

## Cod (*Gadus morhua*) in divisions 7.e–k (western English Channel and southern Celtic Seas)

### ICES advice on fishing opportunities

ICES advises that when the MSY approach and precautionary considerations are applied, there should be zero catch in 2024.

ICES notes the existence of a precautionary management plan, developed and adopted by one of the relevant management authorities for this stock.

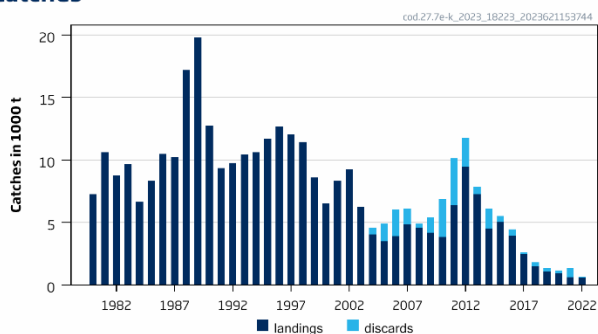
### ICES advice on conservation aspects

ICES has not identified any conservation aspects.

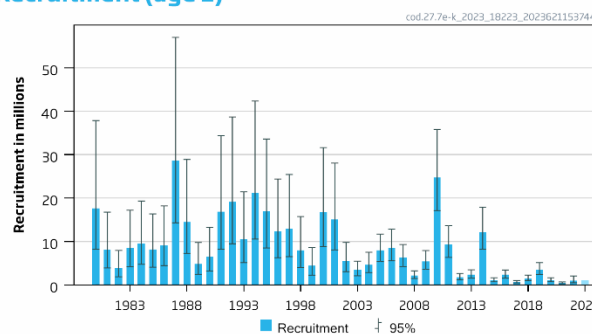
### Stock development over time

Fishing pressure on the stock is above  $F_{MSY}$  and between  $F_{pa}$  and  $F_{lim}$ , and spawning-stock size is below MSY  $B_{trigger}$ ,  $B_{pa}$ , and  $B_{lim}$ .

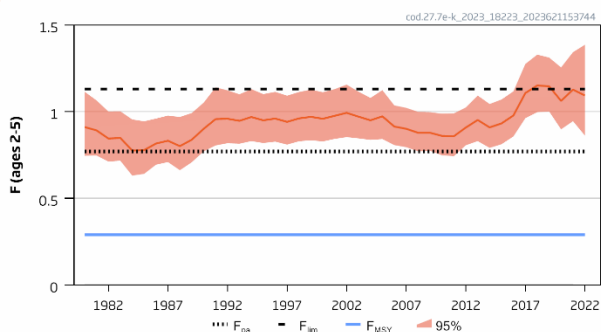
#### Catches



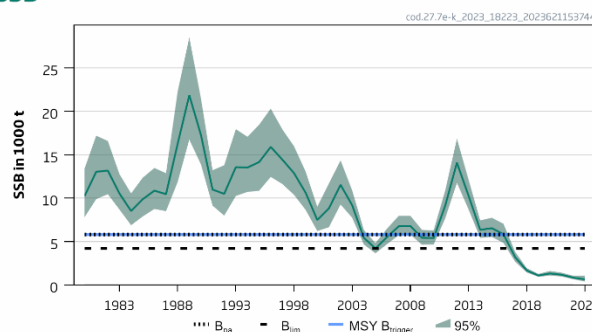
#### Recruitment (age 1)



#### F



#### SSB



**Figure 1** Cod in divisions 7.e–k. Summary of the stock assessment. Discard estimates are available from 2004. The assumed recruitment value for 2023 is shaded in a lighter colour.

### Conservation status

ICES is not aware of any information on stock/species-specific conservation status.

## Catch scenarios

**Table 1** Cod in divisions 7.e-k. Assumptions made for the interim year and in the forecast.

| Variable                     | Value | Notes  |
|------------------------------|-------|--|
| $F_{\text{ages 3-5}}$ (2023) | 1.09  | $F = F_{\text{Average (2020-2022)}}$                                 |
| SSB (2024)                   | 733   | Short-term forecast; in tonnes                                       |
| $R_{\text{age 1}}$ (2023)    | 1108  | Median recruitment, resampled from the years 2015–2022; in thousands |
| $R_{\text{age 1}}$ (2024)    | 1102  | Median recruitment, resampled from the years 2015–2022; in thousands |
| Total catch (2023)           | 812   | Short-term forecast; in tonnes                                       |

