

# ICES advice for North Western Waters stocks for 2023

NWWAC meeting, July 4, 2022

ENGLISH CHANNEL

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ICES ACOM vice-chair



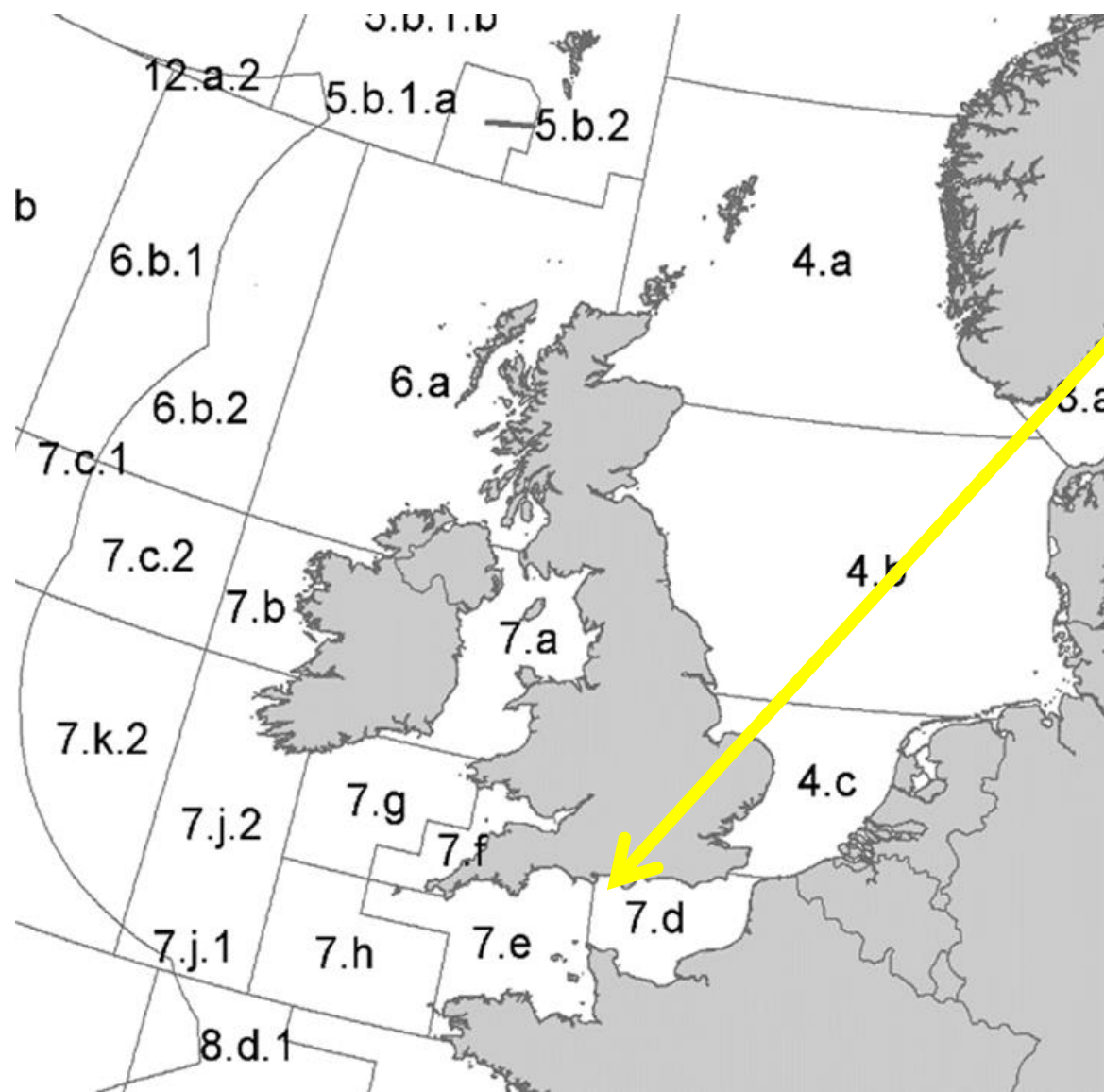
Science for sustainable seas

Image Dirk Vonten, Fotolia

## Introduction – English Channel

- Includes advice released up to 30 June 2022.
- COVID-19 impacts usually in Quality of the assessment.
- Stocks managed by EU and UK: advice provided on the basis of MSY or PA but EU MAP option provided in catch scenario table if available.
- Any changes to advice rules documented in sheets
- Advice to be released in the autumn: thornback, blonde and spotted rays in eastern Channel.

## English Channel (Divisions 7.d and e)

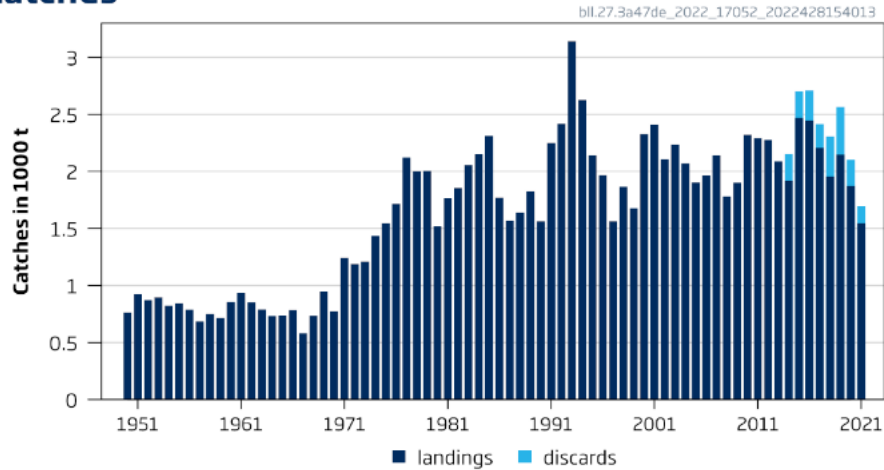


- Brill (3a, 4, 7d)
- Cod (4, 7.d, Skagerrak)
- Lemon sole (3a,4,7d)
- Plaice (7.d)
- Plaice (7.e)
- Sea bass ( 4.bc, 7.a,d-h)
- Sole (7.e)
- Sprat (7.de)
- Whiting (4,7.d)
- No new advice
  - Striped red mullet (4,7.d,3.a)
- Autumn
  - Rays and skates
  - Sole 7.d

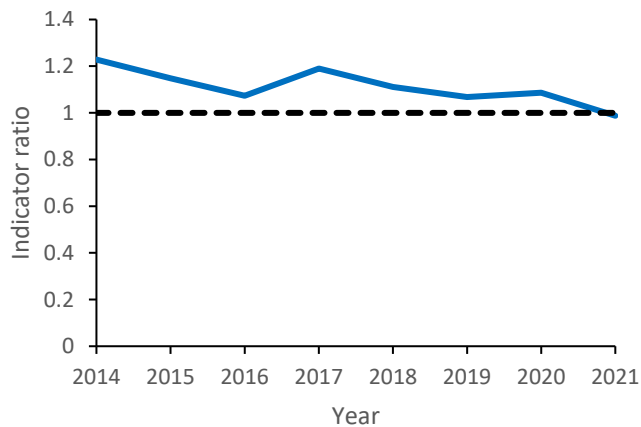
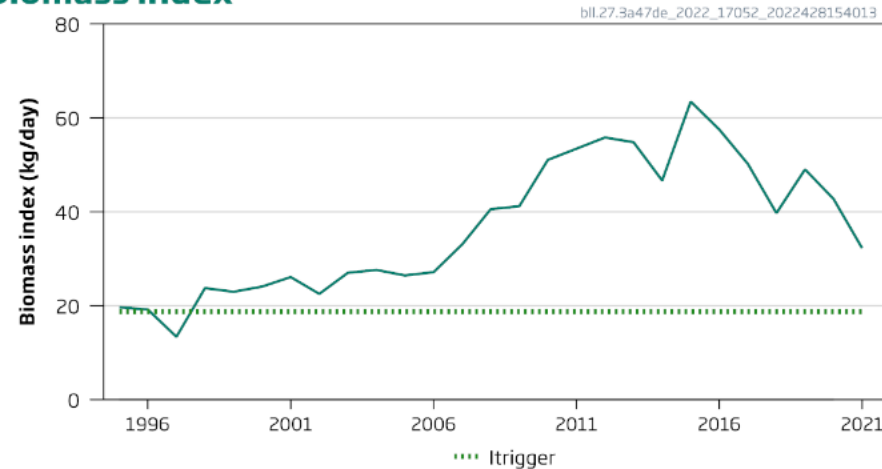
# Brill in the North Sea, Skagerrak and Kattegat, English Channel (4, 3.a, 7.de)

**Advice for 2023, MSY:** Catch  $\leq$  1315 t advice -30%

Catches



Biomass index



- New DLS method
- Fishing pressure above Fmsy proxy
- The stock size index is above MSY Btrigger proxy (Itrigger)

