

5.3.65 Whiting (*Merlangius merlangus*) in Divisions VIIb,c,e–k (Southern Celtic seas and Eastern English Channel)

ICES stock advice

ICES advises that when the MSY approach is applied, catches in 2016 should be no more than 19 076 tonnes. If this stock is not under the EU landing obligation in 2016 and discard rates do not change from the average of the last three years (2012–2014), this implies landings of no more than 15 395 tonnes.

Stock development over time

The spawning-stock biomass (SSB) shows an increasing trend from 2008 and remains above MSY $B_{trigger}$. Fishing mortality (F) declined from 2007 to 2012, was below F_{MSY} during 2011–2013, and is at F_{MSY} in 2014. Recruitment between 2010 and 2012 was below average, whereas the 2013 year class is estimated to be the second highest in the series.

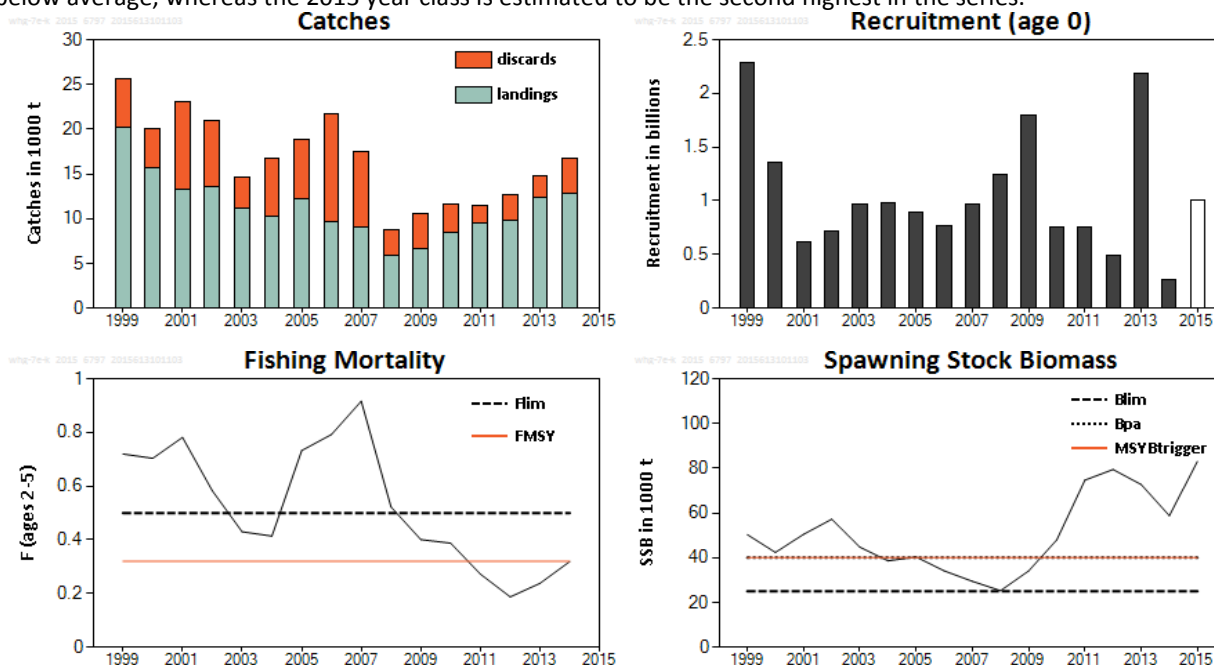


Figure 5.3.65.1 Whiting in Divisions VIIb,c,e–k. Summary of stock assessment (weights in thousand tonnes). Assumed recruitment values are not shaded.

Stock and exploitation status

Table 5.3.65.1 Whiting in Divisions VIIb,c,e–k. State of the stock and fishery, relative to reference points.

| | | Fishing pressure | | | Stock size | | | | |
|---------------------------|-------------------|------------------|------|------|-------------------|------|------|---|----------------------------|
| | | 2012 | 2013 | 2014 | 2013 | 2014 | 2015 | | |
| Maximum Sustainable Yield | F_{MSY} | ✓ | ✓ | ✓ | MSY | ✓ | ✓ | ✓ | Above trigger |
| Precautionary approach | F_{pa}, F_{lim} | ✓ | ✓ | ✓ | B_{pa}, B_{lim} | ✓ | ✓ | ✓ | Full reproductive capacity |
| Management plan | F_{MGT} | - | - | - | SSB_{MGT} | - | - | - | Not applicable |

