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# Blue whiting (*Micromesistius poutassou*) in subareas 1–9, 12, and 14 (Northeast Atlantic and adjacent waters)

## ICES advice on fishing opportunities

ICES advises that when the long term management strategy agreed by the European Union, the Faroe Islands, Iceland, and Norway is applied, catches in 2019 should be no more than 1 143 629 tonnes.

## Stock development over time

Fishing mortality (F) has increased from a historical low in 2011 to above $F_{MSY}$ since 2014. Spawning-stock biomass (SSB) decreased since 2017 but remains well above MSY $B_{trigger}$. Recruitments (R) in 2017 and 2018 are estimated to be low, following a period of high recruitments.

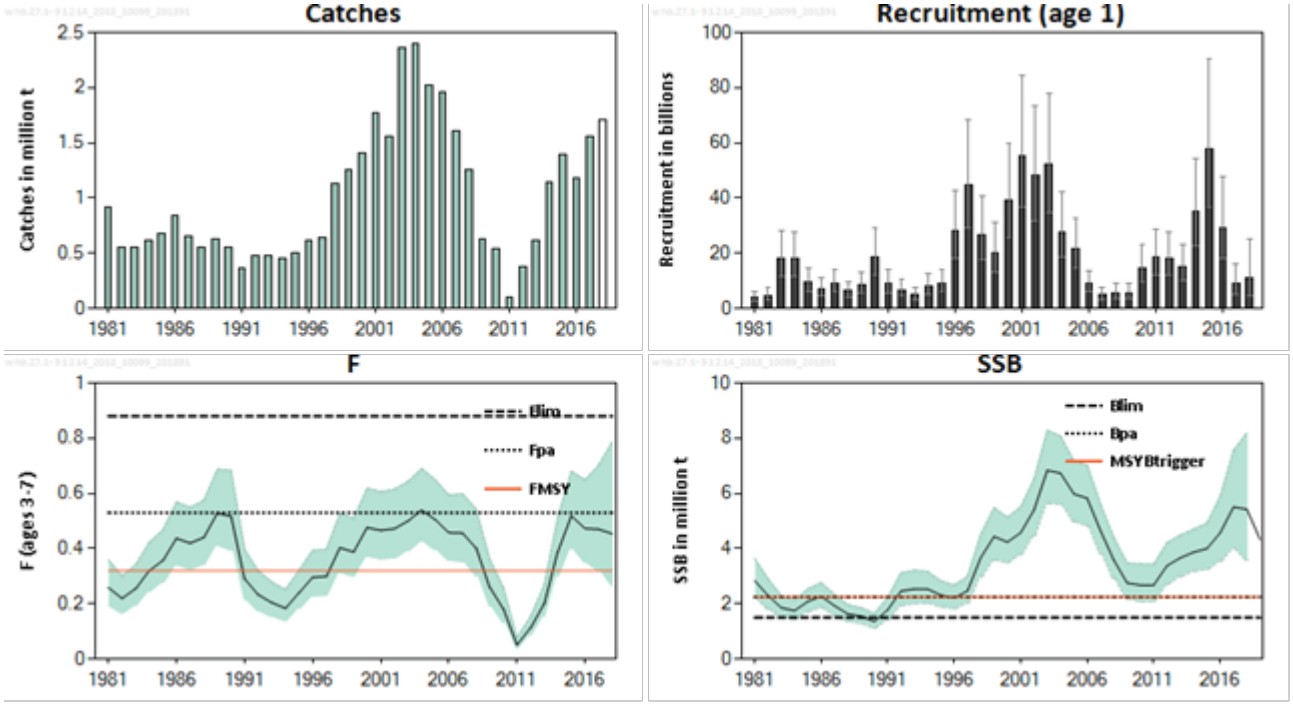


**Figure 1** Blue whiting in subareas 1–9, 12, and 14. Summary of the stock assessment. Catches for 2018 (not shaded) are preliminary. For this stock, $F_{MGT} = F_{MSY}$ and $SSB_{MGT} = B_{pa}$; therefore, the horizontal lines representing these points in the graph would overlap.