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

**Advice for 2023, MSY:** Catch  $\leq$  1315 t

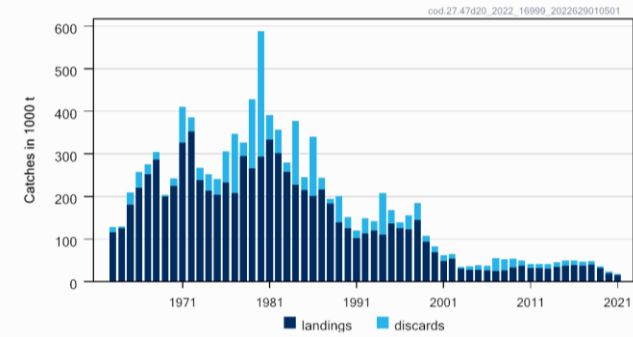
|  |                                    |      |
|--|------------------------------------|------|
| Previous catch advice $A_y$ (advised catch for 2022)   | 1878 tonnes                        |      |
| Biomass index  |                                    |      |
| I: most recent biomass index ( $I_{2021}$ )  | 32.2 kg $\times$ day <sup>-1</sup> |      |
| MSY proxy harvest rate   |                                    |      |
| $F_{MSY\ proxy}$ : MSY proxy harvest rate (average of the ratio of catch to biomass index for the years for which $f > 1$ , where $f = L_{mean}/L_{F=M}$ ) | 49.1                               |      |
| Biomass safeguard  |                                    |      |
| Index trigger value ( $I_{trigger}$ )  | 18.7 kg $\times$ day <sup>-1</sup> |      |
| b: index relative to trigger value, $\min\{I_{2022}/I_{trigger}, 1\}$  | 1.00                               |      |
| Precautionary multiplier to maintain biomass above $B_{lim}$ with 95% probability  |                                    |      |
| m: multiplier (generic multiplier based on life history)   | 0.5                                |      |
| <b>CHR calculation**</b>   | 791 tonnes                         |      |
| Uncertainty cap (+20%/-30% compared to $A_y$ , only considered if $b=1$ )  | Applied                            | -30% |
| Catch advice for 2023  | 1315 tonnes                        |      |
| % advice change***   | -30%                               |      |

Catch (2021) = 1698 t (9 % discards) – 549 t in 7.de

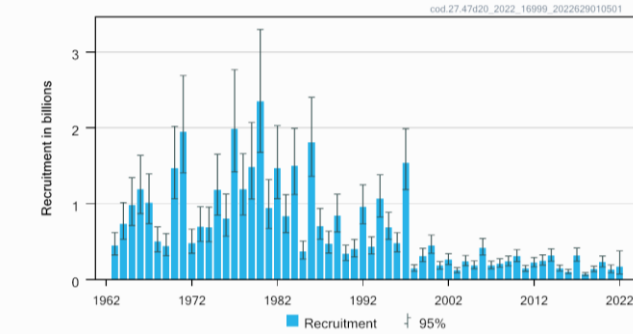
# Cod in Subarea 4 and Divisions 7.d and subdivision 20

**Advice for 2023, MSY:** Catch  $\leq 22\,946$  t advice +61%

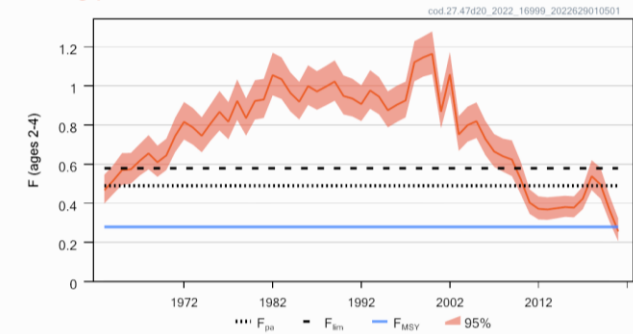
Catches



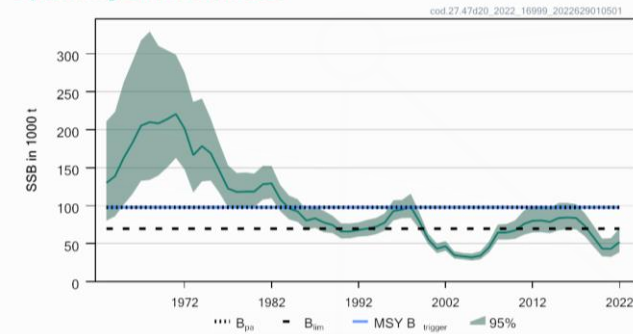
Recruitment (age 1)



Fishing pressure



Spawning Stock Biomass



- Adjustment to account for migration to the West of Scotland area.
- Fishing pressure below  $F_{MSY}$
- Spawning stock below  $B_{lim}$
- Recruitment remains poor
- Advised catch projected to bring stock above  $B_{lim}$  by 2024
- Decreased sampling 2020 and 2021 – but data seem reasonable
- Q1 survey reduction in coverage 2022 (storms) – but considered appropriate

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



Catch (2020) : 18 583 t (20 % discards); **Catch of 37 t in 7.d**

**F(2022) = 0.21** (assumed catch 2022 of 20 207);

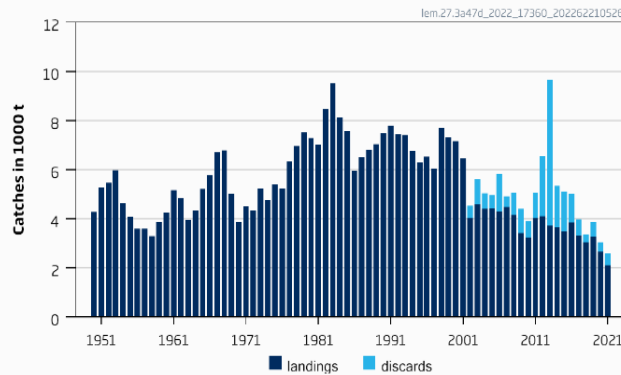
**SSB (2024)= 84197 > B<sub>lim</sub> (69 841t) < MSYBtrigger (97 777 t) F<sub>MSY</sub>= 0.28**

| Basis   | Total catch (2023) | Projected landings (2023) | Projected discards* (2023) | F <sub>total</sub> (ages 2-4) (2023) | F <sub>projected</sub> landings (ages 2-4) (2023) | F <sub>projected</sub> discards (ages 2-4) (2023) | SSB (2024) | % SSB change ** | % TAC change *** | % advice change ^ | % Probability of falling below B <sub>lim</sub> in 2024 ^^ |
|---|--------------------|---------------------------|----------------------------|--------------------------------------|---|---|------------|-----------------|------------------|-------------------|--|
| ICES advice basis   |                    |                           |                            |                                      |   |   |            |                 |                  |                   |  |
| MSY approach: F <sub>MSY</sub> × SSB (2023) /MSY B <sub>trigger</sub> | 22 946             | 19 500                    | 3446                       | 0.20                                 | 0.16  | 0.04  | 84 197     | 22              | 44               | 61                | 16.90  |
| Other scenarios   |                    |                           |                            |                                      |   |   |            |                 |                  |                   |  |
| F = F <sub>MSY lower</sub> × SSB (2023) /MSY B <sub>trigger</sub>     | 15 752             | 13 439                    | 2313                       | 0.13                                 | 0.10  | 0.03  | 90 115     | 31              | -1.00            | 10.30             | 9.50   |
| F = 0   | 0                  | 0                         | 0                          | 0.00                                 | 0.00  | 0.00  | 103 498    | 50              | -100             | -100              | 1.60   |
| F <sub>pa</sub>   | 49 839             | 41 862                    | 7977                       | 0.49                                 | 0.39  | 0.10  | 62 613     | -9.30           | 210              | 250               | 68   |
| F <sub>lim</sub>  | 56 773             | 47 488                    | 9285                       | 0.58                                 | 0.46  | 0.12  | 57 552     | -16.60          | 260              | 300               | 80   |
| SSB (2024) = B <sub>lim</sub>   | 40 682             | 34 292                    | 6390                       | 0.38                                 | 0.30  | 0.08  | 69 841     | 1.19            | 156              | 185               | 50   |
| SSB (2024) = MSY B <sub>trigger</sub> = B <sub>pa</sub>               | 6647               | 5678                      | 969                        | 0.05                                 | 0.04  | 0.01  | 97 775     | 42              | -58              | -53               | 3.90   |
| TAC (2022) -20%   | 12 729             | 10 866                    | 1863                       | 0.11                                 | 0.08  | 0.02  | 92 686     | 34              | -20.00           | -10.80            | 7.40   |
| TAC (2022) -15%   | 13 524             | 11 537                    | 1987                       | 0.11                                 | 0.09  | 0.02  | 92 031     | 33              | -15.00           | -5.30             | 8.00   |
| TAC (2022) -10%   | 14 320             | 12 215                    | 2105                       | 0.12                                 | 0.09  | 0.03  | 91 286     | 32              | -10.00           | 0.31              | 8.40   |
| TAC (2022) -5%  | 15 115             | 12 893                    | 2222                       | 0.13                                 | 0.10  | 0.03  | 90 638     | 31              | -5.00            | 5.90              | 8.90   |
| TAC (2022)  | 15 911             | 13 573                    | 2338                       | 0.13                                 | 0.11  | 0.03  | 89 985     | 30              | 0.00             | 11.50             | 9.60   |
| TAC (2022) +5%  | 16 707             | 14 248                    | 2459                       | 0.14                                 | 0.11  | 0.03  | 89 323     | 29              | 5.00             | 17.00             | 10.70  |
| TAC (2022) +10%   | 17 502             | 14 922                    | 2580                       | 0.15                                 | 0.12  | 0.03  | 88 622     | 28              | 10.00            | 23                | 11.30  |
| TAC (2022) +15%   | 18 298             | 15 597                    | 2701                       | 0.15                                 | 0.12  | 0.03  | 87 992     | 27              | 15.00            | 28                | 12.20  |
| TAC (2022) +20%   | 19 093             | 16 275                    | 2818                       | 0.16                                 | 0.13  | 0.03  | 87 348     | 27              | 20.00            | 34                | 13.10  |
| F = F <sub>2022</sub>   | 23 981             | 20 377                    | 3604                       | 0.21                                 | 0.17  | 0.04  | 83 358     | 21              | 51               | 68                | 18.20  |
| F = F <sub>MSY lower</sub>  | 21 721             | 18 473                    | 3248                       | 0.19                                 | 0.15  | 0.04  | 85 182     | 23              | 37               | 52                | 15.60  |
| F = F <sub>MSY</sub>  | 31 261             | 26 495                    | 4766                       | 0.28                                 | 0.22  | 0.06  | 77 687     | 12.60           | 96               | 119               | 30   |

