# European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)

## Fourth Report by the United Kingdom under Article 17

on the implementation of the Directive
from January 2013 to December 2018

Conservation status assessment for the species:

**S2618 - Minke whale (*Balaenoptera acutorostrata*)**

UNITED KINGDOM

## IMPORTANT NOTE - PLEASE READ

- The information in this document represents the UK Report on the conservation status of this species, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- It is based on supporting information provided by the geographically-relevant Statutory Nature Conservation Bodies, which is documented separately.
- The 2019 Article 17 UK Approach document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Maps showing the distribution and range of the species are included (where available).
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the UK assessments. Further underpinning explanatory notes are available in the related country-level reports.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was not relevant to this species (section 12 Natura 2000 coverage for Annex II species).
- The UK-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, https://jncc.gov.uk/article17, for further information on UK Article 17 reporting.

# Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

## NATIONAL LEVEL

## 1. General information

| | |
|---|---|
| 1.1 Member State | **UK** |
| 1.2 Species code | **2618** |
| 1.3 Species scientific name | **Balaenoptera acutorostrata** |
| 1.4 Alternative species scientific name | |
| 1.5 Common name (in national language) | Minke whale |

## 2. Maps

| | |
|---|---|
| 2.1 Sensitive species | No |
| 2.2 Year or period | 2013-2018 |
| 2.3 Distribution map | Yes |
| 2.4 Distribution map Method used | Based mainly on extrapolation from a limited amount of data |
| 2.5 Additional maps | No |

## 3. Information related to Annex V Species (Art. 14)

| | | |
|---|---|---|
| 3.1 Is the species taken in the wild/exploited? | No | |
| 3.2 Which of the measures in Art. 14 have been taken? | a) regulations regarding access to property | No |
| | b) temporary or local prohibition of the taking of specimens in the wild and exploitation | No |
| | c) regulation of the periods and/or methods of taking specimens | No |
| | d) application of hunting and fishing rules which take account of the conservation of such populations | No |
| | e) establishment of a system of licences for taking specimens or of quotas | No |
| | f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens | No |
| | g) breeding in captivity of animal species as well as artificial propagation of plant species | No |
| | h) other measures | No |

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3.3 Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

| b) Statistics/ quantity taken | Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period | | | | | |
|---|---|---|---|---|---|---|
| | Season/ year 1 | Season/ year 2 | Season/ year 3 | Season/ year 4 | Season/ year 5 | Season/ year 6 |
| Min. (raw, ie. not rounded) | | | | | | |
| Max. (raw, ie. not rounded) | | | | | | |
| Unknown | No | No | No | No | No | No |

3.4. Hunting bag or quantity taken in the wild Method used

3.5. Additional information

## BIOGEOGRAPHICAL LEVEL

## 4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

**Marine Atlantic (MATL)**

4.2 Sources of information

Anderwald, P., Brandecker, A., Coleman, M., Collins, C., Denniston, H., Haberlin, M. D., et al. (2013). Displacement responses of a mysticete, an odontocete, and a phocid seal to construction related vessel traffic. Endangered Species Research, 21:231-240. https://doi.org/10.3354/esr00523
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CODA (2009). Cetacean Offshore Distribution and Abundance in the European Atlantic (CODA). Final Report, 43pp. http://biology.st-andrews.ac.uk/coda/documents/CODA_Final_Report_11-2-09.pdf
DG Environment (2017). Reporting under Article 17 of the Habitats Directive: Explanatory notes and guidelines for the period 2013-2018. Brussels. Pp 188 http://cdr.eionet.europa.eu/help/habitats_art17
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Hammond, P. S., Lacey, C., Gilles, A., Viquerat, S., Borjesson, P., Herr, H., Macleod, K., Ridoux, V., Santos, M. B., Scheidat, M., Teilmann, J., Vingada, J & Oien, N. (2017). Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys. Available here:

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Haug, T., Bogstad, B., Chierici, M., Gjosaeter, H., Hallfredsson, E. H., Hoines, A. S., et al. (2017). Future harvest of living resources in the Arctic Ocean north of the Nordic and Barents Seas: A review of possibilities and constraints. Fisheries Research, 188: 38-57. https://doi.org/10.1016/j.fishres.2016.12.002
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JNCC (2010c). JNCC guidelines for minimising the risk of injury to marine mammals from using explosives. August 2010. Available here: http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Explosives Guidelines_August 2010.pdf
JNCC (2017). JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys Available here: http://jncc.defra.gov.uk/pdf/jncc_guidelines_seismicsurvey_aug2017.pdf
Kleivance, L., & Skaare, J. (1998). Organochlorine contaminants in northeast Atlantic minke whales (Balaenoptera acutorostrata). Environmental Pollution, 101:231-239.
Kvadsheim, P. H., Deruiter, S., Sivle, L. D., Goldbogen, J., Roland-hansen, R., Miller, P. J. O., et al. (2017). Avoidance responses of minke whales to 1 - 4 kHz naval sonar. Marine Pollution Bulletin, 121:60-68. https://doi.org/10.1016/j.marpolbul.2017.05.037.
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(PFCAs) in Arctic and North Atlantic marine mammals 1984 - 2009. Chemosphere, 86:278-285. https://doi.org/10.1016/j.chemosphere.2011.09.054
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Stone, C.J. (2015). Marine mammal observations during seismic surveys from 1994 - 2010, JNCC Report 463a, ISSN 0963 8901.
Stone, C. J., Hall, K. Mendes, S and Tasker, M. L. (2017). The effects of seismic operations in UK waters: analysis of Marine Mammal Observer data. J. Cetacean Red. Manage 16:71-85
Vikingsson, G. A., Elvarsson, B. TH., Olafsdottir, D., Sigurjonsson, J., Chosson, V and Galan, A. (2013) Recent changes in the diet composition of common minke whales (Balaenoptera acutorostrata) in Icelandic waters. A consequence of climate change? Marine Biology Research, 10:2, 138-152, DOI: 10.1080/17451000.2013.793812.