## Stock and exploitation status

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

**Table 1** Blue whiting in subareas 1–9, 12, and 14. State of the stock and fishery relative to reference points.

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

## Catch scenarios

**Table 2** Blue whiting in subareas 1–9, 12, and 14. The basis for the catch scenarios.

| Variable | Value | Notes |
|---|---|---|
| $F_{ages\ 3–7}$ (2018) | 0.45 | Catch constraint, based on preliminary 2018 catches |
| SSB (2019) | 4326857 tonnes | From forecast |
| $R_{age\ 1}$ (2019-2020) | 14580847 thousands | GM (1981–2017) |
| Total catch (2018) | 1712874 tonnes | Preliminary 2018 catches as estimated by ICES, based on declared quotas and expected uptake |

**Table 3** Blue whiting in subareas 1–9, 12, and 14. Annual catch scenarios. All weights are in tonnes.

| Basis | Total catch (2019) | $F_{total}$ (2019) | SSB (2020) | % SSB change * | % Catch change ** | % Advice change *** |
|---|---|---|---|---|---|---|
| ICES advice basis | | | | | | |
| Long-term management strategy ($F = F_{MSY}$) | 1143629 | 0.32 | 3752236 | -13 | -33 | -18 |
| Other scenarios | | | | | | |
| MSY approach: $F_{MSY}$ | 1143629 | 0.32 | 3752236 | -13 | -33 | -18 |
| F = 0 | 0 | 0 | 4850444 | 12 | -100 | -100 |
| $F_{pa}$ | 1725357 | 0.53 | 3201021 | -26 | 1 | 24 |
| $F_{lim}$ | 2476742 | 0.88 | 2499796 | -42 | 45 | 79 |
| SSB (2020) = $B_{lim}$ | 3587714 | 1.75 | 1500171 | -65 | 110 | 159 |
| SSB (2020) = $B_{pa}$ | 2747920 | 1.04 | 2250714 | -48 | 60 | 98 |
| SSB (2020) = MSY $B_{trigger}$ | 2747920 | 1.04 | 2250714 | -48 | 60 | 98 |
| $F = F_{2018}$ | 1528542 | 0.45 | 3386825 | -22 | -11 | 10 |
| SSB (2020) = SSB (2019) | 544778 | 0.140 | 4325259 | 0 | -68 | -61 |
| Catch (2019) = Catch (2018) | 1712874 | 0.53 | 3212778 | -26 | 0 | 23 |
| Catch (2019) = Catch (2018) -20 % | 1370342 | 0.40 | 3536701 | -18 | -20 | -1 |
| Catch (2019) = Advice (2018) -20 % | 1109872 | 0.31 | 3784400 | -13 | -35 | -20 |

* SSB 2020 relative to SSB 2019.
** Catch in 2019 relative to catch in 2018 (1 712 874t, ICES estimate).
***Advice value for 2019 relative to advice value for 2018.

The advised catch is lower than last year's advice due to the low recruitment in 2017 and 2018 and decreasing biomass in addition to a downwards revision in the estimate of SSB in recent years.

## Basis of the advice

**Table 4** Blue whiting in subareas 1–9, 12, and 14. The basis of the advice.

| | |
|---|---|
| Advice basis | Long-term management strategy |
| Management plan | A long-term management strategy was agreed by the European Union, the Faroe Islands, Iceland, and Norway in 2016 (Anon, 2016). ICES has evaluated the strategy and found it to be precautionary (ICES, 2016a). |

## Quality of the assessment

Since 2016, the assessment has used a preliminary estimate of catch-at-age in the year in which the assessment is carried out to supplement information from the acoustic survey conducted in the spring. In most recent years more than 90% of the annual catches of the age 3+ fish are consistently taken in the first half year, which makes it reasonable to estimate the total annual catch-at-age from preliminary first semester data. This is expected to provide an assessment that is less prone to the year effects sometimes observed in the survey index from the International Blue Whiting Spawning Stock Survey (IBWSS). The deviations between the preliminary and final catch weight for both 2016 and 2017 are less than 3 %. However, the final age structure differs because only a limited amount of biological samples are available and used. This could have an impact on the accuracy of the forecast.

SSB has been overestimated and F underestimated in the last two years.

