

Plaice (*Pleuronectes platessa*) in Division 7.a (Irish Sea)

ICES advice on fishing opportunities

In the context of the EU multiannual plan for Western Waters and adjacent waters in which this stock is considered bycatch, the EC has requested that ICES provide advice based on the precautionary approach. ICES advises that catches of up to 5640 tonnes are considered to be precautionary.

Stock development over time

The spawning-stock biomass (SSB) has increased since 2012 and has been well above MSY $B_{trigger}$ since 2013. Recruitment (R) has declined in recent years. Fishing mortality (F) has been generally decreasing since 1992 and has been below F_{MSY} since 2011.

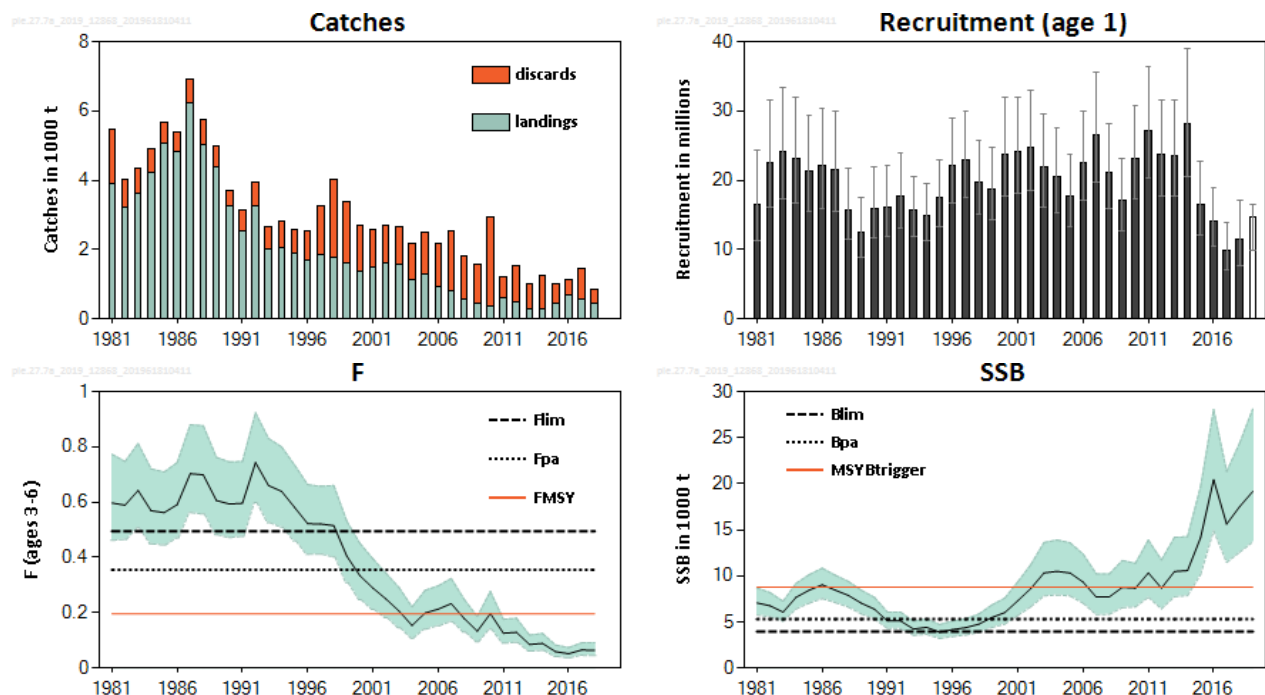


Figure 1 Plaice in Division 7.a. Summary of the stock assessment. Discards prior to 2003 are modelled estimates. The assumed recruitment value is not shaded. Shaded areas in F and SSB plots and error bars in the recruitment plot represent $2 \times$ standard deviation.

Stock and exploitation status

ICES assesses that fishing pressure on the stock is below F_{MSY} , F_{pa} , and F_{lim} ; spawning-stock size is above MSY $B_{trigger}$, B_{pa} , and B_{lim} .

