# Sandeel (*Ammodytes* spp.) in divisions 4.b–c, Sandeel Area 1r (central and southern North Sea, Dogger Bank)

## ICES advice on fishing opportunities

ICES advises that when the maximum sustainable yield (MSY) approach is applied, catches should be no more than 72 997 tonnes in 2025.

## ICES non-fisheries conservation considerations

ICES advises that any activity leading to the degradation of sandeel habitat should be avoided.

## Stock development over time

Spawning-stock size is above MSY $B_{escapement}$, $B_{PA}$, and $B_{lim}$. No reference points for fishing pressure have been defined for this stock.

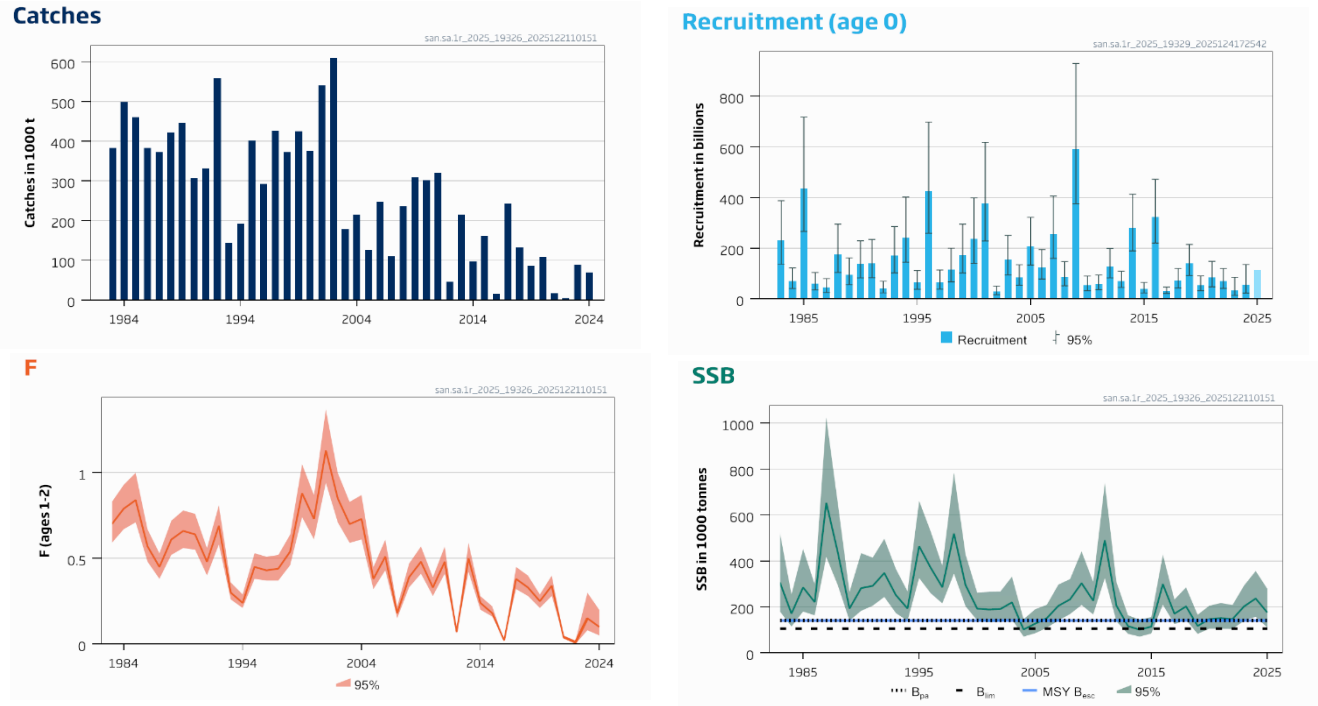


**Figure 1** Sandeel in divisions 4.b–c, Sandeel Area 1r. Summary of the stock assessment. The assumed recruitment value for 2025 is shaded in a lighter colour.