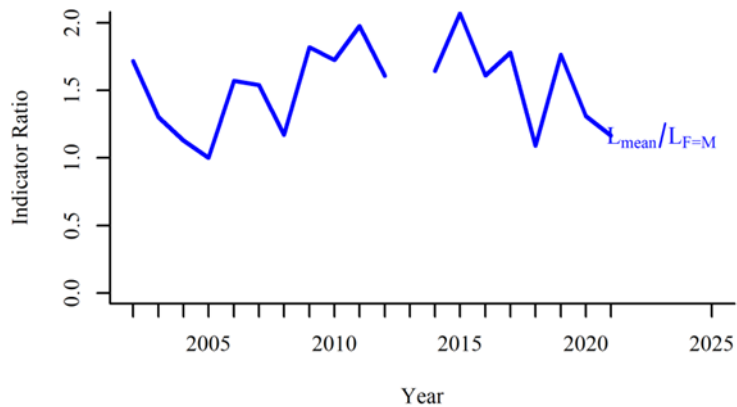
# Lemon sole in the North Sea, Skagerrak and Kattegat, E-English Channel (4, 3.a, 7.d)

**Advice for 2023, MSY:** Catch  $\leq$  2 960 t advice -3.92%

Catches



Biomass index



- New DLS method - chr
- Fishing pressure is below FMSY proxy
- Stock size above MSYBtrigger proxy
- Commercial sampling impacted by Covid but thought to be representative – survey based assessment



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

Catch (2021) = 2 589 t (19% discards); landings of 90 t in 7.d

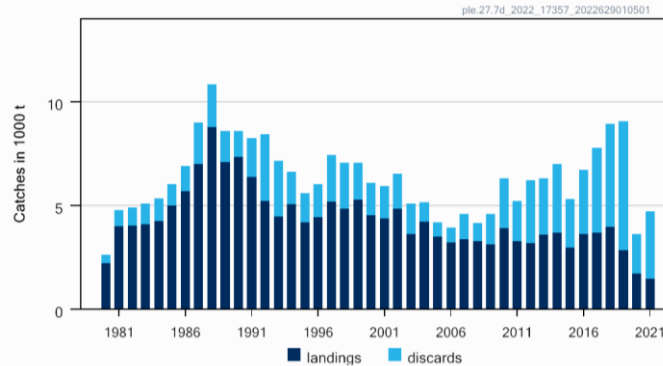


|  |             |
|--|-------------|
| Previous catch advice $A_y$ (advised catch for 2022)   | 3081 tonnes |
| Biomass index  |             |
| l: most recent biomass index ( $l_{2022}$ )  | 419         |
| MSY proxy harvest rate   |             |
| FMSY proxy: MSY proxy harvest rate (average of the ratio of catch to biomass index for the years for which $f > 1$ , where $f = L_{\text{mean}}/L_{F=M}$ ) | 14.14       |
| Biomass safeguard  |             |
| Index trigger value ( $l_{\text{trigger}}$ )   | 146         |
| b: index relative to trigger value, $\min\{l_{2022}/l_{\text{trigger}}, 1\}$   | 1.00        |
| Precautionary multiplier to maintain biomass above $B_{\text{lim}}$ with 95% probability   |             |
| m: multiplier (generic multiplier based on life history)   | 0.5         |
| CHR calculation**  | 2960 tonnes |
| Stability clause (+20%/−30% compared to $A_y$ , only considered if $b=1$ )   | Not applied |
| Catch advice $A_{y+1}$ for 2023**  | 2960 tonnes |
| % advice change***   | −3.92%      |

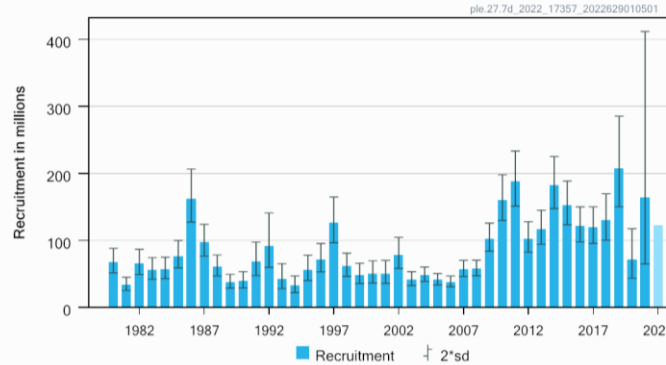
# Plaice in the eastern English Channel (7.d)

**Advice for 2023, MSY:** Catch  $\leq 4\,378\text{t}$  advice -25%

Catches

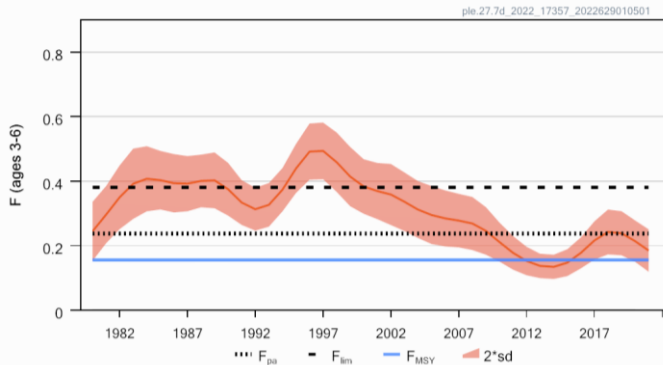


Recruitment (age 1)

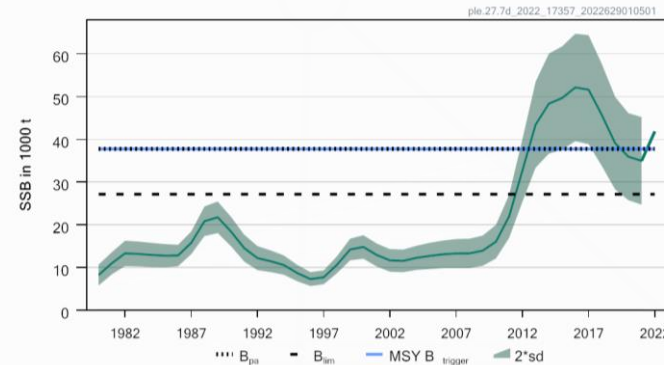


- Part of the catches in 7d are from the Western Channel and North Sea is **5671 t** when taking other stocks caught in 7.d into account
- Fishing pressure above  $F_{msy}$
- Spawning stock above MSY  $B_{trigger}$

Fishing pressure



SSB



# Plaice in the eastern English Channel (7.d)



Catch (2021) : 4717 t for the plaice 7d stock (69 % discards); 5 442t in 7d area

F(2022) = 0.22 (Average (2019-2021));

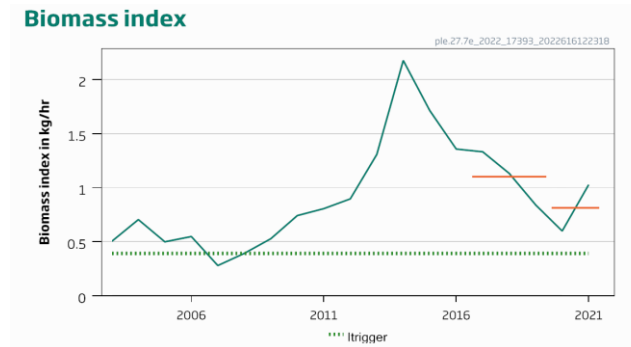
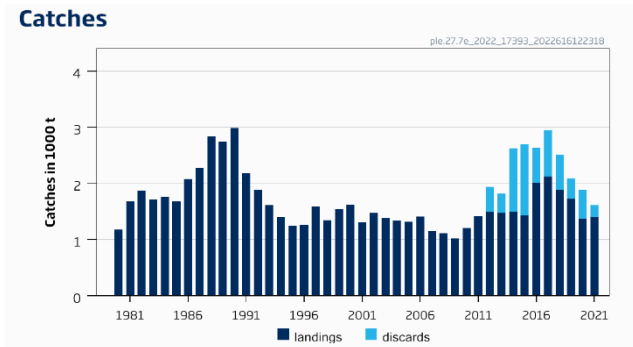
SSB (2023)= 41642 t > MSY<sub>Btrigger</sub> (25 826 t) F<sub>MSY</sub>= 0.21

