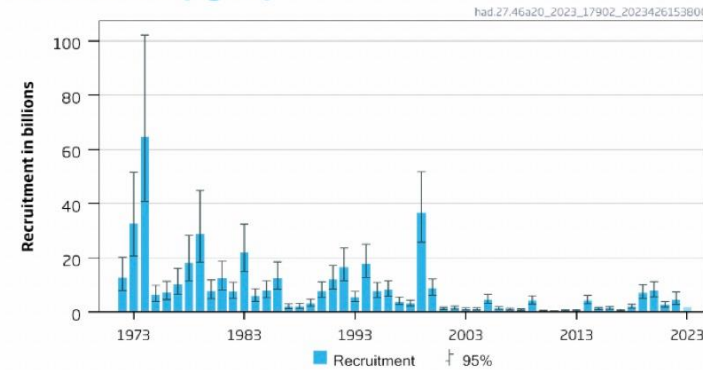
Haddock in the North Sea, West of Scotland, Skagerrak (4, 6.a and Subdiv. 20)

Advice for 2024: MSY: Catch \leq 149 024 t advice +18%

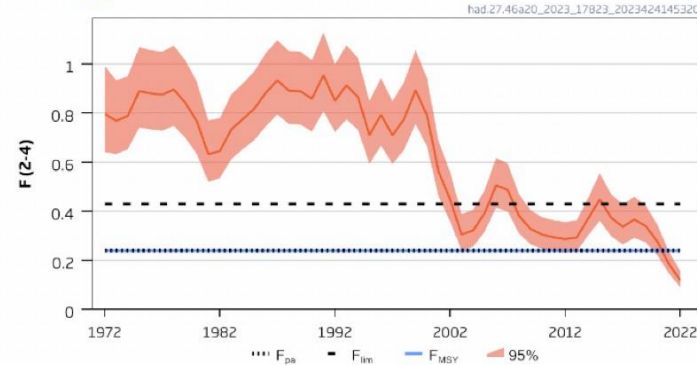
Catches



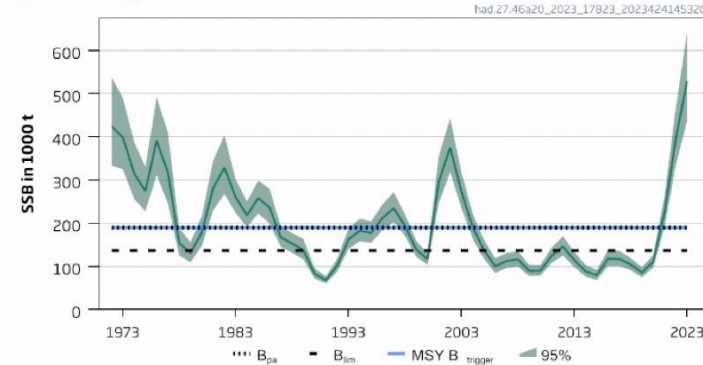
Recruitment (age 0)



Fishing pressure



Spawning Stock Biomass



- F sharp decline since 2000: below F_{MSY}
- SSB large increase since 2000: above MSY $B_{trigger}$
- Increase in advice: increasing stock size, revision in estimated abundance in 2022
- In 2023, TAC in 6.a is about 9 % of TAC for the stock.
- Benchmark 2022: new model (SAM) and biological information

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

Catch (2022) : 56 849 t (33 % discards); **5221 t catch in 6.a**

F(2023) = 0.111 (catch constraint – 68 499 t TAC 2023)

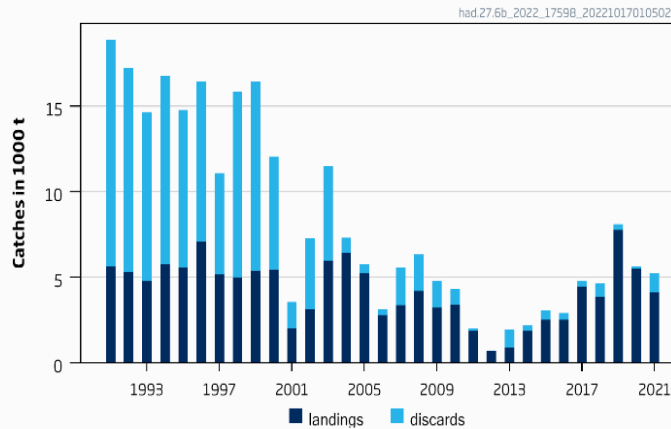
SSB(2024) = 533 910 t > MSY_{Btrigger} (189 734 t) $F_{MSY} = 0.24$