**Table 2** Cod in divisions 7.e-k. Annual catch scenarios. All weights are in tonnes.

| Basis  | Total catch (2024) | $F_{\text{total}}$ (2024) | SSB (2025) | % SSB change* |
|--|--------------------|---------------------------|------------|---------------|
| ICES advice basis  |                    |                           |            |               |
| MSY approach: $F = 0$  | 0                  | 0                         | 2265       | 209           |
| Other scenarios  |                    |                           |            |               |
| $F_{\text{MSY}} \times \text{SSB}_{2024} / \text{MSY } B_{\text{trigger}}$                 | 48                 | 0.04                      | 2189       | 199           |
| EU MAP**: $F_{\text{MSY lower}} \times \text{SSB}_{2024} / \text{MSY } B_{\text{trigger}}$ | 29                 | 0.02                      | 2221       | 203           |
| EU MAP**: $F_{\text{MSY upper}} \times \text{SSB}_{2024} / \text{MSY } B_{\text{trigger}}$ | 68                 | 0.05                      | 2159       | 195           |
| $F = F_{\text{MSY}}$   | 343                | 0.29                      | 1734       | 137           |
| $F = F_{\text{MSY lower}}$   | 212                | 0.170                     | 1937       | 164           |
| $F = F_{\text{MSY upper}}$   | 460                | 0.41                      | 1553       | 112           |
| $F = F_{\text{lim}}$   | 959                | 1.13                      | 818        | 12            |
| $F = F_{\text{pa}}$  | 747                | 0.77                      | 1123       | 53            |
| $\text{SSB}_{2025} = \text{SSB}_{2024}$  | 1019               | 1.26                      | 733        | 0             |
| $F = F_{2023}$   | 940                | 1.09                      | 844        | 15            |
| $\text{SSB}_{2025} = B_{\text{lim}}^{***}$   |                    |                           |            |               |
| $\text{SSB}_{2025} = B_{\text{pa}} = \text{MSY } B_{\text{trigger}}^{***}$                 |                    |                           |            |               |

\*  $\text{SSB}_{2025}$  relative to  $\text{SSB}_{2024}$ .

\*\* EU multiannual plan (MAP) for the Western Waters (EU, 2019).

\*\*\*The  $B_{\text{lim}}$ ,  $B_{\text{pa}}$ , and  $\text{MSY } B_{\text{trigger}}$  options were left blank because none of them can be achieved in 2025, even with zero catch in 2024.

^ Advice value for 2024 relative to the corresponding 2023 value.

The advice for zero catch is the same as last year's because there is no change in the perception of the stock.

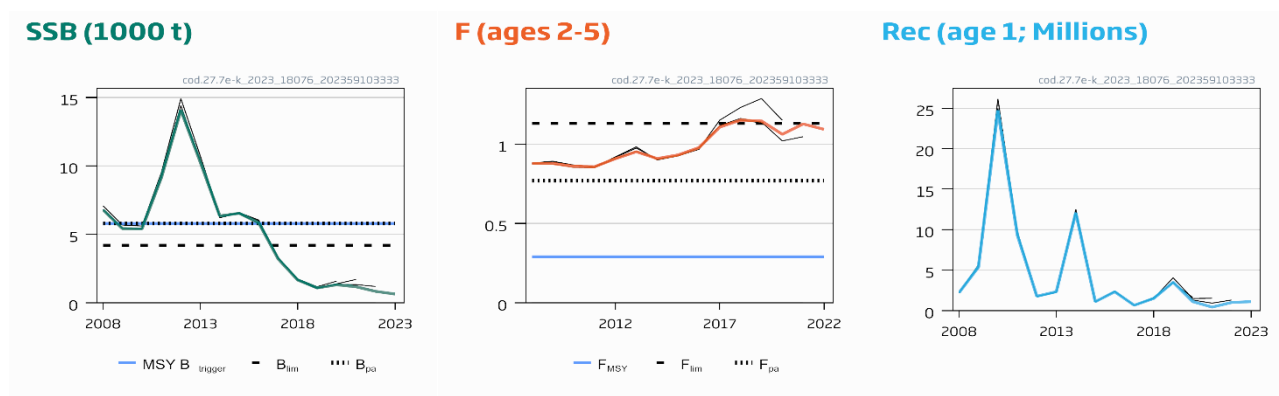
## Basis of the advice

**Table 3** Cod in divisions 7.e-k. The basis of the advice.

| Advice basis    | MSY approach   |
|-----------------|--|
| Management plan | ICES is aware of the multiannual management plan (MAP) that has been adopted by the EU for this stock (EU, 2019) and that ICES considers to be precautionary. There is no agreed shared management plan with UK for this stock, and ICES provides advice according to ICES MSY approach. Catch scenarios consistent with the MAP $F_{\text{MSY}}$ ranges are provided. |

## Quality of the assessment

There is a tendency for the assessment to overestimate SSB and recruitment. However, this does not impact the advice.