## 5. Range

| | | |
|---|---|---|
| 5.1 Surface area (km²) | 1085484 | |
| 5.2 Short-term trend Period | 1994-2018 | |
| 5.3 Short-term trend Direction | Stable (0) | |
| 5.4 Short-term trend Magnitude | a) Minimum | b) Maximum |
| 5.5 Short-term trend Method used | Based mainly on extrapolation from a limited amount of data | |
| 5.6 Long-term trend Period | | |
| 5.7 Long-term trend Direction | | |
| 5.8 Long-term trend Magnitude | a) Minimum | b) Maximum |
| 5.9 Long-term trend Method used | | |
| 5.10 Favourable reference range | a) Area (km²) | 1085484 |
| | b) Operator | |
| | c) Unknown | |
| | d) Method | Range estimated for the current period matches the range given in the 2013 reporting round (excluding analytic differences). |
| 5.11 Change and reason for change in surface area of range | Use of different method | |
| | The change is mainly due to: | Use of different method |
| 5.12 Additional information | Range estimated for the current period matches the range given in the 2013 reporting round (excluding analytic differences). This range is considered sufficient and includes all significant ecological variations to ensure survival of the species. Areas within the range are utilised to a lesser or greater extent. | |

## 6. Population

| | |
|---|---|
| 6.1 Year or period | 2016 |

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| | | |
|---|---|---|
| 6.2 Population size (in reporting unit) | a) Unit | number of individuals (i) |
| | b) Minimum | 6912 |
| | c) Maximum | 22032 |
| | d) Best single value | 12340 |
| 6.3 Type of estimate | 95% confidence interval | |
| 6.4 Additional population size (using population unit other than reporting unit) | a) Unit | |
| | b) Minimum | |
| | c) Maximum | |
| | d) Best single value | |
| 6.5 Type of estimate | | |
| 6.6 Population size Method used | Complete survey or a statistically robust estimate | |
| 6.7 Short-term trend Period | 2005-2016 | |
| 6.8 Short-term trend Direction | Unknown (x) | |
| 6.9 Short-term trend Magnitude | a) Minimum | |
| | b) Maximum | |
| | c) Confidence interval | |
| 6.10 Short-term trend Method used | Insufficient or no data available | |
| 6.11 Long-term trend Period | | |
| 6.12 Long-term trend Direction | | |
| 6.13 Long-term trend Magnitude | a) Minimum | |
| | b) Maximum | |
| | c) Confidence interval | |
| 6.14 Long-term trend Method used | | |
| 6.15 Favourable reference population (using the unit in 6.2 or 6.4) | a) Population size | |
| | b) Operator | |
| | c) Unknown | x |
| | d) Method | |
| 6.16 Change and reason for change in population size | No change | |
| | The change is mainly due to: | |
| 6.17 Additional information | The estimate of population size (6.2) is given as a point estimate (6.2d) with the corresponding 95% confidence intervals (6.2b&c).There is considerable overlap between the confidence intervals of the 2013 estimate and the current estimate, indicating that there is no significant difference between the two values and the population is relatively stable. This is further supported by the OSPAR Intermediate Assessment (OSPAR IA, 2017) which shows that minke whale abundance is stable in the Greater North Sea. However, with only two estimates with complete coverage of UK waters, we cannot confidently conclude this at a UK scale. | |

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## 7. Habitat for the species

| | | |
|---|---|---|
| 7.1 Sufficiency of area and quality of occupied habitat | a) Are area and quality of occupied habitat sufficient (for long-term survival)? | Unknown |
| | b) Is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)? | |
| 7.2 Sufficiency of area and quality of occupied habitat Method used | Based mainly on expert opinion with very limited data | |
| 7.3 Short-term trend Period | 2007-2018 | |
| 7.4 Short-term trend Direction | Unknown (x) | |
| 7.5 Short-term trend Method used | Based mainly on expert opinion with very limited data | |
| 7.6 Long-term trend Period | | |
| 7.7 Long-term trend Direction | | |
| 7.8 Long-term trend Method used | | |
| 7.9 Additional information | | |

## 8. Main pressures and threats

8.1 Characterisation of pressures/threats

| Pressure | Ranking |
|---|---|
| Shipping lanes and ferry lanes transport operations (E02) | M |
| Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution (F25) | M |
| Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (G01) | M |
| Bycatch and incidental killing (due to fishing and hunting activities) (G12) | M |
| Mixed source marine water pollution (marine and coastal) (J02) | M |
| Threats and pressures from outside the Member State (Xo) | M |

| Threat | Ranking |
|---|---|
| Shipping lanes and ferry lanes transport operations (E02) | M |
| Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution (F25) | M |
| Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (G01) | M |
| Bycatch and incidental killing (due to fishing and hunting activities) (G12) | M |
| Mixed source marine water pollution (marine and coastal) (J02) | M |