| Basis | Total catch (2024) | Projected landings (2024) | Projected discards and IBC* (2024) | F _{total} (ages 2–4) (2024) | F _{projected landings} (ages 2–4) (2024) | F _{projected discards and IBC} (ages 2–4) (2024) | SSB (2025) | % SSB change [^] | % TAC change ^{^^} | % advice change ^{^^^} |
|--|--------------------|---------------------------|------------------------------------|--------------------------------------|---|---|------------|---------------------------|----------------------------|--------------------------------|
| ICES advice basis | | | | | | | | | | |
| MSY approach: F _{MSY} | 149024 | 126601 | 22423 | 0.24 | 0.184 | 0.056 | 473483 | -11.3 | 118 | 17.8 |
| Other scenarios | | | | | | | | | | |
| F _{MSY lower} | 118955 | 101191 | 17764 | 0.186 | 0.142 | 0.044 | 499800 | -6.4 | 74 | -6.0 |
| F _{MSY upper} [#] | 149024 | 126601 | 22423 | 0.24 | 0.184 | 0.056 | 473483 | -11.3 | 118 | 17.8 |
| F = 0 | 0 | 0 | 0 | 0 | 0 | 0 | 604551 | 13.2 | -100 | -100 |
| F _{pa} | 149024 | 126601 | 22423 | 0.24 | 0.184 | 0.056 | 473483 | -11.3 | 118 | 17.8 |
| F _{lim} | 241162 | 204166 | 36996 | 0.43 | 0.33 | 0.101 | 393776 | -26 | 252 | 91 |
| SSB (2025) = B _{lim} | 555289 | 454909 | 100380 | 1.73 | 1.32 | 0.41 | 136541 | -74 | 711 | 339 |
| SSB (2025) = B _{pa} = MSY B _{trigger} | 487066 | 403012 | 84054 | 1.28 | 0.98 | 0.30 | 189734 | -64 | 611 | 285 |
| F = F ₂₀₂₃ | 74057 | 63075 | 10982 | 0.111 | 0.085 | 0.026 | 538888 | 0.93 | 8.1 | -41 |
| Rollover TAC | 68498 | 58366 | 10132 | 0.102 | 0.078 | 0.024 | 543651 | 1.82 | 0 | -46 |

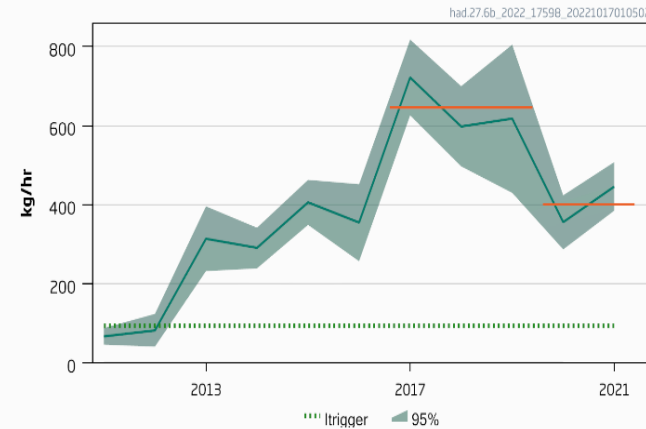
Haddock at Rockall (6.b)

Advice for 2023 and 2024: MSY: Catch \leq 4 078 advice -30%

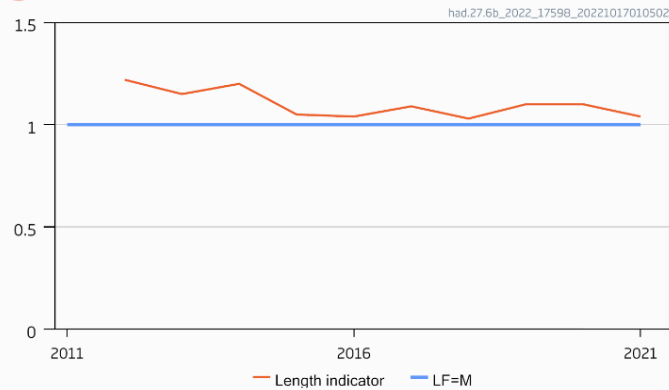
Catches



Biomass Index



Length indicator



- Advice released October 2023 – impacted by lack of Russian participation
- New method: rfb
- F slightly decreasing: below FMSY proxy (not inverse)
- Stock size above Itrigger but lower in last 2 years
- Advice lower because of decline in biomass index and change in method
- Benchmark planned

Haddock at Rockall (6.b)

Catch (2022) : 5 212 (21% discards)

| | |
|--|--------------------------|
| Previous catch advice A_y (2022) | 5825 tonnes |
| Stock biomass trend | |
| Index A (2020, 2021) | 401 kg hr ⁻¹ |
| Index B (2017, 2018, 2019) | 646 kg hr ⁻¹ |
| r: Index ratio (A/B) | 0.62 |
| Fishing pressure proxy | |
| Mean catch length ($L_{\text{mean}} = L_{2021}$) | 39.0 cm |
| MSY proxy length ($L_{F=M}$) | 37.4 cm |
| f: multiplier for relative mean length in catches ($L_{\text{mean}}/L_{F=M 2020}$) | 1.04 |
| Biomass safeguard | |
| Last index value (I_{2021}) | 446 kg hr ⁻¹ |
| Index trigger value ($I_{\text{trigger}} = I_{\text{loss}} \times 1.4$) | 93.5 kg hr ⁻¹ |
| b: multiplier for index relative to trigger $\min\{I_{2021}/I_{\text{trigger}}, 1\}$ | 1 |
| Precautionary multiplier to maintain biomass above B_{lim} with 95% probability | |
| m: multiplier (generic multiplier based on life history) | 0.90 |
| RFB calculation** | 3389 tonnes |
| Stability clause (+20%/-30% compared to A_y , only applied if $b \geq 1$) | Applied 0.70 |
| Discard rate | 9.2% |
| Catch advice for 2023 and 2024 ($A_y \times$ stability clause) | 4078 tonnes |
| Projected landings corresponding to advice*** | 3704 tonnes |
| % advice change^ | -30 % |

