

Plaice (*Pleuronectes platessa*) in divisions 7.f and 7.g (Bristol Channel, Celtic Sea)

ICES advice on fishing opportunities

ICES advises that when the precautionary approach is applied, catches in 2019 should be no more than 2160 tonnes.

Stock development over time

Fishing mortality has been declining since the late 1990s and is now below F_{MSY} proxy. The biomass has been increasing since 2007 and is above $MSY B_{trigger}$ proxy.

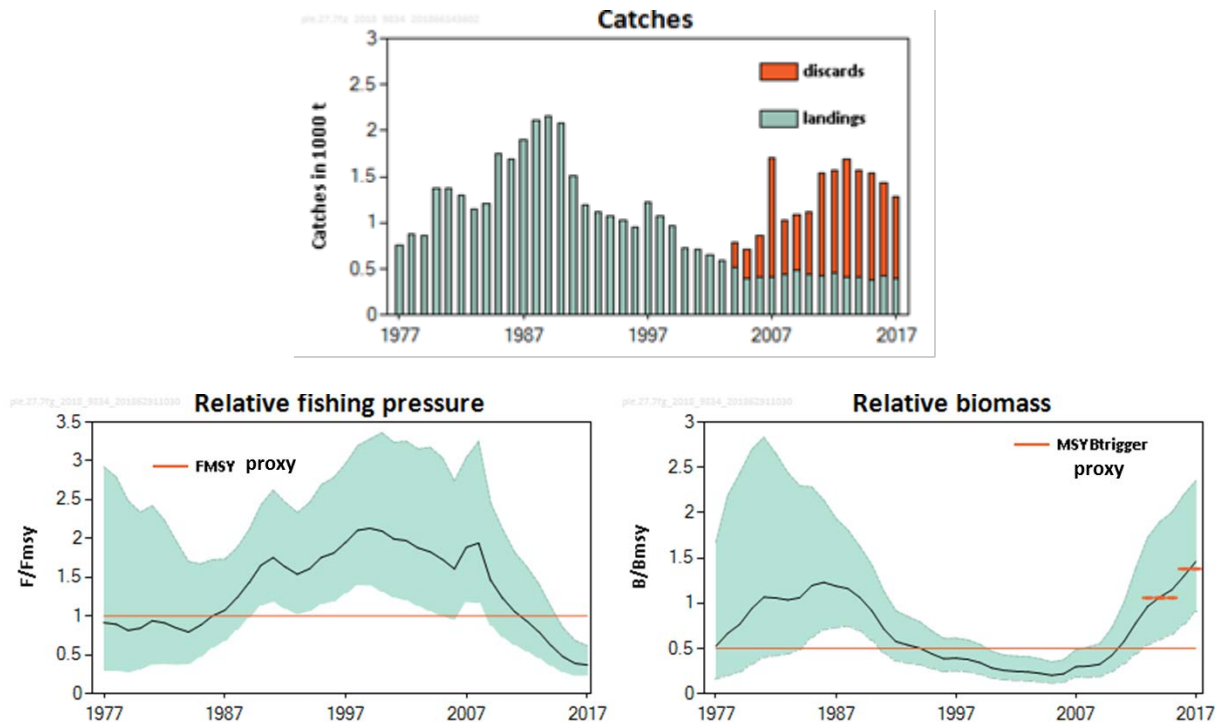


Figure 1 Plaice in divisions 7.f and 7.g. Catches (thousand tonnes). Discards are estimated from 2004 onwards. Shaded areas in the Relative fishing pressure (F/F_{MSY}) and Relative biomass (B/B_{MSY}) plots represent 95% confidence intervals. The short orange lines in the relative biomass plot indicate the average values of the respective years.

Stock and exploitation status

ICES assesses that fishing pressure on the stock is below F_{MSY} proxy and biomass is above $MSY B_{trigger}$ proxy.