**Figure 2** Cod in divisions 7.e-k. Historical assessment results (final-year SSB estimate and recruitment assumption included). The assessment was benchmarked in 2020 (ICES, 2020); therefore, only the last four assessment years are shown.

## Issues relevant for the advice

ICES provides zero-catch advice for this stock in 2024 because the SSB is forecasted to remain below  $B_{lim}$  by 2025 under all catch scenarios.

The assumed recruitment in 2023 and 2024 contributes 75% to the SSB in 2025, indicating that the forecasted stock size is uncertain and highly dependent on the size of incoming year classes. However, the zero catch advice is not affected by this uncertainty.

Recent estimates of discard proportions are highly variable due to changing fishery behaviour and limited discard sampling; therefore, no split in forecast discards and landings is provided.

Landings are adjusted to include those reported from rectangles 33E2 and 33E3 in Division 7.a because they are considered part of this stock. The 2022 reallocation (30 tonnes) accounts for 5% of ICES estimated divisions 7.e-k landings and 30% of the Irish Sea (Division 7.a) landings. This should be taken into consideration when setting TACs for the two management areas (divisions 7.a and 7.e-k), as a portion of the catch taken under the Division 7.a TAC is considered to be part of the divisions 7.e-k stock.

## Mixed fisheries considerations

Cod in divisions 7.e-k is caught as part of a mixed fishery, and almost all fisheries operating with demersal gears catch cod (ICES, 2022).

## Reference points

**Table 4** Cod in divisions 7.e-k. Reference points, values, and their technical basis.

| Framework              | Reference point   | Value | Technical basis   | Source      |
|------------------------|-------------------|-------|---|-------------|
| MSY approach           | MSY $B_{trigger}$ | 5800  | $B_{pa}$ ; in tonnes  | ICES (2020) |
|                        | $F_{MSY}$         | 0.29  | Segmented regression with $B_{lim}$ (EqSim).  | ICES (2020) |
| Precautionary approach | $B_{lim}$         | 4200  | $B_{loss}$ , lowest observed SSB from which there has been some recovery (2005), rounded value; in tonnes | ICES (2020) |
|                        | $B_{pa}$          | 5800  | $B_{lim} \times 1.4$ ; in tonnes  | ICES (2020) |
|                        | $F_{lim}$         | 1.13  | Segmented regression with $B_{lim}$ (EqSim)   | ICES (2020) |
|                        | $F_{pa}$          | 0.77  | $F_{P05}$ ; the F that leads to SSB $\geq B_{lim}$ with 95% probability                                   | ICES (2020) |

| Framework              | Reference point       | Value | Technical basis  | Source                 |
|------------------------|-----------------------|-------|--|------------------------|
| Management plan (MAP)* | MAP MSY $B_{trigger}$ | 5800  | MSY $B_{trigger}$ ; in tonnes  | EU (2019), ICES (2020) |
|                        | MAP $B_{lim}$         | 4200  | $B_{lim}$ ; in tonnes  | EU (2019), ICES (2020) |
|                        | MAP $F_{MSY}$         | 0.29  | $F_{MSY}$  | EU (2019), ICES (2020) |
|                        | MAP range $F_{lower}$ | 0.17  | Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY | EU (2019), ICES (2020) |
|                        | MAP range $F_{upper}$ | 0.41  | Consistent with ranges resulting in no more than 5% reduction in long-term yield compared with MSY | EU (2019), ICES (2020) |

\* EU multiannual plan (MAP) for the Western Waters (EU, 2019).

## Basis of the assessment

**Table 5** Cod in divisions 7.e–k. Basis of the assessment and advice.

|                          |   |
|--------------------------|---|
| ICES stock data category | 1 ( <a href="#">ICES, 2023a</a> )   |
| Assessment type          | Age-based stochastic analytical assessment (SAM; ICES, 2023b)   |
| Input data               | Commercial landings, ages, and length frequencies from sampling by métier; one combined VAST-modelled survey index (combined IGFS-WIBTS-Q4 [G7212] and EVHOE-WIBTS-Q4 [G9527]); one commercial index (FR-OTDEF Q2+3+4 trawlers in divisions 7.e–k); fixed maturity ogive derived from UK-WCGFS survey Q1 data; age-dependent natural mortalities (time invariant; Lorenzen, 1996) |
| Discards and bycatch     | Included in the assessment. Observer-based estimates from 2004; discards and bycatch prior to that (between 1980 and 2003) are model estimated. No discards proportion was provided in the 2023 advice.   |
| Indicators               | None  |
| Other information        | Benchmarked at WKCELTIC 2020 (ICES, 2020)   |
| Working group            | Working Group for the Celtic Seas Ecoregion ( <a href="#">WGCSE</a> )   |