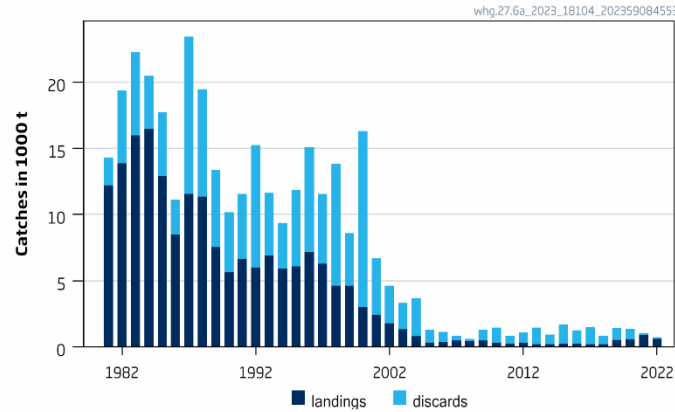
rfb rule

- $A_{y+1} = A_y \times r \times f \times b \times m$
- Stability clause applied

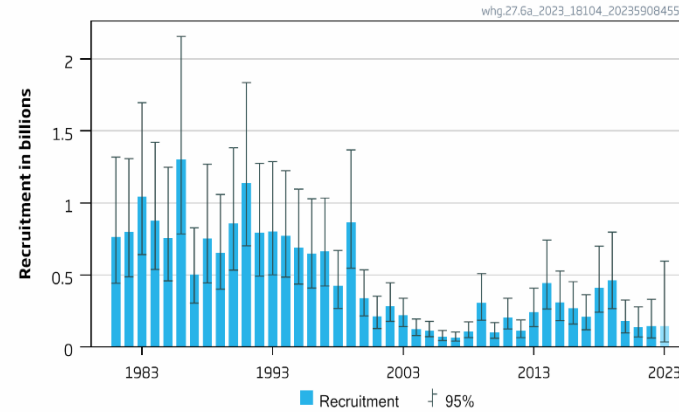
Whiting 6a West of Scotland

Advice for 2024 : MSY: Catch \leq 3 879t advice -7%

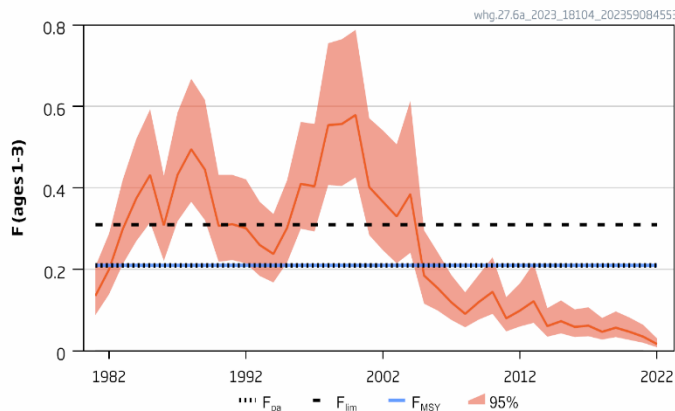
Catches



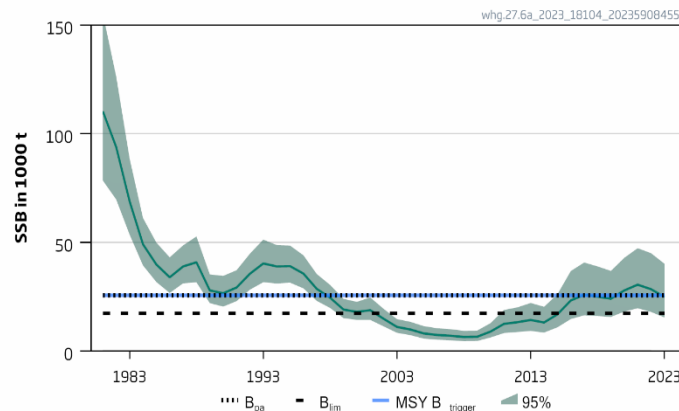
Recruitment (age 0)



F



SSB



- Catches have been low since early 2000's
- F declining and below F_{MSY}
- SSB increased from early 2000s to about 2015 and has been fairly stable since: just below MSY Btrigger
- Decrease in advice: lower SSB and lower F target since below trigger

Whiting 6a West of Scotland

Catch (2022) = 751 t (16 % discards)

F(2023) = 0.0166 (Fsq: average 2018-2022)