Table 1 Plaice in divisions 7.f and 7.g. State of the stock and fishery relative to reference points.

| | | Fishing pressure | | | Stock size | | | | |
|---------------------------|-------------------|------------------|------|------|-------------------------|------|------|---|---------------------------------|
| | | 2015 | 2016 | 2017 | 2015 | 2016 | 2017 | | |
| Maximum sustainable yield | F_{MSY} proxy | ✓ | ✓ | ✓ | $MSY B_{trigger}$ proxy | ✓ | ✓ | ✓ | Above proxy |
| Precautionary approach | F_{pa}, F_{lim} | ✓ | ✓ | ✓ | B_{pa}, B_{lim} | ✓ | ✓ | ✓ | Above possible reference points |
| Management plan | F_{MGT} | — | — | — | B_{MGT} | — | — | — | Not applicable |

Catch scenarios

The ICES framework for category 3 stocks was applied (ICES, 2012). A biomass index, based on a SPiCT model, was used as an indicator of stock development. The advice is based on the ratio between the average of the two latest index values (index A) and the average of the three preceding values (index B), multiplied by the recent advised catch.

The index indicates an increase of 30% between 2013–2015 and 2016–2017 and therefore the uncertainty cap was applied. As the fishing mortality is below and the stock size above the proxy levels, no additional precautionary buffer was applied. The mean discard rate in 2013–2017 was 71% of the total catch.

Table 2 Plaice in Division 7.f-g. The basis for the catch scenarios*.

| | | |
|-----------------------------|-------------|-------------|
| Index A (2016–2017) | | 1.38 |
| Index B (2013–2015) | | 1.06 |
| Index ratio (A/B) | | 1.30 |
| Uncertainty cap | Applied | 1.20 |
| Recent advised catch (2018) | | 1800 tonnes |
| Precautionary buffer | Not applied | - |
| Catch advice** | | 2160 tonnes |
| % Advice change*** | | +20% |

* The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

** [Recent advised catch] × [uncertainty cap].

*** Advice value 2019 relative to advice value 2018.

This year's advice has increased by 20% when compared to last year's advice, due to the biomass increase tempered by the application of the uncertainty cap.

Basis of the advice

Table 3 Plaice in divisions 7.f and 7.g. The basis of the advice.

| | |
|-----------------|--|
| Advice basis | Precautionary approach. |
| Management plan | The EU has proposed a multiannual management plan for the Western Waters, which is not yet finalized (EU, 2018). |

Quality of the assessment

The Surplus Production model in Continuous Time (SPiCT) used previously to evaluate stock status is now the basis for this advice (ICES, 2018). Although historical estimates remain uncertain, this year's inclusion of an extended time-series of catch data results in a more realistic and robust assessment of trends in relative B and F.

Discard numbers used in the SPiCT analyses for the period of 1977–2003 were estimated using the mean ratio between landings and discards in 2004–2010, when discarding of commercial-sized fish was negligible. These numbers are likely to be inconsequential to the assessment results.

While discard sampling has improved in recent years under the EU Data Collection Framework (DCF), unknown levels of discard mortality is a source of uncertainty in the assessment. Given the increase in discards in the recent years, estimates of biomass could potentially be underestimated.

Issues relevant for the advice

Sole and plaice are caught in mixed fisheries, which generates high discards of plaice owing to a mismatch in the selectivity properties of the gear and the plaice minimum landings size. In addition, the relatively low market value of plaice may contribute to the high and variable discard rates. Catchpole *et al.* (2015) estimate discard survival of plaice around 40%.

Reference points

Table 4 Plaice in divisions 7.f and 7.g. Reference points, values, and their technical basis.

| Framework | Reference point | Value | Technical basis | Source |
|------------------------|-----------------------------------|-----------------------------|--------------------|-------------|
| MSY approach | MSY $B_{\text{trigger proxy}}$ | $\frac{B}{B_{MSY}} = 0.5^*$ | Estimated by SPiCT | ICES (2018) |
| | $F_{MSY \text{ proxy}}$ | $\frac{F}{F_{MSY}} = 1^*$ | Estimated by SPiCT | ICES (2018) |
| Precautionary approach | B_{lim} | Not defined | | |
| | B_{pa} | Not defined | | |
| | F_{lim} | Not relevant | | |
| | F_{pa} | Not relevant | | |
| Management plan | SSB_{MGT} | Not applicable | | |
| | F_{MGT} | Not applicable | | |

* No reference points are defined for this stock in terms of absolute values. The SPiCT-estimated values of the ratios F/F_{MSY} and B/B_{MSY} are used to estimate stock status relative to the proxy MSY reference points.