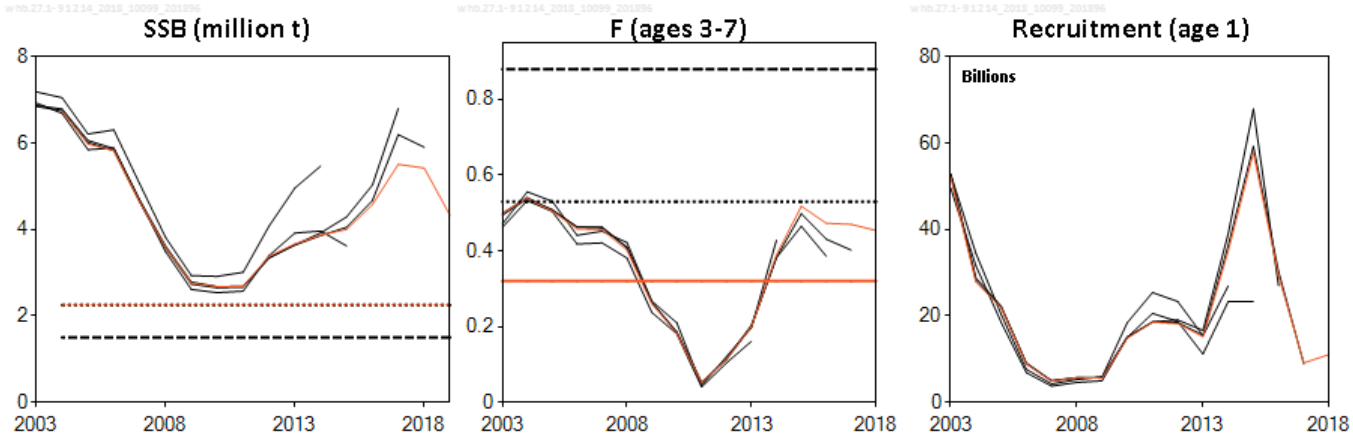


**Figure 2** Blue whiting in subareas 1–9, 12, and 14. Historical assessment results. Since 2016, the SSB time series include the TAC year.

## Issues relevant for the advice

The assessment estimates a low 2017 year class, which is confirmed by a series of surveys not used in the assessment model. This is likely to result in a decrease in stock size, and a reduction in fishing opportunities when the 2016 and the 2017 year classes are fully selected in the fishery from 2020.

The advice is based on the application of the long-term management strategy agreed by the European Union, the Faroe Islands, Iceland, and Norway and does not take into acount the deviations from the plan as evident from the sum of unilateral quotas in 2018. The last catch scenario presented (Table 3) therefore uses the recommended catch from last year's application of the management plan as the basis from which to calculate the option relating to a 20% TAC constraint.

## Reference points

**Table 5** Blue whiting in subareas 1–9, 12, and 14. Reference points, values, and their technical basis.

| Framework | Reference point | Value | Technical basis | Source |
|---|---|---|---|---|
| MSY approach | MSY $B_{trigger}$ | 2250000 t | $B_{pa}$ | ICES (2013a, 2013b, 2016a) |
| | $F_{MSY}$ | 0.32 | Stochastic simulations with segmented regression stock–recruitment relationship | ICES (2016a) |
| Precautionary approach | $B_{lim}$ | 1500000 t | Approximately $B_{loss}$ | ICES (2013a, 2013b, 2016a) |
| | $B_{pa}$ | 2250000 t | $B_{lim}$ exp(1.645 × σ), with σ = 0.246 | ICES (2013a, 2013b, 2016a) |
| | $F_{lim}$ | 0.88 | Equilibrium scenarios with stochastic recruitment: F value corresponding to 50% probability of (SSB < $B_{lim}$) | ICES (2016a) |
| | $F_{pa}$ | 0.53 | Based on $F_{lim}$ and assessment uncertainties. $F_{lim}$ exp(-1.645 × σ), with σ = 0.299 | ICES (2016a) |
| EU–Faroes–Iceland–Norway long-term management strategy | $SSB_{MGT\_lower}$ | 1500000 t | $B_{lim}$ | Anon (2016) |
| | $SSB_{MGT}$ | 2250000 t | $B_{pa}$ | |
| | $F_{MGT\_lower}$ | 0.05 | Arbitrary low F | |
| | $F_{MGT}$ | 0.32 | $F_{MSY}$ | |