| Basis                                 | Division 7.d plaice stock       |                           |                             |                                      |   |   |            |                 |                              | All plaice in Division 7.d <sup>#</sup> |                           |                            |   |                               |
|---------------------------------------|---------------------------------|---------------------------|-----------------------------|--------------------------------------|---|---|------------|-----------------|------------------------------|---|---------------------------|----------------------------|---|-------------------------------|
|                                       | Total catch (2023) <sup>^</sup> | Projected landings (2023) | Projected discards * (2023) | F <sub>total</sub> (ages 3–6) (2023) | F <sub>projected landings</sub> (ages 3–6) (2023) | F <sub>projected discards</sub> (ages 3–6) (2023) | SSB (2024) | % SSB change ** | % advice change <sup>§</sup> | Total catch (2023)                      | Projected landings (2023) | Projected discards* (2023) | % change in projected catches <sup>^^</sup> | % advice change <sup>##</sup> |
| ICES advice basis                     |                                 |                           |                             |                                      |   |   |            |                 |                              |   |                           |                            |   |                               |
| MSY approach:<br>F <sub>MSY</sub>     | 4738                            | 2204                      | 2534                        | 0.156                                | 0.046   | 0.110   | 44 175     | 6.08            | -25                          | 5671                                    | 2638                      | 3033                       | 4.20  | -25                           |
| Other scenarios                       |                                 |                           |                             |                                      |   |   |            |                 |                              |   |                           |                            |   |                               |
| F = F <sub>MSY lower</sub>            | 3493                            | 1627                      | 1866                        | 0.113                                | 0.034   | 0.079   | 45 820     | 10              | -45                          | 4181                                    | 1948                      | 2233                       | -23   | -45                           |
| F = F <sub>MSY</sub>                  | 4738                            | 2204                      | 2534                        | 0.156                                | 0.046   | 0.110   | 44 175     | 6.08            | -25                          | 5671                                    | 2638                      | 3033                       | 4.20  | -25                           |
| F = F <sub>MSY upper</sub>            | 6618                            | 3070                      | 3548                        | 0.22                                 | 0.067   | 0.157   | 41 706     | 0.15            | 4.00                         | 7922                                    | 3674                      | 4247                       | 46  | 4.70                          |
| F = 0                                 | 0                               | 0                         | 0                           | 0                                    | 0   | 0   | 50 473     | 23              | -100                         | 0                                       | 0                         | 0                          | -100  | -100                          |
| F <sub>pa</sub>                       | 6992                            | 3506                      | 3750                        | 0.23                                 | 0.07  | 0.17  | 41 217     | -1.02           | 9.80                         | 8370                                    | 3880                      | 4990                       | 54  | 10                            |
| F <sub>lim</sub>                      | 10 578                          | 4876                      | 5702                        | 0.38                                 | 0.27  | 0.11  | 36 573     | -12             | 66                           | 12 661                                  | 5836                      | 6826                       | 133   | 67                            |
| SSB (2024) = B <sub>lim</sub>         | 18 080                          | 8210                      | 9870                        | 0.75                                 | 0.22  | 0.53  | 27 147     | -35             | 184                          | 21 642                                  | 9827                      | 11 814                     | 298   | 186                           |
| SSB (2024) = B <sub>pa</sub>          | 9655                            | 4457                      | 5198                        | 0.34                                 | 0.10  | 0.24  | 37 761     | -9.32           | 52                           | 11 555                                  | 5335                      | 6222                       | 112   | 53                            |
| SSB (2024) = MSY B <sub>trigger</sub> | 9655                            | 4457                      | 5198                        | 0.34                                 | 0.10  | 0.24  | 37 761     | -9.32           | 52                           | 11 555                                  | 5335                      | 6222                       | 112   | 53                            |
| F = F <sub>2022</sub>                 | 5556                            | 2581                      | 2975                        | 0.185                                | 0.06  | 0.130   | 43 098     | 3.50            | -13                          | 6651                                    | 3090                      | 3561                       | 22  | -12                           |

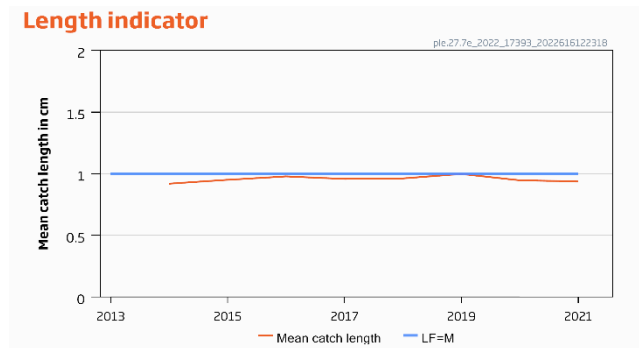
Advice for plaice in Division 7.d is for the stock, it takes into account catches of 7.e and North Sea stocks in 7.d

# Plaice in the western English Channel (7.e)

**Advice for 2023 and 2024, MSY:** Catch  $\leq 1\,219$  t advice -30%  
Catch of plaice in 7e\*  $\leq 1\,104$  t



- New DLS method rfb
- Fishing pressure above Fmsy proxy
- Stock size above MSY  $B_{trigger}$
- Advice rule provides two year advice



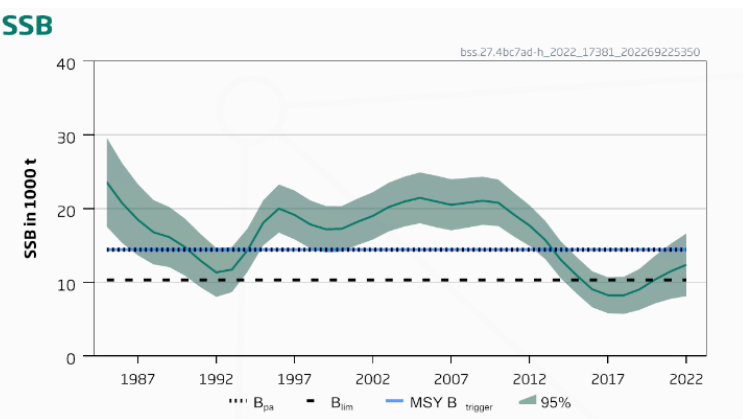
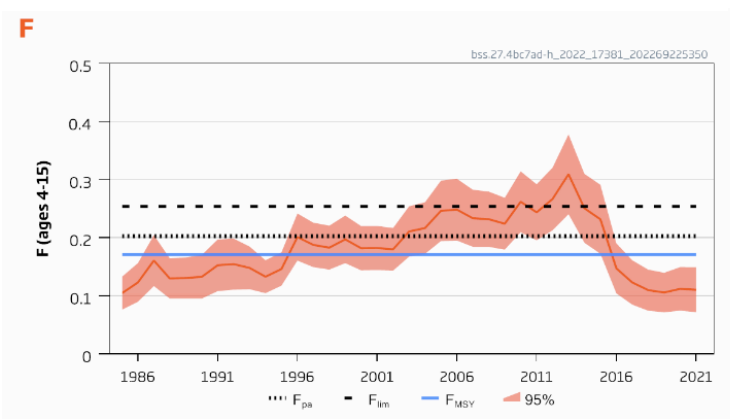
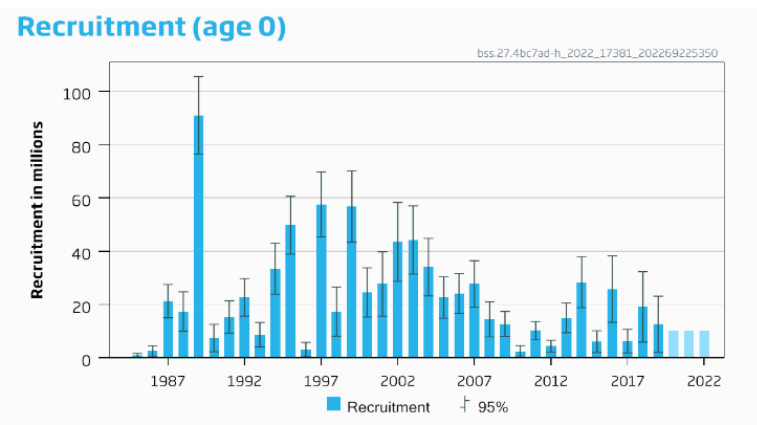
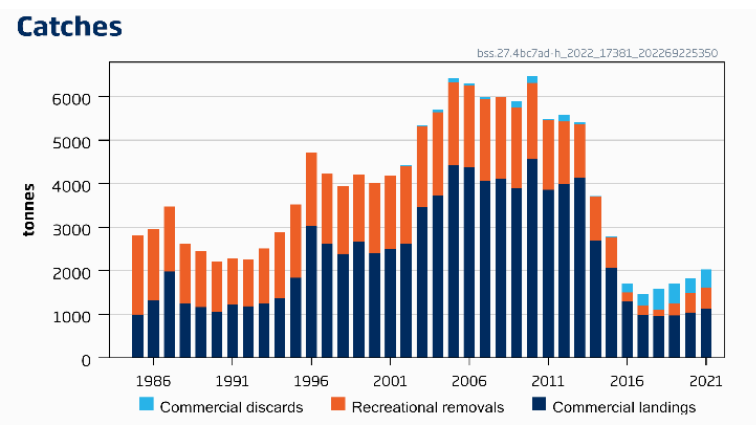
**Plaice catches in Div. 7.d in Quarter 1 from various stocks: 35% from 7.d; 15% from 7.e; 50% from N Sea**