## History of the advice, catch, and management

**Table 6** Cod in divisions 7.e–k. ICES advice and official landings and ICES catch estimates. Weights are in tonnes.

| Year | ICES advice  | Landings corresponding to advice | Catch corresponding to advice | Agreed TAC* | ICES landings <sup>^^^</sup> | ICES discards |
|------|--|----------------------------------|-------------------------------|-------------|------------------------------|---------------|
| 1987 | Reduce F   | < 6400**                         |                               |             | 10390                        |               |
| 1988 | No increase in F; TAC                                    | 7000**                           |                               |             | 17196                        |               |
| 1989 | No increase in F; TAC                                    | 8600**                           |                               |             | 19804                        |               |
| 1990 | No increase in F; TAC                                    | 9200**                           |                               |             | 12878                        |               |
| 1991 | TAC; SSB mean  | 4500**                           |                               |             | 9336                         |               |
| 1992 | Appropriate to reduce F                                  | -                                |                               |             | 9747                         |               |
| 1993 | 20% reduction in F                                       | 6500**                           |                               | 17500       | 10416                        |               |
| 1994 | 20% reduction in F                                       | 5600**                           |                               | 17000       | 10620                        |               |
| 1995 | 20% reduction in F                                       | 4700***                          |                               | 17000       | 11710                        |               |
| 1996 | 20% reduction in F                                       | 4700***                          |                               | 20000       | 12681                        |               |
| 1997 | 20% reduction in F                                       | 7400***                          |                               | 20000       | 12028                        |               |
| 1998 | 10% reduction in F                                       | 8800^                            |                               | 20000       | 11418                        |               |
| 1999 | Reduce F below $F_{pa}$                                  | 9200^                            |                               | 19000       | 8580                         |               |
| 2000 | Reduce F below $F_{pa}$                                  | < 7600^^                         |                               | 16000       | 6539                         |               |
| 2001 | 40% reduction in F                                       | < 4300^^                         |                               | 10500       | 8316                         |               |
| 2002 | 45% reduction in F                                       | < 5300^^                         |                               | 8700        | 9239                         |               |
| 2003 | 60% reduction in F                                       | < 3800^^                         |                               | n/a         | 6425                         |               |
| 2004 | 90% reduction in F or management plan                    | < 700                            |                               | n/a         | 4027                         | 543           |
| 2005 | 17% reduction in F                                       | < 5200                           |                               | 6200        | 3478                         | 1426          |
| 2006 | No increase in effort (should have been “reduce effort”) | Cannot be estimated              |                               | 5580        | 3902                         | 2118          |
| 2007 | Zero catch   | 0                                |                               | 4743        | 4842                         | 1248          |
| 2008 | Zero catch   | 0                                |                               | 4316        | 4577                         | 306           |
| 2009 | 50% reduction in F                                       | < 2600                           |                               | 4023        | 4187                         | 1229          |
| 2010 | Substantial catch reduction                              | -                                |                               | 4023        | 3831                         | 3040          |

| Year | ICES advice                                   | Landings corresponding to advice | Catch corresponding to advice | Agreed TAC* | ICES landings <sup>^^^</sup> | ICES discards |
|------|---|----------------------------------|-------------------------------|-------------|------------------------------|---------------|
| 2011 | Catch and effort reduction                    | -                                |                               | 5379        | 6376                         | 3749          |
| 2012 | MSY framework                                 | < 10000                          |                               | 10059       | 9443                         | 2341          |
| 2013 | MSY framework                                 | < 10200                          |                               | 10200       | 7273                         | 562           |
| 2014 | MSY approach                                  | < 6848                           |                               | 6848        | 4512                         | 1569          |
| 2015 | MSY approach                                  | < 4024                           |                               | 5072        | 5028                         | 483           |
| 2016 | MSY approach                                  | ≤ 3569                           |                               | 4565        | 3924                         | 525           |
| 2017 | MSY approach                                  | ≤ 1447                           |                               | 2830        | 2471                         | 134           |
| 2018 | MSY approach                                  | ≤ 3076                           | ≤ 3428                        | 3076        | 1496                         | 316           |
| 2019 | MSY approach                                  |                                  | 0                             | 1610        | 1051                         | 300           |
| 2020 | MSY approach                                  |                                  | 0                             | 805         | 922                          | 231           |
| 2021 | MSY approach and precautionary considerations |                                  | 0                             | 805         | 627                          | 733           |
| 2022 | MSY approach and precautionary considerations |                                  | 0                             | 644         | 573                          | 75            |
| 2023 | MSY approach and precautionary considerations |                                  | 0                             | 644         |                              |               |
| 2024 | MSY approach and precautionary considerations |                                  | 0                             |             |                              |               |