## Basis of the assessment

**Table 6** Blue whiting in subareas 1–9, 12, and 14. Basis of the assessment and advice.

| | |
|---|---|
| ICES stock data category | 1 (ICES, 2016b) |
| Assessment type | Age-based analytical assessment (SAM; Berg and Nielsen, 2016) that uses catches for the model and the forecast |
| Input data | Commercial catches, preliminary estimate of catch-at-age in the year in which the assessment is carried out. One survey index (International Blue Whiting Spawning Stock Survey (IBWSS) ages 1–8, 2004–2018, excluding 2010). Fixed maturity estimated in 1994 by combining maturity ogives from the southern and northern areas. Natural mortalities fixed at 0.2, derived in the 1980s from age compositions before the targeted fishery started. |
| Discards and bycatch | Discard data have been included since 2014. |
| Indicators | Estimates of recruitment from surveys: Norwegian bottom trawl survey in the Barents Sea, International Ecosystem Survey in the Nordic Seas in May (IESNS) and the International Ecosystem Summer Survey in the Nordic Seas in July (IESSNS), the Faroese bottom trawl surveys in spring and the Icelandic bottom trawl survey in spring). |
| Other information | The stock was benchmarked in 2012 (WKPELA; ICES, 2012). An inter-benchmark protocol was conducted in the spring of 2016 (ICES, 2016c). |
| Working group | Working Group on Widely Distributed Stocks (WGWIDE) |

## Information from stakeholders

The EU industry reported that the fishery for blue whiting in 2018 was very good. High catch rates were maintained all through the season and the vessels had no difficulty catching their allocations. A very large fishery took place in west of Ireland in the Porcupine area and west of Scotland. There was a higher proportion of larger blue whiting in the catch in the Spring (February, March, and April) than in the previous year. The industry considers recruitment to the fishery to have been above average over the last three years.

## History of the advice, catch, and management

**Table 7** Blue whiting in subareas 1–9, 12, and 14. ICES advice and catch. All weights are in tonnes.

| Year | ICES advice | Catch corresponding to advice | TAC | ICES catch |
|---|---|---|---|---|
| 1987 | TAC for northern areas; no advice for southern areas | 950000 | - | 655000 |
| 1988 | TAC for northern areas; no advice for southern areas | 832000 | - | 557847 |
| 1989 | TAC for northern areas; no advice for southern areas | 630000 | - | 627447 |
| 1990 | TAC for northern areas; no advice for southern areas | 600000 | - | 561610 |
| 1991 | TAC for northern areas; no advice for southern areas | 670000 | - | 369524 |
| 1992 | No advice | - | - | 475026 |
| 1993 | Catch at status quo F (northern areas); no assessment for southern areas | 490000 | - | 480679 |
| 1994 | Precautionary TAC (northern areas); no assessment for southern areas | 485000 | 650000* | 459414 |
| 1995 | Precautionary TAC for combined stock | 518000 | 650000* | 578905 |
| 1996 | Precautionary TAC for combined stock | 500000 | 650000* | 645982 |
| 1997 | Precautionary TAC for combined stock | 540000 | - | 672437 |
| 1998 | Precautionary TAC for combined stock | 650000 | - | 1128969 |
| 1999 | Catches above 650 000 t may not be sustainable in the long run | 650000 | - | 1256228 |
| 2000 | F should not exceed the proposed $F_{pa}$ | 800000 | - | 1412927 |
| 2001 | F should not exceed the proposed $F_{pa}$ | 628000 | - | 1780170 |
| 2002 | Rebuilding plan | 0 | - | 1556792 |
| 2003 | F should be less than the proposed $F_{pa}$ | 600000 | - | 2321406 |
| 2004 | Achieve 50% probability that F will be less than $F_{pa}$ | 925000 | - | 2380161 |
| 2005 | Achieve 50% probability that F will be less than $F_{pa}$ | 1075000 | - | 2034309 |
| 2006 | F old management plan | 1500000 | 2100000** | 1982692 |
| 2007 | F should be less than the proposed $F_{pa}$ | 980000 | 1847000*** | 1630646 |
| 2008 | F should be less than $F_{pa}$ | 835000 | 1250000^ | 1265830 |
| 2009 | Maintain stock above $B_{pa}$ | 384000 | 606000^^ | 641878 |
| 2010 | Follow the agreed management plan | 540000 | 548000 | 528793 |
| 2011 | See scenarios | 40100–223000 | 40000 | 103644 |
| 2012 | Follow the agreed management plan | 391000 | 391000 | 382843 |
| 2013 | Follow the agreed management plan | 643000 | 643000 | 628171 |
| 2014 | Follow the agreed management plan | 948950 | 1200000 | 1161778 |
| 2015 | Follow the agreed management plan | 839886 | 1260000^^^ | 1401894 |
| 2016 | MSY approach | ≤ 776391 | 1147000^^^ | 1194712 |
| 2017 | MSY approach | ≤ 1342330 | 1675400^^^ | 1558349§ |
| 2018 | Long-term management strategy | ≤ 1387872 | 1727964^^^ | 1712874§ |
| 2019 | Long-term management strategy | ≤ 1143629 | | |