Catch options

Table 5.3.65.2 Whiting in Divisions VIIb,c,e–k. The basis for the catch options.

| Variable | Value | Source | Notes |
|-------------------------------|----------------|--------------|--------------------------------------|
| F ages 2–5 (2015) | 0.25 | ICES (2015a) | mean (2012–2014) |
| SSB (2016) | 67 569 t | ICES (2015a) | |
| R _{age0} (2015–2016) | 1.010 millions | ICES (2015a) | GM _{1999–2013} |
| Total catch (2015) | 14 921 t | ICES (2015a) | |
| Landings (2015) | 10 879 t | ICES (2015a) | |
| Discards (2015) | 4042 t | ICES (2015a) | Mean discard rate-at-age (2012–2014) |

Table 5.3.65.3 Whiting in Divisions VIIb,c,e–k. The catch options. Weights in tonnes. No information for % TAC change can be shown as the TAC area differs from the stock distribution area.

| Rationale | Catch (2016) | Wanted catch* (2016) | Unwanted catch* (2016) | Basis | F catch (2016) | F Wanted catch (2016) | F Unwanted catch (2016) | SSB (2017) | % SSB change ** |
|--|--------------|----------------------|------------------------|--------------------------|----------------|-----------------------|-------------------------|------------|-----------------|
| MSY approach | 19076 | 15395 | 3682 | F _{MSY} | 0.32 | 0.24 | 0.08 | 66187 | -2% |
| Zero catch | 0 | 0 | 0 | F = 0 | - | - | - | 83110 | +23% |
| Other options | 12478 | 10106 | 2371 | F ₂₀₁₅ × 0.80 | 0.2 | 0.15 | 0.05 | 71999 | +7% |
| | 13885 | 11238 | 2647 | F ₂₀₁₅ × 0.90 | 0.22 | 0.17 | 0.05 | 70755 | +5% |
| | 15262 | 12343 | 2919 | F ₂₀₁₅ × 1.00 | 0.25 | 0.19 | 0.06 | 69540 | +3% |
| | 16609 | 13422 | 3187 | F ₂₀₁₅ × 1.10 | 0.27 | 0.21 | 0.07 | 68354 | +1% |
| | 17926 | 14476 | 3450 | F ₂₀₁₅ × 1.20 | 0.3 | 0.23 | 0.07 | 67196 | -1% |
| <i>Mixed-fisheries options (ICES, 2015b)</i> | | | | | | | | | |
| Maximum | 18463 | | | A | 0.33 | | | 63716 | -6% |
| Minimum | 10236 | | | B | 0.17 | | | 70978 | +5% |
| Cod | 10398 | | | C | 0.17 | | | 70835 | +5% |
| Haddock | 12693 | | | D | 0.21 | | | 68802 | +2% |
| Whiting*** | 18070 | | | E | 0.32 | | | 64061 | -5% |
| SQ effort | 18038 | | | F | 0.32 | | | 64089 | -5% |

* “Wanted catch” is used to describe fish that would be landed in the absence of the EU landing obligation. The “unwanted catch” refers to the component that was previously discarded (ICES, 2015c).

** SSB 2017 relative to SSB 2016.

*** The whiting mixed-fisheries option results in a catch that differs slightly to the single-stock advice, due to the assumption that effort in the intermediate year is the same as in 2014.

Mixed-fisheries assumptions:

(note: The “stock share” is used to describe the share of the fishing opportunities for each particular fleet, which has been calculated based on the single-stock advice for 2016 and the historical proportion of the stock landings taken by the fleet)

- A. Maximum: Each fleet stops fishing when its last stock share is exhausted.
- B. Minimum: Each fleet stops fishing when its first stock share is exhausted.
- C. Cod: Each fleet stops fishing when its cod stock share is exhausted.
- D. Haddock: Each fleet stops fishing when its haddock stock share is exhausted.
- E. Whiting: Each fleet stops fishing when its whiting stock share is exhausted.
- F. *Status quo* effort: The effort of each fleet is the same as in 2014.

Basis of the advice

Table 5.3.65.4 Whiting in Divisions VIIb,c,e–k. The basis of the advice.

| | |
|-----------------|---|
| Advice basis | MSY approach |
| Management plan | There is no management plan for whiting in this area. |

Quality of the assessment

There is considerable uncertainty around the discard estimates prior to 2003, but the assessment appears to be quite robust to this uncertainty. This year’s assessment is consistent with last year.

