## 6.3.56 Whiting (*Merlangius merlangus*) in Subarea IV and Division VIId (North Sea and Eastern English Channel)

### ICES stock advice

***Please note: This advice was updated in November 2015 (ICES, 2015e).***

ICES advises that when the EU–Norway management strategy is applied, total catches in 2016 should be no more than 25 000 tonnes. If this stock is not under the EU landing obligation in 2016 and discard and industrial bycatch rates do not change from the average (2012–2014), this implies human consumption landings of no more than 13 957 tonnes.

### Stock development over time

Spawning-stock biomass (SSB) and fishing mortality (F) have been relatively stable since 2003. Recruitment has been low since 2003, with recruitment in 2015 above the average of the recent years.

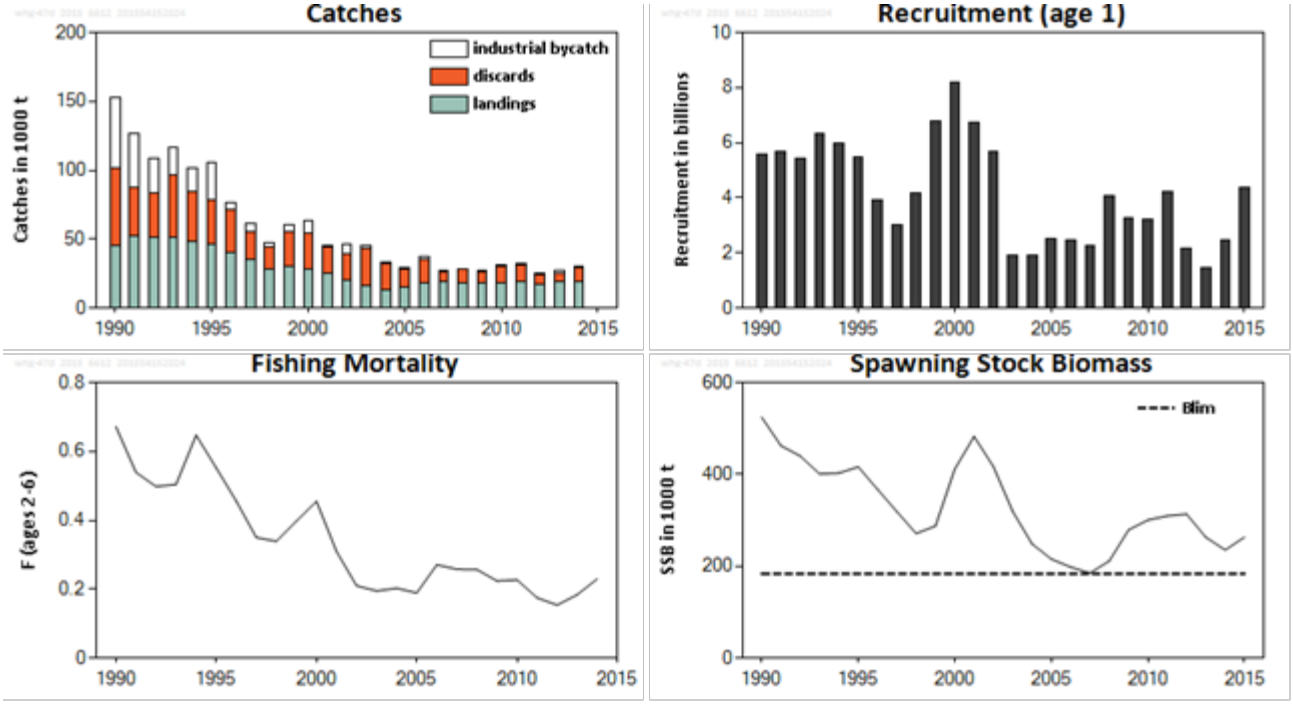


**Figure 6.3.56.1** Whiting in Subarea IV and Division VIId. Summary of stock assessment (weights in thousand tonnes).

### Stock and exploitation status

**Table 6.3.56.1** Whiting in Subarea IV and Division VIId. State of the stock and fishery, relative to reference points.

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

## Catch options

**Table 6.3.56.2** Whiting in Subarea IV and Division VIId. The basis for the catch options.

| Variable | Value | Source | Notes |
|---|---|---|---|
| F (2015) | 0.230 | ICES (2015a) | F (2014) |
| SSB (2016) | 326331 | ICES (2015a) | Short-term forecast (STF), tonnes |
| R (2015) | 4353 | ICES (2015a) | RCT3, millions of individuals |
| R (2016–2017) | 3782 | ICES (2015a) | Geometric mean (GM, 1990–2014), millions of individuals |
| Total catch (2015) | 36754 | ICES (2015a) | MFDP output, tonnes |
| Commercial landings (2015) | 21731 | ICES (2015a) | MFDP output, tonnes |
| Discards (2015) | 13861 | ICES (2015a) | MFDP output, tonnes; discard rate equals average 2012–2014 |
| Industrial bycatch | 1162 | ICES (2015a) | MFDP output, tonnes; bycatch rate equals average 2012–2014 |