## Catch scenarios

**Table 1** Sandeel in divisions 4.b–c, Sandeel Area 1r. Values in the forecast.

| Variable | Value | Notes |
|---|---|---|
| $F_{ages\ 1–2}$ (2024) | 0.103 | Assessment model estimate |
| Recruitment (2025) | 112 824 038 | Geometric mean (1983–2023); thousands |
| SSB (2025) | 186 569 | Assessment model estimates; tonnes |

**Table 2** Sandeel in divisions 4.b–c, Sandeel Area 1r. Annual catch scenarios. All weights are in tonnes.

| Basis | Total catch (2025) | $F_{total}$ (2025) | Spawning-stock biomass (SSB) (2026) | % SSB change* | % total allowable catch (TAC) change** | % advice change*** |
|---|---|---|---|---|---|---|
| ICES advice basis | | | | | | |
| SSB(2026) ≥ MSY $B_{escapement}$ with $F_{cap}$ | 72 997 | 0.33 | 142 275 | −24 | −43 | −45 |
| Other scenarios | | | | | | |
| SSB(2026) = MSY $B_{escapement}$ without $F_{cap}$ | 76 547 | 0.35 | 140 824 | −25 | −40 | −36 |
| F = 0 | 0 | 0 | 171 808 | −8 | −100 | −100 |
| SSB(2026) = $B_{lim}$ | 160 653 | 0. 96 | 105 809 | −43 | 25 | 33 |
| F = $F_{2024}$ | 25 628 | 0.103 | 161 495 | −13 | −80 | −79 |

* $SSB_{2026}$ relative to $SSB_{2025}$.
** Catch scenario for 2025 relative to TAC in 2024 (128 346 t).
*** Advice value 2025 relative to advice value 2024 (132 315 t).

The catch advice is decreased following two years of low recruitment (2023–2024).

## Basis of the advice

**Table 3** Sandeel in divisions 4.b–c, Sandeel Area 1r. The basis of the advice for fishing opportunities.

| | |
|---|---|
| Advice basis | Maximum sustainable yield (MSY) approach (escapement strategy with $F_{cap}$) |
| Management plan | ICES is not aware of any agreed precautionary management plan for sandeel in this area |

## Quality of the assessment

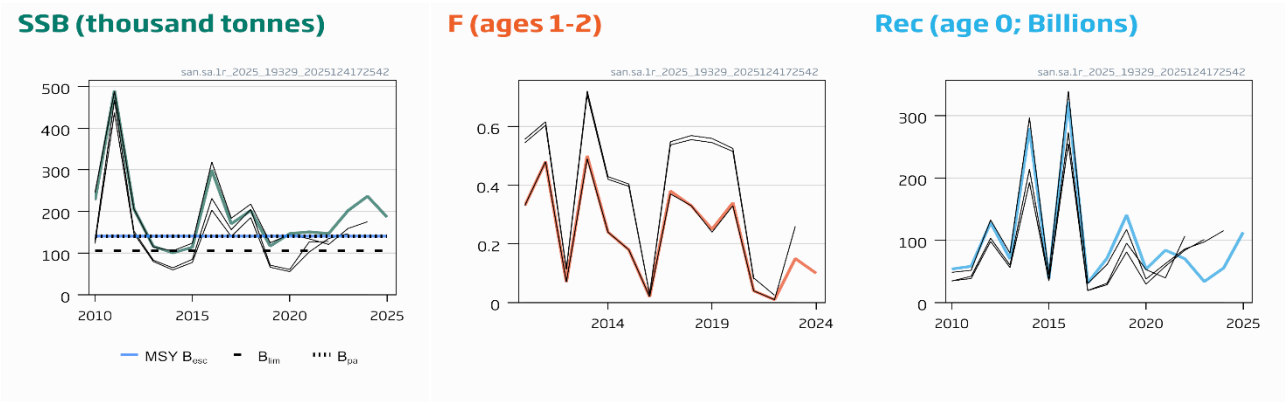


**Figure 2** Sandeel in divisions 4.b–c, Sandeel Area 1r. Historical assessment results (final-year recruitment is the geometric mean). The stock was benchmarked in 2023. The biomass reference points were updated at the benchmark, and only the assessment results from the last two years should be compared to the reference points indicated.