Table 1 Plaice in Division 7.a. State of the stock and fishery relative to reference points.

| | | Fishing pressure | | | Stock size | | | | |
|---------------------------|-------------------|------------------|------|------|-------------------|------|------|---|----------------------------|
| | | 2016 | 2017 | 2018 | 2017 | 2018 | 2019 | | |
| Maximum sustainable yield | F_{MSY} | ✓ | ✓ | ✓ | MSY $B_{trigger}$ | ✓ | ✓ | ✓ | Above trigger |
| Precautionary approach | F_{pa}, F_{lim} | ✓ | ✓ | ✓ | B_{pa}, B_{lim} | ✓ | ✓ | ✓ | Full reproductive capacity |
| Management plan | F_{MGT} | — | — | — | B_{MGT} | — | — | — | |

Catch scenarios

Table 2 Plaice in Division 7.a. Assumptions made for the interim year and the forecast.

| Variable | Value | Notes |
|------------------------------------|-------|---|
| F _{ages 3-6} (2019) | 0.060 | F _{sq} = F _{average} of F (2016–2018). |
| SSB (2020) | 19160 | Fishing at <i>status quo</i> (F _{sq}); in tonnes. |
| R _{age 1} (2019 and 2020) | 14079 | Median resampled recruitment (2015–2018) as estimated by a stochastic projection; in thousands. |
| Total catch (2019) | 1055 | Fishing at F _{sq} plus surviving discards; in tonnes. |
| Landings (2019) | 595 | Assuming 2018 landings pattern; in tonnes. |
| Discards (2019) | 460 | Assuming average discard pattern (2016–2018); in tonnes. |
| Discard survival rate | 40% | Catchpole <i>et al.</i> (2015). |
| Surviving discards (2019) | 184 | Assuming an average discard pattern (2016–2018) where 40% of the discards survive; in tonnes. |
| Dead discards (2019) | 276 | Assuming an average discard pattern (2016–2018) where 60% of the discards die; in tonnes. |

Table 3 Plaice in Division 7.a. Annual catch scenarios. All weights are in tonnes.

| Basis | Total catch (2020) | Wanted catch (2020) | Total unwanted catch * (2020) | F _{total} (2020) | F _{wanted} (2020) | F _{unwanted} ** (2020) | SSB (2021) | % SSB change *** | % TAC change ^ | % Advice change ^^ |
|--|--------------------|---------------------|-------------------------------|---------------------------|----------------------------|---------------------------------|------------|------------------|----------------|--------------------|
| ICES advice basis | | | | | | | | | | |
| Precautionary approach: F _{pa} | 5640 | 3300 | 2340 | 0.36 | 0.10 | 0.26 | 16371 | -15 | 83 | 61 |
| Other scenarios | | | | | | | | | | |
| MSY approach: F _{MSY} | 3299 | 1931 | 1368 | 0.196 | 0.054 | 0.142 | 18354 | -4 | 7 | -6 |
| F _{MSY lower} | 2288 | 1341 | 947 | 0.133 | 0.036 | 0.097 | 19240 | 0.42 | -26 | -35 |
| F _{MSY upper} | 4772 | 2779 | 1993 | 0.29 | 0.080 | 0.21 | 17057 | -11 | 55 | 36 |
| F = 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | -100 | -100 |
| F = F _{lim} | 7467 | 4375 | 3092 | 0.50 | 0.136 | 0.36 | 14812 | -23 | 143 | 113 |
| SSB ₂₀₂₁ = B _{lim} | 20103 | 12253 | 7850 | 2.5 | 0.69 | 1.83 | 3958 | -79 | 554 | 474 |
| SSB ₂₀₂₁ = B _{pa} | 18728 | 11285 | 7443 | 2.1 | 0.57 | 1.49 | 5294 | -72 | 509 | 435 |
| SSB ₂₀₂₁ = MSY B _{trigger} | 14839 | 8839 | 6000 | 1.29 | 0.35 | 0.93 | 8757 | -54 | 383 | 324 |
| F = F ₂₀₁₉ | 1070 | 625 | 445 | 0.060 | 0.017 | 0.043 | 20323 | 6 | -65 | -69 |

* Dead + surviving unwanted catch.