**Table 6.3.56.3** Whiting in Subarea IV and Division VIId. The catch options. Weights in thousand tonnes.

| Rationale | Total catch 2016 | Total wanted catch IV+VIId 2016 * | Total unwanted catch 2016 * | Total IBC 2016 ** | Wanted catch IV *** 2016 | Wanted catch VIId *** 2016 | Basis | Total F 2016 | F (wanted catch) 2016 | F (unwanted catch) 2016 | F(IBC) 2016 | SSB 2017 | % SSB change ^ | % TAC Change wanted catch ^^ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EU–Norway management strategy | 25.000 | 13.957 | 9.891 | 1.153 | 11.626 | 2.330 | 15% TAC constraint | 0.155 | 0.106 | 0.039 | 0.010 | 354 | 8.5 | −15 |
| IBC only | 1.218 | 0.000 | 0.000 | 1.218 | 0.000 | 0.000 | No HC fishery | 0.010 | 0.000 | 0.000 | 0.010 | 374 | 14.5 | −100 |
| Other options | 28.148 | 15.778 | 11.225 | 1.144 | 13.144 | 2.634 | $0.75 \times F_{2014}$ | 0.175 | 0.121 | 0.045 | 0.010 | 352 | 7.8 | −4 |
| | 24.267 | 13.536 | 9.577 | 1.155 | 11.276 | 2.260 | $F_{MGT}$ from Management Strategy | 0.150 | 0.102 | 0.038 | 0.010 | 355 | 8.7 | −18 |
| | 37.442 | 21.268 | 15.056 | 1.118 | 17.717 | 3.551 | $F_{2014}$ | 0.230 | 0.161 | 0.060 | 0.010 | 344 | 5.4 | 30 |
| | 29.260 | 16.420 | 11.700 | 1.141 | 13.678 | 2.742 | Roll-over TAC | 0.182 | 0.126 | 0.047 | 0.010 | 351 | 7.5 | 0 |
| | 45.157 | 25.608 | 18.452 | 1.098 | 21.332 | 4.276 | $1.25 \times F_{2014}$ | 0.285 | 0.201 | 0.075 | 0.010 | 338 | 3.6 | 56 |
| | 33.521 | 18.882 | 13.509 | 1.129 | 15.730 | 3.153 | 15% TAC increase | 0.210 | 0.146 | 0.054 | 0.010 | 347 | 6.4 | 15 |
| *Mixed-fisheries options – minor differences with calculation above can occur because of the different methodology used (ICES, 2015b).* | | | | | | | | | | | | | | |
| *Maximum* | 70.557 | | | | | | A | 0.46 | | | | 319 | −2 | |
| *Minimum* | 16.345 | | | | | | B | 0.10 | | | | 363 | 11 | |
| *Cod* | 27.156 | | | | | | C | 0.16 | | | | 354 | 8 | |
| *SQ_Effort* | 36.084 | | | | | | D | 0.22 | | | | 347 | 6 | |
| *Value* | 35.168 | | | | | | E | 0.21 | | | | 348 | 7 | |
| *Effort_Mgt* | 29.008 | | | | | | F | 0.17 | | | | 353 | 8 | |

* "Wanted" and "unwanted" catch are used to described fish that would be landed and discarded in the absence of the EU landing obligation based on discard rates estimates for 2012–2014.

** The split of catch between wanted catch, unwanted catch, and industrial bycatch (IBC) in 2016 was done using partial age-dependent fishing mortalities as forecasting input. Partial Fs were calculated based on total F-at-age and the numbers-at-age per catch category as estimated in the assessment (average exploitation pattern of 3 recent years).

*** The wanted catch split between Subarea IV and Division VIId in 2016 is the same as the proportion of landings between the areas in 2014: 83.3% from Subarea IV and 16.7% from Division VIId. This assumes that management for Division VIId is separate from Subarea VII. Total catches are based on a combined discard rate for Subarea IV and Division VIId.

^ SSB 2017 relative to SSB 2016.

^^ Human consumption (wanted catch) for Subarea IV in 2016 relative to TAC for Subarea IV and Division IIa in 2015 (13 678 t).

Mixed-fisheries assumptions

(note:"fleet's 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 scenario: Each fleet stops fishing when its last stock share is exhausted.

B. Minimum scenario: Each fleet stops fishing when its first stock share is exhausted.

C. Cod scenario: Each fleet stops fishing when its cod stock share is exhausted.

D. SQ effort scenario: The effort of each fleet in 2015 and 2016 is as in 2014.

E. Value scenario: The effort of each fleet is equal to the weighted average of the efforts required to catch the fleet's quota share of each of the stocks, where the weights are the relative catch values of each stock in the fleet's portfolio.