\* TAC covers subareas 7 (except Division 7.a) and 8. From 2009 onwards, the TAC covers divisions 7.b–c and 7.e–k, subareas 8–10, and EU waters of CECAF Division 34.1.1 (with a separate TAC established for Division 7.d).

\*\* For the division 7.f–g stock component.

\*\*\* For the division 7.f–h stock component.

^ For the division 7.e–h stock component.

^^ For the division 7.e–k stock component.

^^^ Landings have been adjusted to include those taken or reported in rectangles 33E2 and 33E3 since 2004.

### History of the catch and landings

**Table 7** Cod in divisions 7.e–k. Catch distribution by fleet in 2022, as estimated by ICES.

| Catch      | Landings     |            |             |             | Discards     |            |             |             |
|------------|--------------|------------|-------------|-------------|--------------|------------|-------------|-------------|
|            | Otter trawls | Seine nets | Beam trawls | Other gears | Otter trawls | Seine nets | Beam trawls | Other gears |
| 648 tonnes | 67%          | 14%        | 9%          | 10%         | 30%          | 43%        | 20%         | 7%          |
|            | 573 tonnes   |            |             |             | 75 tonnes    |            |             |             |

**Table 8** Cod in divisions 7.e–k. History of official commercial landings, presented by country and discard estimates. All weights are in tonnes.

| Year | Belgium | France | Ireland | UK   | Others | Total | Discard estimates | Landings taken or reported in rectangles 33E2 and 33E3* |
|------|---------|--------|---------|------|--------|-------|-------------------|---|
| 1971 | n/a     | n/a    | n/a     | n/a  | n/a    | 5782  | n/a               | n/a   |
| 1972 | n/a     | n/a    | n/a     | n/a  | n/a    | 4737  | n/a               | n/a   |
| 1973 | n/a     | n/a    | n/a     | n/a  | n/a    | 4015  | n/a               | n/a   |
| 1974 | n/a     | n/a    | n/a     | n/a  | n/a    | 2898  | n/a               | n/a   |
| 1975 | n/a     | n/a    | n/a     | n/a  | n/a    | 3993  | n/a               | n/a   |
| 1976 | n/a     | n/a    | n/a     | n/a  | n/a    | 4818  | n/a               | n/a   |
| 1977 | n/a     | n/a    | n/a     | n/a  | n/a    | 3059  | n/a               | n/a   |
| 1978 | n/a     | n/a    | n/a     | n/a  | n/a    | 3647  | n/a               | n/a   |
| 1979 | n/a     | n/a    | n/a     | n/a  | n/a    | 4650  | n/a               | n/a   |
| 1980 | n/a     | n/a    | n/a     | n/a  | n/a    | 7243  | n/a               | n/a   |
| 1981 | n/a     | n/a    | n/a     | n/a  | n/a    | 10597 | n/a               | n/a   |
| 1982 | n/a     | n/a    | n/a     | n/a  | n/a    | 8766  | n/a               | n/a   |
| 1983 | n/a     | n/a    | n/a     | n/a  | n/a    | 9641  | n/a               | n/a   |
| 1984 | n/a     | n/a    | n/a     | n/a  | n/a    | 6631  | n/a               | n/a   |
| 1985 | n/a     | n/a    | n/a     | n/a  | n/a    | 8317  | n/a               | n/a   |
| 1986 | n/a     | n/a    | n/a     | n/a  | n/a    | 10475 | n/a               | n/a   |
| 1987 | n/a     | n/a    | n/a     | n/a  | n/a    | 10228 | n/a               | n/a   |
| 1988 | 554     | 13863  | 1480    | 1292 | 2      | 17191 | n/a               | n/a   |
| 1989 | 910     | 15801  | 1860    | 1223 | 15     | 19809 | n/a               | n/a   |
| 1990 | 621     | 9383   | 1241    | 1346 | 158    | 12749 | n/a               | n/a   |