This stock was benchmarked in 2014. There were revisions in the input data to include discards and a revised natural mortality. This has rescaled the SSB, F, and recruitment relative to previous assessments. This rescaling was most pronounced for the recruitment time-series.

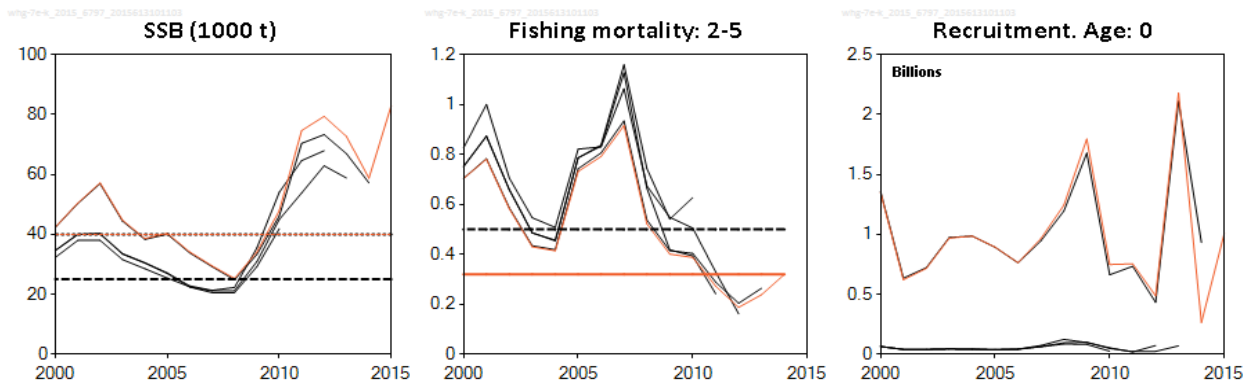


Figure 5.3.65.2 Whiting in Divisions VIIb,c,e–k. Historical assessment results (final-year recruitment estimates included). The 2014 benchmark led to a rescaling of the assessment outputs, particularly recruitment.

Issues relevant for the advice

Despite the introduction of square mesh panels during 2012 the volume of discards has remained high and there is not yet evidence of improvements in selectivity in the fishery.

Whiting are caught in mixed fisheries with cod and haddock and this should be taken into account. Assuming fishing patterns and catchability in 2015 and 2016 are unchanged from those in 2014, cod, haddock, and whiting are the limiting species in the mixed-fisheries scenarios for 83% (12 fleets), 12% (2 fleets), and 5% (2 fleets) of the fishing effort in the Celtic Sea gadoid fisheries in 2014 (see mixed fisheries analysis presented in Section 5.2.2.1).

Whiting is fished at or below F_{MSY} in 2016 under all mixed-fisheries scenarios except the maximum scenario, reflecting that it is the least limiting stock for most fleets.

Catches reported or taken in ICES rectangles 33E2 and 33E3 are reallocated from Division VIIa to this stock. The implications for this stock are very minor.

Reference points

Table 5.3.65.5 Whiting in Divisions VIIb,c,e–k. Reference points, values, and their technical basis.

| Framework | Reference point | Value | Technical basis | Source |
|------------------------|-------------------|-----------|---|-------------|
| MSY approach | MSY $B_{trigger}$ | 40 000 t | Lower bound of expected range at $F_{0.1}$. | ICES (2014) |
| | F_{MSY} | 0.32 | $F_{0.1}$ as estimated using a stochastic equilibrium analysis on the full time-series. | ICES (2014) |
| Precautionary approach | B_{lim} | 25 000 t | B_{loss} , the lowest observed spawning-stock biomass. | ICES (2014) |
| | B_{pa} | 40 000 t | Lower bound of expected range at $F_{0.1}$. | ICES (2014) |
| | F_{lim} | 0.5 | Increasing risk of reaching B_{lim} . | ICES (2014) |
| | F_{pa} | Undefined | | |
| Management plan | SSB_{MGT} | Undefined | | |
| | F_{MGT} | Undefined | | |

Basis of the assessment

Table 5.3.65.6 Whiting in Divisions VIIb,c,e–k. The basis of the assessment.