F. Effort management scenario: Effort reductions according to cod and flatfish management plans.

## Basis of the advice

**Table 6.3.56.4** Whiting in Subarea IV and Division VIId. The basis of the advice.

| Advice basis | EU-Norway management strategy |
|---|---|
| Management plan | **EU–Norway long-term management plan for whiting in the North Sea**<br>Excerpt from the EU–Norway agreement 2014:<br>*The Parties agreed to implement a long-term management plan for the whiting stock in the North Sea, which is consistent with a precautionary approach and designed to provide for sustainable fisheries and high yields.*<br>*The plan shall consist of the following elements:*<br>*1. The Parties shall establish a TAC that is consistent with a fishing mortality rate of no more than 0.15 for appropriate age-groups.*<br>*2. Where the rule in paragraph 1 would lead to a TAC, which deviates by more than 15% from the TAC of the preceding year, the Parties shall establish a TAC that is no more than 15% greater or 15% less than the TAC of the preceding year.*<br>*3. A review of this arrangement shall take place no later than 31 December 2017.*<br>*4. This arrangement entered into force on 1 January 2014.* |

## Quality of the assessment

The overall reporting of catch data provided to ICES has improved during 2012–2014 through such aspects as the fully documented fisheries (FDF) programme and increased coverage by the Scottish industry/science observer sampling scheme.

In 2012, natural mortality estimates were revised substantially, taking into account additional predation mortality, which has resulted in a rescaling of SSB, F, and recruitment. There have been improvements in the provision of landing and discard estimates from participating countries in recent years. Within the North Sea, stock identity remains an unresolved issue with this assessment.

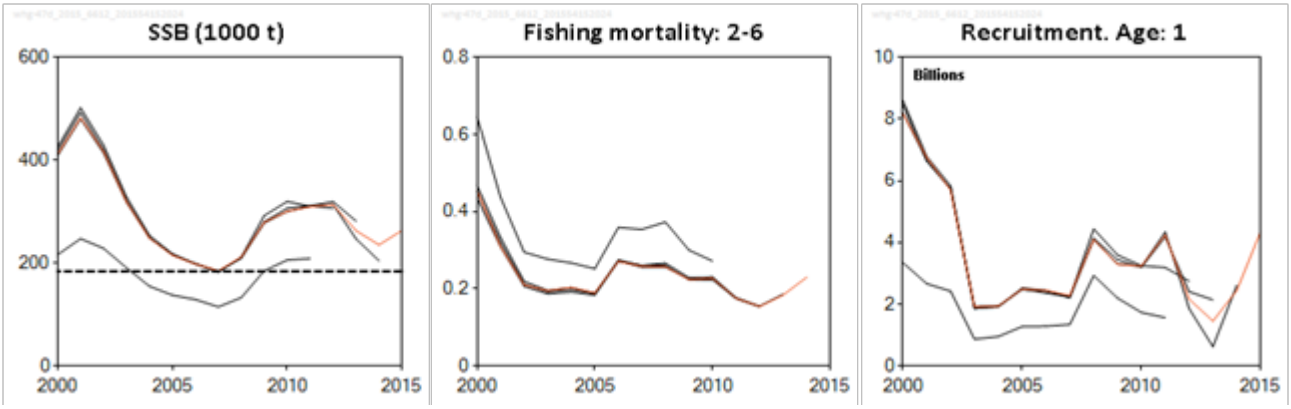


**Figure 6.3.56.2** Whiting in Subarea IV and Division VIId. Historical assessment results (final-year recruitment estimates included).

## Issues relevant for the advice

The overall status of the stock shows a low biomass, but there is still a concentration of whiting biomass in the western part of the North Sea; therefore, catch rates from some local fleets do not represent trends in the overall stock.

Results from a North Sea mixed-fisheries analysis are presented in ICES (2015c). Assuming fishing patterns and catchability in 2015 and 2016 are unchanged from those in 2014, and in the case of a strictly implemented discard ban, North Sea whiting and *Nephrops* FU 6 (if it was managed with an own TAC for the FU) would be the most limiting stocks, constraining 46% and

34% of the 2014 effort, respectively. Results for the whiting stock are also included as additional rows in the catch options table of this advice sheet.