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| | |
|---|---|
| Decline or extinction of related species (e.g. food source / prey, predator / parasite, symbiote, etc.) due to climate change (N07) | M |
| Threats and pressures from outside the Member State (Xo) | M |

8.2 Sources of information

8.3 Additional information

## 9. Conservation measures

9.1 Status of measures

a) Are measures needed? No

b) Indicate the status of measures

9.2 Main purpose of the measures taken

9.3 Location of the measures taken

9.4 Response to the measures

9.5 List of main conservation measures

9.6 Additional information

This species is not an Annex II species under the Habitats Directive, therefore conservation measures stipulated in the Directive are not required. This is reflected in the UK response to field 9.1 (with no measures listed under field 9.5) However, the UK has been committed to supporting several international agreements and conventions on the conservation of marine mammals and the marine environment in general. For example: The Convention on Migratory Species; the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR). The UK Government funds a national strandings scheme, ongoing since 1990, which aims to: collate, analyse and report data for all cetacean strandings around the coast of the UK; determine the causes of death in stranded cetaceans, including bycatch and physical trauma and; undertake surveillance on the incidence of disease in stranded cetaceans in order to identify any substantial new threats to their conservation status. These considerations for this species most closely equate to the following five measures in the EU conservation measures list: Reduce impact of mixed source pollution (CJ01) Reduce impact of military installations and activities (CH01) Control/eradication of illegal killing, fishing and harvesting (CG04) Reduce bycatch and incidental killing of non-target species (CG05) Adapt/manage exploitation of energy resources (CC02).

## 10. Future prospects

10.1 Future prospects of parameters

a) Range Good

b) Population Unknown

c) Habitat of the species Unknown

10.2 Additional information

These results are based on the current conservation status for each parameter combined with the future trend for each parameter. The future trend is an estimate of how the parameter is likely to progress into the future, using the current trend as a baseline and considering the balance between threats and

measures to assess how these are likely to affect that trend over the next two reporting cycles (12 years). For minke whale, the future trend of Range is assessed as Overall Stable. As the current conservation status for Range is Favourable for this species, the future prospects are considered Good.
The future trend and consequently the future prospects for the Population and Habitat parameters are assessed as Unknown; this is due to there being insufficient data to establish current trends for these parameters

## 11. Conclusions

| | |
|---|---|
| 11.1. Range | Favourable (FV) |
| 11.2. Population | Unknown (XX) |
| 11.3. Habitat for the species | Unknown (XX) |
| 11.4. Future prospects | Unknown (XX) |
| 11.5 Overall assessment of Conservation Status | Unknown (XX) |
| 11.6 Overall trend in Conservation Status | Unknown (x) |
| 11.7 Change and reasons for change in conservation status and conservation status trend | a) Overall assessment of conservation status<br>Use of different method<br>The change is mainly due to: Use of different method<br>b) Overall trend in conservation status<br>No change<br>The change is mainly due to: |
| 11.8 Additional information | Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is stable and (ii) the current Range surface area is approximately equal to the Favourable Reference Range.<br>Conclusion on Population reached because: (i) the FRP is unknown; and (ii) the short-term trend direction in Population size is unknown.<br>Conclusion on Habitat for the species reached because: (i) the area of habitat is sufficiently large but (ii) the habitat quality is unknown for the long-term survival of the species; and (iii) the short-term trend in area and quality of habitat is unknown.<br>Conclusion on Future prospects reached because: (i) the Future prospects for Range are good but; (ii) the Future prospects for Population are unknown; and (iii) the Future prospects for Habitat for the species are unknown.<br>Overall assessment of Conservation Status is Unknown because two or more of the conclusions are Unknown.<br>Overall trend in Conservation Status is based on the combination of the short-term trends for Range - stable, Population - unknown, and Habitat for the species - unknown. |

## 12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

# Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

| | |
|---|---|
| 12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present) | a) Unit<br>b) Minimum<br>c) Maximum<br>d) Best single value |
| 12.2 Type of estimate | |
| 12.3 Population size inside the network Method used | |
| 12.4 Short-term trend of population size within the network Direction | |
| 12.5 Short-term trend of population size within the network Method used | |
| 12.6 Additional information | |

## 13. Complementary information

| |
|---|
| 13.1 Justification of % thresholds for trends |
| 13.2 Trans-boundary assessment |
| 13.3 Other relevant Information |

