ESTIMATES OF CETACEAN ABUNDANCE IN THE NORTH ATLANTIC
OF RELEVANCE TO NAMMCO

North Atlantic Marine Mammal Commission¹

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INTRODUCTION

The purpose of this table is to present the best available abundance estimates for cetacean species in areas of relevance to the work of NAMMCO. It is intended to be used as a starting point for researchers, and the original sources are provided if additional information is required.

The Scientific Committee of NAMMCO maintains a Working Group on Abundance Estimates, composed of invited experts in the field as well as some Committee members. This Working Group meets periodically to review new abundance estimates from recent surveys or, in some cases, re-analyses of older data. The reports of the Working Group are brought to the Scientific Committee at their annual meetings, and used to formulate advice on stock status, allowable removals or other matters. In most cases, the Scientific Committee will formally endorse estimates approved by the Working Group, and if so this is indicated on the Table. Some estimates have been endorsed by the Scientific Committee of the International Whaling Commission (IWC).

In some cases, estimates have been revised subsequent to their endorsement by the Scientific Committee. Publication of estimates generally occurs after their presentation to the Committee, and estimates may be revised due to reviewer suggestions, advances in analytical techniques or errors detected in the original analysis. In these cases, the published estimate is considered the most reliable and is presented even if it differs from the originally endorsed estimate. In most cases these differences are small. It is anticipated that these revised estimates will be endorsed by the Scientific Committee at some point.

A more complete version of the Table, published and regularly updated on the NAMMCO web site, includes all estimates which have been endorsed and used at some points by NAMMCO working groups. Some estimates have been superseded by newer estimates, as the analytical procedures have evolved and improved. This Table includes older estimates that have been superseded, newer analyses and published estimates. Reasons for the differences between estimates for the same species, year and area are explained under Comments. This "live" table, "North Atlantic - Abundance Estimates of relevance to NAMMCO // All cetacean species - All surveys", can be found here https://nammco.no/marinemammals/.

In most cases, the survey areas vary between surveys, and estimate cannot be directly compared between survey years. Informed comparisons can usually be found in the published articles. Survey areas can be found here under the different survey headings.

When no abundance estimate for a species has ever been generated for an area because of paucity of sightings, this area is not included in this table for that species, even when a few sightings may have been made. For example, the NASS/TNASS series does not survey properly the geographical distribution of bowhead whales, i.e., does not cover an area large enough of their distribution range so they can be used to generate any abundance. Therefore, they are not indicated in this table for that species, although some bowhead whale sightings have been made during the surveys. These are indicated on the web Table though. A lack of sightings for a species in an area is only indicated when other abundance estimates exist for that species in that area, for example for blue whales in 2007 in the Iceland + Faroes area.

Narwhals are at present not included in the tables. The way abundance estimates for narwhal have been corrected for perception and availability biases have varied between surveys and raised concerns. The Joint NAMMCO/JCNB Working Group on Narwhal and Beluga, which is the scientific body providing advice to NAMMCO and the Canada-Greenland Joint Commission on Narwhal and Beluga (JCNB), decided at its last meeting in October 2020 (the report will become available here), that it needed to review these corrections and to agree on corrected estimates. Abundance estimates for narwhal, past and recent, will then become available on the updated web table, associated with informed comments and, if necessary, recalculated estimates.

Column definitions

Some columns require no explanation (e.g., species) and are not included below.

Regions

Species-specific Regions, management areas and sub-areas of relevance to NAMMCO were defined by the 26th Scientific Committee in 2019 (NAMMCO 2019). Note that a survey may cover all or part of a region, management area or sub-area, so comparisons between surveys must take this into consideration.

A, Atlantic; N, North; E, East; and a combination of those abbreviations.
Management area/sub-area See above.
CA, Canada; FR, Faroe Islands; GL, Greenland; IS, Iceland; NO, Norway.

Survey
Area
Usually the stratum name from the survey
See above
CIC, Iceland Coastal Area, as delimited for aerial surveys. Note that IS+FR area for ship survey also includes the CIC aerial survey area
ECA, Eastern Canada; W, west
NO mosaic: the area covered changes every year, as Norway covers its huge area by conducted partial surveys every year on a six-year cycle.

Name
Survey series: NASS, North Atlantic Sightings Surveys, TNASS Trans-North Atlantic sightings surveys (in 2007), NILS, Norwegian Independent Line-Transect Surveys
Or name of the country organising the survey for national surveys

Platform
A - aerial, S - ship.

Mode
SP - single platform; IO - double platform, independent observers; B-T - double platform, Buckland-Turnock mode (Buckland & Turnock 1992).

Uncorrected Abundance Estimate (UAE)

UAE
Uncorrected Abundance estimate. Does not include corrections for perception or availability biases unless otherwise noted with a (p)

CV
Coefficient of variation.

95% CI
95% confidence interval.

TfS
Too few sightings for generating an abundance estimate

Corrected Abundance Estimate (CAE)
Includes corrections for perception bias (Per), availability bias (Avail) or both as indicated.

Endorsed by
Organizational endorsement, usually NAMMCO or the International Whaling Commission (IWC). Committee meeting number and working group acronym are provided, the latest in ‘(…).’
Square brackets around the organizational endorsement mean that an initial estimate has been previously endorsed by an organisation and was subsequently revised and represented and/or published.
In most cases the published is presented even if an earlier accepted estimate exists, as earlier estimates in working papers have been improved and adjustments made post review in the published versions. These changes are consistent with the advice provided.
On the NAMMCO live web version of the table, the comments include the explanation of the revisions made.

Publications
Citation to peer-reviewed publication if available. Citations to non-peer reviewed publications, generally meeting documents, are given in square brackets.

