Reporting under the Habitat Regulations (as amended)[1]

**2019-2024**

Conservation status assessment for the species:

# S2027 - Killer whale

# (*Orcinus orca*)

## United Kingdom

**[1] Habitat Regulations (as amended):**

- The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A
- The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended), Regulation 6A
- Report under The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), regulation 3ZA
- The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended), regulation 3ZA

**For further information please contact:**

Joint Nature Conservation Committee. Quay House, 2 East Station Road, Fletton Quays, Peterborough, PE2 8YY. https://jncc.gov.uk

This report was produced by JNCC in collaboration with the UK Country Nature Conservation Bodies (CNCBs) and country governments.

**This document should be cited as:**

JNCC, Department of Agriculture, Environment and Rural Affairs, Natural England, Natural Resources Wales & NatureScot. (2026). Conservation status assessment for the species: S2027 Killer whale (*Orcinus orca*).

**Important note - Please read**

- The information in this document represents the United Kingdom Reporting under the Habitat Regulations (as amended)[1], for the period 2019-2024.
- It is based on supporting information provided by Joint Nature Conservation Committee and UK Country Nature Consevation Bodies (CNCBs), which is documented separately.
- The Habitats Regulations reporting 2019-2024 Approach Document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- Map showing the distribution and range of the species is included.
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the assessments. Further underpinning explanatory notes are available in the related country 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 National Site Network coverage for Annex II species).

Further details on the approach to the Habitats Regulations Reporting 2019-2024 are available on the JNCC website.

# Assessment Summary: Killer whale

## Distribution and Range Map

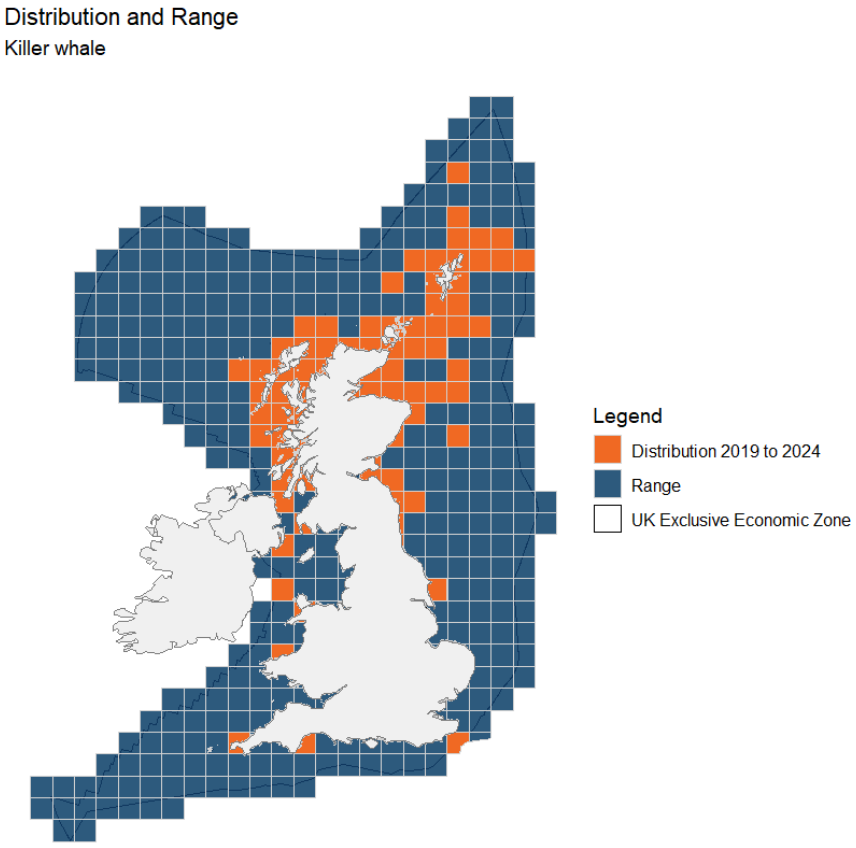


**Figure 1:** United Kingdom distribution and range map for S2027 - Killer whale (*Orcinus orca*). The 50km grid square distribution map is based on available species records within the current reporting period.

**Table 1:** Table summarising the conservation status for S2027 - Killer whale (*Orcinus orca*). Overall conservation status for species is based on assessments of range, population, habitat for the species, and future prospects.