** F_{unwanted} concerns dead unwanted catch only.

*** SSB 2021 relative to SSB 2020.

^ Total catch in 2020 relative to TAC in 2019 (3075 tonnes).

^^ Advice value for 2020 relative to the advice value for 2019 (3503 tonnes).

The advice for 2020 represents an increase compared to last year’s advice, due primarily to the change in the advice basis as the EC has requested that ICES provide advice based on the precautionary approach.

Basis of the advice

Table 4 Plaice in Division 7.a. The basis of the advice.

| | |
|-----------------|--|
| Advice basis | Precautionary approach |
| Management plan | The EU multiannual plan (MAP; EU, 2019) for stocks in the Western Waters and adjacent waters takes bycatch of this species into account. |
| | The EC has requested that ICES provide advice based on the precautionary approach. |

Quality of the assessment

The assessment was benchmarked in 2017 (ICES, 2017). The assessment model (SAM; Nielsen and Berg, 2014) uses catches based on modelled estimates of discards prior to 2004. The historical (1981–2003) modelled discard estimates introduce additional uncertainty in the model. The model estimates of stock development since 2004 are more reliable as they are based on discard sampling.

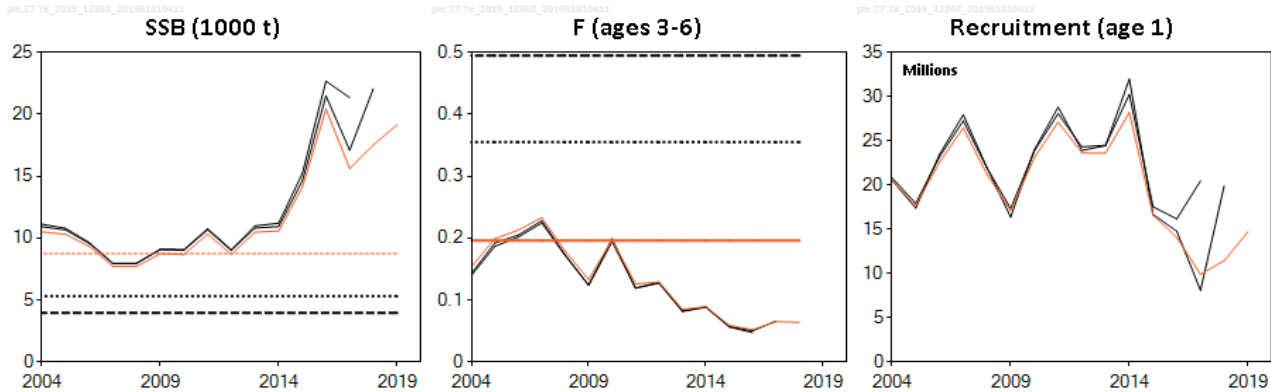


Figure 2 Plaice in Division 7.a. Historical assessment results (final-year recruitment estimates included).

Issues relevant for the advice

The basis for the advice this year is the precautionary approach, as requested by the European Commission.

Since 2004, the majority of the catch has been discarded (61% average discard by weight). The rate of discarding, as estimated by scientific observers, has been variable over the time-series.

The assessment only uses the dead portion of the discards (60%; based on Catchpole *et al.*, 2015), but in the forecast the estimates are raised to include the surviving discards.