Basis of the assessment

Table 5 Plaice in divisions 7.f and 7.g. The basis of the assessment.

| | |
|--------------------------|--|
| ICES stock data category | 3 (ICES, 2016). |
| Assessment type | SPiCT (Surplus Production model in Continuous Time), considered indicative of trends only (ICES, 2018). |
| Input data | Two survey indices (UK (E&W)-BTS-Q3, IGFS-WIBTS-Q4), commercial landings and discards, LPUE from UK beam and otter trawlers. |
| Discards and bycatch | Discards included. |
| Indicators | None. |
| Other information | Benchmarked in 2011 (ICES, 2011). |
| Working group | Working Group for the Celtic Seas Ecoregion (WGCSE) |

Information from stakeholders

There is no additional available information.

History of the advice, catch, and management

Table 6 Plaice in divisions 7.f and 7.g. History of ICES advice, the agreed TAC, and the official and ICES estimates of landings. Weights are in tonnes. N/A = French landings not available.

| Year | ICES advice | Catch corresponding to advice | Landings corresponding to advice | Agreed TAC | Official landings | ICES landings | ICES discards* |
|------|---|-------------------------------|----------------------------------|------------|-------------------|---------------|----------------|
| 1987 | TAC not to be restrictive on other species | - | - | 2000 | 1912 | 1901 | - |
| 1988 | TAC not to be restrictive on other species | - | - | 2500 | 2194 | 2116 | - |
| 1989 | TAC not to be restrictive on other species | - | - | 2500 | 2583 | 2151 | - |
| 1990 | F likely to be F(88) | - | ~1900 | 1900 | 2219 | 2082 | - |
| 1991 | F likely to be F(89) | - | ~1700 | 1900 | 1827 | 1501 | - |
| 1992 | No long-term gains in increasing F | - | - | 1500 | 1362 | 1188 | - |
| 1993 | No long-term gains in increasing F | - | - | 1400 | 1303 | 1114 | - |
| 1994 | No long-term gains in increasing F | - | - | 1400 | 982 | 1070 | - |
| 1995 | No increase in F | - | 1290 | 1400 | 956 | 1028 | - |
| 1996 | 20% reduction in F | - | 930 | 1100 | 978 | 952 | - |
| 1997 | 20% reduction in F | - | 1100 | 1100 | 1259 | 1217 | - |
| 1998 | 20% reduction in F | - | 1000 | 1100 | 1149 | 1067 | - |
| 1999 | 35% reduction in F | - | 670 | 905 | 656 | 968 | - |
| 2000 | 30% reduction in F | - | 700 | 800 | 721 | 718 | - |
| 2001 | 40% reduction in F | - | 600 | 760 | 684 | 714 | - |
| 2002 | At least 35% reduction in F | - | 680 | 680 | 618 | 642 | - |
| 2003 | At least 40% reduction in F | - | 660 | 660 | 564 | 594 | - |
| 2004 | F < 0.10 or recovery plan | - | < 210 | 560 | 489 | 510 | 274 |
| 2005 | 70% reduction in F or recovery plan | - | < 250 | 476 | 399 | 386 | 321 |
| 2006 | 50% reduction in F or recovery plan | - | < 400 | 476 | 414 | 404 | 453 |
| 2007 | 50% reduction in F or recovery plan | - | < 380 | 417 | 417 | 410 | 1288 |
| 2008 | 60% reduction in F | - | < 240 | 491 | 375 | 437 | 583 |
| 2009 | 75% reduction in F | - | < 170 | 422 | N/A | 481 | 608 |
| 2010 | 50% reduction in F | - | < 330 | 451 | 442 | 442 | 670 |
| 2011 | See scenarios | - | - | 410 | 420 | 427 | 1107 |
| 2012 | Reduce catches | - | - | 369 | 450 | 450 | 1123 |
| 2013 | Decrease landings by 19% (1.5% increase followed by 20% PA reduction) | - | < 360 | 369 | 412 | 414 | 1274 |
| 2014 | Increase catches by 20% | < 1608 | < 519 | 461 | 411 | 410 | 1158 |
| 2015 | Catches should be no more than recent catches (last 3 years) | < 1500 | < 420 | 461 | 381 | 381 | 778 |
| 2016 | Precautionary approach (same catch value as advised for 2015) | ≤ 1500 | ≤ 420** | 420 | 431*** | 443 | 571 |
| 2017 | Precautionary approach (same catch value as advised for 2016) | ≤ 1500 | ≤ 405 | 405 | 389*** | 389 | 895 |
| 2018 | Precautionary approach | ≤ 1800 | ≤ 511 | 511 | | | |
| 2019 | Precautionary approach | ≤ 2160 | | | | | |