## Reference points

**Table 6.3.56.5** Whiting in Subarea IV and Division VIId. Reference points, values, and their technical basis.

| Framework | Reference point | Value | Technical basis | Source |
|---|---|---|---|---|
| MSY approach | MSY $B_{trigger}$ | Not defined. | | |
| | $F_{MSY}$ | Not defined. | | |
| Precautionary approach | $B_{lim}$ | 184000 t | Provisional reference point $B_{loss}$ (SSB in 2007 in the 2013 assessment) | ICES (2013a) |
| | $B_{pa}$ | Not defined. | | |
| | $F_{lim}$ | Not defined. | | |
| | $F_{pa}$ | Not defined. | | |
| EU–Norway management strategy | $SSB_{MGT}$ | Not defined. | | |
| | $F_{MGT}$ | 0.15 | | EU–Norway management strategy |

## Basis of the assessment

**Table 6.3.56.6** Whiting in Subarea IV and Division VIId. The basis of the assessment.

| | |
|---|---|
| ICES stock data category | 1 (ICES, 2015d). |
| Assessment type | Age-based analytical assessment (FLXSA; ICES, 2015a) that uses catches in the model and in the forecast. |
| Input data | Commercial catches (international landings, ages from catch sampling by métier), two survey indices (IBTS Q1 & Q3 ages 1 to 5); maturity data assumed fixed through time;<br>time-varying natural mortalities from the SMS multispecies model (ICES, 2011). |
| Discards and bycatch | Included in the assessment, using samples (in 2014) for discards from France, Germany, UK (England), and UK (Scotland). Data series from the discard-sampled fleets cover 73% of the landings. There were no biological samples available for industrial bycatch in 2014. |
| Indicators | None. |
| Other information | This assessment was benchmarked in 2013 (WKROUND; ICES, 2013a). |
| Working group | Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK),<br>Working Group on Mixed-Fisheries Advice (WGMIXFISH-NS). |

## Information from stakeholders

The majority of responses from the Fishers' Survey reported an increase in the abundance of whiting in most areas over the last decade (Napier, 2014; Figure 6.3.56.3). This is in contrast with the assessment estimates of SSB, which have remained relatively stable since 2003.

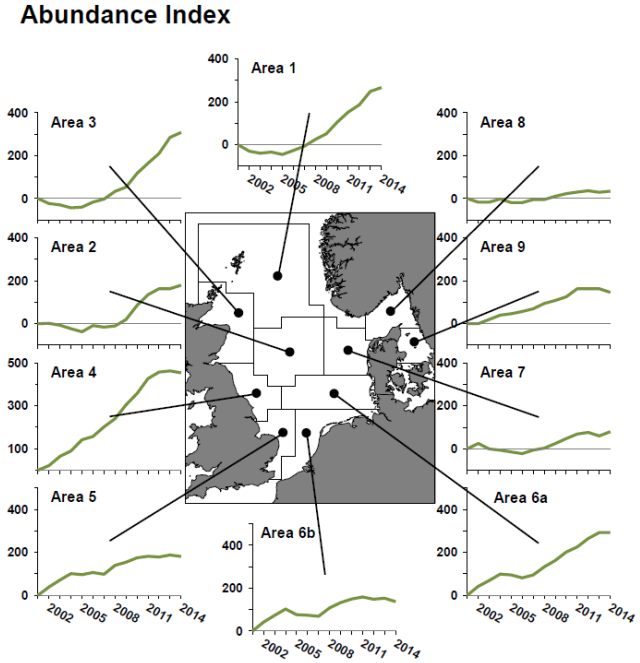


**Figure 6.3.56.3** Cumulative time-series of index of perceptions of abundance of whiting, by area (see page 14 of Napier (2014) for an explanation of the index).

## History of advice, catch, and management

**Table 6.3.56.7** Whiting in Subarea IVand Division VIId. History of ICES advice, the agreed TAC, and ICES estimates of catches. Weights in thousand tonnes. n/a = Not available.