# Distribution Map

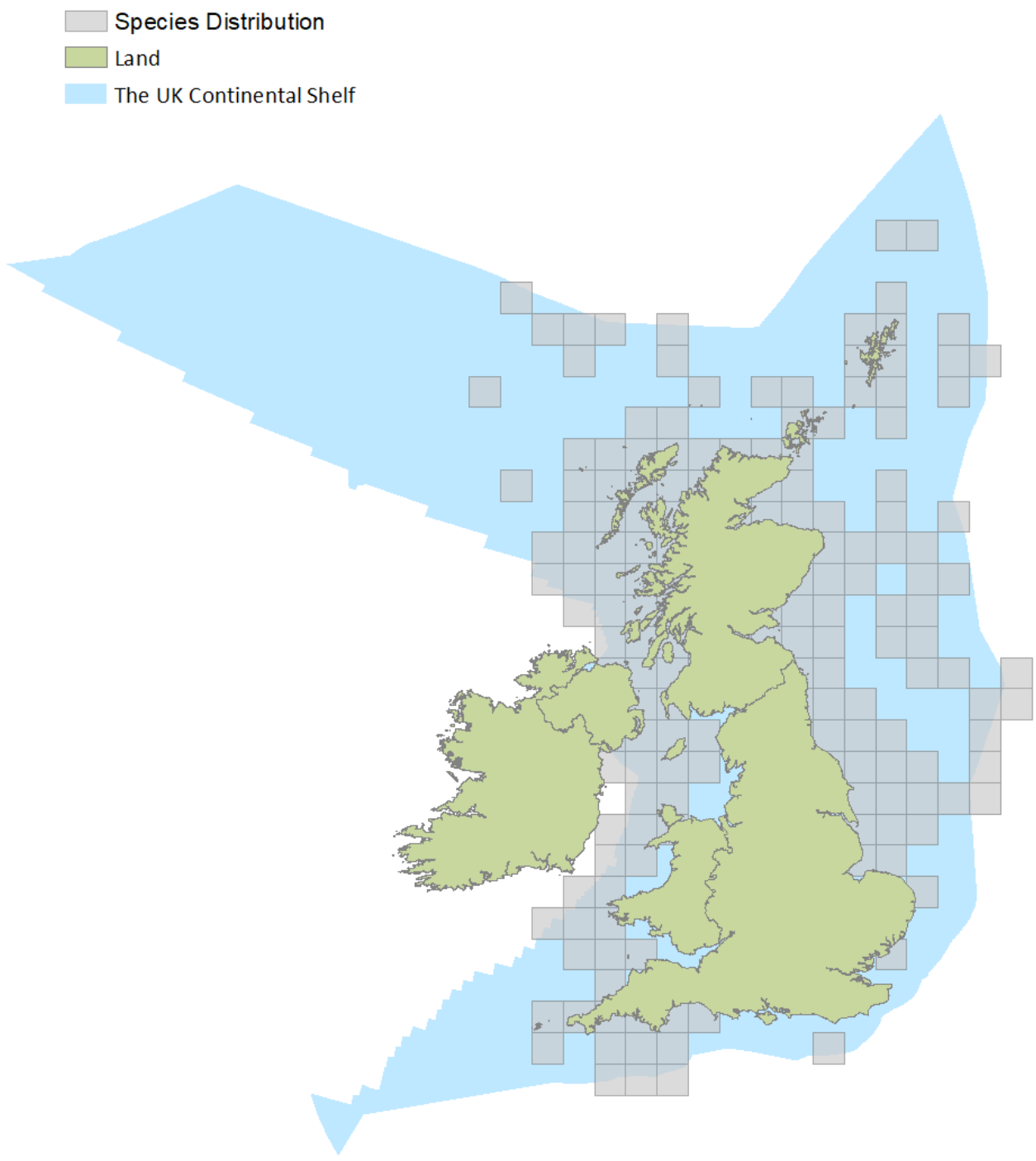


Figure 1: UK distribution map for S2618 - Minke whale (*Balaenoptera acutorostrata*).

The 50km grid square distribution map is based on available species records within the current reporting period. For further details see the 2019 Article 17 UK Approach document.