Reference points

Table 5 Plaice in Division 7.a. Reference points, values, and their technical basis.

| Framework | Reference point | Value | Technical basis | Source |
|------------------------|-------------------|----------------|---|--------------|
| MSY approach | MSY $B_{trigger}$ | 8757 | Lower 5 th percentile of B_{MSY} ; in tonnes. | ICES (2018a) |
| | F_{MSY} | 0.196 | Stochastic simulations with segmented regression from the entire time-series (1981–2017). | ICES(2018a) |
| Precautionary approach | B_{lim} | 3958 | B_{loss} = minimum SSB observed; in tonnes. | ICES(2018a) |
| | B_{pa} | 5294 | $B_{lim} \times \exp(1.645 \times \sigma)$; $\sigma = 0.177$; in tonnes. | ICES(2018a) |
| | F_{lim} | 0.50 | F with 50% probability of SSB < B_{lim} . | ICES(2018a) |
| | F_{pa} | 0.36 | $F_{lim} \times \exp(-1.645 \times \sigma)$; $\sigma = 0.201$. | ICES(2018a) |
| Management plan | SSB_{mgt} | Not applicable | | |
| | F_{mgt} | Not applicable | | |

Basis of the assessment

Table 6 Plaice in Division 7.a. Basis of the assessment and advice.

| | |
|--------------------------|---|
| ICES stock data category | 1 (ICES, 2018b). |
| Assessment type | Age-based analytical assessment (SAM; Nielsen and Berg, 2014; ICES, 2019) that uses landings and discards in the model and in the forecast. |
| Input data | Commercial catch-at-age data; three survey indices (UK (E&W)-BTS-Q3, NIGFS-WIBTS-Q1, and NIGFS-WIBTS-Q4); fixed maturity ogive; natural mortality constant over the years and different across the ages. |
| Discards and bycatch | Discard values available from 2004. Estimates of modelled discards for 1981–2003 (WKIRISH3; ICES, 2017). Only the dead fraction of discards (estimated to be 0.6) is accounted for in the model. In the forecast discard values are raised to include the live portion. |
| Indicators | None. |
| Other information | Last benchmark in 2017 (WKIRISH3; ICES, 2017). Reference points updated in 2018 (ICES, 2018a). |
| Working group | Working Group for the Celtic Seas Ecoregion (WGCSE) |

Information from stakeholders

There is no additional available information for this stock.

History of the advice, catch, and management

Table 7 Plaice in Division 7.a. History of ICES advice, the agreed TAC, and ICES estimates of landings and discards. Weights are in tonnes.

| Year | ICES advice | Catch corresponding to advice | Landings corresponding to advice | Agreed TAC | Official landings | ICES landings | ICES discards *** |
|------|---|-------------------------------|----------------------------------|------------|-------------------|---------------|-------------------|
| 1987 | F high; no long-term gains in increasing F | - | 5000 | 5000 | 5600 | 6220 | - |
| 1988 | No increase in F | - | 4800 | 5000 | 4400 | 5005 | - |
| 1989 | 80% of F(87); TAC | - | 5800 | 5800 | 4200 | 4372 | - |
| 1990 | Halt decline in SSB; TAC | - | 5100 | 5100 | 4000 | 3275 | - |
| 1991 | Rebuild SSB to SSB(90); TAC | - | 3300 | 4500 | 2800 | 2554 | - |
| 1992 | 70% of F(90) | - | 3000 | 3800 | 3200 | 3267 | - |
| 1993 | F = 0.55 ~ 2800 t | - | 2800 | 2800 | 2000 | 1996 | - |
| 1994 | Long-term gains in decreasing F | - | < 3700 | 3100 | 2100 | 2066 | - |
| 1995 | Long-term gains in decreasing F | - | 2400* | 2800 | 2000 | 1874 | - |
| 1996 | No long-term gain in increasing F | - | 2500 | 2450 | 1900 | 1707 | - |
| 1997 | No advice | - | - | 2100 | 2000 | 1871 | - |
| 1998 | No increase in F | - | 2400 | 2400 | 1800 | 1765 | - |
| 1999 | Keep F below F_{pa} | - | 2400 | 2400 | 1600 | 1600 | - |
| 2000 | Keep F below F_{pa} | - | < 2300 | 2400 | 1400 | 1371 | - |
| 2001 | Keep F below F_{pa} | - | < 2400 | 2000 | 1500 | 1473 | - |
| 2002 | Keep F below F_{pa} | - | < 2800 | 2400 | 1500 | 1623 | - |
| 2003 | No increase in F | - | 1900 | 1675 | 1600 | 1559 | - |
| 2004 | $F < F_{pa}$ | - | 1600 | 1340 | 1100 | 1143 | 1031 |
| 2005 | $F < F_{pa}$ | - | 2970 | 1608 | 1300 | 1281 | 1210 |
| 2006 | $F < F_{pa}$ | - | 5900 | 1608 | 937 | 934 | 1254 |
| 2007 | $F < F_{pa}$ | - | 6500 | 1849 | 802 | 805 | 1744 |
| 2008 | $F < F_{pa}$ | - | 5200 | 1849 | 563 | 563 | 1268 |
| 2009 | No long-term gains in increasing F above $F_{0.1}$ | - | 1430 | 1430 | 458 | 457 | 1132 |
| 2010 | No long-term gains in increasing F above $F_{0.1}$ | - | 1630 | 1630 | 377 | 378 | 2561 |
| 2011 | Effort should be consistent with no increase in catches | - | - | 1627 | 596 | 595 | 603 |
| 2012 | Catches should not increase | - | - | 1627 | 508 | 503 | 1010 |