ACKNOWLEDGEMENTS
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| Species | Regions | Management areas/sub-areas | Survey | Area | Name | Year | Platform | Mode | UAE | CV | 95% CI | CAE | CV | 95% CI | Per | Avail | Bias correction | Endorsed by | Comments |
|---------|---------|---------------------------|--------|------|------|------|---------|------|------|-----|-------|------|-----|-------|-----|-------|-------------------------------|------------|----------|
| Bowhead whales | Arctic | ECA - WGL | CA | 2013 | A | IO | 6,446 | 0.26 | 3,838-10,827 | 1 | 1 | 1 | Canadian Science Advisory Secretariat | High Arctic Cetacean Survey |
| | | West GL | GL | 2012 | A | IO | 744 | 0.34 | 357-1,461 | 1 | 1 | 1 | | West Greenland only |
| | | West GL | GL | 2006 | A | IO | 1,229 | 0.47 | 495-2,939 | 1 | 1 | 1 | Heide-Jørgensen et al. 2007a | |
| | | | GL | 1998 | A | IO | 246 | 0.62 | 62-978 | 0 | 1 | 1 | Heide-Jørgensen & Acquarone 2002 | |
| Bowhead whales | Spitsbergen | NEGL | GL | 2017 | A | IO | 318 | 0.60 | 110-956 | 1 | 1 | 1 | Spring survey | Hansen et al. 2018b |
| | | NE/Water polynya | GL | 2017 | A | IO | 301 | 0.54 | 127-769 | 1 | 1 | 1 | Strategic Environmental Study Program for NEGL, Summer survey | Boertmann et al. 2020 |
| | | Svalbard | NO | 2015 | A | SP | 69 | 0.45 | 29-160 | 1 | 1 | 1 | | Vacquie-Garcia et al. 2017 |
| Blue whales | Eastern NA | IS + FR | NASS | 2015 | S | IO | 2,480 | 0.36 | 1,234-5,022 | 1 | 0 | 1 | NAMMCO SC/26 (AEWG 2019) | | Pike et al. 2019a |
| | | | NASS | 2007 | S | BT | tfs | 1 | 1 | 1 | 1 | 1 | 1 | | | Pike et al. 2020a |
| | | | NASS | 2001 | S | BT | 855 | 0.35 | 358-1,419 | 1 | 0 | 1 | | [NAMMCO SC/11 (AEWG 2003)] | Pike et al. 2009a |
| | | | NASS | 1995 | S | SP/BT | 979 | 0.64 | 137-2,542 | 1 | 0 | 1 | | | |
| | | | NASS | 1989 | S | SP | 531 | 0.24 | 288-759 | 1 | 0 | 1 | | | |
| | | | NASS | 1987 | S | SP | 222 | 0.35 | 115-440 | 1 | 0 | 1 | | | |
| Sei whales | NA | IS + FR | NASS | 2015 | S | IO | 3,127 | 0.51 | 964-10,142 | 1 | 0 | 1 | NAMMCO SC/26 (AEWG 2019) | | Pike et al. 2019a |
| | | | T-NASS | 2007 | S | BT | 9,737 | 0.38 | 4,189-19,665 | 1 | 0 | 1 | | | Pike et al. 2020b |
| | | | | | S | BT | 5,159 | 0.47 | 1,983-13,423 | 1 | 0 | 1 | | | |
| | | | | | S | BT | 1,494 | 0.24 | 843-2,245 | 1 | 0 | 1 | NAMMCO SC/18 (AEWG 2011) | [Pike et al. 2011] |
| | | | | | S | SP/BT | 4,249 | 0.49 | 3,700-23,116 | 1 | 0 | 1 | NAMMCO SC/05 (AEWG 1997) | [Borchers and Burt 1997] |
| | | | | | S | SP/BT | 1,293 | 0.6 | 434-3,853 | 1 | 0 | 1 | IWC SC/44 | Cattanach et al. 1993 |
| | | | IS | 1989 | S | SP | 10,300 | 0.27 | 6,150-17,260 | 1 | 0 | 1 | Good survey timing and coverage for sei whale | Cattanach et al. 1993 |
| | | | IS | 1987 | S | SP | 1,293 | 0.6 | 434-3,853 | 1 | 0 | 1 | Partial estimate, as the species entire summer range and peak season are not covered. Superseeds below estimate | Gudlaugsson & Sigurjónsson 1990, Cattanach et al. 1993 |

North Atlantic Marine Mammal Commission (2020)
| Western NA | West GL | West GL | NASS 2015 | A | ID | 465 (p) | 0.35 | 233-929 | 2,215 | 0.41 | 1,017-4,823 | 1 | 1 | IWC SC/66a, [NAMMCO SC 23 (AEWG 2016)] | Hansen et al. 2018a |
| TNASS 2007 | A | ID | 4,359 | 0.45 | 1,879-10,114 | 15,957 | 0.72 | 4,531-56,202 | 1 | 1 | IWC SC/59 | |
| GL 2005 | A | ID | 1,660 | 0.38 | 799-3,450 | 9,800 | 0.62 | 3,228-29,753 | 1 | 1 | | |
| GL 1993 | A | ID | 178 | 26-382 | 0 | 1 | Partial survey coverage, high area of abundance not covered | Larsen 1995 |
| NASS 1987/88 | A | ID | 1,096 | 0.35 | 520-2,106 | 0 | 1 | IWC SC/43 | IWC 1992 |
| NASS 1987 | A | ID | 1,985 | 0.46 | 0 | 1 | IWC SC/40 | Hilby et al. 1989 |

| East GL | East GL | NASS 2015 | A | ID | 1,932 (p) | 0.24 | 1,204-3,100 | 6,440 | 0.26 | 3,901-10,632 | 1 | 1 | IWC SC/66a, [NAMMCO SC 23 (AEWG 2016)] | Hansen et al. 2018a |
| GL 2005 | S | SP | 3,214 | 0.48 | 980-10,547 | | | | | | | | Heide-Jørgensen et al. 2007b |

| Central NA | IS + FR | NASS 2015 | S | IO | 31,953 | 0.17 | 22,536-45,306 | 36,773 | 0.17 | 25,811-52,392 | 1 | 0 | NAMMCO SC/25 [AEWG 2018] | Pike et al. 2019a |
| TNASS 2007 | S | BT | 24,824 | 0.15 | 18,347-33,589 | 30,777 | 0.19 | 21,153-44,779 | 1 | 0 | NAMMCO SC/17 [AEWG 2009] | Pike et al. 2020a |
| NASS 2001 | S | BT | 24,887 | 0.13 | 18,186-30,214 | | | | | | | | Vik langs et al. 2009 |
| NASS 1995 | S | SP/BT | 19,136 | 0.21 | 12,235-27,497 | | | | | | | | IWC SC/58 (joint NAFW WS) |
| NASS 1989 | S | SP | 10,378 | 0.16 | 7,600-14,200 | | | | | | | | | |
| NASS 1987 | S | SP | 5,479 | 0.10 | 3,380-7,830 | | | | | | | | Buckland et al. 1992 |