* NEAFC proposal for NEAFC regions 1 and 2.
**Agreed TAC from four Coastal States of 2 million tonnes, and an additional allocation to Russia in the international zone of 100 000t.
*** Agreed TAC from four Coastal States of 1.7 million tonnes, and an additional allocation to Russia and Greenland of 147 000 t.
^ Agreed TAC from four Coastal States of 1.1 million tonnes, and an additional allocation to Russia and Greenland.
^^ Agreed TAC from four Coastal States of 0.59 million tonnes, and an additional allocation to Russia of 16 000 t.
^^^ No agreed TAC by the Coastal States, sum of unilateral quotas.
§ Preliminary.

## History of the catch and landings

**Table 8** Blue whiting in subareas 1–9, 12, and 14. Catch distribution by fleet in 2017 as estimated by ICES.

| Total catch (2017) | Landings | | Discards |
|---|---|---|---|
| 1558061 tonnes | 98% pelagic trawl | 2% bottom trawl | 2030 tonnes |
| | 1556030 tonnes | | |

**Table 9** Blue whiting in subareas 1–9, 12, and 14. Catches inside and outside NEAFC regulartory area. All weights are in tonnes

| Year | Catches inside NEAFC RA | Catches outside NEAFC RA | Total catches |
|---|---|---|---|
| 2017 | 263019 | 1295042 | 1558061 |

**Table 10** Blue whiting in subareas 1–9, 12, and 14. History of commercial catch and landings; ICES estimated values are presented for each country participating in the fishery. Discard data are included since 2014. All weights are in tonnes.