SSB (2024)= 23 794 > B_{lim} (17 286) but < MSY Btrigger (25 597) F_{MSY}= 0.21

| Basis | Total catch (2024) | Projected landings (2024) | Projected discards (2024) | F _{total} (2024) | F _{projected} landings (2024) | F _{projected} discards (2024) | SSB (2025) | % SSB change * | % advice change** |
|---|--------------------|---------------------------|---------------------------|---------------------------|--|--|------------|----------------|-------------------|
| ICES advice basis | | | | | | | | | |
| MSY approach: F _{MSY} × SSB (2024) /MSY B _{trigger} | 3879 | 2612 | 1267 | 0.195 | 0.064 | 0.131 | 19777 | -16.9 | -6.6 |
| Other scenarios | | | | | | | | | |
| MSY approach: F _{MSY lower} × SSB (2024) /MSY B _{trigger} | 3245 | 2185 | 1060 | 0.160 | 0.053 | 0.107 | 20391 | -14.3 | -22 |
| MSY approach: F _{MSY upper} × SSB (2024) /MSY B _{trigger} | 3879 | 2612 | 1267 | 0.195 | 0.064 | 0.131 | 19777 | -16.9 | -6.6 |
| F = 0 | 0 | 0 | 0 | 0 | 0 | 0 | 23671 | -0.52 | -100 |
| F= F _{MSY} | 4158 | 2799 | 1359 | 0.21 | 0.069 | 0.141 | 19512 | -18 | 0.07 |
| F= F _{MSY lower} | 3482 | 2345 | 1137 | 0.173 | 0.057 | 0.116 | 20159 | -15.3 | -16.2 |
| F= F _{pa} | 4158 | 2799 | 1359 | 0.21 | 0.069 | 0.141 | 19512 | -18 | 0.07 |
| F= F _{lim} | 5878 | 3950 | 1928 | 0.31 | 0.102 | 0.21 | 17923 | -25 | 41 |
| SSB (2025) = B _{lim} | 6582 | 4421 | 2161 | 0.35 | 0.116 | 0.24 | 17286 | -27 | 58 |
| SSB (2025) = B _{pa} = MSY B _{trigger} *** | | | | | | | | | |
| SSB (2025) = SSB (2024)*** | | | | | | | | | |
| F = F ₂₀₂₂ | 361 | 243 | 118 | 0.0166 | 0.005 | 0.012 | 23292 | -2.1 | -91 |

SAM assessment

SSB projected to decline further, remaining below MSY Btrigger

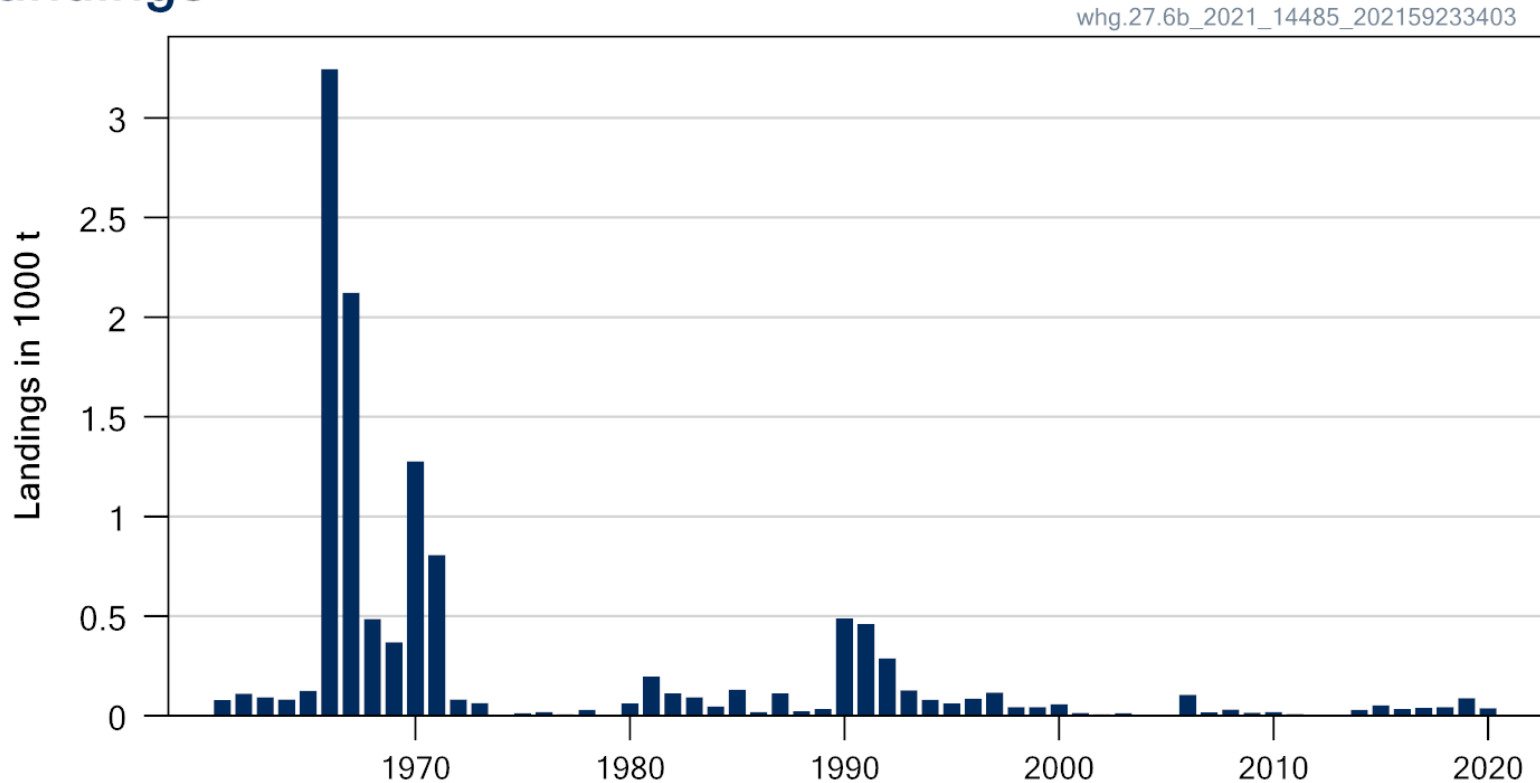
TAC includes Division 6.b, for which advice is given separately. ICES recommends, therefore, that the TAC area corresponds to the assessment area.