| Eastern NA | Norwegian mosaic | CM1a, 3a + EW1,2,3 | NILS-NA | 2015 | S | IO | 3,147 | 0.44 | 1,290-7,673 | 3,729 | 0.44 | 1,531-9,081 | 1 | 0 | NAMMCO SC/26 [AEWG 2019] | Leonard & Øien 2020a |
| NLS 2014-2018 | S | IO | 9,494 | 0.17 | 6,800-13,256 | 11,387 | 0.17 | 8,072-16,063 | 1 | 0 | NAMMCO SC/26 [AEWG 2019] | Leonard & Øien 2020b |
| NLS 2008-2013 | S | IO | 8,047 | 0.23 | 5,043-12,824 | 10,861 | 0.26 | 6,433-18,339 | 1 | 0 | NAMMCO SC/24 & IWC SC/58 (joint NAFW WS 2006) | Øien 2009 |
| NLS 2002-2007 | S | IO | 7,094 | 0.15 | 5,219-9,1614 | 10,004 | 0.18 | 6,937-14,426 | 1 | 0 | NAMMCO SC/24 & IWC SC/58 (joint NAFW WS 2006) | Øien 2009 |
| NLS 1996-2001 | S | IO | 10,369 | 0.24 | 6,277-17,128 | | | | | | | | Christensen et al. 1992 |
| NLS 1995 | S | IO | 5,034 | 0.21 | 3,314-7,647 | | | | | | | | | |
| NASS 1989 | S | SP | 2,245 | 0.33 | 1 | | | | | | | | | |
| NO 1988 | S | SP | 2,309 | 0.31 | 1 | | | | | | | | | |
| NASS 1987 | S | SP | 5,806 | 0.50 | 1 | | | | | | | | | |
|          |          |         |         |         |         |         |          |          |          |          |          |          |          |          |          |
|----------|----------|---------|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Humpback whales |          |         |         |         |         |         |          |          |          |          |          |          |          |          |          |
|          | West GL  |         |         |         |         |         |          |          |          |          |          |          |          |          |          |
| NASS     | 2015     | A       | IO      | 427     | 0.35    | 219-831 | 993      | 0.44     | 434-2,272 | 1        | 1        | NASS     | 2018a    |          |          |
|          | 2007     | A       | IO      | 1,020   | 0.35    | 4,090   | 0.5      | 1        | 1        | [NAMMCO SC/17 | AEWG 2009 |          |          |          |          |
|          |          |         |         |         |         |         |          |          |          | Heide-Jørgensen & Laidre 2015 |          |          |          |          |
|          |          |         |         |         |         |         |          |          |          |          |          |          |          |          |          |
|          | GL       | 2005    | S       | SP      | 1,306   | 0.42    | 570-2,989|          |          |          |          |          |          |          |          |
|          | 2005     | A       | IO      | 1,158   | 0.35    | 595-2,255|          |          |          | Abundance based on small groups and large groups estimated separately | Heide-Jørgensen & L554 2008 |          |          |          |
|          |          |         |         |         |         |         |          |          |          | Line transect analysis of all group sizes |          |          |          |          |
|          | GL       | 1993    | A       | IO      | 599     | 0.57    | 423-3,508|          |          |          |          |          | Kingsley & Witting 2001 |          |          |
|          | NASS     | 1989    | A       | IO      | 272     | 0.75    |          |          |          |          |          |          |          |          |          |
|          | GL       | 1988    | A       | IO      | 200     | 0.74    |          |          |          |          |          |          |          |          |          |
|          | NASS     | 1987    | A       | IO      | 220     | 0.62    |          |          |          |          |          |          | Heide-Jørgensen et al. 2012 |          |          |
|          |          |         |         |         |         |         |          |          |          |          |          |          |          |          |          |
|          | East GL  |         |         |         |         |         |          |          |          |          |          |          |          |          |          |
| NASS     | 2015     | A       | IO      | 1,816   | 0.35    | 933-3,536| 4,223    | 0.44     | 1,845-9,666 | 1        | 1        | NASS     | 2018b    |          |          |
|          | 2005     | S       | SP      | 347     | 0.85    | 48-2,515 |          |          |          | Incomplete survey coverage | Heide-Jørgensen et al. 2007b |          |          |          |
|          |          |         |         |         |         |         |          |          |          |          |          |          |          |          |          |
|          | IS       | 2016    | A       | IO      | tfs     |          |          |          |          |          | Block 5 (area NW and NE corners), with large numbers expected, not covered | Pike et al. 2020b |          |          |          |
|          | IS       | 2009    | A       | IO      | 2,002   | 0.30    | 1,096-3,655| 2,261    | 0.35     | 1,142-4,477 | 1        | 0        | NASS     | 2018a    |          |          |
|          | TNASS    | 2007    | A       | IO      | 1,138   | 0.65    | 565-2,039| 1,242    | 0.44     | 632-2,445 | 1        | 0        | TNASS    | 2009a    |          |          |
|          | 2001     | A       | IO      | 6,242   | 2,273   | 11,580  |          |          | 1        | Line transect analysis and density surface fit | Paxton et al. 2009 |          |          |          |
|          | NASS     | 1995    | A       | IO      | 1,674   | 0.45    | 656-4,269|          |          |          | Line transect analysis | Pike et al. 2009c |          |          |          |
|          | NASS     | 1987    | A       | SP      | 219     | 0.85    |          |          |          |          |          |          |          |          |          |
|          | IS + FR  |         |         |         |         |         |          |          |          |          |          |          |          |          |          |
| NASS     | 2015     | S       | IO      | 6,643   | 0.32    | 3,543-12,456| 9,867    | 0.37     | 4,854-20,058 | 1        | 0        | IS + FR  | 2018b    |          |          |
|          | TNASS    | 2007    | S       | BT      | 12,078  | 0.37    | 5,879-24,814| 18,105   | 0.43     | 7,226-45,360 | 1        | 0        | IS + FR  | 2020a    |          |          |