| Country | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Denmark | 89500 | 41450 | 54663 | 48659 | 18134 | 248 | 140 | 165 | 340 | 2167 | 35256 | 45178 | 39395 | 60868 |
| Estonia | * | | | | | | | | | | | | | |
| Faroes | 322322 | 266799 | 321013 | 317859 | 225003 | 58354 | 49979 | 16405 | 43290 | 85768 | 224700 | 282502 | 282416 | 356501 |
| France | | 8046 | 18009 | 16638 | 11723 | 8831 | 7839 | 4337 | 9799 | 8978 | 10410 | 9659 | 10345 | 13369 |
| Germany | 15293 | 22823 | 36437 | 34404 | 25259 | 5044 | 9108 | 278 | 6239 | 11418 | 24487 | 24107 | 20025 | 45555 |
| Iceland | 379643 | 265516 | 309508 | 236538 | 159307 | 120202 | 87942 | 5887 | 63056 | 104918 | 182879 | 214870 | 186914 | 228934 |
| Ireland | 75393 | 73488 | 54910 | 31132 | 22852 | 8776 | 8324 | 1195 | 7557 | 13205 | 21466 | 24785 | 27657 | 43238 |
| Lithuania | | | 4635 | 9812 | 5338 | | | | | | 4717 | | 1129 | 5300 |
| Netherlands | 95311 | 147783 | 102711 | 79875 | 78684 | 35686 | 33762 | 4595 | 26526 | 51635 | 38524 | 56397 | 58148 | 81156 |
| Norway | 957684 | 738490 | 642451 | 539587 | 418289 | 225995 | 194317 | 20539 | 118832 | 196246 | 399520 | 489439 | 310412 | 399363 |
| Poland | | | | | | | | | | | | | | 15889 |
| Portugal | 3937 | 5190 | 5323 | 3897 | 4220 | 2043 | 1482 | 603 | 1955 | 2056 | 2150 | 2547 | 2586 | 2046 |
| Spain | 15612 | 17643 | 15173 | 13557 | 14342 | 20637 | 12891 | 2416 | 6726 | 15274 | 32065 | 29206 | 31952 | 28920 |
| Sweden | 19083 | 2960 | 101 | 464 | 4 | 3 | 50 | 1 | 4 | 199 | 2 | 32 | 42 | 90 |
| UK (England Wales) | 2593 | 7356 | 10035 | 12926 | 14147 | 6176 | 2475 | 27 | 1590 | 4100 | 11 | 131 | 1374+ | 3447 |
| UK (Northern Ireland) | | | | | | | | | | 1232 | 2205 | 1119 | | |
| UK (Scotland) | 57028 | 104539 | 72106 | 43540 | 38150 | 173 | 5496 | 1331 | 6305 | 8166 | 24630 | 30508 | 37173 | 64724 |
| Russia | 346762 | 332226 | 329100 | 236369 | 225163 | 149650 | 112553 | 45841 | 88303 | 120674 | 152256 | 185763 | 173655 | 188449 |
| Greenland | | | 6517 | 5389 | 5215 | 60 | 2435 | 24 | 2321 | 2135 | 6500 | 5651 | 12863 | 20500 |
| Unallocated | | | | | | | | | 3 499 | | | | | |
| TOTAL | 2380161 | 2034309 | 1982692 | 1630646 | 1265830 | 641878 | 528793 | 103644 | 382843 | 628171 | 1161778 | 1401894 | 1194712 | 1558349 |

* Landings of 19 467 tonneswere reported to the EU, but not to the ICES WGNPBW.

\+ updated in 2018.

**Table 11** Blue whiting in subareas 1–9, 12, and 14. ICES estimated catches (tonnes) by main fishing areas.

| Year | Norwegian Sea fishery (SAs 1 and 2; ICES divisions 5.a and 14.a–b) | Fishery in the spawning area (SA 12.; ICES divisions 5.b, 6.a–b, and 7.a–c) | Directed- and mixed fisheries in the North Sea (SA 4; ICES Division 3.a) | Total northern areas | Total southern areas (SAs 8 and 9; ICES divisions 7.d–k) | Grand total |
|---|---|---|---|---|---|---|
| 1988 | 55829 | 426037 | 45143 | 527009 | 30838 | 557847 |
| 1989 | 42615 | 475179 | 75958 | 593752 | 33695 | 627447 |
| 1990 | 2106 | 463495 | 63192 | 528793 | 32817 | 561610 |
| 1991 | 78703 | 218946 | 39872 | 337521 | 32003 | 369524 |
| 1992 | 62312 | 318018 | 65974 | 446367 | 28722 | 475026 |
| 1993 | 43240 | 347101 | 58082 | 448423 | 32256 | 480679 |
| 1994 | 22674 | 378704 | 28563 | 429941 | 29473 | 459414 |
| 1995 | 23733 | 423504 | 104004 | 551241 | 27664 | 578905 |
| 1996 | 23447 | 478077 | 119359 | 620883 | 25099 | 645982 |
| 1997 | 62570 | 514654 | 65091 | 642315 | 30122 | 672437 |
| 1998 | 177494 | 827194 | 94881 | 1099569 | 29400 | 1128969 |
| 1999 | 179639 | 943578 | 106609 | 1229826 | 26402 | 1256228 |
| 2000 | 284666 | 989131 | 114477 | 1388274 | 24654 | 1412928 |
| 2001 | 591583 | 1045100 | 118523 | 1755206 | 24964 | 1780170 |
| 2002 | 541467 | 846602 | 145652 | 1533721 | 23071 | 1556792 |
| 2003 | 931508 | 1211621 | 158180 | 2301309 | 20097 | 2321406 |
| 2004 | 921349 | 1232534 | 138593 | 2292476 | 85093 | 2377569 |
| 2005 | 405577 | 1465735 | 128033 | 1999345 | 27608 | 2026953 |
| 2006 | 404362 | 1428208 | 105239 | 1937809 | 28331 | 1966140 |
| 2007 | 172709 | 1360882 | 61105 | 1594695 | 17634 | 1612330 |
| 2008 | 68352 | 1111292 | 36061 | 1215704 | 30761 | 1246465 |
| 2009 | 46629 | 533996 | 22387 | 603012 | 32627 | 635639 |
| 2010 | 36214 | 441521 | 17545 | 495280 | 28552 | 523832 |
| 2011 | 20599 | 72279 | 7524 | 100401 | 3191 | 103592 |
| 2012 | 24391 | 324545 | 5678 | 354614 | 29402 | 384016* |
| 2013 | 31759 | 481356 | 8749 | 521864 | 103973 | 625837** |
| 2014 | 45580 | 885483 | 28596 | 959659 | 195620 | 1155279 |
| 2015 | 150828 | 895684 | 44661 | 1091173 | 305071 | 1396244 |
| 2016 | 59744 | 905087 | 55774 | 1020604 | 162583 | 1183187 |
| 2017 | 136565 | 1284105 | 45474 | 1466144 | 91917 | 1558061 |