Whiting in division 6.b

Advice for 2022, 2023, 2024: PA: Catch ≤ 7 t

Advice released in 2021 – no update

Landings

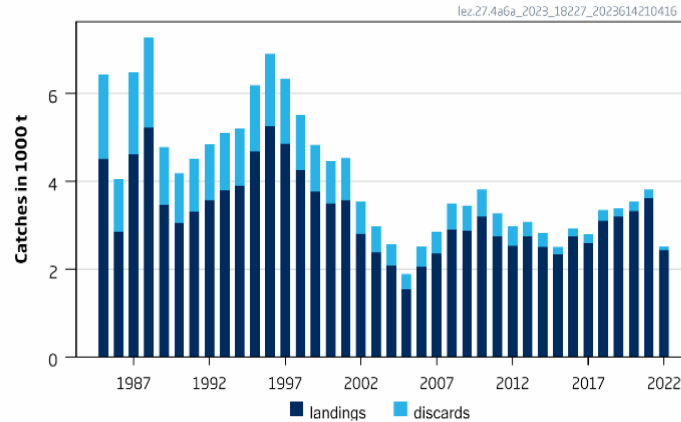


- Only landings data are available.
- Catch of 38 t in 2020.
- There is uncertainty on the accuracy of historical landings.
- Discards uncertain.

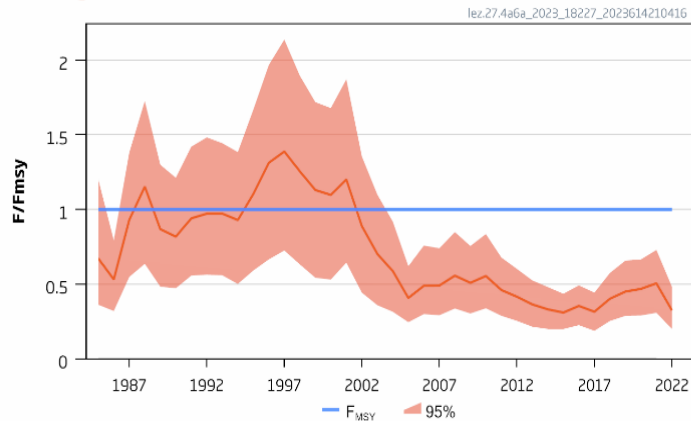
Megrim in the northern North Sea and West of Scotland (4.a and 6.a)

Advice for 2024: MSY: Catch \leq 7 900 t advice +9.7%

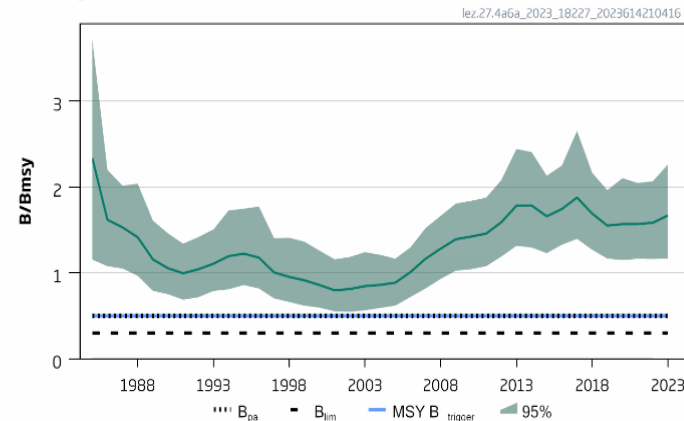
Catches



F/F_{msy}



B/B_{msy}



- Catch and F fairly stable since 2006: F below F_{MSY}
- Stock size stable since 2013: above MSY Btrigger
- Increase in advice: increase in stock size and upward revision (retrospective)
- Bycatch in 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.

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

Catch (2022) : 2 507t (3% discards)

F(2023) = 0.32 (Fsq = F 2022)

B2024/BMSY = 1.67

Note: TAC includes area 6b for which separate advice given

| Basis | Total catch (2024) | Projected landings (2024) | Projected discards (2024) | Fishing mortality F ₂₀₂₄ /F _{M_{SY}} | Stock size B ₂₀₂₅ /B _{M_{SY}} | % B change* | % advice change^ |
|--|--------------------|---------------------------|---------------------------|--|---|-------------|------------------|
| ICES advice basis | | | | | | | |
| MSY approach: F= F _{M_{SY}} | 7900 | 7510 | 390 | 1 | 1.38 | -17.6 | 9.7 |
| Other scenarios | | | | | | | |
| EU MAP^^: F _{M_{SY}} | 7900 | 7510 | 390 | 1 | 1.38 | -17.6 | 9.7 |
| EU MAP^^ F _{M_{SY}} lower | 6150 | 5847 | 303 | 0.78 | 1.47 | -12.0 | -14.6 |
| EU MAP^^ F _{M_{SY}} upper | 7900 | 7510 | 390 | 1 | 1.38 | -17.6 | 9.7 |
| F = 0 | 0 | 0 | 0 | 0 | 1.80 | 7.8 | -100 |
| B ₂₀₂₅ = B _{lim} | 29800 | 28331 | 1469 | 3.8 | 0.30 | -82 | 314 |
| B ₂₀₂₅ = B _{pa} = MSY B _{trigger} | 24850 | 23625 | 1225 | 3.1 | 0.50 | -70 | 245 |
| B ₂₀₂₅ = B ₂₀₂₄ | 2300 | 2187 | 113 | 0.29 | 1.67 | 0 | -68 |
| F = F ₂₀₂₃ | 2550 | 2424 | 126 | 0.32 | 1.66 | -0.78 | -65 |