## Catch (2021) : 1 520 t (8% discards)

|   |   |
|---|---|
| Division 7.e plaice stock   |   |
| Previous catch advice $A_y$ (advised catch for 2022)                                      | 1742 tonnes                                   |
| Stock biomass trend   |   |
| Index A (2020, 2021)  | 0.81 kg hr <sup>-1</sup> m beam <sup>-1</sup> |
| Index B (2017, 2018, 2019)  | 1.10 kg hr <sup>-1</sup> m beam <sup>-1</sup> |
| r: stock biomass trend (index ratio A/B)  | 0.74  |
| Fishing pressure proxy  |   |
| Mean catch length ( $L_{\text{mean}} = L_{2021}$ )  | 32.3 cm                                       |
| MSY proxy length ( $L_{F=M}$ )  | 34.4 cm                                       |
| f: Fishing pressure proxy relative to MSY proxy ( $L_{2021}/L_{F=M}$ )                    | 0.94  |
| Biomass safeguard   |   |
| Last index value ( $I_{2021}$ )   | 1.03 kg hr <sup>-1</sup> m beam <sup>-1</sup> |
| Index trigger value ( $I_{\text{trigger}} = I_{\text{loss}} \times 1.4$ )                 | 0.39 kg hr <sup>-1</sup> m beam <sup>-1</sup> |
| b: Index relative to trigger value, $\min\{I_{2021}/I_{\text{trigger}}, 1\}$              | 1   |
| Precautionary multiplier to maintain biomass above $B_{\text{lim}}$ with 95% probability  |   |
| m: multiplier (generic multiplier based on life history)                                  | 0.95  |
| RFB calculation**   | 1146 tonnes                                   |
| Stability clause (+20%/-30% compared to $A_y$ , only applied if $b = 1$ )                 | Applied   0.70                                |
| Discard rate  | 27%   |
| Catch advice for 2023 and 2024 ( $A_y \times$ stability clause)                           | 1219 tonnes                                   |
| Projected landings corresponding to advice***   | 894 tonnes                                    |
| % advice change^  | -30%  |
| Plaice in Division 7.e  |   |
| Proportion of Division 7.e stock landings caught in Division 7.e (2003–2021)              | 0.91  |
| Catch of plaice in Division 7.e corresponding to the advice for the stock                 | 1104 tonnes                                   |
| Projected landings of plaice in Division 7.e corresponding to the advice for the stock*** | 809 tonnes                                    |

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

**Advice for 2023, MSY:** Catch  $\leq$  2 542 t: advice +14.7%



- Spawning stock above  $B_{lim}$  and  $B_{pa}$  but below MSY  $B_{trigger}$
- Fishing pressure is below  $F_{MSY}$
- Under advised catch, stock expected to decrease remaining below MSY  $B_{trigger}$

**EU MAP :** Catch: 2133 – 2542t ( $F_{MSY}$ : 2542t)

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

**Catch 2021: 2027 t (1126 t commercial, 412 t discards and 489 t recreational)**

**F (2021)= 0.114 (F<sub>sq</sub> for commercial fishery and full compliance in recreational)**



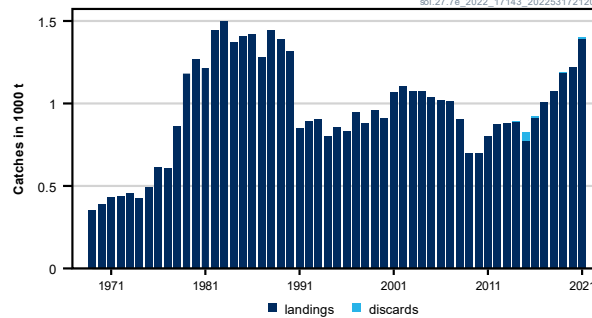
**SSB(2022) = 12 052 t > B<sub>lim</sub> 10 313 t but < MSY B<sub>trigger</sub> = 14 439 t F<sub>MSY</sub> = 0.1713**

| Basis   | Total removals* (2023) | F <sub>total</sub> (2023) | SSB (2024) | % SSB change** | % advice change *** |
|---|------------------------|---------------------------|------------|----------------|---------------------|
| ICES advice basis   |                        |                           |            |                |                     |
| MSY approach:<br>F = F <sub>MSY</sub> × SSB <sub>2023</sub> /MSY B <sub>trigger</sub> | 2542                   | 0.153                     | 12631      | -2.1           | 14.7                |
| Other scenarios   |                        |                           |            |                |                     |
| EU MAP^: F <sub>MSY</sub> × SSB <sub>2023</sub> /MSY B <sub>trigger</sub>             | 2542                   | 0.153                     | 12631      | -2.1           | 14.7                |
| EU MAP^: F <sub>MSY upper</sub> × SSB <sub>2023</sub> /MSY B <sub>trigger</sub>       | 2542                   | 0.153                     | 12631      | -2.1           | 14.7                |
| EU MAP^: F <sub>MSY lower</sub> × SSB <sub>2023</sub> /MSY B <sub>trigger</sub>       | 2133                   | 0.127                     | 12964      | 0.50           | -3.7                |
| F = F <sub>MSY</sub>  | 2821                   | 0.171                     | 12405      | -3.8           | 27                  |
| F = 0   | 0                      | 0                         | 14716      | 14.1           | -100                |
| F <sub>pa</sub>   | 3294                   | 0.20                      | 12021      | -6.8           | 49                  |
| F <sub>lim</sub>  | 4096                   | 0.25                      | 11430      | -11.4          | 85                  |
| SSB <sub>2024</sub> = B <sub>lim</sub>  | 5422                   | 0.36                      | 10313      | -20            | 145                 |
| SSB <sub>2024</sub> = B <sub>pa</sub>   | 336                    | 0.0190                    | 14439      | 11.9           | -85                 |
| SSB <sub>2024</sub> = MSY B <sub>trigger</sub>  | 336                    | 0.0190                    | 14439      | 11.9           | -85                 |
| F = F <sub>2022</sub>   | 1906                   | 0.113                     | 13149      | 1.94           | -14.0               |
| SSB <sub>2024</sub> = SSB <sub>2023</sub>   | 2213                   | 0.132                     | 12899      | 0.00           | -0.135              |

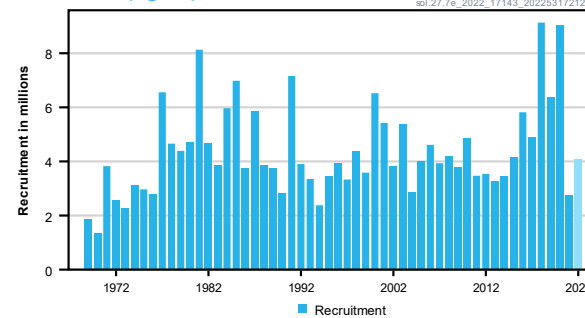
# Sole in the western English Channel (7.e)

**Advice for 2023, MSY : Catch  $\leq$  1 394 t -23%**

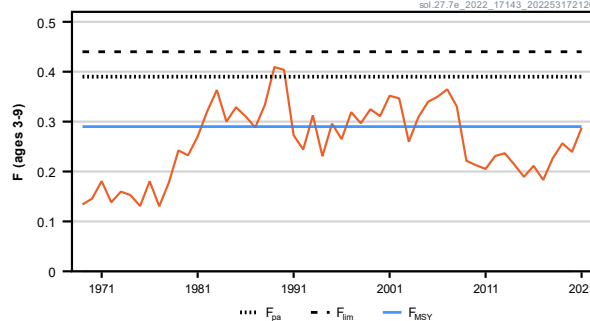
Catches



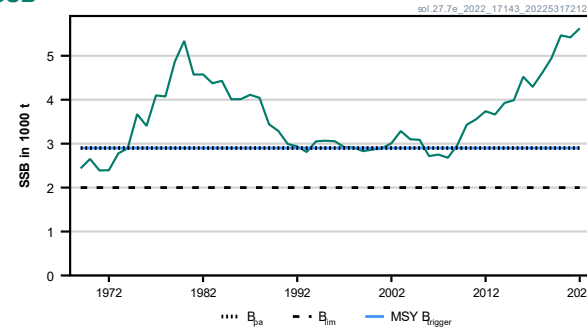
Recruitment (age 2)



F



SSB



- Fishing pressure at  $F_{MSY}$
- Spawning-stock biomass above MSY  $B_{trigger}$
- Recruitment variable and lower in 2021

**EU MAP : Catch: 816 – 1 596 t ( $F_{MSY}$ : 1 394 t)**



# Sole in the western English Channel (7.e)

Catch (2021) : 1 405 t (<1 % discards)

F(2022) = 0.29 (Fsq=F2021));