* Official catches by area from Sweden are not included (2012).

** Official catches by areafrom Sweden and Greenland are not included (2013).

## Summary of the assessment

**Table 12** Blue whiting in subareas 1–9, 12, and 14. Assessment summary. Weights are in tonnes.

| Year | Recruitm. (age 1) Thousands | Recruitm. 97.5th percentile | Recruitm. 2.5th percentile | SSB | SSB 97.5th percentile | SSB 2.5th percentile | Catch* | Mean F (ages 3–7) | Mean F 97.5th percentile | Mean F 2.5th percentile |
|---|---|---|---|---|---|---|---|---|---|---|
| 1981 | 3943692 | 6171224 | 2520198 | 2843780 | 3640508 | 2221416 | 922980 | 0.26 | 0.36 | 0.186 |
| 1982 | 4664381 | 7383007 | 2946828 | 2303718 | 2913988 | 1821256 | 550643 | 0.22 | 0.30 | 0.162 |
| 1983 | 18115304 | 28059578 | 11695267 | 1858444 | 2299072 | 1502264 | 553344 | 0.26 | 0.34 | 0.190 |
| 1984 | 18014177 | 27639865 | 11740672 | 1752199 | 2130531 | 1441049 | 615569 | 0.32 | 0.42 | 0.24 |
| 1985 | 9611988 | 14685653 | 6291195 | 2088626 | 2544764 | 1714249 | 678214 | 0.36 | 0.47 | 0.27 |
| 1986 | 7249682 | 11002687 | 4776823 | 2271261 | 2762068 | 1867669 | 847145 | 0.44 | 0.57 | 0.34 |
| 1987 | 9122396 | 13876349 | 5997119 | 1931350 | 2345128 | 1590580 | 654718 | 0.42 | 0.55 | 0.32 |
| 1988 | 6427638 | 9783063 | 4223067 | 1637240 | 1971313 | 1359781 | 552264 | 0.44 | 0.57 | 0.34 |
| 1989 | 8537748 | 13044327 | 5588110 | 1547528 | 1857550 | 1289249 | 630316 | 0.53 | 0.69 | 0.41 |
| 1990 | 18736561 | 29063658 | 12078959 | 1360082 | 1647312 | 1122934 | 558128 | 0.52 | 0.68 | 0.39 |
| 1991 | 8988548 | 14103339 | 5728713 | 1779458 | 2229791 | 1420075 | 364008 | 0.29 | 0.40 | 0.21 |
| 1992 | 6713109 | 10398504 | 4333876 | 2459581 | 3124481 | 1936174 | 474592 | 0.23 | 0.32 | 0.170 |
| 1993 | 4998700 | 7837980 | 3187939 | 2540869 | 3213523 | 2009014 | 475198 | 0.20 | 0.28 | 0.149 |
| 1994 | 8135997 | 12637610 | 5237893 | 2535365 | 3171744 | 2026669 | 457696 | 0.184 | 0.25 | 0.134 |
| 1995 | 9335808 | 14346906 | 6074990 | 2312732 | 2827686 | 1891556 | 505176 | 0.24 | 0.32 | 0.179 |
| 1996 | 27984503 | 42911611 | 18249895 | 2212106 | 2678269 | 1827081 | 621104 | 0.30 | 0.39 | 0.22 |
| 1997 | 44654015 | 68314138 | 29188410 | 2467411 | 2992161 | 2034689 | 639681 | 0.30 | 0.40 | 0.23 |
| 1998 | 26698034 | 40590846 | 17560241 | 3674788 | 4521274 | 2986783 | 1131955 | 0.40 | 0.53 | 0.31 |