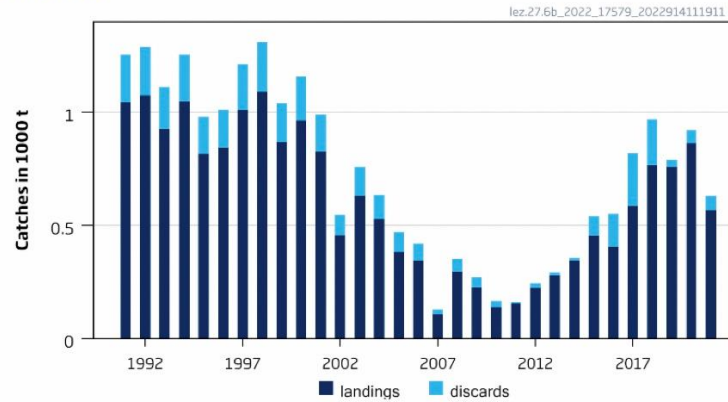
Bayesian production model

Megrim in Rockall (6b)

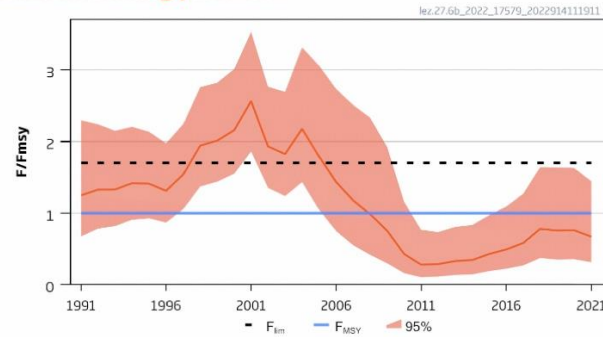
Advice for 2023: MSY: Catch \leq 1 022 t advice +3%

- Advice released autumn 2022
- New advice autumn 2023

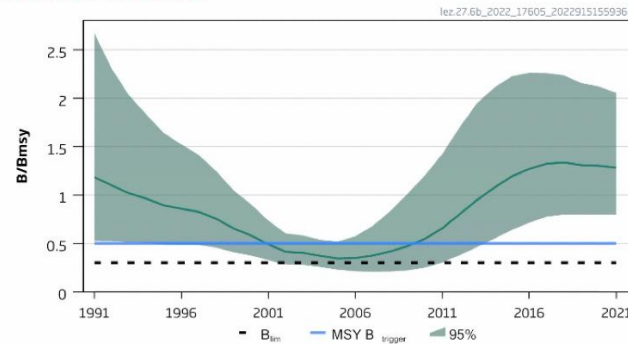
Catches



Relative fishing pressure



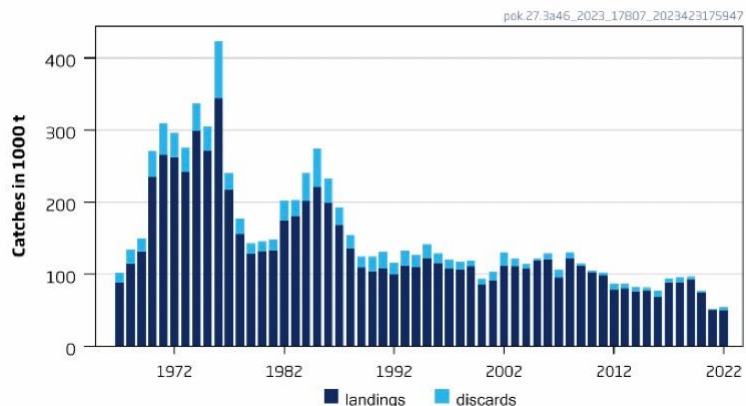
Relative Biomass



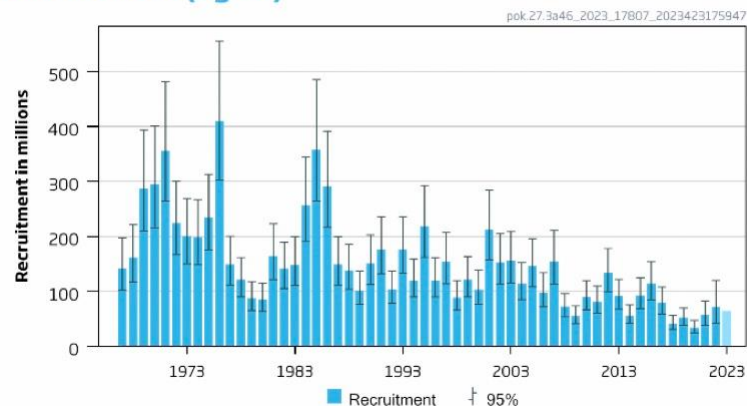
Saithe in the North Sea, Rockall and West of Scotland, Skagerrak and Kattegat (4,6,3.a)