| Year   | Belgium | France | Ireland          | UK   | Others | Total             | Discard estimates | Landings taken or reported in rectangles 33E2 and 33E3* |
|--------|---------|--------|------------------|------|--------|-------------------|-------------------|---|
| 1991   | 303     | 6260   | 1659             | 1094 | 20     | 9336              | n/a               | n/a   |
| 1992   | 195     | 7120   | 1212             | 1207 | 13     | 9747              | n/a               | n/a   |
| 1993   | 391     | 8317   | 766              | 945  | 6      | 10425             | n/a               | n/a   |
| 1994   | 398     | 7692   | 1616             | 906  | 8      | 10620             | n/a               | n/a   |
| 1995   | 400     | 8321   | 1946             | 1034 | 8      | 11709             | n/a               | n/a   |
| 1996   | 552     | 8981   | 1982             | 1166 | 0      | 12681             | n/a               | n/a   |
| 1997   | 694     | 8662   | 1513             | 1166 | 0      | 12035             | n/a               | n/a   |
| 1998   | 528     | 8096   | 1718             | 1089 | 0      | 11431             | n/a               | n/a   |
| 1999   | 326     | 5488   | 1883             | 897  | 0      | 8594              | n/a               | n/a   |
| 2000   | 208     | 4281   | 1302             | 744  | 0      | 6535              | n/a               | n/a   |
| 2001   | 347     | 6033   | 1091             | 838  | 0      | 8309              | n/a               | n/a   |
| 2002   | 555     | 7368   | 694              | 618  | 0      | 9235              | n/a               | n/a   |
| 2003   | 136     | 5222   | 517              | 346  | 0      | 6221              | n/a               | n/a   |
| 2004   | 153     | 2934   | 657              | 281  | 1      | 4027              | 543               | 108   |
| 2005   | 186     | 2127   | 855              | 309  | 1      | 3478              | 1426              | 54  |
| 2006   | 101     | 2431   | 995              | 371  | 3      | 3902              | 2118              | 103   |
| 2007   | 107     | 3113   | 1208             | 411  | 3      | 4842              | 1248              | 527   |
| 2008   | 65      | 2994   | 1222             | 295  | 1      | 4577              | 306               | 558   |
| 2009   | 48      | 3020   | 847              | 267  | 5      | 4187              | 1229              | 193   |
| 2010   | 52      | 2449   | 1030             | 296  | 3      | 3831              | 3040              | 143   |
| 2011   | 123     | 4808   | 1010             | 427  | 7      | 6376              | 3749              | 147   |
| 2012   | 290     | 6900   | 1539             | 706  | 8      | 9443              | 2341              | 85  |
| 2013   | 202     | 5051   | 1470             | 548  | 3      | 7273              | 562               | 76  |
| 2014   | 141     | 2715   | 1189             | 466  | 0      | 4512              | 1569              | 24  |
| 2015   | 121     | 3373   | 1109             | 422  | 3      | 5028              | 483               | 39  |
| 2016   | 97      | 2579   | 881              | 365  | 1      | 3924              | 525               | 40  |
| 2017   | 82      | 1578   | 623              | 188  | 0      | 2471              | 134               | 19  |
| 2018   | 49      | 611    | 706 <sup>c</sup> | 130  | 0      | 1496 <sup>c</sup> | 316               | 20  |
| 2019   | 43      | 369    | 554 <sup>c</sup> | 84   | n/a    | 1051 <sup>c</sup> | 300               | 37  |
| 2020   | 18      | 371    | 487              | 44   | 2      | 922               | 231               | 71  |
| 2021** | 11      | 261    | 309              | 46   | 0      | 627               | 733               | 52  |
| 2022** | 8       | 206    | 279              | 52   | 21     | 567               | 75                | 30  |

\* Included in Ireland landings estimates. Landings in the southern part of Division 7.a (rectangles 33E2 and 33E3) are included in the assessment and are considered to be part of the stock.

\*\* Preliminary official landings.

<sup>c</sup> Incomplete/missing as a result of part of the data being unavailable under data confidentiality clauses.