**Subarea IV (North Sea)**

| Year | ICES advice | Predicted landings corresp. to advice* | Predicted catch corresp. to advice** | Agreed TAC | Off. lndgs. | ICES estimates | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Human cons. landings | Indust. bycatch | Discards | Total catch |
| 1989 | Protect juveniles | - | | 115 | 40 | 41 | 43 | 36 | 120 |
| 1990 | 80% of F(88); TAC | 130 | | 125 | 41 | 42 | 51 | 52 | 146 |
| 1991 | 70% of effort (89) | - | | 141 | 47 | 46 | 40 | 30 | 117 |
| 1992 | 70% of effort (89) | - | | 135 | 47 | 45 | 25 | 28 | 99 |
| 1993 | 70% of effort (89) | - | | 120 | 47 | 47 | 21 | 41 | 109 |
| 1994 | Significant reduction in effort; mixed fishery | - | | 100 | 42 | 42 | 17 | 32 | 91 |
| 1995 | Significant reduction in effort; mixed fishery | - | | 81 | 41 | 41 | 27 | 29 | 97 |
| 1996 | Mixed fishery; take into account cod advice | - | | 67 | 35 | 36 | 5 | 27 | 68 |
| 1997 | Mixed fishery; take into account cod advice | - | | 74 | 32 | 31 | 6 | 17 | 54 |
| 1998 | No increase from 1996 level | 54 | | 60 | 24 | 24 | 3 | 12 | 40 |
| 1999 | at least 20% reduction of F(95–97) | 40.4 | | 44 | 25 | 26 | 5 | 22 | 52 |
| 2000 | lowest possible catch | 0 | | 30 | 24 | 24 | 9 | 22 | 55 |
| 2001 | 60% reduction of F(97–99) | 19.4 | | 30 | 19 | 19 | 1 | 16 | 36 |
| 2002 | F not larger than 0.37 | ≤ 33 | | 32 | 16 | 15 | 7 | 17 | 39 |
| 2003 | No cod catches | - | | 16 | 11 | 10 | 3 | 26 | 39 |
| 2004 | No cod catches.<br>Fishing mortality in 2004 should be < $F_{pa}$ | No increase compared to recent years | | 16 | 9 | 9 | 1 | 18 | 28 |
| 2005 | No cod catches. Less than recent average | 52 | | 28.5 | 8 | 11 | 1 | 10 | 22 |
| 2006 | No cod catches. Less than recent average | < 17.3 | | 23.8 | 16 | 15 | 2 | 14 | 31 |
| 2007 | No cod catches. Less than recent average | < 15.1 | | 23.8 | 16 | 16 | 1 | 5 | 22 |
| 2008 | No cod catches. Less than recent average | < 15.1 | | 17.9 | 14 | 13 | 0 | 8 | 22 |
| 2009 | No cod catches. $F < F_{max}$ | < 11 | | 15.2 | 12 | 12 | 1 | 5 | 18 |
| 2010 | No cod catches. Stable SSB | < 6.8 | | 12.9 | 12 | 12 | 1 | 8 | 21 |
| 2011 | No cod catches. Stable SSB | < 9.5 | | 14.832 | 13 | 13 | 2 | 8 | 23 |
| 2012 | Management plan | < 17.1 | | 17.056 | 12.588 | 12.929 | 0.078 | 5.929 | 18.936 |
| 2013 | Precautionary considerations (F = 0.225) and separate management for Division VIId | < 19 | | 18.932 | 13.361 | 15.384 | 1.53 | 4.198 | 21.119 |
| 2014 | November update: Precautionary considerations (15% TAC reduction) and separate management for Division VIId | < 16.092 | | 16.092 | 13.756 | 15.616 | 1.479 | 8.326 | 25.421 |
| 2015 | November update: Management plan and separate management for Division VIId | < 13.678 | | 13.678 | | | | | |
| 2016 | EU–Norway management strategy | | ≤ 25.000 | | | | | | |

*Including Division VIId from 2006 to 2010.

**Catch corresponding to the advice for the whole stock (Subarea IV and Division VIId)

**Division VIId (Eastern Channel)**

| Year | ICES advice | Predicted landings corresp. to advice* | Predicted catch corresp. to advice^ | Agreed TAC *** | Official landings | ICES estimates | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Human cons. | Discards | Total catch |
| 1989 | Precautionary TAC | - | | - | n/a | 4.2 | n/a | n/a |
| 1990 | No increase in F; TAC | 8.0 ** | | - | n/a | 3.5 | 3.3 | 6.8 |
| 1991 | $F_{sq}$; TAC | 5.1 | | - | n/a | 5.7 | 4.2 | 9.9 |
| 1992 | If required, precautionary TAC | 6.0 ** | | - | 5.9 | 5.7 | 4.1 | 9.8 |
| 1993 | No basis for advice | - | | - | 5.4 | 5.2 | 3 | 8.2 |
| 1994 | No long-term gains in increasing F | - | | - | 7.1 | 6.6 | 3.9 | 10.5 |
| 1995 | Significant reduction in effort; link to North Sea | - | | - | 5.6 | 5.4 | 3.2 | 8.6 |
| 1996 | Reference made to North Sea advice | - | | - | 5.1 | 5.0 | 3.4 | 8.3 |
| 1997 | Reference made to North Sea advice | - | | - | 4.8 | 4.6 | 3.0 | 7.6 |
| 1998 | Reference made to North Sea advice | 5.8 | | 27 | 4.8 | 4.6 | 3.2 | 7.8 |
| 1999 | Reference made to North Sea advice | 3.9 | | 25 | 0.2 | 4.4 | 3.6 | 8.0 |
| 2000 | Lowest possible catch | 0 | | 22 | 6.1 | 4.3 | 4.1 | 8.4 |
| 2001 | 60% reduction of $F_{sq}$ | 2.5 | | 21 | 6.6 | 5.8 | 3.1 | 8.9 |
| 2002 | F not larger than 0.37 | ≤ 4 | | 31.7 | 5.4 | 5.8 | 1.3 | 7.2 |
| 2003 | No cod catches | - | | 27 | 7.0 | 5.7 | 0.6 | 6.3 |
| 2004 | No cod catches. Fishing mortality should be < $F_{pa}$ | Catch should not increase compared to recent years | | 21.6 | 5.3 | 4.4 | 0.9 | 5.3 |
| 2005 | No cod catches | - | | 19.9 | 4.9 | 4.8 | 2.2 | 7.0 |
| 2006 | No cod catches. Less than recent average | < 17.3 | | 19.9 | 3.7 | 3.4 | 2.2 | 5.7 |
| 2007 | No cod catches. Less than recent average | < 15.1 | | 19.9 | 3.4 | 3.3 | 1.8 | 5.0 |
| 2008 | No cod catches. Less than recent average | < 15.1 | | 19.9 | 3.2 | 4.5 | 1.9 | 6.4 |
| 2009 | No cod catches. F < $F_{max}$ | < 11 | | 16.9 | 6.6 | 6.6 | 2.5 | 9.1 |
| 2010 | No cod catches. Stable SSB | < 6.8 | | 14.4 | 6.1 | 6.0 | 3.7 | 9.7 |
| 2011 | No cod catches. Stable SSB | < 3.2 | | 16.6 | 5.5 | 5.1 | 3.5 | 8.6 |
| 2012 | Management plan | < 4.2 | | 19.053 | 3.857 | 4.103 | 2.446 | 6.549 |
| 2013 | Precautionary considerations (F = 0.225) and separate management for Division VIId | < 7 | | 24.500 | 4.293 | 3.950 | 1.778 | 5.728 |
| 2014 | November update: Precautionary considerations (15% TAC reduction) and separate management for Division VIId | < 5.106 | | 20.668 | 3.212 | 3.130 | 2.125 | 5.255 |
| 2015 | November update: Management plan and separate management for Division VIId | < 3.512 | | 17.742 | | | | |
| 2016 | EU–Norway management strategy | | ≤ 25.000 | | | | | |