## Overall Conservation Status (see section 11)

**Unknown (XX)**

## Breakdown of Overall Conservation Status

| | |
|---|---|
| **Range** (see section 5) | **Favourable (FV)** |
| **Population** (see section 6) | **Unknown (XX)** |
| **Habitat for the species** (see section 7) | **Unknown (XX)** |
| **Future prospects** (see section 10) | **Unknown (XX)** |

# List of Sections

# National Level

## 1. General information

| | |
|---|---|
| **1.1 Country** | United Kingdom |
| **1.2 Species code** | S2027 |
| **1.3 Species scientific name** | *Orcinus orca* |
| **1.4 Alternative species scientific name** | |
| **1.5 Common name** | Killer whale |
| **Annex(es)** | IV |

## 2. Maps

| | |
|---|---|
| **2.1 Sensitive species** | No |
| **2.2 Year or period** | 2019-2022 |
| **2.3 Distribution map** | Yes |
| **2.4 Distribution map; Method used** | Complete survey or a statistically robust estimate |

### 2.5 Additional information

The distribution map is based on verified sightings data of Killer whale between 2019 and 2024. The sightings were collated from SCANS IV, Pelagis French surveys, NBN Atlas, European Seabirds at Sea, the Joint Cetacean Data Programme, POSEIDON project, University of Aberdeen, The Crown Estate Marine Data Exchange, Whale and Dolphin Conservation, Hebridean Whale and Dolphin Trust, ORCA, Sea Watch Foundation, Marine Discovery Penzance, Sussex Dolphin Project, Cornwall Seal Group Research Trust and Cardigan Bay Marine Wildlife Centre.

## 3. Information related to Annex V Species

### 3.1 Is the species taken in the wild / exploited?

### 3.2 What measures have been taken?

### a) Regulations regarding access to property

**b) Temporary or local prohibition on the taking of specimens in the wild and exploitation**

**c) Regulation of the periods and/or methods of taking specimens**

**d) Application of hunting and fishing rules which take account of the conservation of such populations**

**e) Establishment of a system of licences for taking specimens or of quotas**

**f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens**

**g) Breeding in captivity of animal species as well as artificial propagation of plant species**

**Other measures**

**Other measures description**

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

### a) Unit

**Table 2:** Quantity taken from the wild during the reporting period (see 3.3a for units). For species with defined hunting seasons, Season 1 refers to 2018/2019 (autumn 2018 to spring 2019), and Season 6 to 2023/2024. For species without hunting seasons, data are reported by calendar year: Year 1 is 2019, and Year 6 is 2024.

| | Season/ year 1 | Season/ year 2 | Season/ year 3 | Season/ year 4 | Season/ year 5 | Season/ year 6 |
|---|---|---|---|---|---|---|
| **b) Minimum** | - | - | - | - | - | - |
| **c) Maximum** | - | - | - | - | - | - |
| **d) Unknown** | - | - | - | - | - | - |

## 3.4: Hunting bag or quantity taken in the wild; Method used

### 3.5: Additional information

No additional information

# Biogeographical Level

## 4. Biogeographical and marine regions

**4.1 Biogeographical or marine region where the species occurs** MATL

### 4.2 Sources of information

See section 14 References

## 5. Range

| | |
|---|---|
| **5.1 Surface area (km²)** | 895,498 |
| **5.2 Short-term trend; Period** | 2013-2024 |
| **5.3 Short-term trend; Direction** | Stable |
| **5.4 Short-term trend; Magnitude** | |
| **a) Estimated minimum** | |
| **b) Estimated maximum** | |
| **c) Pre-defined range** | |
| **d) Unknown** | |
| **e) Type of estimate** | |
| **f) Rate of decrease** | |
| **5.5 Short-term trend; Method used** | Based mainly on expert opinion with very limited data |
| **5.6 Long-term trend; Period** | |
| **5.7 Long-term trend; Direction** | Unknown |
| **5.8 Long-term trend; Magnitude** | |
| **a) Minimum** | |

| | |
|---|---|
| **b) Maximum** | |
| **c) Rate of decrease** | |
| **5.9 Long-term trend; Method used** | Insufficient or no data available |

### 5.10 Favourable Reference Range (FRR)

| | |
|---|---|
| **a) Area (km²)** | 895,498 |
| **b) Pre-defined increment** | |
| **c) Unknown** | No |
| **d) Method used** | Expert opinion |
| **e) Quality of information** | high |

### 5.11 Change and reason for change in surface area of range

| | |
|---|---|
| **a) Change** | No |
| **b) Genuine change** | |
| **c) Improved knowledge or more accurate data** | |
| **d) Different method** | |
| **e) No information** | |
| **f) Other reason** | |
| **g) Main reason** | |