## Summary of the assessment

**Table 9** Cod in divisions 7.e–k. Assessment summary. Recruitments are in thousands, weights in tonnes.

| Year | Recruitment Age 1 |       |       | SSB   |       |       | Landings | Discards | F ages 2–5 |       |      |
|------|-------------------|-------|-------|-------|-------|-------|----------|----------|------------|-------|------|
|      | Low               | Value | High  | Low   | Value | High  |          |          | Low        | Value | High |
| 1980 | 8182              | 17604 | 37874 | 7806  | 10233 | 13413 | 7243     |          | 0.75       | 0.91  | 1.12 |
| 1981 | 3902              | 8089  | 16771 | 9886  | 13040 | 17199 | 10597    |          | 0.75       | 0.89  | 1.06 |
| 1982 | 1875              | 3859  | 7943  | 10458 | 13171 | 16586 | 8766     |          | 0.71       | 0.85  | 1.00 |
| 1983 | 4204              | 8506  | 17212 | 8682  | 10530 | 12771 | 9641     |          | 0.72       | 0.85  | 1.00 |
| 1984 | 4743              | 9577  | 19338 | 6881  | 8521  | 10551 | 6631     |          | 0.63       | 0.78  | 0.96 |
| 1985 | 4082              | 8171  | 16357 | 7890  | 9876  | 12361 | 8317     |          | 0.64       | 0.78  | 0.94 |
| 1986 | 4458              | 9009  | 18203 | 8756  | 10863 | 13478 | 10475    |          | 0.69       | 0.82  | 0.96 |
| 1987 | 14314             | 28569 | 57019 | 8500  | 10461 | 12875 | 10228    |          | 0.71       | 0.83  | 0.98 |
| 1988 | 7230              | 14447 | 28868 | 11853 | 16248 | 22272 | 17191    |          | 0.66       | 0.80  | 0.97 |
| 1989 | 2404              | 4847  | 9773  | 16748 | 21857 | 28524 | 19809    |          | 0.71       | 0.84  | 0.99 |
| 1990 | 3172              | 6483  | 13247 | 13890 | 17287 | 21516 | 12749    |          | 0.77       | 0.90  | 1.05 |
| 1991 | 8204              | 16803 | 34411 | 9141  | 10991 | 13216 | 9336     |          | 0.81       | 0.96  | 1.14 |

| Year | Recruitment Age 1 |       |       | SSB   |       |       | Landings | Discards | F ages 2–5 |       |      |
|------|-------------------|-------|-------|-------|-------|-------|----------|----------|------------|-------|------|
|      | Low               | Value | High  | Low   | Value | High  |          |          | Low        | Value | High |
| 1992 | 9486              | 19154 | 38676 | 7984  | 10495 | 13796 | 9747     |          | 0.82       | 0.96  | 1.12 |
| 1993 | 5132              | 10496 | 21465 | 10255 | 13569 | 17952 | 10425    |          | 0.82       | 0.95  | 1.10 |
| 1994 | 10564             | 21155 | 42362 | 10718 | 13527 | 17073 | 10620    |          | 0.83       | 0.97  | 1.13 |
| 1995 | 8518              | 16925 | 33627 | 10853 | 14153 | 18457 | 11709    |          | 0.82       | 0.95  | 1.10 |
| 1996 | 6250              | 12348 | 24398 | 12447 | 15901 | 20314 | 12681    |          | 0.83       | 0.96  | 1.11 |
| 1997 | 6511              | 12865 | 25419 | 11626 | 14433 | 17919 | 12035    |          | 0.81       | 0.94  | 1.09 |
| 1998 | 4031              | 7965  | 15737 | 10383 | 12881 | 15980 | 11431    |          | 0.83       | 0.96  | 1.11 |
| 1999 | 2228              | 4381  | 8612  | 8641  | 10622 | 13058 | 8594     |          | 0.84       | 0.97  | 1.13 |
| 2000 | 8835              | 16714 | 31621 | 6214  | 7481  | 9008  | 6535     |          | 0.83       | 0.96  | 1.11 |
| 2001 | 8081              | 15061 | 28069 | 6650  | 8822  | 11704 | 8309     |          | 0.84       | 0.98  | 1.13 |
| 2002 | 3077              | 5492  | 9803  | 9269  | 11536 | 14358 | 9235     |          | 0.85       | 0.99  | 1.16 |
| 2003 | 2106              | 3392  | 5462  | 7741  | 9182  | 10892 | 6221     |          | 0.85       | 0.97  | 1.12 |
| 2004 | 2853              | 4634  | 7526  | 4662  | 5434  | 6333  | 4027     | 543      | 0.84       | 0.95  | 1.08 |
| 2005 | 5419              | 7958  | 11687 | 3648  | 4197  | 4828  | 3478     | 1426     | 0.84       | 0.97  | 1.12 |
| 2006 | 5575              | 8455  | 12823 | 4707  | 5533  | 6504  | 3902     | 2118     | 0.81       | 0.91  | 1.04 |
| 2007 | 4204              | 6255  | 9305  | 5731  | 6756  | 7964  | 4842     | 1248     | 0.80       | 0.90  | 1.02 |
| 2008 | 1483              | 2202  | 3270  | 5800  | 6797  | 7966  | 4577     | 306      | 0.77       | 0.88  | 1.00 |
| 2009 | 3644              | 5374  | 7927  | 4630  | 5420  | 6345  | 4187     | 1229     | 0.77       | 0.88  | 1.00 |
| 2010 | 17089             | 24734 | 35800 | 4643  | 5401  | 6283  | 3831     | 3040     | 0.75       | 0.86  | 0.99 |
| 2011 | 6353              | 9310  | 13641 | 7690  | 9158  | 10907 | 6376     | 3749     | 0.74       | 0.86  | 0.99 |
| 2012 | 1202              | 1776  | 2622  | 11765 | 14082 | 16855 | 9443     | 2341     | 0.81       | 0.91  | 1.02 |
| 2013 | 1565              | 2335  | 3485  | 8701  | 10276 | 12137 | 7273     | 562      | 0.83       | 0.95  | 1.09 |
| 2014 | 8183              | 12097 | 17883 | 5425  | 6352  | 7437  | 4512     | 1569     | 0.79       | 0.91  | 1.04 |
| 2015 | 738               | 1102  | 1647  | 5528  | 6542  | 7742  | 5028     | 483      | 0.81       | 0.93  | 1.07 |
| 2016 | 1561              | 2322  | 3455  | 4841  | 5842  | 7051  | 3924     | 525      | 0.86       | 0.98  | 1.12 |
| 2017 | 434               | 661   | 1007  | 2689  | 3205  | 3821  | 2471     | 134      | 0.96       | 1.11  | 1.27 |
| 2018 | 1003              | 1502  | 2248  | 1435  | 1669  | 1941  | 1496     | 316      | 1.00       | 1.15  | 1.33 |
| 2019 | 2376              | 3497  | 5148  | 935   | 1090  | 1272  | 1050     | 300      | 1.00       | 1.15  | 1.31 |
| 2020 | 745               | 1108  | 1649  | 1078  | 1320  | 1615  | 922      | 231      | 0.90       | 1.06  | 1.25 |
| 2021 | 270               | 432   | 691   | 976   | 1174  | 1411  | 627      | 733      | 0.95       | 1.13  | 1.34 |
| 2022 | 483               | 998   | 2063  | 663   | 839   | 1063  | 573      | 75       | 0.86       | 1.09  | 1.39 |
| 2023 |                   | 1108* |       | 391   | 645   | 1068  |          |          |            |       |      |