|          | 2001     | AvS     | SP      | 14,662  | 0.44    | 9,441-29,879|          |          |          | Density surface fitting, using generalised additive models (GAMs) | Paxton et al. 2009 |          |          |          |
|          | NASS     | 1995    | AvS     | SP      | 10,521  | 0.46    | 3,716-24,636|          |          |          |          |          |          |          |          |
|          | NASS     | 1989    | S       | SP      | tfs     |          |          |          |          |          |          |          |          |          |          |
|          | NASS     | 1987    | S       | SP      | 1,722   | 0.25    | 1,061-2,795|          |          |          |          | [Pike et al. 2005 |          |          |          |
|          |          |         |         |         |         |         |          |          |          |          |          |          |          |          |          |
|          | NO       |         |         |         |         |         |          |          |          |          |          |          |          |          |          |
| NASS     | 2015     | S       | IO      | 1,164   | 0.39    | 395-1,994| 1,711    | 0.41     | 604-3,631 | 1        | 0        | Area CM1a,3a + EW1,2,3 | Leonard & Øien 2020a |          |          |
|          | NASS     | 2014-2018 | S     | IO      | 8,150   | 0.38    | 3,765-17,646| 10,708   | 0.38     | 4,906-23,370 | 1        | 0        | NASS     | 2018b    |          |          |
|          | NASS     | 2008-2013 | S     | IO      | 9,631   | 0.30    | 5,284-17,521| 12,411   | 0.30     | 6,847-22,497 | 1        | 0        | NASS     | 2020b    |          |          |
|          | NASS     | 2002-2007 | S     | IO      | 7,388   | 0.30    | 3,909-13,963| 9,749    | 0.38     | 3,947-19,210 | 1        | 0        | NASS     | 2020b    |          |          |
|          | NASS     | 1996-2001 | S     | IO      | 4,695   | 0.39    | 2,124-10,378|          |          |          |          |          | NASS     | 2009     |          |
|          | NASS     | 1995     | S       | IO      | 1,059   | 0.25    | 645-1,738 |          |          |          | [NAMMCO SC/11 | MFWG 2003] |          |          |          |
|          | NASS     | 1989     | S       | SP      | 698     | 0.59    |          |          |          |          |          |          | Christensen et al. 1992 |          |          |
|          | NO       | 1998     | S       | SP      | 1,126   | 0.31    |          |          |          |          |          |          | Øien 1990 |          |          |
|          | NASS     | 1987     | S       | SP      | tfs     | (4)     |          |          |          |          |          |          | Østfjeld et al. 1989 |          |          |
| Whales                      | NASS 2015 | A | IO | 963 | 0.37 | 5,095 | 0.46 | 2,171-11,961 | 1 | 1 | IWC SC/66a | Strip census. Availability correction based on 5 minke whales tagged in 2013-17 off GL | Hansen et al. 2018 |
|-----------------------------|-----------|---|----|-----|------|-------|------|--------------|---|---|-----------|-----------------------------------------------------------------|---------------------|
| Western Atlantic            | NASS 2007 | A | IO | 9,066 | 0.39 | 4,333-18,973 | 1 | 1 | IWC SC/66a | Incomplete survey coverage | Heide-Jørgensen et al. 2007b |
| GL                          | 2005      | A | IO | 4,856 (a) | 0.49 | 1,910-12,348 | 10,792 | 0.59 | 3,594-32,407 | 1 | 1 | IWC SC/46 | Larsen 1995 |
| S | SP | 4,479 | 0.46 | 1,760-11,394 | | | | | | | | | |
| GL                          | 1993      | A | IO | 8,371 | 0.43 | 0 | 1 | IWC SC/46 | | Heide-Jørgensen et al. 2007b |
| GL                          | 1987-88   | A | IO | 3,266 | 0.31 | 1,702-5,718 | 0 | 1 | IWC SC/4 | | IWC 1990a |
| NASS 1987                   | A | IO | 1,930 | 0.44 | 0 | 1 | IWC SC/4 | | | | | |
| East GL coastal             | NASS 2015 | A | IO | 523 | 0.38 | 238-1,145 | 2,762 | 0.47 | 1,160-6,574 | 1 | 1 | [NAMMCO SC 23 (AEWG 2016)] | Availability correction based on 5 minke whales tagged in 2013-17 off GL | Hansen et al 2018 |
| GL                          | 2005      | S | SP | 1,848 | 1.24 | 197-17,348 | | | | | | | |
| Iceland Coastal (CIC)       | IS        | 2016 | A | IO | 12,966 | 0.47 | 3,384-49,688 | 13,497 | 0.50 | 3,312-55,007 | 1 | 1 | NAMMCO SC/26 (AEWG 2019) | | Pike et al. 2020b |
| NASS 2015                   | S | IO | 12,710 | 0.52 | 4,498-35,912 | 1 | 0 | NAMMCO SC/23 (AEWG 2016) | Shipboard estimate for the CIC area | Pike et al. 2020b |
| IS                          | 2009      | A | IO | 5,284 | 0.24 | 2,915-7,822 | 9,588 | 0.24 | 5,274-14,420 | 1 | 1 | NAMMCO SC/17 (AEWG 2010) | Corrected using data from both platforms | Pike et al. 2020b |
| TNASS 2007                  | A | IO | 15,055 | 0.36 | 6,357-27,278 | 20,834 | 0.35 | (9,808-37,042) | 1 | 1 | NAMMCO SC/18 (AEWG 2011) | Using only the most effective primary observer (much higher sighting rate) | Pike et al. 2020b |
| NASS 2001                   | A | IO | 38,071 (a) | 25,908-55,945 | 43,633 | 0.19 | 30,148-61,149 | 1 | 1 | NAMMCO SC/11 (AEWG 2003) | Estimate corrected for measurement error | Borchers et al. 2009 |
| NASS 1995                   | S | SP | 5,977 | 0.39 | 2,671-13,376 | | | | | | | |
| NASS 1989                   | S | SP | 13,487 | 0.44 | 4,779-38,060 | | | | | | | |
| NASS 1987                   | A | SP | 24,532 | 0.32 | 13,399-44,916 | 0 | 1 | NAMMCO SC/11 (AEWG 2003) | | Borchers et al. 2009 |
| Western Norwegian Sea - Jan Mayer | NASS 2015 | S | IO | 28,407 | 0.28 | 13,035-42,032 | 48,016 | 0.23 | 30,709-75,078 | 1 | 0 | NAMMCO SC/25 (AEWG 2018) | IWC Central Medium Area, but stock boundaries putative (not true stock division) and distribution dynamic; not biologically meaningful unit | PIke 2018 |
| IS + FR                     | NASS 2015 | S | IO | 23,407 | 0.28 | 13,035-42,032 | 42,515 | 0.31 | 22,896-78,942 | 1 | 0 | NAMMCO SC/25 (AEWG 2018) | | Pike et al. 2019a |
| TNASS 2007                  | S | BT | 12,427 | 0.27 | 7,205-21,443 | | | | | | | |
| NASS 2001                   | S | BT | 25,929 | 0.29 | 14,747-45,590 | | | | | | | |
| NASS 1995                   | S | SP/BT | 19,042 | 0.20 | 12,801-28,325 | | | | | | | |
| NASS 1989                   | S | SP | 27,184 | 0.26 | 14,956-49,410 | | | | | | | |
| NASS 1987                   | S | SP | 21,984 | 0.15 | 16,310-29,632 | | | | | | | |