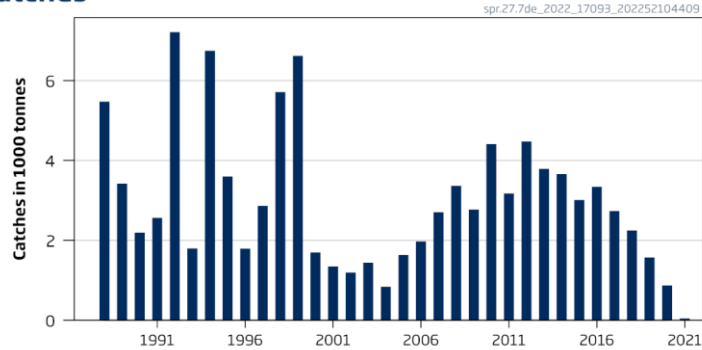
SSB (2023)= 5 052 t > MSY<sub>Btrigger</sub> (2 900 t) F<sub>MSY</sub>= 0.29

| Basis   | Total catch* (2023) | Projected landings (2023) | Projected discards (2023) | F <sub>projected</sub> landings (2023) | SSB (2024) | % SSB change ** | % TAC change*** | % advice change^ |
|---|---------------------|---------------------------|---------------------------|--|------------|-----------------|-----------------|------------------|
| ICES advice basis   |                     |                           |                           |  |            |                 |                 |                  |
| MSY approach:<br>F= F <sub>MSY</sub>                            | 1394                | 1388                      | 6                         | 0.29                                   | 4541       | -10.1           | -23             | -23              |
| Other scenarios   |                     |                           |                           |  |            |                 |                 |                  |
| EU MAP^^: F <sub>MSY</sub>                                      | 1394                | 1388                      | 6                         | 0.29                                   | 4541       | -10.1           | -23             | -23              |
| EU MAP^^ F <sub>MSY</sub> lower                                 | 820                 | 816                       | 4                         | 0.160                                  | 5103       | 1.01            | -55             | -55              |
| EU MAP^^ F <sub>MSY</sub> upper                                 | 1596                | 1589                      | 7                         | 0.34                                   | 4344       | -14.0           | -11.8           | -11.8            |
| F = 0   | 0                   | 0                         | 0                         | 0                                      | 5909       | 17.0            | -100            | -100             |
| F= F <sub>pa</sub>  | 1788                | 1781                      | 8                         | 0.39                                   | 4156       | -17.7           | -1.19           | -1.19            |
| F= F <sub>lim</sub>   | 1971                | 1962                      | 9                         | 0.44                                   | 3979       | -21             | 8.9             | 8.9              |
| SSB <sub>2024</sub> = B <sub>lim</sub>                          | 4036                | 4018                      | 18                        | 1.29                                   | 2000       | -60             | 123             | 123              |
| Rollover TAC  | 1810                | 1802                      | 8                         | 0.40                                   | 4135       | -18.1           | 0               | 0                |
| SSB <sub>2024</sub> = B <sub>pa</sub> = MSY <sub>Btrigger</sub> | 3088                | 3074                      | 14                        | 0.81                                   | 2900       | -43             | 71              | 71               |
| SSB <sub>2024</sub> = SSB <sub>2023</sub>                       | 872                 | 868                       | 4                         | 0.171                                  | 5052       | 0               | -52             | -52              |
| F = F <sub>2022</sub>   | 1384                | 1378                      | 6                         | 0.29                                   | 4551       | -9.9            | -24             | -24              |

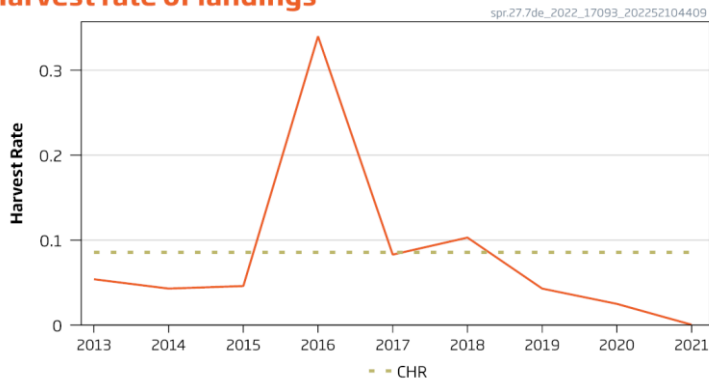
# Sprat in subdivisions 7.d-e

**Advice for 1 July 2022 to 30 June 2023, MSY Catch  $\leq$  9 200 t**  
advice +217.6%

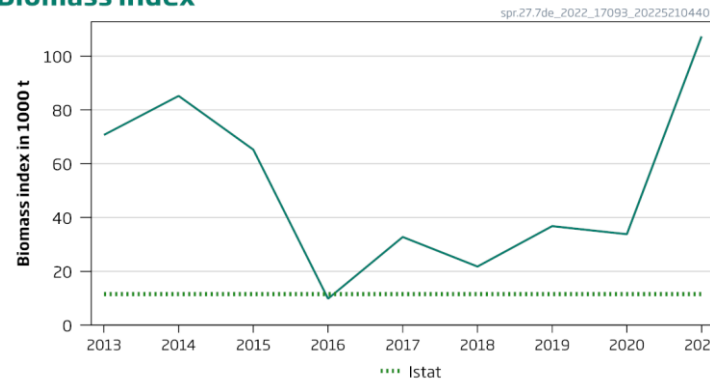
Catches



Harvest rate of landings



Biomass index



- Constant harvest rate used to provide advice.
- Fishing pressure below  $F_{MSY}$  proxy
- Stock size index above MSYBtrigger

# Sprat in subdivisions 7.d-e

Catch 2021 49 t

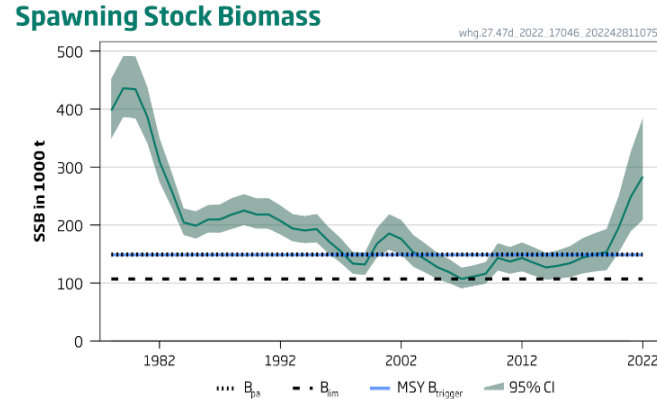
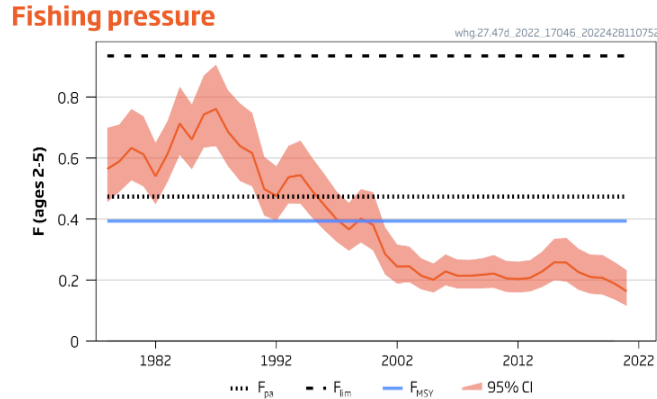
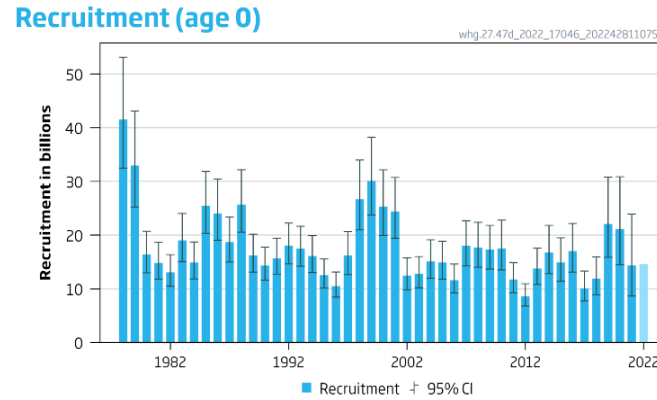
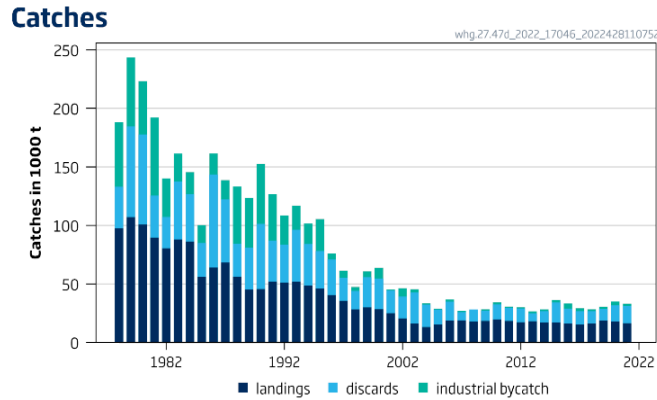


19

|   |               |
|---|---------------|
| Previous catch advice $A_y$ (advised catch for 2022)                                | 2897 tonnes   |
| Last index value ( $I_{2021}$ )   | 107355 tonnes |
| MSY proxy harvest rate  |               |
| f: MSY proxy harvest rate (derived through an MSE and adjusted for in-year growth.) | 0.0857        |
| Precautionary multiplier to maintain biomass above $B_{lim}$ with 95% probability   |               |
| Discard rate  | Negligible    |
| Catch advice [ $I_{2021}$ ] $\times$ [CHR]  | 9200 tonnes   |
| % advice change**   | 217.6%        |

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

**Advice for 2023, MSY:** Catch  $\leq 110\ 172$  t advice +25%



- New model configuration with 6+
- New reference points in  $F_{MSY}$  from 0.371 to 0.393
- Fishing pressure below  $F_{MSY}$
- Spawning stock above  $MSY B_{trigger}$ .
- About 20% of the catches are taken in the Eastern Channel area.