| | |
|--------------------------|--|
| ICES stock data category | 1 (ICES, 2015c). |
| Assessment type | Age-based analytical assessment (XSA) that uses catches in the model and in the forecast. |
| Input data | Commercial catches (international landings and ages from catch sampling) and one survey index (EVHOE-WIBTS-Q4 & IGFS-WIBTS-Q4 combined: IGFSEVHOE); maturity-based knife-edge at age 2; Lorenzen-based M (Lorenzen, 1996) derived from the mean weight-at-age. |
| Discards and bycatch | Included in the assessment for the full time-series. Sampling from the majority of the fleets. |
| Indicators | None. |
| Other information | This stock was benchmarked in 2014 (WKCELT ; ICES, 2014). |
| Working group | Working Group for the Celtic Seas Ecoregion (WGCSE), Working Group on Mixed Fisheries Advice (WGMIXFISH-Advice). |

Information from stakeholders

Information from the French industry shows that the quota uptake rate in 2015 is faster than in previous years.

History of advice, catch, and management

Table 5.3.65.7 Whiting in Divisions VIIb,c,e–k. History of ICES advice, the agreed TAC, and ICES estimates of landings. Weights in thousand tonnes.

| Year | ICES advice | Predicted catch corresp. to advice | Predicted landings corresp. to advice | Agreed TAC* | ICES landings | ICES discards |
|------|---|---------------------------------------|--|-------------|---------------|---------------|
| 1987 | <i>Status quo</i> F; TAC | - | 7.1 [#] | | 12.7 | |
| 1988 | Precautionary TAC | - | 7.0 [#] | | 15.1 | |
| 1989 | Precautionary TAC | - | 7.9 [#] | | 16.5 | |
| 1990 | No increase in F; TAC | - | 8.4 [#] | | 14.1 | |
| 1991 | Precautionary TAC | - | 8.0 [#] | | 13.5 | |
| 1992 | If required, precautionary TAC | - | 8.0 [#] | | 12.4 | |
| 1993 | Within safe biological limits | - | 6.6 [#] | 22.0 | 16.3 | |
| 1994 | Within safe biological limits | - | < 9.4 [#] | 22.0 | 20 | |
| 1995 | 20% reduction in F | - | 8.2 ^{##} | 25.0 | 22.7 | |
| 1996 | 20% reduction in F | - | 8.6 ^{##} | 26.0 | 18.3 | |
| 1997 | At least 20% reduction in F | - | < 7.3 ^{###} | 27.0 | 20.5 | |
| 1998 | At least 20% reduction in F | - | < 8.2 ^{###} | 27.0 | 19.2 | |
| 1999 | No increase in F | - | 12.4 ^{###} | 25.0 | 20.2 | 5.4 |
| 2000 | 17% reduction in F | - | < 13.1 ^{###} | 22.2 | 15.6 | 4.4 |
| 2001 | No increase in F | - | 13.5 ^{###} | 21.0 | 13.2 | 9.9 |
| 2002 | No increase in F | - | 27.7 ^{###} | 31.7 | 13.6 | 7.3 |
| 2003 | No increase in F | - | 20.2 ^{###} | 31.7 | 11.1 | 3.6 |
| 2004 | No increase in F | - | 14.0 ^{###} | 27.0 | 10.2 | 6.5 |
| 2005 | No increase in F | - | 10.6 ^{###} | 21.6 | 12.2 | 6.7 |
| 2006 | No increase in F | - | 10.8 ^{###} | 19.9 | 9.7 | 12.0 |
| 2007 | No increase in F | - | - | 19.9 | 9.1 | 8.5 |
| 2008 | Reduction in F | - | - | 19.9 | 5.9 | 2.9 |
| 2009 | Same advice as last year | - | - | 16.95 | 6.6 | 4.1 |
| 2010 | Same advice as last year | - | - | 14.407 | 8.5 | 3.0 |
| 2011 | See scenarios | - | - | 16.658 | 9.5 | 2.0 |
| 2012 | No increase catch and improved gear selection | - | - | 19.053 | 9.8 | 2.4 |
| 2013 | MSY approach | - | < 17.5 ^{###} | 24.5 | 12.4 | 2.5 |
| 2014 | MSY approach | - | < 15.562 ^{###} | 19.162 | 12.8 | 3.9 |
| 2015 | MSY approach | < 18.501 ^{**} | < 14.230 | 17.742 | | |
| 2016 | MSY approach | ≤ 19.076 ^{**} | ≤ 15.395 | | | |

* TAC covers Subarea VII (except Division VIIa).

** Wanted catch.

[#] For the Divisions VIIf,g stock component.