# Range Map

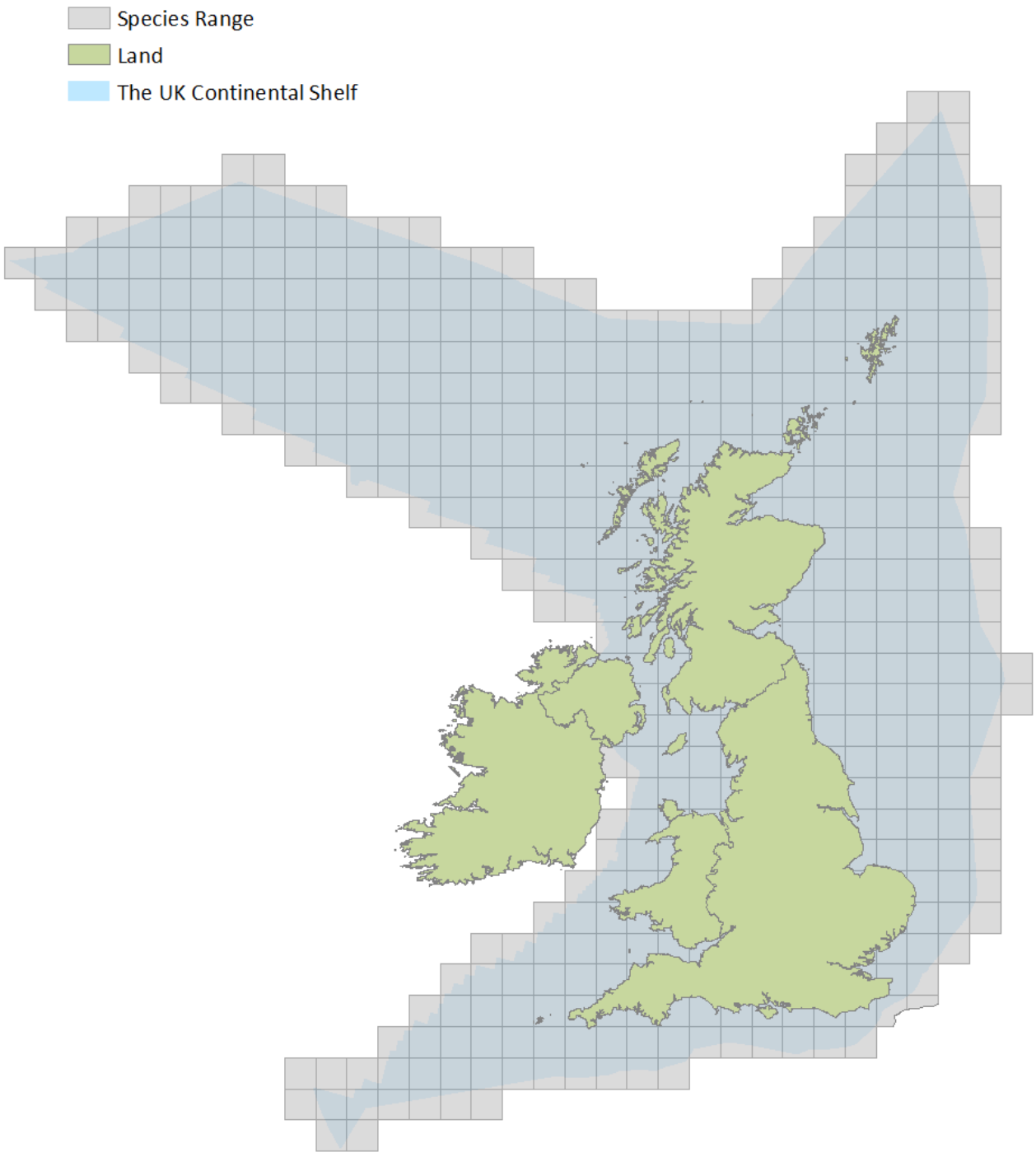


Figure 2: UK range map for S2618 - Minke whale (*Balaenoptera acutorostrata*).

The range for the 2013-2018 report was based on an analysis of effort related survey data spanning 1994-2010 compiled for the Joint Cetacean Protocol (JCP) undertaken by Paxton et al. (2016). The estimated range was based on a modelled prediction of Minke whale (*Balaenoptera acutorostrata*)

distribution during August 2010 (see Paxton et al., 2016 for further detail) and adapted based on additional sightings data and expert knowledge for the current reporting period. The range was mapped using a grid of 50x50km resolution and projected to ETRS LAEA 5210.

# Explanatory Notes

**Species name: Balaenoptera acutorostrata (2618)**

| Field label | Note |
|---|---|
| 2.1 Sensitive species | This refers to sensitivities around publishing distribution data. |
| 2.3 Distribution map | Around the UK, minke whale occur mainly in shelf waters in water depths of 200m or less. While they can be found in the southern North Sea and English Channel, they are less common in these areas. The species is found in offshore waters, but due to low survey effort and lower density, their presence in these areas is underrepresented on the distribution map which more closely resembles the species distribution in coastal and shelf waters. The resulting map (Annex A) is therefore a good representation of minke whale in shelf areas but is biased towards areas with greater survey effort and higher densities of animals. As a result, the offshore component appears under-represented and it is likely that the species can be found anywhere within their range (Annex B). The distribution map is based on actual sightings of minke whale, covering the UK Exclusive Economic Zone (EEZ) and UK Continental Shelf area (hereafter referred to as 'UK waters') between 2013 and 2018. This collates sightings data from the SCANS III, National Biodiversity Network (NBN), SeaWatch Foundation, MARINElife and ORCA datasets and includes both effort related sightings and confirmed opportunistic sightings collected from land, ship and aerial platforms during this period. |
| 2.5 Additional maps | Predicted core range for minke whale in UK waters (Annex B). No evidence of change since 2013 reporting round. The range is the same range as the previous (2013) report. The 2013 range was based on an analysis of effort related survey data spanning 1994-2010 compiled for the Joint Cetacean Protocol (JCP) undertaken by Paxton et al. (2016). The estimated range was based on a modelled prediction of minke whale distribution during August 2010 and adapted based on additional sightings data and expert knowledge (see Paxton et al., 2016 for further detail). |