| Year | ICES advice | Catch corresponding to advice | Landings corresponding to advice | Agreed TAC | Official landings | ICES landings | ICES discards *** |
|------|---|-------------------------------|----------------------------------|------------|-------------------|---------------|-------------------|
| 2013 | Landings should be no more than 2% more than recent landings (last 3 years) | - | < 490 | 1627 | 339 | 303 | 725 |
| 2014 | Catches should be no more than 1% more than recent catches (last 3 years) | < 1827 | < 497 | 1220 | 282 | 287 | 943 |
| 2015 | Catches should be no more than recent catches (last 3 years) | < 1244 | < 394 | 1098 | 439 | 440 | 572 |
| 2016 | Precautionary approach (same advised catch value as given for 2015) | ≤ 1244 | ≤ 343** | 1098 | 742 | 682 | 437 |
| 2017 | Precautionary approach (same advised catch value as given for 2015) | ≤ 1493 | ≤ 436** | 1098 | 585 | 586 | 852 |
| 2018 | MSY approach | ≤ 3336 | ≤ 1793** | 1793 | 432* | 435 | 395 |
| 2019 | MSY approach | ≤ 3503 | | 3075 | | | |
| 2020 | Precautionary approach | ≤ 5640 | | | | | |

* Preliminary.

** Wanted catch.

*** Total discards (dead and surviving components).

History of the catch and landings

Table 8 Plaice in Division 7.a. Catch distribution by fleet in 2018 as estimated by ICES.

| Catch (2018) | | Landings | | | Discards | | |
|--------------|------------------|------------|-------------|---------------|------------|-------------|------------------|
| dead 81% | surviving 19% | Beam trawl | Otter trawl | Other gears | Beam trawl | Otter trawl | Other gear types |
| 830 t | | 33% | 64% | 3% | 54% | 41% | 5% |
| | | 435 t | | | 395 t | | |
| | | 60% dead | | 40% surviving | | | |

Table 9 Plaice in Division 7.a. History of commercial catch and landings for each country participating in the fishery; both the official and ICES estimated values are presented. Weights in tonnes.