* Includes both areas (Subarea IV and Division VIId) from 2006 to 2010.

** Included in TAC for Subarea VII (except Division VIIa).

*** Including Division VIIe.

^ Catch corresponding to the advice for the whole stock (Subarea IV and Division VIId).

## History of catch and landings

**Table 6.3.56.8** Whiting in Subarea IV and Division VIId. Catch distribution by fleet in 2014 as estimated by ICES.

| Catch (2014) | Landings | | | | Discards | Industrial bycatch |
|---|---|---|---|---|---|---|
| 30675 t | 53% demersal trawls and seine with mesh size ≥120 mm (North Sea) | 19% demersal trawls mesh size 70–99 mm (North Sea) | 15% demersal trawls mesh size 70–99 mm (Eastern Channel) | 13% other gears | 10451 t | 1479 t |
| | 18746 t | | | | | |

**Table 6.3.56.9** Whiting in Subarea IV and Division VIId. History of commercial landings; both the official and ICES estimated values are presented by area for each country participating in the fishery. Weights in tonnes. NA = not available.

**Subarea IV**

| Year | Belgium | Denmark | France | Germany | Netherlands | Norway | Sweden | England (Wales) | Scotland | UK | Total landings | Unallocated landings | ICES landings |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1990 | 1040 | 1206 | 4951 | 692 | 3273 | 55 | 16 | 2338 | 23486 | NA | 41057 | −1123 | 42180 |
| 1991 | 913 | 1528 | 5188 | 865 | 4028 | 103 | 48 | 2676 | 31257 | NA | 46606 | 396 | 46210 |
| 1992 | 1030 | 1377 | 5115 | 511 | 5390 | 232 | 22 | 2528 | 30821 | NA | 47026 | 1816 | 45210 |
| 1993 | 944 | 1418 | 5502 | 441 | 4799 | 130 | 18 | 2774 | 31268 | NA | 47295 | 685 | 46610 |
| 1994 | 1042 | 549 | 4735 | 239 | 3864 | 79 | 10 | 2722 | 28974 | NA | 42214 | 344 | 41870 |
| 1995 | 880 | 368 | 5963 | 124 | 3640 | 115 | 1 | 2477 | 27811 | NA | 41379 | 829 | 40550 |
| 1996 | 843 | 189 | 4704 | 187 | 3388 | 66 | 1 | 2329 | 23409 | NA | 35116 | −434 | 35550 |
| 1997 | 391 | 103 | 3526 | 196 | 2539 | 75 | 1 | 2638 | 22098 | NA | 31567 | 627 | 30940 |
| 1998 | 268 | 46 | 1908 | 103 | 1941 | 65 | 0 | 2909 | 16696 | NA | 23936 | 246 | 23690 |
| 1999 | 529 | 58 | NA | 176 | 1795 | 68 | 9 | 2268 | 17206 | NA | NA | NA | 25700 |
| 2000 | 536 | 105 | 2527 | 424 | 1884 | 33 | 4 | 1782 | 17158 | NA | 24453 | 173 | 24280 |
| 2001 | 454 | 105 | 3455 | 402 | 2478 | 44 | 6 | 1301 | 10589 | NA | 18834 | −426 | 19260 |
| 2002 | 270 | 96 | 3314 | 354 | 2425 | 47 | 7 | 1322 | 7756 | NA | 15591 | 721 | 14870 |
| 2003 | 248 | 89 | 2675 | 334 | 1442 | 39 | 10 | 680 | 5734 | NA | 11251 | 801 | 10450 |
| 2004 | 144 | 62 | 1721 | 296 | 977 | 23 | 2 | 1209 | 5057 | NA | 9491 | 541 | 8950 |
| 2005 | 105 | 57 | 1261 | 149 | 805 | 16 | 0 | 2560 | 3441 | NA | 8394 | −2286 | 10680 |
| 2006 | 93 | 251 | 2711 | 252 | 702 | 17 | 2 | NA | NA | 11632 | 15660 | 563 | 15097 |
| 2007 | 45 | 78 | 3336 | 76 | 618 | 11 | 1 | NA | NA | 12110 | 16275 | 609 | 15666 |
| 2008 | 115 | 42 | 3076 | 76 | 656 | 92 | 2 | NA | NA | 10391 | 14451 | 972 | 13479 |
| 2009 | 162 | 79 | 2305 | 124 | 718 | 73 | 4 | NA | NA | 8853 | 12318 | 544 | 11774 |
| 2010 | 147 | 156 | 2644 | 156 | 614 | 118 | 8 | NA | NA | 7845 | 11690 | −591 | 12281 |
| 2011 | 74 | 135 | 2794 | 111 | 514 | 28 | 6 | NA | NA | 8892 | 12554 | −751 | 13305 |
| 2012 | 45 | 131 | 1925 | 25 | 471 | 94 | 4 | NA | NA | 9893 | 12588 | −341 | 12929 |
| 2013 | 33 | 124 | 942 | 44 | 495 | 560 | 1 | NA | NA | 11162 | 13361 | −2023 | 15384 |
| 2014 | 46 | 160 | 1887 | 31 | 466 | 916 | 2 | NA | NA | 10248 | 13756 | −1860 | 15616 |