Advice for 2024: MSY: Catch \leq 73 815 t advice +25%

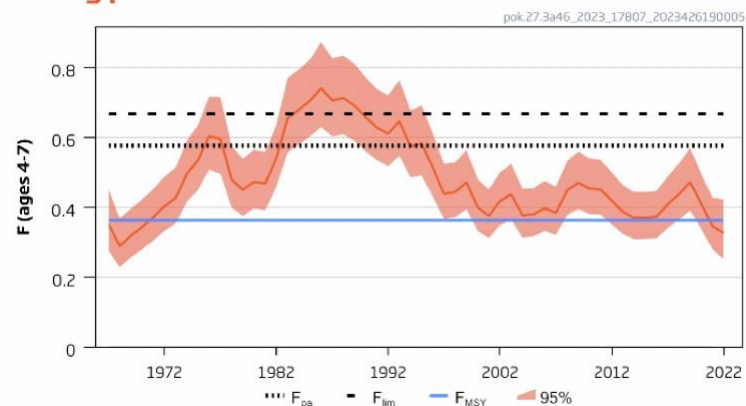
Catches



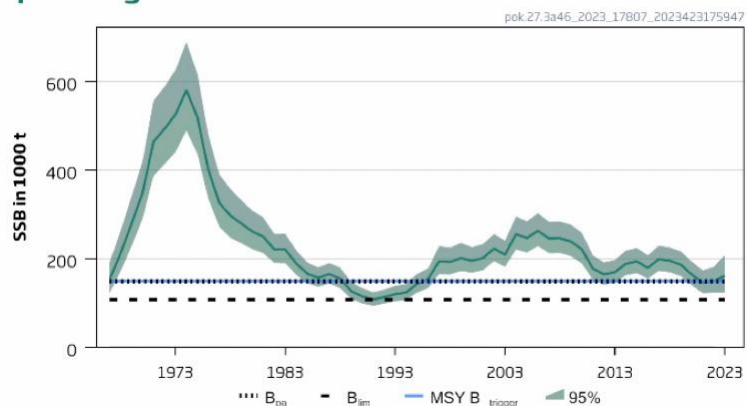
Recruitment (age 3)



Fishing pressure



Spawning Stock Biomass



- Catches lower last 2 years
- F has declined: below FMSY
- SSB has increased to above MSY $B_{trigger}$
- Increased advice: increased stock size, upward revision of stock size (retrospective) and target of FMSY as stock now above MSY $B_{trigger}$
- Decreased proportion of landings sampled for ages 2022– considered acceptable
- Since 2021 assessment signals from commercial CPUE and survey consistent

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

Catch (2022) : 53 805t (8 % discards); **3 566 t from West of Scotland**

F(2023) = 0.33 (Average exploitation pattern (2020-2022) scaled to F 2022);