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

**Catch (2021): 33 186 t (50% discards) ; Catch of 6 958 t in 7.d**  
**F (2022)=0.163 (Average exploitation pattern(2019-2021), scaled to 2021;**  
**SSB(2023) = 294175 t > MSY<sub>Btrigger</sub> =148 888kt F<sub>MSY</sub>=0.393**

| Basis   | Total catch 2023 | Total projected landings 2023 | Total projected discards 2023* | Total IBC 2023* | Human Consumption catch 2023 | Total F (ages 2-5) 2023+ | F (projected landings, ages 2-5) 2023 | F (projected discards, ages 2-5) 2023 | F (IBC, ages 2-5) 2023+ | SSB 2024 | % SSB change^ | % advice change^ |
|---|------------------|-------------------------------|--------------------------------|-----------------|------------------------------|--------------------------|---------------------------------------|---------------------------------------|-------------------------|----------|---------------|------------------|
| ICES advice basis                                       |                  |                               |                                |                 |                              |                          |                                       |                                       |                         |          |               |                  |
| MSY approach:<br>F = F <sub>MSY</sub>                   | 110 172          | 71 182                        | 35 711                         | 3280            | 106 892                      | 0.39                     | 0.26                                  | 0.12                                  | 0.01                    | 244 860  | -16.8         | 25               |
| Other scenarios   |                  |                               |                                |                 |                              |                          |                                       |                                       |                         |          |               |                  |
| F = F <sub>MSY</sub> upper                              | 132 198          | 85 910                        | 43 146                         | 3142            | 129 055                      | 0.47                     | 0.31                                  | 0.15                                  | 0.01                    | 228 596  | -22           | 50               |
| F = F <sub>MSY</sub> lower                              | 82 366           | 52 587                        | 26 325                         | 3454            | 78 912                       | 0.29                     | 0.19                                  | 0.09                                  | 0.01                    | 265 392  | -9.8          | -6.9             |
| F = 0 (IBC only)  | 3941             | 0                             | 0                              | 3941            | 0                            | 0.01                     | 0                                     | 0                                     | 0.01                    | 323 506  | 10.0          | -96              |
| F = F <sub>2022</sub>                                   | 46 850           | 28 838                        | 14 336                         | 3675            | 43 174                       | 0.16                     | 0.10                                  | 0.05                                  | 0.01                    | 291 617  | -0.87         | -47              |
| Rollover TAC  | 38 059           | 22 959                        | 11 370                         | 3730            | 34 328                       | 0.13                     | 0.08                                  | 0.04                                  | 0.01                    | 298 109  | 1.34          | -57              |
| 15% TAC decrease (27.4 only)                            | 32 941           | 19 536                        | 9643                           | 3762            | 29 179                       | 0.11                     | 0.07                                  | 0.03                                  | 0.01                    | 301 888  | 2.6           | -63              |
| 15% TAC increase (27.4 only)                            | 43 176           | 26 381                        | 13 096                         | 3698            | 39 478                       | 0.15                     | 0.09                                  | 0.04                                  | 0.01                    | 294 330  | 0.053         | -51              |
| 0.75 × F <sub>2022</sub> +++                            | 36 570           | 21 964                        | 10 866                         | 3740            | 32 830                       | 0.13                     | 0.08                                  | 0.04                                  | 0.01                    | 299 207  | 1.71          | -59              |
| 1.25 × F <sub>2022</sub> +++                            | 57 135           | 35 716                        | 17 808                         | 3611            | 53 524                       | 0.20                     | 0.13                                  | 0.06                                  | 0.01                    | 284 022  | -3.5          | -35              |
| F <sub>pa</sub>   | 132 198          | 85 910                        | 43 146                         | 3142            | 129 055                      | 0.47                     | 0.31                                  | 0.15                                  | 0.01                    | 228 596  | -22           | 50               |
| F <sub>lim</sub>  | 259 393          | 170 964                       | 86 081                         | 2348            | 257 045                      | 0.94                     | 0.63                                  | 0.30                                  | 0.01                    | 134 676  | -54           | 193              |
| SSB (2024) = B <sub>pa</sub> = MSY B <sub>trigger</sub> | 239 816          | 157 873                       | 79 473                         | 2470            | 237 346                      | 0.87                     | 0.58                                  | 0.27                                  | 0.01                    | 148 888  | -49           | 171              |
| SSB (2024) = B <sub>lim</sub>                           | 296 251          | 195 610                       | 98 522                         | 2118            | 294 133                      | 1.07                     | 0.72                                  | 0.34                                  | 0.01                    | 107 146  | -63           | 235              |



**Thank you  
for your  
attention!**



Science for sustainable seas

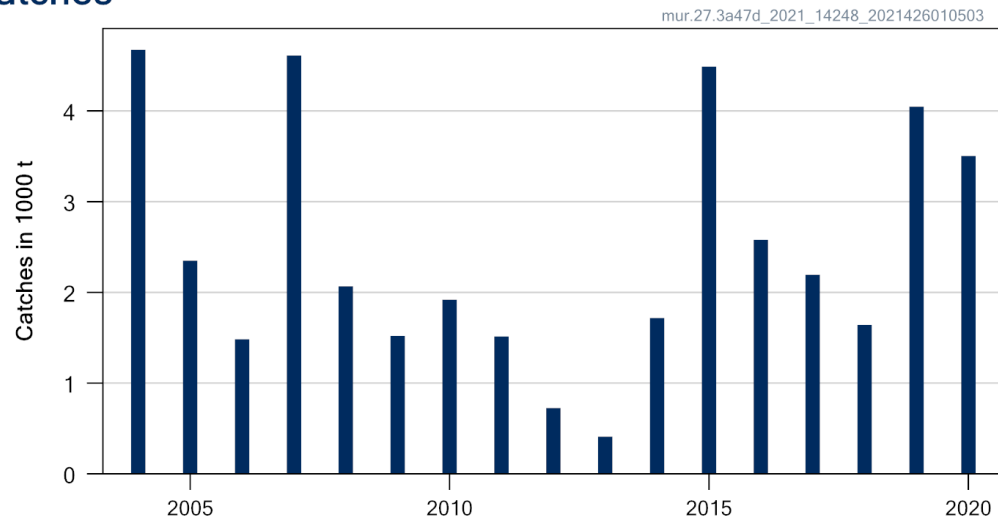
[www.ices.dk](http://www.ices.dk)

[Joanne.Morgan@ices.dk](mailto:Joanne.Morgan@ices.dk)

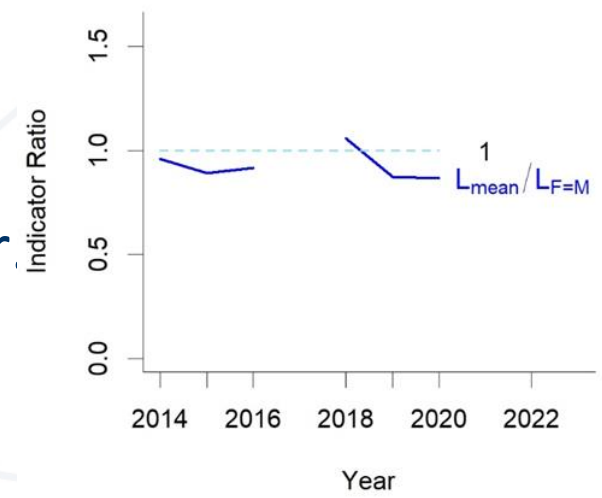


## Advice for 2022 and 2023 , PA: Catch $\leq$ 1 950 t

Catches



- Channel Ground Fish Survey index incomplete because of COVID- 19.
- Assessment downgraded to landings only. Precautionary buffer applied to average catches
- Catches in 2020 : 3503 t ; 2103 t taken in eastern Channel.
- Fishing pressure is above  $F_{MSY}$  based on length indicator.



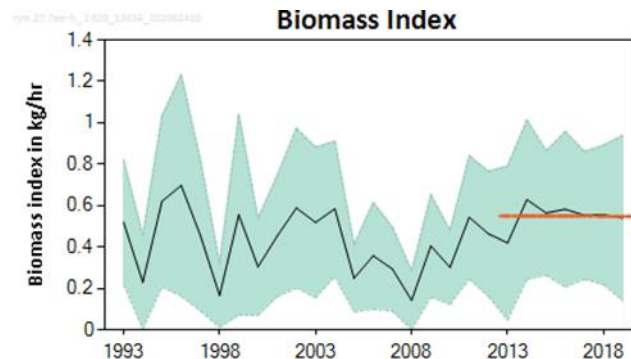
|  |             |     |
|--|-------------|-----|
| Average catch (2004–2020)                  | 2438 tonnes |     |
| Discard rate                               | Negligible  |     |
| Precautionary buffer                       | Applied     | 0.8 |
| Catch advice*                              | 1950 tonnes |     |
| Landings corresponding to the catch advice | 1950 tonnes |     |