| NEA                        | NILS 2008-13 | S | IO | 100,615 | 0.11 | 81,154-124,743 | 1 | 1 | IWC SC/66a | | Solvang et al. 2015 |
| Svalbard-Bear Island        | NILS 2002-07 | S | IO | 108,140 | 0.23 | 69,299-168,752 | 1 | 1 | IWC SC/61 | | Bathon et al. 2009 |
| Eastern Barents Sea         | NILS 1996-2001 | S | IO | 107,205 | 0.13 | 83,180-138,169 | 1 | 1 | IWC SC/55 | | Skag et al. 2004 |
| Eastern Norwegian Sea       | NILS 1995 | S | IO | 118,299 | 0.10 | 91,000-137,000 | 1 | 1 | IWC SC/48 | | Schweder et al. 1997 |
| North Sea/Sea+West UK       | NILS 1988-89 | S | SP | 34,600 | 0.16 | 67,380 | 0.19 | 44,000-94,000 | 1 | 0 | IWC SC/4 | | Olsen 1990 |
| NO                         | 1988       | S | SP | 25,599 | 0.14 | | | | | | | |
| NASS 1987                   | S | SP | 17,918 | 0.23 | | | | | | | |

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| Sperm whales | NA | NA |
|--------------|----|----|
| IS + FR      |    |    |
| NASS 2015    | S  | IO | 7,257 | 0.35 | 3,461-15,215 | 23,166 | 0.59 | 7,699-69,709 | Revisited estimate after correction asked for by the WG, see WG report for detail | Pike et al. 2019a |
| TNASS 2007   | S  | BT | 6,429 | 0.28 | 3,412-10,007 | 12,268 | 0.33 | 6,386-23,568 | A left truncation is used in the primary platform detection function because of a paucity of sightings near the trackline | Pike et al. 2020a |
| NASS 2001    | S  | BT | 6,726 | 0.40 |            | 11,185 | 0.34 |            | Best estimate so far, but tagging in NA waters needed to provide more reliable correction. The present correction is based on cue counting | Gunnlaugsson et al. 2009 |
| NASS 1995    | S  | SP/BT | na |    |            |    |    |    |            |            |
| NASS 1989    | S  | SP | na |    |            |    |    |    |            |            |
| IS           |    |    |
| NASS 1987    | S  | SP | 1,234 | 0.17 |    |    |    |    |            |            |
| FR           |    |    |
| NASS 1987    | S  | SP | 308 | 0.38 |    |    |    |    |            |            |
| CM extra     |    |    |
| NILS-NASS 2015 | S | IO | 2,692 | 0.25 | 3,828 | 0.33 | 1,994-7,595 |            |            |
| NO mosaic    |    |    |
| NILS 2014-2018 | S | IO | 3,822 | 0.21 | 2,479-5,891 | 5,704 | 0.26 | 3,374-9,643 |            |            |
| NILS 2008-2013 | S | IO | 3,649 | 0.28 | 2,051-6,490 | 3,962 | 0.29 | 2,218-7,079 |            |            |
| NILS 2002-2007 | S | IO | 6,697 | 0.17 | 4,712-9,234 | 8,134 | 0.18 | 5,695-11,617 |            |            |
| NILS 1996-2001 | S | IO | 6,375 | 0.22 | 4,163-9,762 |    |    |    |            |            |
| NO           |    |    |
| NILS 1995    | S  | IO | 4,319 | 0.20 | 2,903-6,424 |    |    |    |            |            |
| NILS 1989    | S  | SP | 5,231 | 0.31 |    |    |    |    |            |            |
| NILS 1988    | S  | SP | 2,548 | 0.27 |    |    |    |    |            |            |
| NILS 1987    | S  | SP | tfs (29) |    |    |    |    |    |            |            |
| Christensen et al. 1992 |            |    |            |    |    |    |    |            |            |
| Øien 2009    |    |    |
| Øien 1990    |    |    |
| Ørsted et al. 1989 |            |    |            |    |    |    |    |            |            |
| NAMMCO SC/11 (AEWG 2003) | Pike et al. 2003 |
|--------------------------|-------------------|
| NAMMCO SC/03 (NBKWG/MPWG 2003) | Pike et al. 2019a |
| NAMMCO SC/26 (AEWG 2019) | Pike et al. 2020a |
| NAMMCO SC/27 | Leonard & Øien 2020a |
| NAMMCO SC/02 (NBKWG 1993) | Gunnlaugsson & Sigurjónsson 1990 |
| NAMMCO SC/11 (AEWG 2003) | IWC SC/41, NAMMCO SC/02 (NBKWG 1993) |

*NA* = Northern Bottlenose Whales

**IS + FR**

| Year | Dataset | Area | Method | Parallel | Distance | Effective Strip Half-Width (esw) |
|------|---------|------|--------|----------|----------|----------------------------------|
| 2015 | NASS    | S    | IO     | 18,375   | 0.59     | 5,128-65,834                     |
| 2007 | TNASS   | S    | BT     | tfs      |           |                                  |
| 2001 | NASS    | S    | BT     | 24,561   | 0.23     | 15,261-39,528                    |
| 1995 | NASS    | S    | SP/BT  | 27,879   | 0.67     | 12,396-62,700                    |
| 1987 | NASS    | S    | SP     | 8,827    | 0.32     |                                  |
| 1989 | NASS    | S    | SP     | tfs      |           |                                  |