This stock was benchmarked in 2023. The 2024 assessment updated the natural mortalities from the 2023 Working Group on Multispecies Assessment Methods (WGSAM; ICES, 2024a) key-run to account for predation. $F_{cap}$ was updated in 2025, following the 2024 update of natural mortalities.

Since 26 March 2024, UK has prohibited the fishing of sandeel in English waters of the North Sea and in all Scottish waters. This closure fully affected the sandeel fishery in 2024, as the fishery is opened 01 April. The closure led to changes to the fishing distribution and catch-at-age composition, with a high proportion of age 0 fish; to account for these changes, the assessment model was modified to accommodate subsequent changes in selectivity pattern and declining catch per fishing day (ICES, 2025). While improving the overall model fit, abrupt changes in fishing distribution led to higher uncertainty in estimated fishing mortality in 2023 and 2024 compared to previous years.

## Issues relevant for the advice

**On fishing opportunities**

The change in the advice from year to year is caused by the interannual variability of recruitment and biomass as well as early maturation, both of which are typical for a short-lived species.

The management strategy evaluation (MSE) conducted at the 2023 benchmark evaluated interannual quota transfer arrangements for this fishery and found that this marginally increased the risk of spawning-stock biomass (SSB) falling below $B_{lim}$ (0.2% higher risk at $F_{cap}$).

The Arbitration Tribunal regarding the UK's decision to prohibit since 26 March 2024 the fishing of sandeel in English waters of the North Sea and in all Scottish waters was held from 28 to 30 January 2025[1]. The decision is still being awaited. If the closure continues into the future, the assessment and MSE should be revised to take into account the closure of the major fishing ground and the subsequent change in exploitation pattern.

**On conservation aspects**

The lesser sandeel (*Ammodytes marinus*) spends large parts of its life burrowed in sandy seabeds, where the proportion of silt is low. During spawning, sandeel eggs are glued to the sand. After hatching, the larvae are dispersed by oceanographic processes. Following metamorphosis, juveniles settle in the same sandy habitat type as adults. The strong habitat preference makes post-settled lesser sandeel stationary and vulnerable to seabed deterioration, climate change, and oil pollution. The effect of activities that might have a negative impact on sandeel habitats (e.g., extraction of gravel, offshore wind development, and oil exploration) should be assessed.

[1] UK-Sandeel (The European Union v. the United Kingdom of Great Britain and Northern Ireland), Permanent Court of Arbitration (PCA) Case No. 2024-45. https://pca-cpa.org/en/cases/334/