**Division VIId**

| Year | Belgium VIId | France VII d | Netherlands VII | England (Wales) VIId | Scotland VIId | UK VIId | Total landings | Unallocated landings VIId | ICES landings VIId |
|---|---|---|---|---|---|---|---|---|---|
| 1990 | 83 | NA | 0 | 239 | 0 | NA | NA | NA | 3480 |
| 1991 | 83 | NA | 0 | 292 | 0 | NA | NA | NA | 5720 |
| 1992 | 66 | 5414 | 0 | 419 | 24 | NA | 5923 | 203 | 5740 |
| 1993 | 74 | 5032 | 0 | 321 | 2 | NA | 5429 | 219 | 5210 |
| 1994 | 61 | 6734 | 0 | 293 | 0 | NA | 7088 | 468 | 6620 |
| 1995 | 68 | 5202 | 0 | 280 | 1 | NA | 5551 | 161 | 5390 |
| 1996 | 84 | 4771 | 1 | 199 | 1 | NA | 5056 | 106 | 4950 |
| 1997 | 98 | 4532 | 1 | 147 | 1 | NA | 4779 | 159 | 4620 |
| 1998 | 53 | 4495 | 32 | 185 | 0 | NA | 4765 | 165 | 4600 |
| 1999 | 48 | NA | 6 | 135 | 0 | NA | NA | NA | 4430 |
| 2000 | 65 | 5875 | 14 | 118 | 0 | NA | 6072 | 1772 | 4300 |
| 2001 | 75 | 6338 | 67 | 134 | 0 | NA | 6614 | 814 | 5800 |
| 2002 | 58 | 5172 | 19 | 112 | 0 | NA | 5361 | −439 | 5800 |
| 2003 | 67 | 6654 | 175 | 109 | 0 | NA | 7005 | 1295 | 5710 |
| 2004 | 46 | 5006 | 132 | 99 | 0 | NA | 5283 | 933 | 4350 |
| 2005 | 45 | 4638 | 128 | NA | NA | 90 | 4901 | 111 | 4790 |
| 2006 | 73 | 3487 | 117 | NA | NA | 72 | 3749 | 306 | 3443 |
| 2007 | 75 | 3135 | 118 | NA | NA | 63 | 3391 | 137 | 3254 |
| 2008 | 69 | 2875 | 162 | NA | NA | 87 | 3193 | −1278 | 4471 |
| 2009 | 71 | 6248 | 112 | NA | NA | 138 | 6569 | −77 | 6646 |
| 2010 | 88 | 5512 | 275 | NA | NA | 258 | 6133 | 194 | 5939 |
| 2011 | 78 | 4833 | 282 | NA | NA | 271 | 5464 | 400 | 5064 |
| 2012 | 66 | 3093 | 437 | NA | NA | 261 | 3857 | −246 | 4103 |
| 2013 | 95 | 3076 | 650 | NA | NA | 472 | 4293 | −343 | 3950 |
| 2014 | 89 | 2115 | 663 | NA | NA | 345 | 3212 | −82 | 3130 |