### 5.12 Additional information

The distribution is based on verified sightings of killer whales between 2019 and 2024. The sightings were collated from SCANS IV, Pelagis French surveys, NBN Atlas, European Seabirds at Sea, the Joint Cetacean Data Programme, POSEIDON project, University of Aberdeen, The Crown Estate Marine Data Exchange, Whale and Dolphin Conservation, Hebridean Whale and Dolphin Trust, ORCA, Sea Watch Foundation, Marine Discovery Penzance, Sussex Dolphin Project, Cornwall Seal Group Research Trust and Cardigan Bay Marine Wildlife Centre.

The range of killer whales in UK EEZ has not thought to have changed since the 2019 UK reporting for Article 17 of the EU Habitats Directive.

Due to insufficient available data, the modelling approach (Paxton et al., 2016) used for the more common or coastal species could not be applied to killer whale. Instead, the FRR of killer whales is based on interpolation of distribution data and expert opinion.

## 6. Population

### 6.1 Year or period

### 6.2 Population size (in reporting unit)

| | |
|---|---|
| **a) Unit** | number of individuals |
| **b) Minimum** | |
| **c) Maximum** | |
| **d) Best single value** | |
| **6.3 Type of estimate** | |
| **6.4 Quality of extrapolation to reporting unit** | |

### 6.5 Additional population size (using population unit other than reporting unit)

| | |
|---|---|
| **a) Unit** | |
| **b) Minimum** | |
| **c) Maximum** | |
| **d) Best single value** | |
| **e) Type of estimate** | |

| | |
|---|---|
| **6.6 Population size; Method used** | Insufficient or no data available |
| **6.7 Short-term trend; Period** | |
| **6.8 Short-term trend; Direction** | Unknown |
| **6.9 Short-term trend; Magnitude** | |
| **a) Estimated minimum** | |
| **b) Estimated maximum** | |

| | |
|---|---|
| **c) Pre-defined range** | |
| **d) Unknown** | |
| **e) Type of estimate** | |
| **f) Rate of decrease** | |
| **6.10 Short-term trend; Method used** | Insufficient or no data available |
| **6.11 Long-term trend; Period** | |
| **6.12 Long-term trend; Direction** | Unknown |
| **6.13 Long-term trend; Magnitude** | |
| **a) Minimum** | |
| **b) Maximum** | |
| **c) Confidence interval** | |
| **d) Rate of decrease** | |
| **6.14 Long-term trend; Method used** | Insufficient or no data available |
| **6.15 Favourable Reference Population (FRP)** | |
| **ai) Population size** | |
| **aii) Unit** | |
| **b) Pre-defined increment** | |
| **c) Unknown** | Yes |
| **d) Method used** | |
| **e) Quality of information** | |
| **6.16 Change and reason for change in population size** | |
| **a) Change** | No |
| **b) Genuine change** | |

| |
|---|
| **c) Improved knowledge or more accurate data** |
| **d) Different method** |
| **e) No information** |
| **f) Other reason** |
| **g) Main reason** |

### 6.17 Additional information

There is no comprehensive abundance estimate for killer whales in UK waters available, despite high levels of regional effort to record sightings. Theer are two distinct populations of killer whales in UK waters, some which are considered resident or semi-resident, and others which are more transient, spending longer periods in waters outside of the UK.

A photo catalogue for UK killer whales was published in 2021 which outlines the current knowledge of known killer whales identified in coastal Scottish waters. This catalogue was produced by citizen scientists, using photos collected through dedicated effort and from members of the public (Scullion et al., 2021). The catalogue describes 11 to 13 groups consisting of circa 200 animals repeatedly encountered in UK waters.

Several of the regularly seen groups have been observed reproducing successful, with their numbers increasing and, in some cases, fracturing into separate groups. However, the West Coast Community is the most well studied killer whale group in the UK but has decreased to 2 individuals in recent years (Scullion et al., 2021). A known adult female from the West Coast Community stranded in 2016 due to entanglement and was found to have over 100 times above the toxicity threshold of polychlorinated biphenyl (PCB) in her blubber (Brownlow, et al., 2016)

Some groups of Killer whales are known to migrate between Iceland, Faroes and Northern Scotland, with multiple identification matches between the two regions. Movement between Scotland and Norway has not yet been identified as commonly occurring, with only a rare identification match between the regions (Scullion et al., 2021).