| 1999 | 20324984 | 31053766 | 13302894 | 4438043 | 5484320 | 3591370 | 1261033 | 0.39 | 0.51 | 0.30 |
| 2000 | 39079520 | 59843181 | 25520182 | 4235751 | 5129742 | 3497561 | 1412449 | 0.48 | 0.62 | 0.37 |
| 2001 | 55497740 | 84311145 | 36531341 | 4571904 | 5511112 | 3792756 | 1771805 | 0.47 | 0.61 | 0.36 |
| 2002 | 48380225 | 73556421 | 31821100 | 5397878 | 6518552 | 4469870 | 1556955 | 0.47 | 0.62 | 0.36 |
| 2003 | 52143422 | 78120861 | 34804230 | 6834267 | 8287133 | 5636111 | 2365319 | 0.50 | 0.64 | 0.39 |
| 2004 | 27840934 | 42105293 | 18409030 | 6730016 | 8072237 | 5610974 | 2400795 | 0.54 | 0.69 | 0.42 |
| 2005 | 21854787 | 32817581 | 14554141 | 5976941 | 7169991 | 4982409 | 2018344 | 0.51 | 0.65 | 0.39 |
| 2006 | 8915416 | 13538385 | 5871058 | 5824060 | 7021375 | 4830917 | 1956239 | 0.46 | 0.59 | 0.35 |
| 2007 | 4873765 | 7426981 | 3198282 | 4641908 | 5614809 | 3837586 | 1612269 | 0.46 | 0.60 | 0.35 |
| 2008 | 5730029 | 8858823 | 3706275 | 3584601 | 4400090 | 2920250 | 1251851 | 0.40 | 0.54 | 0.30 |
| 2009 | 5577076 | 8932002 | 3482285 | 2755802 | 3474958 | 2185478 | 634978 | 0.26 | 0.36 | 0.187 |
| 2010 | 14802057 | 23068329 | 9497910 | 2676765 | 3445491 | 2079551 | 539539 | 0.182 | 0.26 | 0.128 |
| 2011 | 18517015 | 28616700 | 11981809 | 2681413 | 3434960 | 2093175 | 103771 | 0.052 | 0.078 | 0.035 |
| 2012 | 18200627 | 27716214 | 11951951 | 3379349 | 4219058 | 2706766 | 375692 | 0.113 | 0.154 | 0.083 |
| 2013 | 15173469 | 23077923 | 9976381 | 3665883 | 4491716 | 2991885 | 613863 | 0.20 | 0.27 | 0.150 |
| 2014 | 34951221 | 54066761 | 22594064 | 3870679 | 4702926 | 3185710 | 1147650 | 0.39 | 0.51 | 0.30 |
| 2015 | 57777072 | 90577896 | 36854356 | 4001425 | 4919409 | 3254742 | 1390656 | 0.52 | 0.68 | 0.40 |
| 2016 | 29276819 | 47626416 | 17996990 | 4575498 | 5903228 | 3546395 | 1180786 | 0.47 | 0.65 | 0.35 |
| 2017 | 9104584 | 16249224 | 5101379 | 5508728 | 7560914 | 4013548 | 1555069 | 0.47 | 0.70 | 0.32 |
| 2018 | 11037772 | 25300070 | 4815497 | 5422226 | 8197337 | 3586596 | 1712874 | 0.45 | 0.79 | 0.26 |
| 2019 | 14580847** | | | 4326857 | | | | | | |

*Catches presented are the sum of product (SOP) values from catch- and weight-at-age used in the assessment model.
** GM (1981-2017)

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