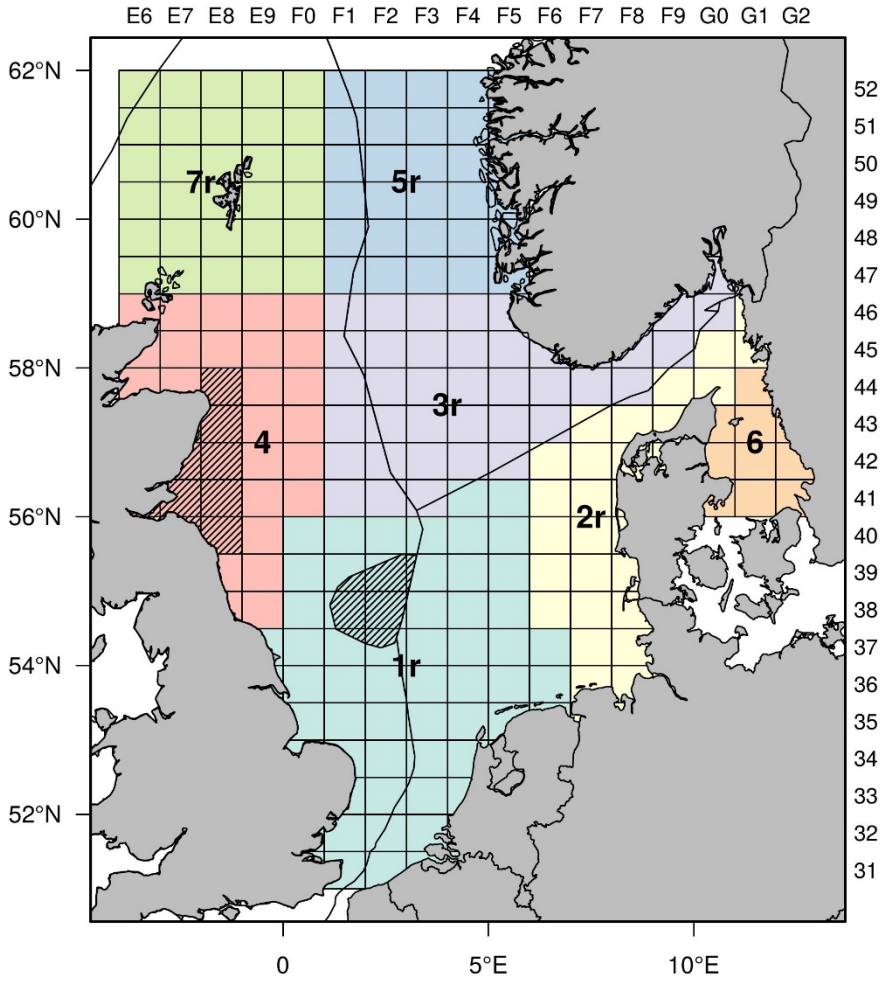


**Figure 3** Sandeel in divisions 4.b–c, Sandeel Area 1r. Stock areas for the seven sandeel stocks. The closed parts of Sandeel Area 1 (Dogger Bank since 2022) and 4 (since 2000) are shown with hatched markings. In 2024, English waters of the North Sea and all Scottish waters were closed to sandeel fishing. The UK, EU, and Norwegian EEZs are shown.

## Reference points

**Table 4** Sandeel in divisions 4.b–c, Sandeel Area 1r. Reference points, values, and their technical basis.

| Framework | Reference point | Value | Technical basis | Source |
|---|---|---|---|---|
| Maximum sustainable yield (MSY) approach | MSY $B_{escapement}$ | 140 824 | $B_{PA}$; tonnes | ICES (2024b) |
| | $F_{MSY}$ | Not defined | | |
| | $F_{cap}$* | 0.33 | Maximum F, estimated from the management strategy evaluation (MSE), resulting in < 5% probability of SSB < $B_{lim}$ | ICES (2025) |
| Precautionary approach | $B_{lim}$ | 105 809 | The lowest SSB at which above median recruitment is observed; tonnes | ICES (2024b) |
| | $B_{PA}$ | 140 824 | $B_{PA} = B_{lim} \times \exp(\sigma \times 1.645)$, with $\sigma = 0.17$ estimated from the assessment uncertainty in the terminal year; tonnes | ICES (2024b) |
| | $F_{lim}$ | Not defined | | |
| Management plan | $SSB_{mgt}$ | Not defined | | |
| | $F_{mgt}$ | Not defined | | |

* Not used as a biological reference point but used in ICES MSY approach for stocks of short-lived species.

## Basis of the assessment

**Table 5** Sandeel in divisions 4.b–c, Sandeel Area 1r. The basis of the assessment and advice.

| | |
|---|---|
| ICES stock data category | 1 (see ICES, 2023) |
| Assessment type | Age-structured model (SMS-effort) with half-yearly time-steps (ICES, 2025)[2] |
| Input data | One survey index (D9376) in December (dredge survey since 2004) and commercial catch rates in April (RTM); total international catch and fishing effort; annual natural mortality estimated from multispecies assessment (ICES, 2024a); maturity-at-age time-variable from 2005 onward from surveys; age frequencies from catch sampling |
| Discards and bycatch | Discarding is considered to be negligible |
| Indicators | None |
| Other information | Last benchmarked in 2023 (ICES, 2024c) |
| Working group | Herring Assessment Working Group for the Area South of 62°N (HAWG) |