**Species name: Balaenoptera acutorostrata (2618) Region code: MATL**

| Field label | Note |
|---|---|
| 5.3 Short term trend; Direction | Range for the current report (1,085,484 km2) is equal to the range presented in the 3rd reporting round (1,088,567 km2). |
| 5.5 Short term trend; Method used | The 2013 reported range was based on an analysis of effort related survey data compiled for the JCP undertaken by Paxton et al. (2016). The distribution data collated for the current report was compared with the predicted range from the 2013 report. As there was no discernible difference between the 3rd (2013) and 4th (2019) reporting rounds, the range is considered stable. This is further supported by the OSPAR Intermediate Assessment (OPSAR IA, 2017) which concluded that the distribution of this species has been maintained between 2005 and 2016 based on distribution data collected during the SCANS II and III surveys. |
| 5.10 Favourable reference range | The favourable reference range is approximately equal to the surface area given in Section 5.1. |
| 5.11 Change and reason for change in surface area of range | Range is considered stable but there is a minor difference in the range value between this report and the 3rd reporting round (2013). The difference is due to the use of a slightly different grid template and does not represent an actual difference in the species range between reporting rounds. |
| 6.1 Year or Period | This is when the SCANS-III survey (Hammond et al. 2017) was conducted. |
| 6.2 Population size | SCANS-III block estimates of abundance have been pro-rated by area across UK waters. Minimum and maximum are the lower and upper 95% confidence intervals respectively. The best single value is the point estimate. |

| | |
|---|---|
| 6.6 Population size; Method used | The SCANS-III survey was designed to provide robust estimates of cetacean abundance. The survey provides complete survey coverage of UK EEZ waters. The area west of the EEZ out to the UK Continental Shelf boundary was assumed to have the same density of animals as the adjacent survey block from SCANS-III. The resulting estimates are considered to be statistically robust. |
| 6.7 Short term trend; Period | There have been two abundance estimates with complete coverage of the UK EEZ over this 11-year period. The first was derived from SCANS-II in 2005 combined with CODA in 2007 (CODA, 2009) to cover offshore areas. This estimate was revised in 2017 (detailed in Section 6.15). The second estimate was derived from the SCANS-III survey in 2016. |
| 6.8 Short term trend; Direction | Reported as Unknown as some data are available but they are not enough to accurately determine trend direction at the UK scale. The estimate for the UK population in 2016 (SCANS-III) is approximately equal to the 2005-2007 estimate (CODA and revised SCANS-II) and the confidence intervals overlap considerably. However, with only two data points it is not possible to explore trends. SCANS-II & CODA (2005-2007) UK waters abundance estimate 12,867 (95% CI 5,507 - 30,062). SCANS-III (2016) UK waters abundance estimate 12,340 (95% CI 6,912 - 22,032). Within the North Sea, there are more abundance estimates available and it is possible to assess trends in abundance for this region. The OSPAR Intermediate Assessment (OSPAR IA, 2017) concluded that there was no evidence of change in abundance in the North Sea over the period 1994-2016 (See Figure 1, Annex C). |
| 6.10 Short term trend; Method used | The available data are insufficient to assess whether minke whale abundance has changed in UK waters over the short term, as a minimum of three population estimates are required before trends can be explored. Due to the wide confidence intervals surrounding abundance estimates for this species, even with three estimates the statistical power to detect anything beyond a dramatic change in the short-term is likely to be limited. There are currently only two abundance estimates for minke whale which cover UK waters. |
| 6.15 Favourable reference population | This is the second reliable abundance estimate following a dedicated survey covering UK waters for this species. The 3rd UK Article 17 report (2013) set an FRV for minke whale abundance. This was based on the population estimate, derived from the SCANS II (2005) and CODA (2007) surveys. This value has subsequently been updated to reflect changes in how the original estimate was derived (detailed in Hammond et al., 2017). However, with only two reliable population estimates we cannot assess trend for this species and without reliable trend information it is not possible to state whether either of these estimates represents a favourable reference population. The FRP is therefore currently Unknown. |
| 7.1 Sufficiency of area and quality of occupied habitat | As data relating to habitat quality is limited for cetaceans, the assessment of this parameter is based on the conclusions for range and population as a proxy for habitat. Although minke whale range is considered stable, it is not possible to explore trends relating to their abundance at the UK scale with only two data points and must conclude that the population parameter for this species is Unknown. As the population parameter is Unknown, we cannot conclude that the supporting habitat is sufficient. |
| 8.1 Characterisation of pressures/ threats | General information for minke whales: Pressure ranking for minke whale is mainly based on expert opinion and data from post mortem of stranded animals, which indicate sources of mortality for this species. Between 2000-2017, 293 minke whales were reported as stranded in the UK, of which 46 were examined at post mortem by the UK Cetacean Strandings Investigation Programme (UK CSIP). The main cause of death was entanglement (37%), followed by live stranding (15%), starvation (11%), boat strike (7%), and bacterial infection (7%) (UK CSIP reports (Deaville 2011:2017). |