* Discards only available from 2004 to 2017.

** Wanted catch.

*** Preliminary.

History of the catch and landings

Table 7 Plaice in divisions 7.f and 7.g. Catch distribution by fleet in 2017 as estimated by ICES.

| Catch | Landings | | | | | Discards | | | | |
|-------------|-------------|------------|---------|-------|-------|-------------|------------|---------|-------|-------|
| | Otter trawl | Beam trawl | Gillnet | Seine | Other | Otter trawl | Beam trawl | Gillnet | Seine | Other |
| 1285 tonnes | 42.4% | 51.7% | 0.8% | 3.6% | 1.5% | 58.4% | 37.2% | 0.9% | 1.9% | 1.5% |
| | 389 tonnes | | | | | 895 tonnes | | | | |

Table 8 Plaice in divisions 7.f and 7.g. History of official landings by country, ICES estimated landings, and discards. Weights are in tonnes.

| Year | Belgium | UK | France | Ireland | The Netherlands | Total reported | Discards | Unallocated | ICES landings | ICES catch |
|-------|---------|-----|--------|---------|-----------------|----------------|----------|-------------|---------------|------------|
| 1977 | 214 | 150 | 365 | 28 | | 757 | N/A | 0 | 757 | N/A |
| 1978 | 196 | 152 | 527 | 0 | | 875 | N/A | 0 | 875 | N/A |
| 1979 | 171 | 176 | 467 | 49 | | 863 | N/A | 0 | 863 | N/A |
| 1980 | 372 | 234 | 706 | 61 | | 1373 | N/A | 0 | 1373 | N/A |
| 1981 | 365 | 251 | 697 | 64 | | 1377 | N/A | 0 | 1377 | N/A |
| 1982 | 341 | 196 | 568 | 198 | | 1303 | N/A | 0 | 1303 | N/A |
| 1983 | 314 | 279 | 532 | 48 | | 1173 | N/A | -27 | 1146 | N/A |
| 1984 | 283 | 366 | 558 | 72 | | 1279 | N/A | -69 | 1210 | N/A |
| 1985 | 357 | 466 | 493 | 91 | | 1407 | N/A | 345 | 1752 | N/A |
| 1986 | 665 | 539 | 878 | 302 | 9 | 2384 | N/A | -693 | 1691 | N/A |
| 1987 | 581 | 496 | 708 | 127 | | 1912 | N/A | -11 | 1901 | N/A |
| 1988 | 617 | 630 | 721 | 226 | | 2194 | N/A | -78 | 2116 | N/A |
| 1989 | 843 | 471 | 1089 | 180 | | 2583 | N/A | -432 | 2151 | N/A |
| 1990 | 794 | 498 | 767 | 160 | | 2219 | N/A | -137 | 2082 | N/A |