## History of the advice, catch, and management

**Table 6** Sandeel in divisions 4.b–c, Sandeel Area (SA) 1r. History of ICES advice, the agreed total allowable catch (TAC), and ICES estimates of catch. All weights are in tonnes. Values of catches for the period 2005 to 2015 are presented to the nearest thousand tonnes.

| Year | ICES advice | Catch corresponding to advice | TAC | ICES catch SA 1 | ICES catch SA 1r | Total ICES catch (SAs 1r–7r) |
|---|---|---|---|---|---|---|
| 2005* | Exploitation to be kept below the level of 2003. Adjustment to be made conditional on the abundance of the 2004 year class | - | 661000** | 104000 | | 177000 |
| 2006* | The fishery should remain closed until information is available which assures that the stock can be rebuilt to $B_{PA}$ by 2007 | - | 300000** | 238000 | | 293000 |
| 2007* | The fishery should remain closed until information is available which assures that the stock can be rebuilt to $B_{PA}$ by 2008 | - | 173000** | 109000 | | 230000 |
| 2008* | The fishery should only be allowed if monitoring information is available and shows that the stock can be rebuilt to $B_{PA}$ by 2009 | - | 375000** | 239000 | | 348000 |

[2] View assessment in Transparent Assessment Framework (TAF).

| Year | ICES advice | Catch corresponding to advice | TAC | ICES catch SA 1 | ICES catch SA 1r | Total ICES catch (SAs 1r–7r) |
|---|---|---|---|---|---|---|
| 2009* | The fishery should only be allowed if monitoring information is available and shows that the stock can be rebuilt to $B_{PA}$ by 2010 | - | 377000** | 309000 | | 353000 |
| 2010* | The fishery should only be allowed if monitoring information is available and shows that the stock can be rebuilt to $B_{PA}$ by 2011 | - | 377000** | 301000 | | 414000 |
| 2011 | Maximum sustainable yield (MSY) approach: allow for sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | < 320000 | 320000 | 312000 | | 438000 |
| 2012 | MSY approach: allowfor sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | < 23000 | 23000 | 46000 | | 102000 |
| 2013 | MSY approach: allow for sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | < 224544 | 225000 | 210000 | | 278000 |
| 2014 | MSY approach: allow for sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | < 57000 | 57000 | 99000 | | 264000 |
| 2015 | MSY approach: allow for sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | < 133000 | 133000 | 163000 | | 312000 |
| 2016 | Catches for monitoring purposes should not exceed 5000 t | ≤ 5000 | 13000 | 12751 | 15407 | 75405 |
| 2017^ | MSY approach: allow for sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | ≤ 255956 | 255956 | | 242 069 | 517499 |
| 2018^ | MSY approach: allow for sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | ≤ 134461 | 134461 | | 132 213 | 269579 |
| 2019^ | MSY approach: allow for sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | ≤ 91 916 | 91 916 | | 86 539 | 235 537 |
| 2020^ | MSY approach: allow for sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | ≤ 113 987 | 113 987 | | 108 944 | 446 765 |
| 2021^ | MSY approach: allow for sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | ≤ 5464 | 5351 | | 17082 | 232 610 |
| 2022^ | MSY approach: zero catch | 0 | 5000 | | 5195 | 166 628 |
| 2023^ | MSY approach: allow for sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | ≤ 120 428 | 116 815 | | 88 707 | 163 686 |
| 2024 | MSY approach: allow for sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | ≤ 132 315 | 128 346 | | 69 773*** | 95 488*** |
| 2025 | MSY approach: allow for sufficient stock (MSY $B_{escapement}$) to remain for successful recruitment | ≤ 72 997 | | | | |

* Advice for Subarea 4, excluding the Shetland area.
** Set for EU waters of divisions 2.a and 3.a and Subarea 4.
*** Preliminary.
^ ICES statistical rectangles included in this sandeel area changed with the 2017 assessment and advice.