| Year | Belgium | France | Ireland | Netherlands | UK (NI, E&W) | UK (Isle of Man) | UK (Scotland) | Total official landings | ICES discards | ICES estimates of catches |
|------|---------|--------|---------|-------------|-----------------|---------------------|------------------|----------------------------|------------------|------------------------------|
| 1994 | 332 | 13 | 547 | - | 1082 | 14 | 63 | 2051 | 863 | 2801 |
| 1995 | 327 | 10 | 557 | - | 1050 | 20 | 60 | 2024 | 747 | 2592 |
| 1996 | 344 | 11 | 538 | 69 | 878 | 16 | 18 | 1874 | 832 | 2518 |
| 1997 | 459 | 8 | 543 | 110 | 798 | 11 | 25 | 1954 | 1285 | 3246 |
| 1998 | 327 | 8 | 730 | 27 | 679 | 14 | 18 | 1803 | 1952 | 4028 |
| 1999 | 275 | 5 | 541 | 30 | 687 | 5 | 23 | 1566 | 1657 | 3397 |
| 2000 | 325 | 14 | 420 | 47 | 610 | 6 | 21 | 1443 | 1223 | 2678 |
| 2001 | 482 | 9 | 378 | - | 607 | 1 | 11 | 1488 | 1070 | 2573 |
| 2002 | 636 | 8 | 370 | - | 569 | 1 | 7 | 1591 | 1135 | 2708 |
| 2003 | 628 | 7 | 490 | - | 409 | 1 | 9 | 1544 | 1077 | 2668 |
| 2004 | 431 | 2 | 328 | - | 369 | 0 | 4 | 1134 | 927 | 2173 |
| 2005 | 566 | 9 | 272 | - | 422 | 0 | 1 | 1270 | 1183 | 2492 |
| 2006 | 343 | 2 | 179 | 0 | 413 | 0 | 0 | 937 | 1330 | 2188 |
| 2007 | 194 | 2 | 194 | 0 | 412 | 0 | 0 | 802 | 1523 | 2549 |
| 2008 | 157 | 2 | 102 | 0 | 300 | 1 | 1 | 562 | 1298 | 1830 |
| 2009 | 197 | 0 | 73 | 0 | 185 | 1 | 2 | 457 | 1022 | 1588 |
| 2010 | 138 | 0 | 89 | 0 | 148 | 0 | 3 | 379 | 2295 | 2939 |
| 2011 | 332 | 0 | 118 | 0 | 145 | 0 | 0 | 594 | 763 | 1198 |
| 2012 | 236 | 0 | 106 | 0 | 154 | 0 | 0 | 496 | 865 | 1511 |
| 2013 | 144 | 0 | 67 | 0 | 91 | 0 | 0 | 303 | 695 | 1028 |
| 2014 | 100 | 0 | 123 | 0 | 59 | 0 | 0 | 282 | 913 | 1230 |
| 2015 | 115 | 0 | 244 | 0 | 80 | 0 | 0 | 439 | 492 | 1012 |
| 2016 | 82 | 0 | 605 | - | 56 | - | - | 742 | 498 | 1119 |
| 2017 | 77 | 0 | 446 | - | 62 | - | - | 585 | 852 | 1438 |
| 2018 | 52 | - | 315 | - | 64 | - | - | 432* | 395 | 830 |

* Preliminary.

Summary of the assessment

Table 10 Plaice in Division 7.a. Assessment summary. Recruitment in thousands and weights are in tonnes. High and low refer to 2 × standard deviation.