**IS**

| Year | Dataset | Area | Method | Distance |
|------|---------|------|--------|----------|
| 1987 | NASS    | S    | SP     | 4,925    |

**FR**

| Year | Dataset | Area | Method | Distance |
|------|---------|------|--------|----------|
| 1987 | NASS    | S    | SP     | 902      |

**ND mosaic**

| Year | Dataset | Area | Method | Distance |
|------|---------|------|--------|----------|
| 2014 | NASS    | S    | IO     | 7,800    |

**NILS**

| Year | Dataset | Area | Method | Distance |
|------|---------|------|--------|----------|
| 2014 | NILS    | S    | IO     | 7,800    |

**NO**

| Year | Dataset | Area | Method | Distance |
|------|---------|------|--------|----------|
| 1987 | NASS/NILS/NO | S | IO | 7,800 |
| Central Atlantic | IS + FR + NO | NASS+NI LS | 2015 | S | IO | 14,611 | 0.55 | 4,055-52,773 | 30,540 | 0.63 | 8,316-112,120 | 1 | 0 |
| Killer whales | | IS + FR | NASS | 2015 | S | IO | 15,142 | 0.47 | 6,003-38,190 | 20,345 | 0.64 | 6,317 – 65,523 | 1 | 0 |
| NO mosaic | IS + FR | NASS | 2007 | S | BT | 57,460 | 0.50 | 22,385-147,494 | 30,540 | 0.63 | 8,316-112,120 | 1 | 0 |
| NEA (NO) | IS + FR | NASS | 2001 | S | BT | 15,142 | 0.47 | 6,003-38,190 | 20,345 | 0.64 | 6,317 – 65,523 | 1 | 0 |
| | | NASS | 1995 | S | SP/BT | 4,736 | 0.48 | 1,842-12,176 | 30,540 | 0.63 | 8,317 – 65,523 | 1 | 0 |
| | | NASS | 1989 | S | SP | 10,316 | 0.37 | 4,960-21,456 | 30,540 | 0.63 | 8,317 – 65,523 | 1 | 0 |
| | | NASS | 1987 | S | SP | 8,899 | 0.46 | 3,621-21,870 | 30,540 | 0.63 | 8,317 – 65,523 | 1 | 0 |
| | IS + FR | NILS | 2014-2018 | S | IO | 12,714 | 0.29 | 7,162-22,568 | 15,056 | 0.29 | 8,423-26,914 | 1 | 0 |
| | | NILS | 2008-2013 | S | IO | 7,628 | 0.28 | 4,397-13,023 | 9,563 | 0.36 | 4,719-19,403 | 1 | 0 |
| | | NILS | 2002-2007 | S | IO | 16,462 | 0.2 | 13,234-27,798 | 18,821 | 0.24 | 11,525-30,735 | 1 | 0 |
| | | NILS | 1996-2001 | S | IO | na | | | | | | | |
| | IS + FR | NILS | 1995 | S | IO | na | | | | | | | |
| | | NASS | 1989 | S | SP | 7,057 | 0.38 | 3,400-14,400 | | | | | |
| | | NO | 1988 | S | SP | 3,957 | 0.63 | | | | | |
| | | NASS | 1987 | S | SP | 7,057 | 0.38 | 3,400-14,400 | | | | |

North Atlantic Marine. Mammal Commission (2020)
| Year | Survey | Platform | Abundance | CV | Confidence Interval | Notes |
|------|--------|----------|-----------|----|---------------------|-------|
| 2015 | AIO    | 4797 (p) | 0.50      | 9,180 | 3,635-23,234         | Minimum estimate, as incomplete coverage of the 'WGL stock' and availability correction considered conservative, also based on 3 pw tagged off the Faroes. | Hansen et al. 2018 |
| 2007 | AIO    | 3,253 (p) | 0.38      | 8,133 | 3,765-17,565         | First abundance estimate for WGL. | Hansen & Heide-Jørgensen 2013 |
| 1987 | SP     | 15 (16)  |           |       |                     |       | Larsen et al. 1989 |
| 2015 | AIO    | 135 (p)  | 1.02      | 258   | 50-1,354            | Availability correction considered conservative. | Hansen et al. 2018 |
| 2015 | SIO    | 278,153  | 0.35      | 128,948-600,003 | 344,148 | 0.35 | 162,795-727,527 | NAMMCO SC 25 (AEWG 2018) | Pike et al. 2019a |
| 2007 | SBT    | 92,980   | 0.24      | 57,226-150,747 | 87,417 | 0.38 | 41,783-182,891 | Combined platforms. | Pike et al. 2020a |
| 2001 | IS + FR| 65,315   | 0.39      | 30,122-141,620 |          |       |                     | [Pike et al. 2003] |
| 1995 | IS + FR| 214,840  | 0.26      | 130,054-354,899 |          |       |                     | [Burt and Borchers 1997] |
| 1989 | S      | 660,387  | 0.33      | 351,099-1,242,131 |          |       |                     | Buckland et al. 1993 |
| 1987 | S      | 122,643  | 0.29      | 65,591-220,253 |          |       |                     |       |

**Long-finned pilot whales**

NA: North Atlantic Marine. Mammal Commission (2020)

**Notes:**
- **IS + FR:** Iceland and Faroe Islands survey conducted as a single platform.
- **SP/BT:** Survey implemented for the first time a double platform (BT) mode.
Common dolphins are usually not observed in NASS surveys, as no sightings have been made north of 57° (Canadas et al. 2009). The Faorese blocks of the 1995 NASS survey went south of this limit and had many sightings.

### Short beaked common dolphins

| NEA | IS + FR | NASS | Year | ID | Species | No. | Lower Ext. | Upper Ext. | SD | Error |
|-----|---------|------|------|----|---------|------|------------|------------|----|-------|
| IS + FR | NASS | 2015 | S | ID | 69% | 350,696 | 210,958-539,926 | 1 | 0 |

Corrected both for animals missed on the trackline and responsive movements.