| | |
|---|---|
| **6.18 Age structure, mortality and reproduction deviation** | Unknown |

## 7. Habitat for the species

### 7.1 Sufficiency of area and quality of occupied habitat (for long-term survival)

| | |
|---|---|
| **a) Is area of occupied habitat sufficient?** | Unknown |
| **b) Is quality of occupied habitat sufficient?** | Unknown |
| **c) If No or Unknown, is there a sufficiently large area of unoccupied habitat of suitable quality?** | Unknown |

### 7.2 Sufficiency of area and quality of occupied habitat; Method used

| | |
|---|---|
| **a) Sufficiency of area of occupied habitat; Method used** | Based mainly on expert opinion with very limited data |
| **b) Sufficiency of quality of occupied habitat; Method used** | Based mainly on expert opinion with very limited data |

### 7.3 Short-term trend; Period

| | |
|---|---|
| **7.4 Short-term trend; Direction** | Unknown |
| **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** | Unknown |
| **7.8 Long-term trend; Method used** | Based mainly on expert opinion with very limited data |

### 7.9 Additional information

Direct evidence of cetacean habitat quality is limited as presently, a comprehensive understanding of the key elements important to the species is undetermined. In some cases, conclusions for species range and population could be indicative of habitat quality by proxy, however confidence in assessment outputs would be low.

The occurrence of killer whale in UK EEZ appears to be stable or increasing over the last decade, based on reported sightings and non-systematic photo identification. But there is insufficient evidence to be able to determine the habitat for the species.

## 8. Main pressures

### 8.1 Characterisation of pressures

**Table 3:** Pressures affecting the species, including timing and importance/impact ranking. Pressures are defined as factors acting currently and/or during the reporting period (2019–2024). Rankings are: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

| Pressure | Timing | Ranking |
|---|---|---|
| PF05: Sports, tourism and leisure activities | Ongoing and likely to be in the future | Medium (M) |
| PF12: Residential, commercial and industrial activities and structures generating noise, light, heat or other forms of pollution | Ongoing and likely to be in the future | Medium (M) |
| PG13: Bycatch and incidental killing (due to fishing and hunting activities) | Ongoing and likely to be in the future | Medium (M) |
| PK02: Mixed source marine water pollution (marine and coastal) | Ongoing and likely to be in the future | High (H) |
| PJ12: Decline or extinction of related species (e.g. food source / prey, predator / parasite, symbiote, etc.) due to climate change | Ongoing and likely to be in the future | Medium (M) |
| PC07: Geotechnical surveying | Ongoing and likely to be in the future | Medium (M) |
| PX02: Threats and pressures from outside the Member State | Ongoing and likely to be in the future | Medium (M) |

### 8.2 Sources of information

See section 14 References

### 8.3 Additional information

PF05: Assessed as a ‘Medium’ pressure but current reporting may be underestimating the extent of the pressure on marine mammal populations around the UK. A greater pressure in coastal areas.

PC07: Regional pressure in the North Sea and the Irish Sea.

PX02: Relating to continued whaling of this species outside of UK waters which may be having an impact on populations.

## 9. Conservation measures

### 9.1: Status of measures

| | |
|---|---|
| **a) Are measures needed?** | Yes |
| **b) Indicate the status of measures** | Measures identified and taken |
| **9.2 Main purpose of the measures taken** | Maintain the current range, population and/or habitat for the species |
| **9.3 Location of the measures taken** | Both inside and outside National Site Network |
| **9.4 Response to measures** | Medium-term results (within the next two reporting periods, 2025–2036) |

### 9.5 List of main conservation measures

**Table 4:** Key conservation measures addressing current pressures and/or anticipated threats during the next two reporting periods (2025–2036). Measures are ranked by importance/impact: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

| Conservation measure | Ranking |
|---|---|
| MC02: Adapt/manage exploitation of energy resources | High (H) |
| MC03: Adapt/manage renewable energy installation, facilities and operation (excl. hydropower and abstraction activities) | High (H) |
| MK01: Reduce impact of mixed source pollution | High (H) |
| MG04: Control/eradication of illegal killing, fishing and harvesting of wild plants, fungi and anmals | High (H) |
| MG05: Reduce bycatch and incidental killing of non-target species | High (H) |
| MH01: Reduce impact of military installations and activities | High (H) |

### 9.6 Additional information

This species is not an Annex II species and therefore the designation of SACs is not required, as stipulated in the Habitats Regulations. However, as a European Protected