| Year | Recruitment Age 1 | | | SSB | | | Landings | Dead discards | Surviving discards | Fishing mortality Ages 3–6 | | |
|------|----------------------|--------|-------|-------|-------|-------|----------|---------------|-----------------------|-------------------------------|-------|-------|
| | Low | Value | High | Low | Value | High | | | | Low | Value | High |
| 1981 | 11220 | 16495 | 24249 | 5751 | 7066 | 8681 | 3632 | 803 | 535 | 0.46 | 0.60 | 0.77 |
| 1982 | 16118 | 22526 | 31483 | 5572 | 6753 | 8184 | 3509 | 544 | 363 | 0.47 | 0.59 | 0.75 |
| 1983 | 17331 | 24055 | 33387 | 5079 | 6066 | 7246 | 3506 | 409 | 273 | 0.51 | 0.64 | 0.81 |
| 1984 | 16717 | 23097 | 31913 | 6406 | 7673 | 9191 | 4201 | 363 | 242 | 0.45 | 0.57 | 0.72 |
| 1985 | 15469 | 21331 | 29415 | 7040 | 8443 | 10127 | 4727 | 336 | 224 | 0.45 | 0.56 | 0.71 |
| 1986 | 15956 | 22025 | 30403 | 7533 | 9032 | 10829 | 5041 | 367 | 245 | 0.47 | 0.59 | 0.74 |
| 1987 | 15499 | 21540 | 29936 | 7095 | 8450 | 10064 | 5383 | 361 | 241 | 0.56 | 0.70 | 0.88 |
| 1988 | 11420 | 15728 | 21662 | 6614 | 7884 | 9398 | 4763 | 432 | 288 | 0.56 | 0.70 | 0.88 |
| 1989 | 8815 | 12442 | 17561 | 5865 | 7033 | 8433 | 4020 | 341 | 228 | 0.48 | 0.61 | 0.76 |
| 1990 | 11607 | 15931 | 21866 | 5327 | 6390 | 7666 | 3463 | 280 | 186 | 0.47 | 0.59 | 0.75 |
| 1991 | 11864 | 16174 | 22048 | 4285 | 5103 | 6076 | 2681 | 312 | 208 | 0.48 | 0.60 | 0.75 |
| 1992 | 13130 | 17718 | 23910 | 4285 | 5103 | 6077 | 3030 | 405 | 270 | 0.60 | 0.74 | 0.92 |
| 1993 | 11913 | 15629 | 20505 | 3544 | 4233 | 5056 | 2244 | 517 | 345 | 0.53 | 0.66 | 0.83 |
| 1994 | 11258 | 14814 | 19494 | 3653 | 4418 | 5343 | 2302 | 521 | 347 | 0.51 | 0.64 | 0.80 |
| 1995 | 13336 | 17498 | 22958 | 3199 | 3884 | 4715 | 1915 | 453 | 302 | 0.46 | 0.58 | 0.73 |
| 1996 | 16750 | 22024 | 28957 | 3414 | 4175 | 5104 | 1764 | 500 | 333 | 0.41 | 0.52 | 0.66 |
| 1997 | 17425 | 22871 | 30018 | 3583 | 4377 | 5347 | 1686 | 753 | 502 | 0.41 | 0.52 | 0.66 |
| 1998 | 15008 | 19684 | 25817 | 3864 | 4755 | 5851 | 1501 | 1140 | 760 | 0.40 | 0.52 | 0.66 |
| 1999 | 14189 | 18741 | 24754 | 4400 | 5484 | 6836 | 1519 | 985 | 657 | 0.31 | 0.41 | 0.53 |
| 2000 | 17720 | 23790 | 31940 | 4769 | 6015 | 7588 | 1461 | 770 | 513 | 0.25 | 0.33 | 0.45 |
| 2001 | 18170 | 24108 | 31986 | 5712 | 7317 | 9373 | 1569 | 644 | 429 | 0.21 | 0.29 | 0.40 |
| 2002 | 18514 | 24726 | 33023 | 6655 | 8646 | 11234 | 1548 | 680 | 453 | 0.182 | 0.25 | 0.34 |
| 2003 | 16168 | 21854 | 29540 | 7827 | 10324 | 13617 | 1533 | 664 | 442 | 0.146 | 0.21 | 0.29 |
| 2004 | 15321 | 20535 | 27523 | 7926 | 10492 | 13889 | 1131 | 573 | 382 | 0.108 | 0.154 | 0.22 |
| 2005 | 13279 | 17721 | 23650 | 7816 | 10306 | 13590 | 1309 | 713 | 475 | 0.141 | 0.199 | 0.28 |
| 2006 | 16999 | 22571 | 29970 | 7035 | 9323 | 12354 | 1101 | 802 | 535 | 0.153 | 0.21 | 0.30 |
| 2007 | 19740 | 26478 | 35514 | 5803 | 7704 | 10227 | 761 | 898 | 598 | 0.168 | 0.23 | 0.32 |
| 2008 | 15946 | 21204 | 28196 | 5826 | 7708 | 10196 | 637 | 773 | 515 | 0.130 | 0.179 | 0.25 |
| 2009 | 12669 | 17106 | 23098 | 6553 | 8745 | 11670 | 492 | 624 | 416 | 0.095 | 0.133 | 0.186 |
| 2010 | 17330 | 23108 | 30811 | 6622 | 8672 | 11355 | 349 | 1322 | 881 | 0.141 | 0.197 | 0.28 |
| 2011 | 20218 | 27130 | 36404 | 7675 | 10320 | 13878 | 704 | 472 | 315 | 0.090 | 0.126 | 0.176 |
| 2012 | 17705 | 23650 | 31591 | 6416 | 8672 | 11720 | 450 | 506 | 337 | 0.093 | 0.129 | 0.180 |
| 2013 | 17673 | 23617 | 31561 | 7734 | 10471 | 14176 | 380 | 421 | 281 | 0.061 | 0.085 | 0.119 |
| 2014 | 20429 | 28211 | 38959 | 7852 | 10576 | 14245 | 331 | 535 | 357 | 0.064 | 0.089 | 0.125 |
| 2015 | 12140 | 16576 | 22635 | 10143 | 14118 | 19649 | 409 | 298 | 199 | 0.042 | 0.059 | 0.083 |
| 2016 | 10452 | 14079 | 18964 | 14898 | 20433 | 28023 | 638 | 303 | 202 | 0.037 | 0.052 | 0.074 |
| 2017 | 7099 | 9902 | 13812 | 11448 | 15622 | 21319 | 443 | 449 | 300 | 0.046 | 0.065 | 0.091 |
| 2018 | 7696 | 11443 | 17014 | 12572 | 17522 | 24422 | 613 | 265 | 176 | 0.045 | 0.064 | 0.092 |
| 2019 | 9902 | 14079* | 16576 | 13669 | 19160 | 28101 | | | | | | |