| 1991 | 836 | 392 | 444 | 155 | | 1827 | N/A | -326 | 1501 | N/A |
| 1992 | 371 | 307 | 504 | 180 | | 1362 | N/A | -174 | 1188 | N/A |
| 1993 | 542 | 299 | 373 | 89 | | 1303 | N/A | -189 | 1114 | N/A |
| 1994 | 350 | 252 | 298 | 82 | | 982 | N/A | 88 | 1070 | N/A |
| 1995 | 346 | 286 | 254 | 70 | | 956 | N/A | 72 | 1028 | N/A |
| 1996 | 410 | 239 | 246 | 83 | | 978 | N/A | -26 | 952 | N/A |
| 1997 | 594 | 258 | 329 | 78 | | 1259 | N/A | -42 | 1217 | N/A |
| 1998 | 540 | 176 | 298 | 135 | | 1149 | N/A | -82 | 1067 | N/A |
| 1999 | 371 | 170 | N/A | 115 | | N/A | N/A | 312 | 968 | N/A |
| 2000 | 224 | 134 | 287 | 76 | | 721 | N/A | -3 | 718 | N/A |
| 2001 | 241 | 136 | 262 | 45 | | 684 | N/A | 30 | 714 | N/A |
| 2002 | 248 | 105 | 186 | 79 | | 618 | N/A | 24 | 642 | N/A |
| 2003 | 221 | 127 | 165 | 51 | | 564 | N/A | 30 | 594 | N/A |
| 2004 | 212 | 87 | 145 | 45 | | 489 | 274 | 21 | 510 | 784 |
| 2005 | 168 | 55 | 132 | 44 | | 399 | 321 | -13 | 386 | 707 |
| 2006 | 172 | 88 | 106 | 48 | | 414 | 453 | -10 | 404 | 857 |
| 2007 | 194 | 61 | 104 | 58 | | 417 | 1288 | -7 | 410 | 1698 |
| 2008 | 187 | 63 | 62 | 63 | | 375 | 583 | 62 | 437 | 1020 |
| 2009 | 216 | 56 | N/A | 61 | | N/A | 608 | N/A | 481 | 1071 |
| 2010 | 188 | 54 | 136 | 63 | | 442 | 670 | 0 | 442 | 1103 |
| 2011 | 210 | 45 | 98 | 67 | | 420 | 1107 | -7 | 427 | 1528 |
| 2012 | 203 | 44 | 126 | 76 | | 450 | 1123 | 0 | 450 | 1298 |
| 2013 | 186 | 40 | 106 | 80 | | 412 | 1274 | -2 | 414 | 1686 |
| 2014 | 181 | 24 | 155 | 50 | | 410 | 1158 | 0 | 410 | 1568 |
| 2015 | 185 | 25 | 111 | 59 | | 381 | 778 | 0 | 381 | 1159 |
| 2016* | 244 | 27 | 108 | 64 | | 431 | 571 | 0 | 443 | 1014 |
| 2017* | 179 | 38 | 109 | 63 | | 389 | 895 | 0 | 388 | 1285 |

N/A = not available.

* Preliminary.

Summary of the assessment

Table 9 Plaice in divisions 7.f and 7.g. SPiCT assessment summary. High and Low refer to the 95% confidence intervals for B/B_{MSY} and F/F_{MSY} . Weights are in tonnes.