^{##} For the Divisions VIIf–h stock component.

^{###} For the Divisions VIIe–k stock component.

History of catch and landings

Table 5.3.65.8 Whiting in Divisions VIIb,c,e–k. Catch distribution by fleet in 2014 as estimated by ICES.

| Catch (2014) | Landings | | | | Discards | | | |
|--------------|------------------|----------------|-----------------|----------------|------------------|----------------|----------------|----------------|
| | 66% otter trawls | 21% seine nets | 11% other gears | 2% beam trawls | 64% otter trawls | 20% seine nets | 9% other gears | 7% beam trawls |
| 16742 t | 12847 t | | | | 3895 t | | | |

Table 5.3.65.9 Whiting in Divisions VIIb,c,e–k. History of official landings presented for each country participating in the fishery (in tonnes).

| Year | Belgium | France | Ireland | UK: Eng. + W. | Others | Rectangles 33E2 & 33E3 | Total |
|-------|---------|--------|---------|------------------|--------|---------------------------|-------|
| 1998 | 479 | 11748 | 5549 | 1755 | 179 | | 19710 |
| 1999 | 448 | 16418 | 6013 | 1354 | 27 | | 24260 |
| 2000 | 194 | 9186 | 5358 | 1255 | 39 | | 16032 |
| 2001 | 171 | 7317 | 5365 | 948 | 31 | | 13832 |
| 2002 | 149 | 7548 | 5718 | 847 | 35 | | 14297 |
| 2003 | 129 | 5989 | 4516 | 763 | 21 | | 11418 |
| 2004 | 180 | 4874 | 4350 | 587 | 132 | | 10123 |
| 2005 | 218 | 5913 | 5774 | 482 | 136 | | 12523 |
| 2006 | 128 | 4711 | 4570 | 413 | 129 | | 9951 |
| 2007 | 127 | 3575 | 4864 | 575 | 86 | | 9227 |
| 2008 | 122 | 3072 | 2406 | 618 | 35 | | 6253 |
| 2009 | 87 | 2815 | 2798 | 828 | 25 | | 6553 |
| 2010 | 101 | 3464 | 4331 | 792 | 86 | | 8774 |
| 2011 | 100 | 4311 | 4752 | 739 | 174 | | 10076 |
| 2012 | 170 | 3709 | 5842 | 750 | 141 | 32 | 10644 |
| 2013 | 226 | 4007 | 6887 | 906 | 92 | 34 | 12152 |
| 2014* | 222 | 4926 | 6851 | 969 | 36 | 49 | 13053 |

*Preliminary.

Summary of the assessment

Table 5.3.65.10 Whiting in Divisions VIIb,c,e–k. Assessment summary with weights (in tonnes).

| Year | Recruitment Age 0 thousands | SSB tonnes | Landings tonnes | Discards tonnes | Mean F Ages 2–5 |
|----------------|-----------------------------|--------------|-----------------|-----------------|-----------------|
| 1999 | 2290658 | 50311 | 20180 | 5418 | 0.719 |
| 2000 | 1350888 | 42385 | 15644 | 4401 | 0.703 |
| 2001 | 621217 | 50451 | 13196 | 9874 | 0.782 |
| 2002 | 715601 | 57214 | 13640 | 7337 | 0.583 |
| 2003 | 969261 | 44731 | 11098 | 3558 | 0.43 |
| 2004 | 985037 | 38624 | 10188 | 6482 | 0.414 |
| 2005 | 893355 | 40350 | 12207 | 6704 | 0.732 |
| 2006 | 763451 | 34119 | 9660 | 12031 | 0.792 |
| 2007 | 965296 | 29473 | 9086 | 8457 | 0.916 |
| 2008 | 1243955 | 25266 | 5859 | 2881 | 0.522 |
| 2009 | 1796366 | 34076 | 6572 | 4042 | 0.401 |
| 2010 | 748544 | 47977 | 8514 | 3082 | 0.387 |
| 2011 | 753721 | 74688 | 9498 | 1940 | 0.272 |
| 2012 | 487008 | 79438 | 9812 | 2818 | 0.187 |
| 2013 | 2180652 | 72714 | 12402 | 2394 | 0.238 |
| 2014 | 264479 | 58779 | 12847 | 3895 | 0.319 |
| 2015 | 1009811 [^] | 83052 | | | |
| Average | 1061135 | 50803 | 11275 | 5332 | 0.525 |

[^] GM 1999–2013.

Sources and references

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