Species, protection is provided throughout UK waters and it is an offence to kill, injure or disturb. The UK remains committed to the conservation of marine mammals in UK waters and the implementation of measures to mitigate the impact of pressures and conservation measures have been undertaken in the UK and adjacent waters as part of the requirements of the Habitats Regulations. Such measures include monitoring bycatch, monitoring strandings data to monitor current and identify emerging pressures, application of appropriate management measures, and noise monitoring and mitigation with regards to offshore industry. This is reflected in the list of conservation measures under field 9.5. The UK also supports a range of international agreements and conventions on the conservation of marine mammals and the marine environment. For example: The Convention on Migratory Species; the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR). A UK Cetacean Conservation Strategy is currently in development, due for publication shortly. The strategy is intended to support decision making and identify actions necessary to maintain or improve the conservation status of cetaceans in UK waters. Defra and devolved administrations fund national strandings schemes for cetaceans which aim to: collate, analyse and report data for all cetacean strandings around the coast of the UK; determine the causes of death (both natural and anthropogenic) 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. The UK has several voluntary wildlife watching guidelines/codes of conduct which are publicly available however, while these are endorsed by the UK government and devolved administrations, there is no mandate to adopt by operators or individuals.

## 10. Future prospects

### 10.1a Future trends of parameters

| | |
|---|---|
| **ai) Range** | Overall stable |
| **bi) Population** | Unknown |
| **ci) Habitat for the species** | Unknown |

### 10.1b Future prospects of parameters

| | |
|---|---|
| **aii) Range** | Good |
| **bii) Population** | Unknown |
| **cii) Habitat for the species** | Unknown |

### 10.2 Additional information

No additional information

## 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 |

### 11.7 Change and reason for change in conservation status

| | |
|---|---|
| **a) Change** | No |
| **b) Genuine change** | |
| **c) Improved knowledge or more accurate data** | |
| **d) Different method** | |
| **e) No information** | |
| **f) Other reason** | |
| **g) Main reason** | |

### 11.7 Change and reason for change in conservation status trend

| | |
|---|---|
| **a) Change** | No |
| **b) Genuine change** | |
| **c) Improved knowledge or more accurate data** | |
| **d) Different method** | |
| **e) No information** | |

**f) Other reason**

**g) Main reason**

### 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 equivalent to the Favourable Reference Range.

Conclusion on Population reached because: (i) the short-term trend direction in Population size is unknown; (ii) the best estimate for population size is unknown; and (iii) the Favourable Reference Population is unknown.

Conclusion on Habitat for the species reached because: (i) it is unknown whether the area of habitat is sufficiently large; (ii) it is unknown if habitat quality is sufficient for the long-term survival of the species; and (iii) the short-term trend in area and quality of habitat is unknown.

Conclusion on Future prospects reached because: (i) the Future prospects for Range are Good; (ii) the Future prospects for Population are Unknown; and (iii) the Future prospects for Habitat for the species are Unknown.

Overall assessment of Conservation Status is Unknown because two or more conclusions are Unknown and no conclusions are Unfavourable.

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. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex II species

### 12.1 Population size inside the pSCIs, SCIs and SACs network

**a) Unit**

**b) Minimum**

**c) Maximum**

**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 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction

### 12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used

### 12.8 Additional information

No additional information

## 13. Complementary information

### 13.1 Justification of percentage thresholds for trends

No justification information

### 13.2 Trans-boundary assessment

No trans-boundary assessment information

### 13.2 Other relevant information

No other relevant information

# 14. References

## Biogeographical and marine regions

### 4.2 Sources of information


Paxton, C.G.M., Scott-Hayward, L., Mackenzie, M., Rexstad, E. & Thomas, L. (2016) Revised Phase III Data Analysis of Joint Cetacean Protocol Data Resource, JNCC Report No. 517, JNCC, Peterborough, ISSN 0963-8091. https://hub.jncc.gov.uk/assets/01adfabd-e75f-48ba-9643-2d594983201e

Scullion, A. & Harrop, H. & Munro, K. & Truluck, S. & Foote, A. 2021. Scottish Killer Whale Photo Identification Catalogue 2021. 10.13140/RG.2.2.23096.88325.

Brownlow, A., Davison, N., ten Doeschate, M. 2016. Annual report; 1 January to 31 December 2016 for Marine Scotland, Scottish Government. Scottish Marine Animal Strandings Scheme. https://strandings.org/wp-content/uploads/2021/05/SMASS_Annual_Report_2016.pdf

Erbe, C., 2002. Underwater noise of whale-watching boats and potential effects on killer whales (Orcinus orca), based on an acoustic impact model. Marine mammal science, 18(2), pp.394-418.