SSB (2024)= 177 053 t > $MSY_{B_{trigger}}$ (149 098 t) $F_{MSY} = 0.363$

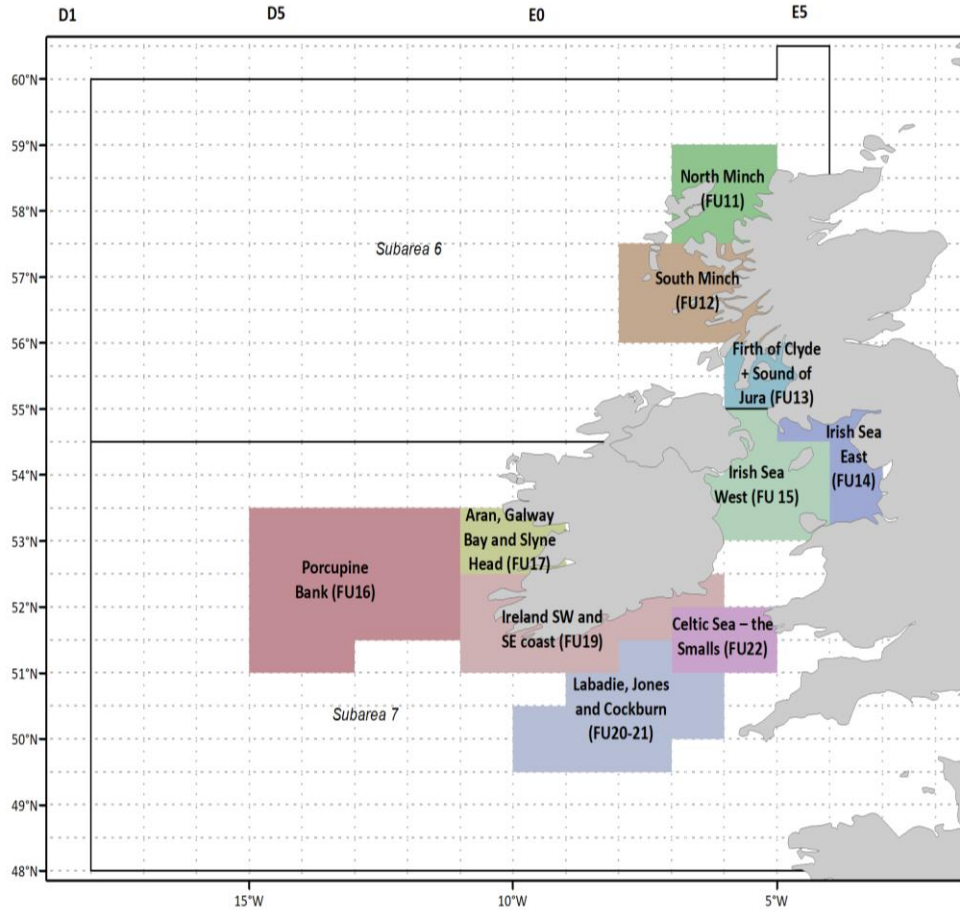
| Basis | Total catch (2024) | Projected landings (2024) | Projected discards* (2024) | Projected landings ## | | F _{total} (ages 4-7) (2024) | F _{projected landings} (ages 4-7) (2024) | F _{projected discards} (ages 4-7) (2024) | SSB (2025) | % SSB change ** | % TAC change # | % advice change ^ |
|---|--------------------|---------------------------|----------------------------|----------------------------|-----------|--------------------------------------|---|---|------------|-----------------|----------------|-------------------|
| | | | | Division 3.a and Subarea 4 | Subarea 6 | | | | | | | |
| ICES advice basis | | | | | | | | | | | | |
| MSY approach: F _{MSY} | 73815 | 70239 | 3576 | 63637 | 6602 | 0.363 | 0.35 | 0.0160 | 183531 | 3.7 | 25 | 25 |
| Other scenarios | | | | | | | | | | | | |
| F _{MSY lower} | 45431 | 43278 | 2153 | 39210 | 4068 | 0.210 | 0.20 | 0.0100 | 209246 | 18.2 | -23 | -23 |
| F _{MSY upper} | 105944 | 100732 | 5212 | 91263 | 9469 | 0.564 | 0.54 | 0.026 | 154584 | -12.7 | 80 | 80 |
| F = 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 251094 | 42 | -100 | -100 |
| F _{pa} | 107702 | 102392 | 5310 | 92767 | 9625 | 0.576 | 0.55 | 0.026 | 153011 | -13.6 | 83 | 83 |
| F _{lim} | 120526 | 114599 | 5927 | 103827 | 10772 | 0.668 | 0.64 | 0.030 | 141609 | -20 | 105 | 105 |
| SSB (2025) = B _{lim} | 162596 | 154340 | 8256 | 139832 | 14508 | 1.01 | 0.97 | 0.046 | 107297 | -39 | 176 | 176 |
| SSB (2025) = B _{pa} = $MSY_{B_{trigger}}$ | 114448 | 108770 | 5678 | 98546 | 10224 | 0.62 | 0.59 | 0.028 | 149098 | -15.8 | 94 | 94 |
| F = F ₂₀₂₃ | 67384 | 64129 | 3255 | 58101 | 6028 | 0.33 | 0.31 | 0.0150 | 189267 | 6.9 | 14.4 | 14.4 |
| TAC ₂₀₂₃ | 58912 | 56097 | 2815 | 50824 | 5273 | 0.28 | 0.27 | 0.0120 | 197020 | 11.3 | 0 | 0 |
| TAC ₂₀₂₃ -15% | 50074 | 47677 | 2397 | 43195 | 4482 | 0.23 | 0.22 | 0.0110 | 205065 | 15.8 | -15.0 | -15.0 |
| TAC ₂₀₂₃ +15% | 67749 | 64473 | 3276 | 58413 | 6060 | 0.33 | 0.31 | 0.0150 | 188949 | 6.7 | 15.0 | 15.0 |
| TAC ₂₀₂₃ -20% | 47130 | 44884 | 2246 | 40665 | 4219 | 0.22 | 0.21 | 0.0100 | 207708 | 17.3 | -20.0 | -20.0 |
| TAC ₂₀₂₃ +25% | 73641 | 70073 | 3568 | 63486 | 6587 | 0.36 | 0.35 | 0.0160 | 183701 | 3.8 | 25 | 25 |

SAM assessment

Benchmark planned

In 2023, quota in 6 is 9.4% (5538 t) of TAC for the stock

Nephrops



| FU | Advice for 2023 | change | Basis |
|-------------------------------------|-----------------|--------|--------------------------------|
| 11 – North Minch | ≤ 3784 t | -2% | MSY |
| 12 – South Minch | ≤ 5242 t | +32% | MSY |
| 13 – Firth of Clyde + Sound of Jura | ≤ 4596 t | +14.3 | MSY |
| 16 – Porcupine Bank | 3054 – 3787 t | +35% | MAP -ranges |
| 17 – Aran grounds | 316 – 363 t | 0.83% | MAP - ranges |
| 20-21 Celtic Sea | ≤ 1803 t | -8.8% | MSY |
| 22 – Celtic Sea, Bristol Channel | ≤ 2548 t | +103% | MSY – stock below MSY Btrigger |

management should be implemented at the FU level.

New advice will be released in autumn



**Thank you
for your
attention!**

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Science for sustainable seas