| Year | B/B_{MSY} | High | Low | Landings | Discards | F/F_{MSY} | High | Low |
|------|-------------|------|------|----------|----------|-------------|------|------|
| 1977 | 0.52 | 1.67 | 0.16 | 757 | | 0.92 | 2.9 | 0.29 |
| 1978 | 0.67 | 2.19 | 0.2 | 875 | | 0.90 | 2.8 | 0.29 |
| 1979 | 0.77 | 2.43 | 0.24 | 863 | | 0.82 | 2.5 | 0.27 |
| 1980 | 0.94 | 2.7 | 0.33 | 1373 | | 0.84 | 2.3 | 0.30 |
| 1981 | 1.07 | 2.83 | 0.4 | 1377 | | 0.94 | 2.4 | 0.36 |
| 1982 | 1.06 | 2.65 | 0.42 | 1303 | | 0.91 | 2.2 | 0.37 |
| 1983 | 1.04 | 2.44 | 0.44 | 1146 | | 0.85 | 1.96 | 0.37 |
| 1984 | 1.06 | 2.29 | 0.49 | 1210 | | 0.80 | 1.70 | 0.37 |
| 1985 | 1.19 | 2.28 | 0.63 | 1752 | | 0.88 | 1.67 | 0.47 |
| 1986 | 1.23 | 2.14 | 0.71 | 1691 | | 1.00 | 1.73 | 0.58 |
| 1987 | 1.19 | 1.94 | 0.73 | 1901 | | 1.07 | 1.73 | 0.67 |
| 1988 | 1.16 | 1.81 | 0.75 | 2116 | | 1.23 | 1.88 | 0.81 |
| 1989 | 1.06 | 1.63 | 0.7 | 2151 | | 1.43 | 2.1 | 0.97 |
| 1990 | 0.92 | 1.42 | 0.59 | 2082 | | 1.66 | 2.4 | 1.13 |
| 1991 | 0.71 | 1.13 | 0.45 | 1501 | | 1.75 | 2.6 | 1.17 |
| 1992 | 0.58 | 0.92 | 0.36 | 1188 | | 1.63 | 2.5 | 1.08 |
| 1993 | 0.54 | 0.85 | 0.34 | 1114 | | 1.54 | 2.3 | 1.02 |
| 1994 | 0.5 | 0.79 | 0.32 | 1070 | | 1.61 | 2.5 | 1.05 |
| 1995 | 0.44 | 0.69 | 0.28 | 1028 | | 1.76 | 2.7 | 1.15 |
| 1996 | 0.39 | 0.61 | 0.24 | 952 | | 1.81 | 2.8 | 1.18 |
| 1997 | 0.39 | 0.61 | 0.25 | 1217 | | 1.95 | 3.0 | 1.28 |
| 1998 | 0.38 | 0.59 | 0.24 | 1067 | | 2.1 | 3.2 | 1.39 |
| 1999 | 0.34 | 0.55 | 0.22 | 968 | | 2.1 | 3.3 | 1.39 |
| 2000 | 0.28 | 0.47 | 0.17 | 718 | | 2.1 | 3.4 | 1.31 |
| 2001 | 0.26 | 0.43 | 0.16 | 714 | | 1.99 | 3.2 | 1.23 |
| 2002 | 0.25 | 0.41 | 0.15 | 642 | | 1.97 | 3.3 | 1.20 |
| 2003 | 0.24 | 0.41 | 0.14 | 594 | | 1.88 | 3.2 | 1.12 |
| 2004 | 0.23 | 0.39 | 0.13 | 510 | 274 | 1.83 | 3.2 | 1.05 |
| 2005 | 0.2 | 0.35 | 0.12 | 386 | 321 | 1.73 | 3.0 | 0.99 |
| 2006 | 0.22 | 0.37 | 0.13 | 404 | 453 | 1.61 | 2.7 | 0.95 |
| 2007 | 0.3 | 0.48 | 0.18 | 410 | 1288 | 1.89 | 3.0 | 1.17 |
| 2008 | 0.3 | 0.51 | 0.18 | 437 | 583 | 1.94 | 3.2 | 1.16 |
| 2009 | 0.32 | 0.55 | 0.19 | 481 | 608 | 1.46 | 2.5 | 0.87 |
| 2010 | 0.42 | 0.73 | 0.25 | 442 | 670 | 1.23 | 2.1 | 0.71 |
| 2011 | 0.57 | 1 | 0.33 | 427 | 1107 | 1.06 | 1.82 | 0.61 |
| 2012 | 0.78 | 1.38 | 0.44 | 450 | 1123 | 0.93 | 1.63 | 0.53 |
| 2013 | 0.96 | 1.73 | 0.54 | 414 | 1274 | 0.79 | 1.41 | 0.45 |
| 2014 | 1.07 | 1.9 | 0.6 | 411 | 1158 | 0.62 | 1.11 | 0.35 |
| 2015 | 1.15 | 2 | 0.66 | 381 | 1159 | 0.47 | 0.85 | 0.27 |
| 2016 | 1.3 | 2.2 | 0.77 | 431 | 1002 | 0.39 | 0.68 | 0.22 |
| 2017 | 1.46 | 2.35 | 0.91 | 389 | 895 | 0.37 | 0.62 | 0.22 |

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