Foote, A.D., Osborne, R.W. and Hoelzel, A.R., 2004. Whale-call response to masking boat noise. Nature, 428(6986), pp.910-910.

Heiler, J., Elwen, S.H., Kriesell, H.J. and Gridley, T., 2016. Changes in bottlenose dolphin whistle parameters related to vessel presence, surface behaviour and group composition. Animal behaviour, 117, pp.167-177.

Jepson, P.D., Deaville, R., Barber, J.L., Aguilar, À., Borrell, A., Murphy, S., Barry, J., Brownlow, A., Barnett, J., Berrow, S. and Cunningham, A.A., 2016. PCB pollution continues to impact populations of orcas and other dolphins in European waters. Scientific reports, 6(1), pp.1-17.

JNCC. 2010a. The protection of marine European Protected Species from deliberate injury, killing and disturbance. Guidance for the marine area in England and Wales and the UK offshore marine area. Available on request from JNCC.

JNCC. 2010b. Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from Piling noise. 2010. JNCC Peterborough. United Kingdom. Available at: https://data.jncc.gov.uk/data/31662b6a-19ed-4918-9fab-8fbcff752046/JNCC-CNCB-Piling-protocol-August2010-Web.pdf [Accessed 06 Nov 2024]

JNCC. 2010c. JNCC guidelines for minimising the risk of injury to marine mammals from using explosives. August 2010. Available at: https://data.jncc.gov.uk/data/24cc180d-4030-49dd-8977-a04ebe0d7aca/JNCC-Guidelines-Explosives-Guidelines-201008-Web.pdf [Accessed 06 Nov 2024]

JNCC. 2017. JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys. Available at: https://data.jncc.gov.uk/data/e2a46de5-43d4-43f0-b296-c62134397ce4/jncc-guidelines-seismicsurvey-aug2017-web.pdf [Accessed 06 Nov 2024]

JNCC. 2023. JNCC guidance for the use of Passive Acoustic Monitoring in UK waters for minimising the risk of injury to marine mammals from offshore activities. JNCC, Peterborough. Available at: https://hub.jncc.gov.uk/assets/fb7d345b-ec24-4c60-aba2-894e50375e33 [Accessed 06 Nov 2024]

Jourdain, E., Ugarte, F., Víkingsson, G.A., Samarra, F.I., Ferguson, S.H., Lawson, J., Vongraven, D. and Desportes, G., 2019. North Atlantic killer whale Orcinus orca populations: a review of current knowledge and threats to conservation. Mammal Review, 49(4), pp.384-400.

Jourdain, E., Vongraven, D., Bisther, A. and Karoliussen, R., 2017. First longitudinal study of seal-feeding killer whales (Orcinus orca) in Norwegian coastal waters. PLoS One, 12(6), p.e0180099.

Kannan, K., Blankenship, A.L., Jones, P.D. and Giesy, J.P., 2000. Toxicity reference values for the toxic effects of polychlorinated biphenyls to aquatic mammals. Human and Ecological Risk Assessment, 6(1), pp.181-201.

Marine Scotland. 2014. The protection of Marine European Protected Species from injury and disturbance. Guidance for Scottish Inshore Waters.

Rayne, S., Ikonomou, M.G., Ross, P.S., Ellis, G.M. and Barrett-Lennard, L.G., 2004. PBDEs, PBBs, and PCNs in three communities of free-ranging killer whales (Orcinus orca) from the northeastern Pacific Ocean. Environmental science & technology, 38(16), pp.4293-4299.

Scottish Marine Animal Stranding Scheme. 2022. Scottish Marine Animal Stranding Scheme (SMASS) Annual Report 2021. Available at: https://strandings.org/wp-content/uploads/2024/06/SMASS-Annual-Report-2021-final.pdf [Accessed 06 Nov 2024]

Stone, C., Hall, K., Mendes, S. and Tasker, M. 2017. The effects of seismic operations in UK waters: analysis of Marine Mammal Observer data. J. Cetacean Res. Manage., 16, pp.71-85.

Stone, C.J. 2015. Implementation of and considerations for revisions to the JNCC guidelines for seismic surveys. JNCC Report No. 463b. Avaialble at: https://data.jncc.

gov.uk/data/f7990481-7a99-414c-be04-b972da10c1b7/JNCC-Report-463b-FINAL-WEB.pdf [Accessed 06 Nov 2024]

Stone, C.J. and Tasker, M.L. 2006. The effects of seismic airguns on cetaceans in UK waters. J. Cetacean Res. Manage., 8(3), pp.255-263.