## Summary of the assessment

**Table 6.3.56.10** Whiting in Subarea IV and Division VIId. Assessment summary (weights in tonnes).

| Year | Recruitment Age 1 thousands | SSB tonnes | Landings tonnes | Discards tonnes | Industrial bycatch tonnes | Mean F Ages 2–6 |
|---|---|---|---|---|---|---|
| 1990 | 5579623 | 524311 | 45662 | 55603 | 51337 | 0.672 |
| 1991 | 5686421 | 462165 | 51929 | 35058 | 39755 | 0.539 |
| 1992 | 5424684 | 439801 | 50946 | 32564 | 25045 | 0.498 |
| 1993 | 6312802 | 400799 | 51818 | 44370 | 20723 | 0.504 |
| 1994 | 5989842 | 402822 | 48486 | 35692 | 17473 | 0.647 |
| 1995 | 5454007 | 416298 | 45938 | 32176 | 27379 | 0.552 |
| 1996 | 3935829 | 367194 | 40503 | 30505 | 5116 | 0.456 |
| 1997 | 3030676 | 318719 | 35563 | 19660 | 6213 | 0.35 |
| 1998 | 4184373 | 271079 | 28288 | 15693 | 3494 | 0.339 |
| 1999 | 6800343 | 287442 | 30130 | 25677 | 5038 | 0.398 |
| 2000 | 8169327 | 411487 | 28583 | 26063 | 9160 | 0.455 |
| 2001 | 6752439 | 482385 | 25061 | 19237 | 944 | 0.309 |
| 2002 | 5698481 | 416857 | 20675 | 18501 | 7275 | 0.21 |
| 2003 | 1913873 | 318943 | 16161 | 26745 | 2734 | 0.195 |
| 2004 | 1935858 | 248575 | 13295 | 19048 | 1214 | 0.203 |
| 2005 | 2491554 | 215393 | 15471 | 12525 | 888 | 0.189 |
| 2006 | 2442975 | 198168 | 18535 | 16310 | 2193 | 0.271 |
| 2007 | 2278771 | 185089 | 18915 | 6971 | 1239 | 0.258 |
| 2008 | 4096200 | 211551 | 17951 | 10296 | 0 | 0.257 |
| 2009 | 3291003 | 279003 | 18418 | 7705 | 1016 | 0.224 |
| 2010 | 3234111 | 300610 | 18224 | 11577 | 1346 | 0.227 |
| 2011 | 4240968 | 309605 | 18899 | 11977 | 1750 | 0.175 |
| 2012 | 2161495 | 313321 | 17032 | 7968 | 78 | 0.154 |
| 2013 | 1453422 | 262960 | 19335 | 5976 | 1530 | 0.184 |
| 2014 | 2446622 | 235388 | 18746 | 10451 | 1479 | 0.23 |
| 2015 | 4352809* | 263195** | | | | |
| Average | 4206096 | 328583 | 28583 | 21534 | 9377 | 0.34 |

* RCT3 estimate.

** Estimated survivors from 2014.

## Sources and references

ICES. 2011. Report of the Working Group on Multispecies Assessment Methods (WGSAM), 10–14 October 2011, Woods Hole, USA. ICES CM 2011/SSGSUE:10. 229 pp.

ICES. 2013a. Report of the Benchmark Workshop on Roundfish Stocks (WKROUND), 4–8 February 2013, Aberdeen, UK. ICES CM 2013/ACOM:47.

ICES. 2013b. Joint EU–Norway request to evaluate the long-term management plan for whiting in the North Sea. *In* Report of the ICES Advisory Committee, 2013. ICES Advice 2013, Book 6, Section 6.3.5.2.

ICES. 2015a. Report of the Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK), 28 April–7 May 2015. ICES CM 2015/ACOM:13.

ICES. 2015b. Report of the Working Group on Mixed-Fisheries Advice for the North Sea (WGMIXFISH-Advice), 25–29 May 2015. ICES CM 2015/ACOM:22.

ICES. 2015c. Mixed-fisheries advice for Subarea IV (North Sea) and Divisions IIIa North (Skagerrak) and VIId (Eastern Channel). *In* Report of the ICES Advisory Committee, 2015. ICES Advice 2015, Book 6, Section 6.2.2.2. In preparation.

ICES. 2015d. Advice basis. *In* Report of the ICES Advisory Committee, 2015. ICES Advice 2015, Book 1, Section 1.2. In preparation.

ICES. 2015e. Whiting in IV and VIId advice sheet. *In* Report of the ICES Advisory Committee, 2015. ICES Advice 2015, Book 6, Section 6.2.2.2 Update

Napier, I. R. 2014. Fishers' North Sea stock survey 2014. NAFC Marine Centre, Shetland, Scotland. http://nsss.eu.