\* Median resampled (2015–2022).

## Sources and references

- EU. 2019. Regulation (EU) 2019/472 of the European Parliament and of the Council of 19 March 2019 establishing a multiannual plan for stocks fished in the Western Waters and adjacent waters, and for fisheries exploiting those stocks, amending Regulations (EU) 2016/1139 and (EU) 2018/973, and repealing Council Regulations (EC) No 811/2004, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007 and (EC) No 1300/2008. Official Journal of the European Union, L 83. 17 pp. <http://data.europa.eu/eli/reg/2019/472/oj>
- ICES. 2020. Benchmark Workshop on Celtic Sea Stocks (WKCELTIC). ICES Scientific Reports, 2:97. 166 pp. <http://doi.org/10.17895/ices.pub.5983>
- ICES. 2022. Working Group on Mixed Fisheries Advice (WGMIXFISH-ADVICE). ICES Scientific Reports. 4:83. 218 pp. <https://doi.org/10.17895/ices.pub.21501414>
- ICES. 2023a. Advice on fishing opportunities (2023). General ICES Advice guidelines. Report. <https://doi.org/10.17895/ices.advice.22240624.v1>
- ICES. 2023b. Working Group for the Celtic Seas Ecoregion (WGCSE). Draft report. ICES Scientific Reports. 5:32. 976 pp. <https://doi.org/10.17895/ices.pub.22268980>. Publication of the full report is expected end of 2023.
- Lorenzen, K. 1996. The relationship between body weight and natural mortality in juvenile and adult fish: a comparison of natural ecosystems and aquaculture. Journal of Fish Biology, 49: 627–642. <https://doi.org/10.1111/j.1095-8649.1996.tb00060.x>

[Download the stock assessment data and figures](#)

*Recommended citation:* ICES. 2023. Cod (*Gadus morhua*) in divisions 7.e–k (eastern English Channel and southern Celtic Seas). In Report of the ICES Advisory Committee, 2023. ICES Advice 2023, cod.27.7e–k. <https://doi.org/10.17895/ices.advice.21840789>