Pike et al. 2020b

### Lagenorhynchus spp

| IS | IS | NASS | Year | ID | Species | No. | Lower Ext. | Upper Ext. | SD | Error |
|----|----|------|------|----|---------|------|------------|------------|----|-------|
| CIC | NASS | 1995 | A | ID | 29,444 | 12,714-32,874 | | |

NAMMCO SC/10 (AEWG 2002)

[Pike et al 2002a]

Sigurjonsso & Vikingsson 1997

| IS | NASS | 1987 | S | SP | C. 5,200 | | |

[Øien 1996]

Leonard & Øien 2020b

### Lagenorhynchus spp. mosaic

| IS | IS Fr | NASS | Year | ID | Species | No. | Lower Ext. | Upper Ext. | SD | Error |
|----|------|------|------|----|---------|------|------------|------------|----|-------|
| NO | NO | NASS | 1996-2001 | S | IO | NA | | |

Likely over 90% are white beaked dolphins. Identified as "springers" only, i.e., delphinids species. Could also include few sightings of common dolphins and bottlenose dolphins, considering the distribution of the species.

[Øien 1996]

### White sided dolphins

| IS - FR | IS + FR | NASS | Year | ID | Species | No. | Lower Ext. | Upper Ext. | SD | Error |
|--------|---------|------|------|----|---------|------|------------|------------|----|-------|
| NASS | 2015 | S | IO | 40,173 | 15,334-105,248 | 131,022 | 35,251-486,981 | 1 | 0 |

NAMMCO SC/25 (AEWG 2018)

Pike et al. 2019a

| TNASS | 2007 | S | BT | 32,296 | 14,609-71,838 | 81,008 | 27,993-234,429 | 1 | 0 |

NAMMCO SC/26 (AEWG 2019)

Pike et al. 2020a

See comments above. Tentative & minimum estimate.

Øien 1990

21 sightings of white beaked dolphins

Øristland et al. 1989

NASS 1987 | S | SP | Tfs | | | | | | |
| Location | Event | Year | Season | ID | Name | Vessel | Start | End | Abundance | Abundance | Notes |
|----------|-------|------|--------|----|------|--------|-------|-----|-----------|-----------|-------|
| West GL | NASS  | 2015 | A      | IO | 15,831 (p) | 0.34 | 8,514-31,202 | 106,822 | 0.35 | 55,149-206,909 | 1 | NAMMCO SC/26 (HPWG 2019) | Abundance also corrected for hp outside the survey strata during the survey period. Availability bias corrected with data collected from 9 hp satellite tagged in Greenlandic waters, using a 19% availability factor. |
|         | TNASS | 2007 | A      | IO | 10,314 (p) | 0.35 | 5,193-20,484 | 69,595 | 0.37 | 34,889-139,624 | 1 | NAMMCO SC/26 (HPWG 2019) |
|         | NASS  | 1987 | A      | SP | tfs (3)    |      |               |       |       |                       | 1 | NAMMCO SC/26 (AEWG 2016) |
| East GL | NASS  | 2015 | A      | IO | 312        | 1.00 | 1,642-3,806 | 318,846 | 1 | 1          | NAMMCO SC 23 (AEWG 2016) |
| NEA     | IS    | NASS  | 2016 | A | IO | 10,506 | 0.26 | 6,120-18,036 | 22,806 | 0.48 | 9,166-56,746 | 1 | NAMMCO SC/26 (AEWG 2019) | Potential for substantial negative bias, as no availability correction and incomplete coverage. |
|         | NASS  | 2009 | A      | IO | na        |      |               |       |       |                       | 0 | NAMMCO SC/26 (AEWG 2019) |
|         | TNASS | 2007 | A      | IO | 43,179    | 0.45 | 31,755-161,899 | 1 | 1 | NAMMCO SC/18 (AEWG 2011) | SCANS-II esw and g(0) applied for bias correction. |
|         | NASS  | 2001 | A      | IO | tfs (13)  |      |               |       |       |                       | 1 | NAMMCO SC/18 (AEWG 2011) |
|         | NASS  | 1995 | A      | IO | 5,156     | 0.42 | 3,027-8,783  |       |       |                       | 1 | NAMMCO SC/26 (AEWG 2019) |
|         | NASS  | 1987 | A      | SP | na        |      |               |       |       |                       | 1 | NAMMCO SC/26 (AEWG 2019) |
|         | IS    | 1986 | A      | SP | 4,239     | 0.35 | 2,724-6,599  |       |       |                       | 1 | NAMMCO SC/26 (AEWG 2019) |
| FR coastal | FR | 2010 | A      | IO | 5,175     | 0.44 | 3,457-17,637 | 1 | 1 | NAMMCO SC/18 (AEWG 2011) | SCANS-II esw and g(0) applied for bias correction. |
| NO mosaic | NILS | 2014-18 | S   | IO | 129,723   | 0.18 | 89,018-189,038 | 255,929 | 0.20 | 172,742-379,175 | 1 | NAMMCO SC/26 (AEWG 2019) |
|         | NILS  | 2008-13 | S   | IO | 14,500    | 0.31 | 7,868-26,721 | 38,351 | 0.58 | 10,502-88,907 | 1 | NAMMCO SC/26 (AEWG 2019) | Comparatively anomalously low and inconsistent abundance estimate. On WG advice, distance was removed from the conditional detection function. |
|         | NILS  | 2002-07 | S   | IO | 98,205    | 0.13 | 75,801-128,450 | 189,604 | 0.19 | 129,437-277,738 | 1 | NAMMCO SC/26 (AEWG 2019) |
|         | NILS  | 1996-01 | S   | IO | na        |      |               |       |       |                       | 1 | NAMMCO SC/26 (AEWG 2019) |
| NO     | NILS  | 1995 | S      | IO | na        |      |               |       |       |                       | 1 | NAMMCO SC/26 (AEWG 2019) |
|         | NASS  | 1989 | S      | SP | 93,612    | 0.22 |               |       |       | Only partial coverage of the area. Bjørge & Øien 1995 |
|         | NASS  | 1987 | S      | SP | tfs (9)   |      |               |       |       |                       | 1 | NAMMCO SC/26 (AEWG 2019) |