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| 8.1 Characterisation of pressures/ threats | E02 Shipping lanes and ferry lanes transport operations Application of pressure: Used to identify risk from disturbance and collision risk from shipping. Minke whales are affected by shipping due to direct mortality cause by ship strikes. 7% of minke whales necropsied by CSIP between 2000-2017 had a cause of death of physical trauma due to the ship strike (CSIP annual reports, http://ukstrandings.org/csip-reports). Noise from shipping vessels is thought to affect baleen whales in particular, due to their good hearing at low frequencies (Gotz et al., 2009). Increased vessel traffic from marine construction activities was correlated with a decrease in minke whale presence in the area surveyed off the northwest coast of Ireland, suggesting they were displaced by the high levels of vessels presence (Anderwald et al., 2013). |
| 8.1 Characterisation of pressures/ threats | N07 Decline or extinction of related species (e.g. food source / prey, predator / parasite, symbiot, etc.) due to climate change Application of pressure: Used to identify risk from climate change. The effects of climate change on minke whales is likely to be mediated through variation in prey resource. It has been suggested that the northward expansion of minke whales in response to climate change may result in competition for resources with endemic Artic species (Haug et al., 2017). However, evidence also suggests that minke whales have spatial and temporal variation in diet, consistent with ecosystem changes such as sea surface temperature and bottom temperatures and change in abundance and distribution of prey species (Vikingsson et al., 2013). This will increase potential for adapting to change in future prey availability. |
| 8.1 Characterisation of pressures/ threats | F25 Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution Application of pressure: Used to identify risk of the cumulative effects of noise on cetaceans. Minke whales showed strong behavioural responses to a large, active airgun array in UK waters (Stone, 2015). Stereotypical behaviours such as travelling away from the source vessel, increase in fast swimming, and an increase in surfacing or 'milling' during periods of firing (Stone, 2015) was observed in the species. Furthermore, tagged minke whales showed strong avoidance behaviour in response to naval sonar, with one individual displaying a 5-fold increase in horizontal speed away from the source, implying an increase in metabolic rate (Kvadsheim et al., 2017). Repeated exposure to noise generating activities may therefore have the potential to cause longer term impacts on minke whale populations, through alterations in feeding behaviour, increased energy expenditure, and disruptions to migrations or social behaviour. The impact for this pressure is indirect, with evidence of recovery/return once the pressure is removed. However, the cumulative effect of these and other sources of noise disturbance may be greater when combined. |
| 8.1 Characterisation of pressures/ threats | J02 Mixed source marine water pollution (marine and coastal) Application of pressure: Used to identify risk from marine and coastal pollution. Persistent organic pollutants (POPs) such a PCBs and PBDEs are of particular concern to cetaceans, as species at a risk of both bioaccumulation due to their long life-span, and biomagnification due to their high-trophic level diets. Increased levels of pollutants in cetaceans is associated with immunosuppression, and reduced fecundity through increased foetal mortality. The influence is long-term and intergenerational, with the pressure ubiquitous across the species range. Whilst evidence of persistent organic pollutants (POPs) has been found in minke whales in the northeast Atlantic (Kleivance and Skaare, 1998; Rotander et al., 2012a; Rotander et al., 2012b), there is minimal information on how pollutants currently affect minke whales in UK waters. This pressure is currently counteracted with mitigation measures. PCBs, TBTs and other major pollutants are banned but legacy pollutants remain an issue. |

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| 8.1 Characterisation of pressures/ threats | Xo Threats and pressures from outside member states Application of pressure: Used to identify risk from nations outside of the EU Member States Minke whales have been historically hunted in neighbouring waters, and the species continues to be hunted annually by Norwegian, Icelandic and Greenland whalers (NAMMCO: https://nammco.no/topics/common-minke-whale/ 1475844711542-eedf1c7b-5dde). Given the migratory nature of minke whales, individuals taken in the annual hunt are likely to be from the same population as those occurring in UK waters (Northridge and Coram, 2010). The IWC abundance estimate for the North-east Atlantic is 90,000 (95% CI 60,000 - 130,000) https://iwc.int/estimate table. Norway, Iceland and Greenland take over 700 minke whales per year, which is used for food (NAMMCO). |
| 8.1 Characterisation of pressures/ threats | G01 Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species. Application of pressure: Used to identify risk from prey depletion and disturbance due to fishing activity. Prey depletion has a direct and immediate influence on the individual. Evidence for starvation in the species comes from CSIP stranding data, with 11% of all minke whales examined post-mortem between 2000 and 2017 reported to have died due to starvation (CSIP annual reports, http://ukstrandings.org/csip-reports). A study on minke whale stomachs in Iceland indicated prey preferences of herring; haddock; sandeel; krill and capelin (Vikingsson et al., 2013). There is potential for competition between whales and fishing activity of commercial species, however evidence also suggests that minke whales are able to adapt to changing availability of prey (Vikingsson et al., 2013). It should be noted that prey depletion can result from both natural and anthropogenic causes, and no direct link has been identified between commercial fishing practices and the cases of cetacean starvation recorded through the UK CSIP. |
| 8.1 Characterisation of pressures/ threats | G12 Bycatch and incidental killing (due to fishing and hunting activities) Application of pressure: Used to identify risk from bycatch in active fishing gears. Entanglement was the cause of death in 40% of the 46 minke whales examined by the UK CSIP between 2000-2016 (CSIP annual reports, https://ukstrandings.org/csip-reports). It has also been noted that this number is likely to be under reported, as not all animals that die as consequence of entanglement will wash ashore (Northridge and Coram, 2010). In the UK, entanglement is a category largely confined to minke whales, with evidence of entanglement in mooring rope and creel lines, or other discarded gear and marine litter (Pierce et al., 2004; Deaville, 2011). Minke whale deaths due to entanglement in fishing gear, principally in creel lines, represent the single most frequently documented cause of anthropogenic mortality in Scottish and UK waters (Northridge et al., 2010), however, exposure of the population across its distribution is regional, therefore the pressure ranking is medium. A new research project, The Scottish Entanglement Alliance, funded by the European Maritime and Fisheries Fund aims to better understand and quantify the levels of marine animal mortality due to entanglement, and will include looking at minke whale entanglement in creel lines off Scotland (http://www.europeanmarinesciencepark.co.uk/news-events/2018/introducing-the-scottish-entanglement-alliance-sea/) |