* Median resampled recruitment (2015–2018) as estimated by a stochastic projection.

Sources and references

- Catchpole, T., Randall, P., Forster, R., Smith, S., Ribeiro Santos, A., Armstrong, F., Hetherington, S., Bendall, V., and Maxwell, D. 2015. Estimating the discard survival rates of selected commercial fish (plaice – *Pleuronectes platessa*) in four English fisheries. MF1234, Cefas report. 108 pp.
file:///D:/Profile/download/12706_MF1234discardsurvivalFinalreport%20(1).pdf.
- 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: 1–17. <http://data.europa.eu/eli/reg/2019/472/oj>
- ICES. 2017. Report of the Benchmark Workshop on the Irish Sea Ecosystem (WKIrish3), 30 January–3 February 2017, Galway, Ireland. ICES CM 2017/BSG:01. 165 pp.
- ICES. 2018a. EU request to ICES to provide plausible and updated F_{MSY} ranges for the stocks of species inhabiting western EU waters. In Report of the ICES Advisory Committee, 2018. ICES Advice 2018, sr.2018.04. <https://doi.org/10.17895/ices.pub.4149>.
- ICES. 2018b. Advice basis. In Report of the ICES Advisory Committee, 2018. ICES Advice 2018, Book 1, Section 1.2. <https://doi.org/10.17895/ices.pub.4503>.
- ICES. 2019. Report of the Working Group for the Celtic Seas Ecoregion. ICES Scientific Reports. 1:29. XXXX pp. <http://doi.org/10.17895/ices.pub.4982>.
- Nielsen, A., and Berg, C. W. 2014. Estimation of time-varying selectivity in stock assessments using state–space models. Fisheries Research, 158: 96–101. <https://doi.org/10.1016/j.fishres.2014.01.014>.

Recommended citation: ICES. 2019. Plaice (*Pleuronectes platessa*) in Division 7.a (Irish Sea). In Report of the ICES Advisory Committee, 2019. ICES Advice 2019, ple.27.7a, <https://doi.org/10.17895/ices.advice.4798>