**Notes:**
- NASS = North Atlantic Survey
- TNASS = Trawl North Atlantic Survey
- NILS = Norwegian Institute for Nature Research
- NASS = Norwegian Marine Research Institute
- SCANS-II esw and g(0) applied for bias correction.
- Potential for substantial negative bias, as no availability correction and incomplete coverage.
- Data quality, incl. realised coverage not appropriate.
- 3D sightings but no perpendicular distance recorded.
- Comparatively anomalously low and inconsistent abundance estimate. On WG advice, distance was removed from the conditional detection function.
- Only partial coverage of the area.
| Region                  | Year | Code | Type | Survey Details                                                                 | Reference                                      |
|-------------------------|------|------|------|-------------------------------------------------------------------------------|-----------------------------------------------|
| North Atlantic          | 2018 | A    | IO   | 2,063, 0.81, 513-8,289                                                          | NAMMCO SC/27 (JWG 2020)                       |
|                         | 2014 | A    | IO   | 2,324, 0.27, 988-5,575                                                          | NAMMCO SC/22 (JWG 2015)                       |
|                         | 2010 | A    | IO   | 1,067 (♂), 0.27, 636-1,792                                                     | Spring (April) surveys. Partial coverage of potential habitat | Heide-Jørgensen et al. 2016b |
|                         | 2009 | A    | IO   | 863 (♂), 0.33, 460-1,620                                                        | NAMMCO SC/21 (JWG 2012)                       |
|                         | 2012 | A    | IO   | 9,072, 0.32, 4,895-16,815                                                       | Spring (May) surveys                           | Heide-Jørgensen et al. 2016a |
|                         | 2006 | A    | IO   | 10,595, 0.43, 4,895-16,815                                                      | MRDS estimate                                 | Heide-Jørgensen et al. 2016b |
|                         | 1998-99 | A   | IO   | 7,941, 0.41, 3,650-17,278                                                       | Abundance for 2009-10 is 2,245 (CV=0.11, 95% CI 1.811-2,783) | Heide-Jørgensen et al. 2013 |
|                         | 1998  | A    | IO   | 6,722, 0.28, 3,562-12,688                                                       | NAMMCO SC/7 (PSBNWG 1999)                     |
|                         | 1993-94 | A   | IO   | 11,563, 0.34, 8,560-15,621                                                     | NAMMCO SC/22 (JWG 2015)                       |
|                         | 2018  | A    | SP   | 549, 436-723                                                                  | NAMMCO SC/27 (JWG 2020)                       |
|                         | 2014  | A    | IO   | 2,324, 0.27, 988-5,575                                                          | NAMMCO SC/22 (JWG 2015)                       |
|                         | 2010  | A    | IO   | 1,067 (♂), 0.27, 636-1,792                                                     | Spring (April) surveys. Partial coverage of potential habitat | Heide-Jørgensen et al. 2016b |
|                         | 2009  | A    | IO   | 863 (♂), 0.33, 460-1,620                                                        | NAMMCO SC/21 (JWG 2012)                       |
|                         | 2012  | A    | IO   | 9,072, 0.32, 4,895-16,815                                                       | Spring (May) surveys                           | Heide-Jørgensen et al. 2016a |
|                         | 2006  | A    | IO   | 10,595, 0.43, 4,895-16,815                                                      | MRDS estimate                                 | Heide-Jørgensen et al. 2016b |
|                         | 1998-99 | A   | IO   | 7,941, 0.41, 3,650-17,278                                                       | NAMMCO SC/8 (PSBNWG 2000)                     |
|                         | 1998  | A    | IO   | 6,722, 0.28, 3,562-12,688                                                       | NAMMCO SC/7 (PSBNWG 1999)                     |
|                         | 1993-94 | A   | IO   | 11,563, 0.34, 8,560-15,621                                                     | NAMMCO SC/22 (JWG 2015)                       |
|                         | 2018  | A    | SP   | 549, 436-723                                                                  | NAMMCO SC/27 (JWG 2020)                       |
|                         | 2014  | A    | IO   | 2,324, 0.27, 988-5,575                                                          | NAMMCO SC/22 (JWG 2015)                       |
|                         | 2010  | A    | IO   | 1,067 (♂), 0.27, 636-1,792                                                     | Spring (April) surveys. Partial coverage of potential habitat | Heide-Jørgensen et al. 2016b |
|                         | 2009  | A    | IO   | 863 (♂), 0.33, 460-1,620                                                        | NAMMCO SC/21 (JWG 2012)                       |
|                         | 2012  | A    | IO   | 9,072, 0.32, 4,895-16,815                                                       | Spring (May) surveys                           | Heide-Jørgensen et al. 2016a |
|                         | 2006  | A    | IO   | 10,595, 0.43, 4,895-16,815                                                      | MRDS estimate                                 | Heide-Jørgensen et al. 2016b |
|                         | 1998-99 | A   | IO   | 7,941, 0.41, 3,650-17,278                                                       | NAMMCO SC/8 (PSBNWG 2000)                     |
|                         | 1998  | A    | IO   | 6,722, 0.28, 3,562-12,688                                                       | NAMMCO SC/7 (PSBNWG 1999)                     |
|                         | 1993-94 | A   | IO   | 11,563, 0.34, 8,560-15,621                                                     | NAMMCO SC/22 (JWG 2015)                       |
|                         | 2018  | A    | SP   | 549, 436-723                                                                  | NAMMCO SC/27 (JWG 2020)                       |
|                         | 2014  | A    | IO   | 2,324, 0.27, 988-5,575                                                          | NAMMCO SC/22 (JWG 2015)                       |
|                         | 2010  | A    | IO   | 1,067 (♂), 0.27, 636-1,792                                                     | Spring (April) surveys. Partial coverage of potential habitat | Heide-Jørgensen et al. 2016b |
|                         | 2009  | A    | IO   | 863 (♂), 0.33, 460-1,620                                                        | NAMMCO SC/21 (JWG 2012)                       |
|                         | 2012  | A    | IO   | 9,072, 0.32, 4,895-16,815                                                       | Spring (May) surveys                           | Heide-Jørgensen et al. 2016a |
|                         | 2006  | A    | IO   | 10,595, 0.43, 4,895-16,815                                                      | MRDS estimate                                 | Heide-Jørgensen et al. 2016b |
|                         | 1998-99 | A   | IO   | 7,941, 0.41, 3,650-17,278                                                       | NAMMCO SC/8 (PSBNWG 2000)                     |
|                         | 1998  | A    | IO   | 6,722, 0.28, 3,562-12,688                                                       | NAMMCO SC/7 (PSBNWG 1999)                     |
|                         | 1993-94 | A   | IO   | 11,563, 0.34, 8,560-15,621                                                     | NAMMCO SC/22 (JWG 2015)                       |
|                         | 2018  | A    | SP   | 549, 436-723                                                                  | NAMMCO SC/27 (JWG 2020)                       |

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