Williams, R., Erbe, C., Ashe, E., Beerman, A. and Smith, J., 2014. Severity of killer whale behavioral responses to ship noise: A dose–response study. Marine pollution bulletin, 79(1-2), pp.254-260.

Williams, R., Lusseau, D. and Hammond, P.S., 2006. Estimating relative energetic costs of human disturbance to killer whales (Orcinus orca). Biological conservation, 133(3), pp.301-311.

Williams, R., Trites, A.W. and Bain, D.E., 2002. Behavioural responses of killer whales (Orcinus orca) to whale-watching boats: opportunistic observations and experimental approaches. Journal of Zoology, 256(2), pp.255-270.

JNCC. 2025. JNCC guidelines for minimising the risk of injury to marine mammals from unexploded ordnance (UXO) clearance in the marine environment. JNCC, Aberdeen.

JNCC, Natural England and Cefas. 2025. JNCC, Natural England and Cefas position on the use of quieter piling methods and noise abatement systems when installing offshore wind turbine foundations. JNCC, Aberdeen.

## Main pressures

### 8.2 Sources of information

No sources of information

## 15. Explanatory Notes

| Field label | Note |
|---|---|
| 8.1: Characterisation of pressures | PG13 Bycatch and incidental killing (due to fishing and hunting activities). Although records of bycatch in this species are relatively low, instances may have a population level effect on small resident populations such as that occurring off West Scotland, therefore risk is considered medium. 1 animal examined at post mortem by the UK CSIP between 2019 and 2022 had a cause of death of entanglement (Scottish Marine Animal Stranding Scheme, 2022). The main risk comes from creeling and potting gears where rope is set between traps therefore animals spending time in coastal areas are at the highest risk of entanglement (http://ukstrandings.org/csip-reports). |
| 8.1: Characterisation of pressures | PF12 Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution. Cetaceans rely on echolocation for navigation, foraging and communication, making them sensitive to noise in the marine environment (Heiler et al., 2016). Background noise can interfere with communication between killer whales, possibly affecting activities such as cooperative foraging (Foote et al., 2004) and group choesion (Jourdain et al., 2019) or require animals to vocalise more loudly/more frequently (Erbe et al., 2002). Impulsive noise such as seismic may displace animals from preferred locations (Stone et al., 2017). Although different sources of disturbance have been identified as potential pressures in the pre-defined EU list (e.g. disturbance from shipping), these pressures independently have not been identified as Medium or High risk to killer whales in UK waters. However, the cumulative impact of activities can affect distribution and communication of animals (Heiler et al., 2016). |
| 8.1: Characterisation of pressures | PF05 Sports, tourism and leisure activities. This species is likely to be affected by human disturbance, particularly boat traffic and noise from tourism activities where boats are close for extended periods of time (Erbe et al., 2002). Boat presence has been linked to significant changes in |

| | |
|---|---|
| | behaviour, with reduced time spent feeding and consequently a substantial decrease in energy intake (Williams et al., 2002; 2006; 2014). The disturbance impact of this pressure is medium-direct with evidence of recovery/ return once the pressure is removed. Exposure is relatively high for populations spending lengths of time in coastal areas such as those associated with the Shetland Isles, however, codes of conduct are in place to mitigate impact. |
| 8.1: Characterisation of pressures | PK02 Mixed source marine water pollution (marine and coastal). The general impact of contaminants, particularly PCBs, on cetaceans is well documented, including impacts on the immune system and reproduction (Jepson et al, 2016). PCBs are recognised as one of the most significant pollutants impacting cetaceans despite measures to reduce PCB pollution (Jepson et al, 2016) with some of the most heavily contaminated individuals sampled around the UK and Ireland (Jourdain et al., 2019). This pressure has an indirect effect on mortality, mediated through the diet (bioaccumulation), causing reduced resilience to disease and lower fecundity through increased foetal mortality. The influence is long-term and intergenerational, with the pressure ubiquitous across the species range. Although Killer whales are able to break down contaminants to some extent, the levels exceed proposed thresholds for toxicity (Kannan et al., 2000: Jepson et al., 2016), and impact of the life-time exposure to these contaminants is unknown (Rayne et al., 2004). This pressure poses a particular threat to critically small populations (i.e., the West Coast Community). |
| 8.1: Characterisation of pressures | PJ12 Decline or extinction of related species (e.g. food source / prey, predator / parasite, symbiot, etc.) due to climate change. The effect of climate change on killer whales is likely to be mediated through variation in prey resource initially. Killer whale populations common to and adjacent to the UK show variation in specialisation in prey, from mammal eaters to fish eaters, which indicates the species may be adept at adapting according to prey availability (Jourdain et al., 2017; 2019). |