## History of catch and landings

**Table 7** Sandeel in divisions 4.b–c, Sandeel Area 1r. Catch distribution by fleet in 2024 as estimated by ICES (in tonnes).

| Total catch (2024) | Landings | Discards |
|---|---|---|
| 69 773 | 100% industrial trawl fisheries | Discarding is considered negligible |
| | 69 773 | |

## Summary of the assessment

**Table 8** Sandeel in divisions 4.b–c, Sandeel Area 1r. Assessment summary. All weights are in tonnes, recruitment age 0 is in thousands. Spawning-stock biomass (SSB) is estimated for 01 January. "High" and "Low" refer to 95% confidence intervals.

| Year | Recruitment (age 0) | | | SSB | | | Total catch | Fishing pressure ages 1–2 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Low | Midpoint | High | Low | Midpoint | High | | Low | Midpoint | High |
| | thousands | | | tonnes | | | tonnes | | | |
| 1983 | 136211923 | 229768808 | 387585053 | 180168 | 307345 | 524295 | 382629 | 0.59 | 0.70 | 0.83 |
| 1984 | 40807224 | 70534910 | 121918942 | 114511 | 170946 | 255196 | 498671 | 0.67 | 0.79 | 0.93 |
| 1985 | 265960971 | 437091847 | 718335784 | 179586 | 285161 | 452804 | 460057 | 0.71 | 0.84 | 1.00 |
| 1986 | 35260323 | 60549264 | 103975604 | 163116 | 221060 | 299589 | 382844 | 0.48 | 0.57 | 0.67 |
| 1987 | 25060891 | 44711644 | 79770952 | 417317 | 654042 | 1025051 | 373021 | 0.38 | 0.45 | 0.53 |
| 1988 | 103961178 | 175069778 | 294816083 | 292421 | 435728 | 649265 | 422805 | 0.52 | 0.61 | 0.72 |
| 1989 | 56006808 | 95119554 | 161546960 | 139812 | 192836 | 265969 | 446129 | 0.56 | 0.66 | 0.78 |
| 1990 | 82749195 | 137691787 | 229114352 | 182800 | 281809 | 434446 | 306302 | 0.55 | 0.64 | 0.76 |
| 1991 | 83238554 | 139785899 | 234748164 | 205125 | 291708 | 414839 | 332204 | 0.40 | 0.48 | 0.56 |
| 1992 | 23594307 | 40584289 | 69808556 | 243083 | 347667 | 497246 | 558602 | 0.58 | 0.69 | 0.81 |
| 1993 | 102641540 | 171183058 | 285494931 | 172742 | 251201 | 365296 | 144389 | 0.26 | 0.30 | 0.36 |
| 1994 | 144781094 | 241225972 | 401916909 | 139029 | 193178 | 268416 | 193241 | 0.21 | 0.24 | 0.29 |
| 1995 | 37732860 | 64950646 | 111801396 | 325355 | 464223 | 662360 | 400759 | 0.38 | 0.45 | 0.53 |
| 1996 | 258870405 | 425167556 | 698293229 | 259110 | 370144 | 528758 | 291709 | 0.37 | 0.43 | 0.51 |
| 1997 | 38138603 | 65914271 | 113918464 | 215199 | 285835 | 379656 | 426414 | 0.37 | 0.44 | 0.52 |
| 1998 | 67193921 | 115937202 | 200039449 | 344212 | 519615 | 784399 | 372604 | 0.46 | 0.54 | 0.64 |
| 1999 | 102203151 | 173631992 | 294981792 | 202703 | 295019 | 429379 | 425478 | 0.74 | 0.88 | 1.05 |
| 2000 | 139946210 | 236283853 | 398939415 | 141180 | 192614 | 262786 | 374724 | 0.61 | 0.73 | 0.87 |