# Skates and rays

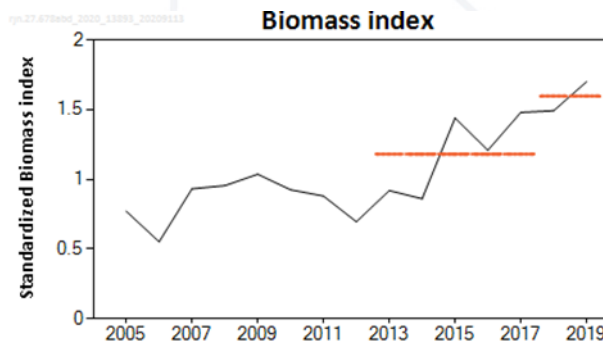
- Advice for the following stocks for 2022 to be issued in autumn
  - Thornback ray in Subarea 4 and in divisions 3.a and 7.d
  - Blonde ray in divisions 4.c and 7.d
  - Spotted ray in Subarea 4 and in divisions 3.a and 7.d
- Advice issued in 2020 for 2021/2022

| Stock                        | Landings (2020) | Advice for 2022<br>Landings | Rationale                                     |
|------------------------------|-----------------|-----------------------------|---|
| Spotted ray in 7.a and 7.e-h | 741             | 1041                        | PA - based on survey index (UK(E&W)-BTS-Q3)   |
| Cuckoo ray in 6,7, 8abd      | 2453            | 3150                        | PA - based on survey indices (IGFS and EVHOE) |
| Undulate ray in 7.de         | 225             | 183 (2552)                  | PA - based on survey index (CGFS)             |
| Small-eyed ray in 7de        | 53              | 40                          | PA - based on historical landings             |
| Thornback ray in 7.e         | 464             | 170                         | PA - based on historical landings             |
| Blonde ray in 7e             | 1014            | 266                         | PA - based on historical landings             |

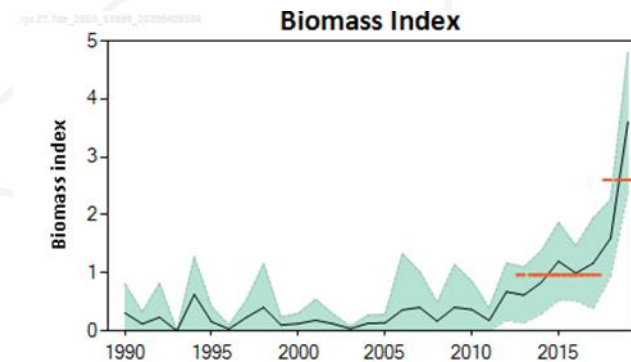
Spotted ray in 7.a , 7e-h



Cuckoo ray in 6, 7, 8 abd



Undulate ray in 7.de



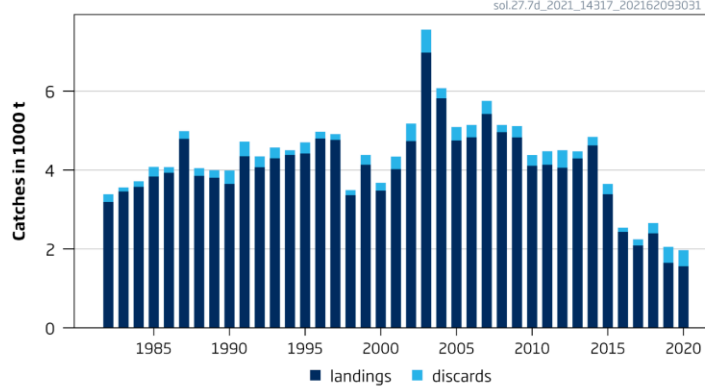


# Sole in the eastern English Channel (7.d)

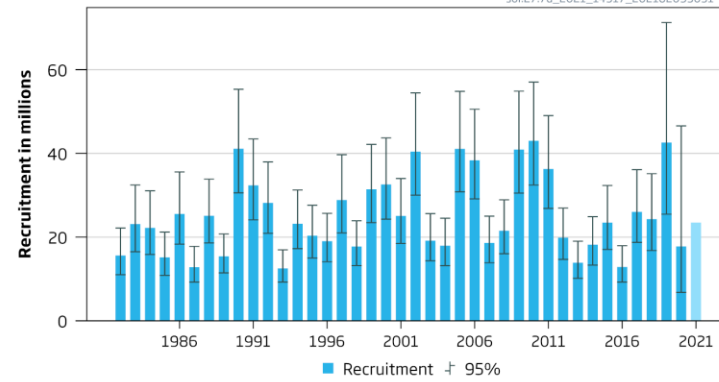
**Advice for 2022, MSY:** Catch  $\leq 2\,380$  t NOT UPDATED



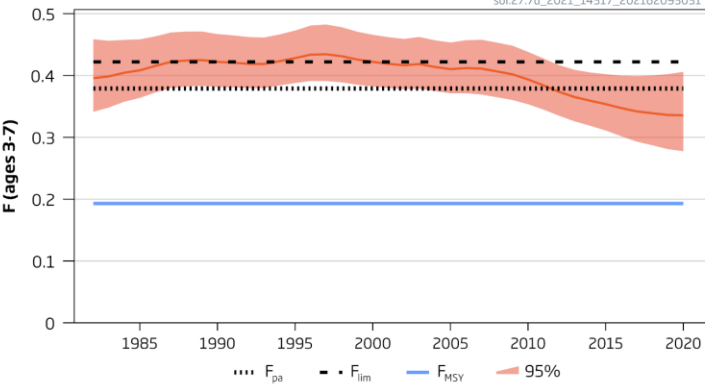
Catches



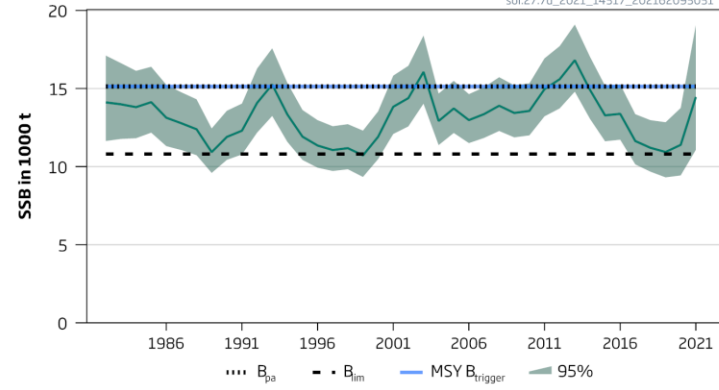
Recruitment (age 1)



Fishing pressure



Spawning Stock Biomass



- Benchmarked in 2021. Upgraded to a category 1 stock.
- New reference points.
- Spawning stock below MSY  $B_{trigger}$  since 2014.
- Fishing pressure declining but well above  $F_{MSY}$ .
- Recruitment estimate in 2019 is among highest in the time-series.

# Sole in the eastern English Channel (7.d)

**Catch (2020) : 1 971 t (21 % discards)**

**F(2021) = 0.28 (Assuming catch of 3248 t in 2021 and average exploitation pattern)**

**SSB (2022)= 14 945 t < MSY<sub>Btrigger</sub> ( 15 135 t)    F<sub>MSY</sub>= 0.193**

| Basis  | Total catch (2022) | Projected landings^ (2022) | Projected discards^^ (2022) | F <sub>total</sub> (ages 3–7) (2022) | F <sub>Projected</sub> landings (ages 3–7) (2022) | F <sub>Projected</sub> discards (ages 3-7) (2022) | SSB -2023 | % SSB change * | % TAC change ** | % advice change ** |
|--|--------------------|----------------------------|-----------------------------|--------------------------------------|---|---|-----------|----------------|-----------------|--------------------|
| ICES advice basis  |                    |                            |                             |                                      |   |   |           |                |                 |                    |
| <b>MSY approach:</b><br>F <sub>MSY</sub> × SSB (2022)/MSY B <sub>trigger</sub> | 2380               | 2139                       | 241                         | 0.191                                | 0.167   | 0.024   | 16450     | 10.1           | -27             | -27                |
| Other scenarios  |                    |                            |                             |                                      |   |   |           |                |                 |                    |
| F = F <sub>MSY lower</sub> × SSB(2022)/ MSY B <sub>trigger</sub>               | 1444               | 1300                       | 144                         | 0.112                                | 0.098   | 0.0139  | 17547     | 17.4           | -56             | -56                |
| F = 0  | 0                  | 0                          | 0                           | 0                                    | 0   | 0   | 19250     | 29             | -100            | -100               |
| F <sub>pa</sub>  | 4347               | 3899                       | 448                         | 0.379                                | 0.33  | 0.047   | 14159     | -5.3           | 34              | 34                 |
| F <sub>lim</sub>   | 4751               | 4260                       | 491                         | 0.422                                | 0.37  | 0.052   | 13697     | -8.4           | 46              | 46                 |
| SSB (2023) = B <sub>lim</sub>  | 7227               | 6458                       | 769                         | 0.73                                 | 0.64  | 0.091   | 10811     | -28            | 123             | 123                |
| SSB (2023) = B <sub>pa</sub>   | 3500               | 3144                       | 356                         | 0.29                                 | 0.26  | 0.037   | 15135     | 1.27           | 7.8             | 7.8                |
| SSB (2023) = MSY B <sub>trigger</sub>  | 3500               | 3144                       | 356                         | 0.29                                 | 0.26  | 0.037   | 15135     | 1.27           | 7.8             | 7.8                |
| F = F <sub>2021</sub>  | 3923               | 3521                       | 402                         | 0.336                                | 0.29  | 0.042   | 14638     | -2.1           | 21              | 21                 |
| F = F <sub>MSY lower</sub>   | 1462               | 1315                       | 147                         | 0.113                                | 0.099   | 0.014   | 17528     | 17.3           | -55             | -55                |
| F = F <sub>MSY</sub>   | 2407               | 2164                       | 243                         | 0.193                                | 0.169   | 0.024   | 16418     | 9.9            | -26             | -26                |
| F = F <sub>MSY upper</sub>   | 3877               | 3480                       | 397                         | 0.331                                | 0.29  | 0.041   | 14693     | -1.69          | 19.4            | 19.4               |