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| 9.5 List of main conservation measures | CC02 Adapt/manage exploitation of energy resources Guidance for the protection of marine European Protected Species from deliberate injury, killing and disturbance has been drafted (JNCC 2010a; Marine Scotland, 2014). Marine Industries generate a variety of noise through activities such as geophysical surveys (e.g. seismic surveys (JNCC 2017)), construction (e.g. pile driving (JNCC 2010b)) and decommissioning (e.g. use of explosives (2010c)). As part of the licencing procedures, developers and operators are required to utilise JNCC guidelines to minimise the risk of injury to cetaceans when undertaking such activities (JNCC 2010b, 2010c; JNCC 2017). The guidelines advise on conducting marine mammal observations prior to and during the activity and, where suitable, utilising procedures such as soft start (gradual introduction of the sound) to reduce and avoid direct harm to animals. A review of the marine mammal observer data demonstrated the effectiveness of soft start approach (Stone et al., 2017). |
| 9.5 List of main conservation measures | CJ01 Reduce impact of mixed source pollution The impact of chemical pollution on minke whales remains an issue (Jepson et al, 2016), however, establishing measures beyond the historic ban on PCB use, has not been achieved to date. Further information is required to understand where exposure is occurring to be able to identify appropriate measures. |
| 9.5 List of main conservation measures | CH01 Reduce impact of military installations and activities To reduce the risk of noise impact on marine mammals, the UK Ministry of Defence (MOD) has a Statement of Intent with UK Statutory Nature Conservation Bodies concerning conduct in relation to marine disturbance. The MOD has developed a real-time alert procedure for naval training operations. This enables localised information on cetacean sightings to be incorporated into the training schedule and for operations to be relocated if necessary. |
| 9.5 List of main conservation measures | CG04 Control/eradication of illegal killing, fishing and harvesting The Habitats Directive is transposed into UK law under the Habitat Regulations (HR) for England and Wales (as amended) and the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended), which make it an offence to kill, injure, capture or disturb European marine protected species. Similar legislation exists for Scottish and Northern Irish inshore waters. |
| 9.5 List of main conservation measures | CG05 Reduce bycatch and incidental killing of non-target species The UK is implementing the European Council Regulation EC 812/2004, which lays down measures concerning incidental catches of cetaceans in fisheries, and more generally the bycatch obligations within the Habitats Directive. Since 2004, a dedicated bycatch monitoring scheme has been in place, managed by the Sea Mammal Research Unit at University of St Andrews, with both dedicated and non-dedicated onboard observers collecting data on bycatch numbers as well as mitigation compliance and effectiveness of measures. |
| 10.1 Future prospects of parameters | Range: The overall assessment of this parameter is Favourable and there is no evidence that risk is increasing in the next 12 years (two reporting rounds). Population: Insufficient information to assess the status of this parameter. Although the pressures impacting this parameter are not thought to be increasing and there are no threats identified which are likely to impact in the next 12 years, the uncertainty surrounding the current status of this parameter make it impractical to predict future prospects. Habitat of the species: Insufficient reliable information to assess the status of this parameter. Although the pressures impacting this parameter are not thought to be increasing and there are no threats identified which are likely to impact in the next 12 years, the uncertainty surrounding the current status of this parameter make it impractical to predict future prospects. |
| 11.1 Range | There is no evidence to suggest range has changed since the last reporting round (2013) and the range assessment therefore remains Favourable. |
| 11.2 Population | The FRP is unknown. Therefore, the current abundance cannot be compared to the FRP and the conclusion for population is Unknown. |

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| 11.3 Habitat for the species | Range is Favourable but population is Unknown. Therefore, the quality of habitat for the species cannot be inferred in the absence of population information. |
| 11.4 Future prospects | There are two or more of the future prospects parameters are assessed as Unknown (population and habitat) resulting in an overall assessment value of future prospects as Unknown. |
| 11.5 Overall assessment of Conservation Status | There are two or more Unknown results (population, habitat and future prospects) therefore the overall assessment of conservation status is Unknown. |
| 11.7 Change and reasons for change in conservation status and conservation status trend | The assessment has changed from Favourable in the 3rd reporting round (2013) to Unknown due to a revised approach to dealing with limited data and interpretation of the guidance relating to the Favourable Reference Values (FRVs). According to the Art17 reporting guidance (DG Environment, 2017) assessment of the population parameter is based on how the current estimate compares with the Favourable reference Population (FRP). A population is considered favourable if the species abundance estimate is not below the FRP. Due to data limitations, cetacean FRPs were set based on the best UK abundance estimates made as close in time as possible to when the Habitats Directive was adopted. This approach was taken in the 3rd reporting round (2013) and was supported by the Article 17 Guidance at the time (Evans and Marvela, 2013). However, the UK interpretation of the FRP concept has changed between reporting rounds and concludes that information on trends needs to be understood to set an FRP. A minimum of three data points is required to explore trends and considering the large confidence intervals associated with cetacean abundance estimates, the statistical power to detect anything beyond a dramatic change is likely to be limited from only three estimates. Where less than three data points are available, identification of trends is not possible. The change in the overall conclusion is therefore driven by this change in approach between the reporting rounds. |