| 2001 | 228702459 | 375881781 | 617776976 | 133973 | 188649 | 265638 | 540248 | 0.94 | 1.13 | 1.37 |
| 2002 | 16359672 | 28617201 | 50058717 | 136212 | 190839 | 267374 | 610161 | 0.71 | 0.85 | 1.00 |
| 2003 | 94134713 | 153557408 | 250490780 | 145483 | 219854 | 332243 | 178642 | 0.59 | 0.70 | 0.83 |
| 2004 | 53542394 | 84927664 | 134710228 | 70585 | 101793 | 146799 | 215352 | 0.61 | 0.73 | 0.87 |
| 2005 | 133298419 | 207171998 | 321986091 | 85180 | 127244 | 190079 | 126261 | 0.32 | 0.38 | 0.45 |
| 2006 | 78302825 | 123410505 | 194503235 | 108793 | 150976 | 209515 | 247510 | 0.43 | 0.51 | 0.61 |
| 2007 | 159481037 | 254509766 | 406162529 | 140938 | 204800 | 297600 | 110395 | 0.150 | 0.180 | 0.22 |
| 2008 | 51805830 | 87388854 | 147412211 | 168605 | 232761 | 321329 | 236069 | 0.33 | 0.39 | 0.47 |
| 2009 | 375405498 | 590793215 | 929758954 | 208257 | 303408 | 442034 | 309712 | 0.41 | 0.48 | 0.57 |
| 2010 | 32174621 | 53829211 | 90058062 | 166939 | 227185 | 309174 | 300896 | 0.28 | 0.33 | 0.39 |
| 2011 | 35976515 | 58214896 | 94199621 | 324772 | 490179 | 739829 | 320241 | 0.41 | 0.48 | 0.57 |
| 2012 | 82713579 | 128347589 | 199158397 | 137159 | 205881 | 309034 | 45954 | 0.060 | 0.070 | 0.080 |
| 2013 | 45013736 | 70124738 | 109243961 | 82485 | 116265 | 163879 | 214787 | 0.42 | 0.50 | 0.59 |
| 2014 | 189464478 | 279780934 | 413150642 | 70600 | 100962 | 144381 | 96430 | 0.20 | 0.24 | 0.28 |
| 2015 | 23060855 | 38738024 | 65072805 | 83783 | 114221 | 155716 | 160764 | 0.160 | 0.180 | 0.22 |
| 2016 | 220470096 | 322708876 | 472358931 | 209253 | 299175 | 427740 | 15407 | 0.020 | 0.020 | 0.020 |
| 2017 | 21232088 | 31464988 | 46629679 | 125007 | 170538 | 232652 | 242069 | 0.32 | 0.38 | 0.45 |
| 2018 | 42668538 | 71526158 | 119900785 | 143424 | 202283 | 285297 | 132213 | 0.28 | 0.33 | 0.40 |
| 2019 | 92036515 | 140537854 | 214598394 | 82354 | 116994 | 166207 | 86539 | 0.21 | 0.25 | 0.29 |
| 2020 | 31893355 | 53740552 | 90553250 | 105118 | 146950 | 205429 | 108944 | 0.28 | 0.34 | 0.40 |
| 2021 | 47619045 | 84105599 | 148548796 | 104930 | 150987 | 217261 | 17082 | 0.040 | 0.040 | 0.050 |
| 2022 | 41174882 | 70334166 | 120143510 | 103607 | 147009 | 208592 | 5195 | 0.00 | 0.0100 | 0.020 |
| 2023 | 13427812 | 33762193 | 84889900 | 139294 | 202236 | 293618 | 88708 | 0.080 | 0.150 | 0.30 |
| 2024 | 22841616 | 55596690 | 135322824 | 156924 | 236640 | 356851 | 69773^ | 0.050 | 0.100 | 0.20 |
| 2025 | | 112824038** | | 117400* | 186569* | 296490* | | | | |

* Using mean weight-at-age from 2020 to 2024.

** Geometric mean (1983–2023).

^ Preliminary.

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