| | |
|---|---|
| 8.1: Characterisation of pressures | PC07 Geotechnical surveying. JNCC advice on geotechnical surveying considers the risk to all marine mammals in UK waters (Stone, 2015; JNCC, 2017, 2010b, 2010c) and previous analysis on the impacts of seismic activty on marine mammals suggested that while there was no observed reduction in sighting rate of killer whales during airgun activity, animals stayed further away from the source while it was active (Stone & Tasker, 2006). This suggests that while killer whales may be less impacted than other species, there is likely some localised spatial avoidance of important areas. Close proximity to noise created by geotechnical activity also has potential to cause injury, although evidence for the impact and level of risk is limited. This is also mitigated through guidance on operations such as soft start and on board marine mammal observers. Extent of this pressure is likely to be regional and only during exercises/surveying. |
| 8.1: Characterisation of pressures | PX02 Threats and pressures from outside the Member State. Killer whales are still hunted without quota in Greenland, with an average of 18 animals taken between 2000 and 2023, ranging from 0 in 2016 to 14 in 2017 to 44 in 2012 (https://nammco.no/marine-mammal-catch-database/). |
| 9.5: List of main conservation measures | MC02 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; 2017; 2023; 2025; JNCC, Natural England & Cefas, 2025). 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 | MC03 Adapt/manage renewable energy installation, facilities and operation (excl. hydropower and abstraction activities). 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; 2017; 2023; 2025; JNCC, Natural England & Cefas, 2025). 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 | MG04 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.) Regula |
| 9.5: List of main conservation measures | MG05 Reduce bycatch and incidental killing of non-target species: The UK is implementing the EU Technical Conservation Measures Regulation transposed into UK regulations which lays down measures concerning incidental catches of vulnerable species in fisheries, and more generally the bycatch obligations within the Habitats Regulations. Since 2004, a dedicated bycatch monitoring |

| | |
|---|---|
| | programme has been in place, with both dedicated and non-dedicated onboard observers collecting data on bycatch numbers. These data inform implementation and potential effectiveness of measures such as pingers. There is a requirement for all fishing vessels over 12m using gill nets or entanglement nets to use pingers under the criteria laid out in the regulation. Inshore Vessel Monitoring System (iVMS) devices are being implemented for under-12 metre fishing vessels, allowing data on latitude, longitude, course and speed to be recorded and help improve the management and sustainability of the marine environment. Legislation to make iVMS mandatory on under-12 metre vessels is expected to come into effect in 2024 in England. In Scotland, consultation on the introduction mandatory electronic tracking for under-12 metre vessels was carried out in late 2023. Legislation requiring iVMS for under-12 metre vessels operating in Welsh waters has been in place since 2022. Since February 2022 it has been mandatory for under-10 metre fishing vessels in English and Welsh waters to create and submit a catch record for every fishing trip through the Catch Recording Application (Catch App or Record your Catch). Data is collected on vessel, trip, gear, area fished and catch and can be used to inform on fishing activity by gear type and species. Furthermore, the UK Marine Wildlife Bycatch Mitigation Initiative (published August 2022) aims to improve our understanding of bycatch and entanglement of sensitive marine species through monitoring and scientific research, identify 'hotspot" or high-risk areas/gear types/fisheries in which to focus monitoring and mitigation, and develop and implement effective measures to minimise bycatch/entanglement. Currently work is progressing towards development of a bycatch risk framework across all PET species to apply all available evidence and support targeted monitoring. |
| 9.5: List of main conservation measures | MK01 Reduce impact of mixed source pollution: The impact of chemical pollution on killer 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 | MH01 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 | MG05 Reduce bycatch and incidental killing of non-target species: The UK is implementing the EU Technical Conservation Measures Regulation transposed into UK regulations which lays down measures concerning incidental catches of vulnerable species in fisheries, and more generally the bycatch obligations within the Habitats Regulations. Since 2004, a dedicated bycatch monitoring programme has been in place, with both dedicated and non-dedicated onboard observers collecting data on bycatch numbers. These data inform implementation and potential effectiveness of measures such as pingers. There is a requirement for all fishing vessels over 12m using gill nets or entanglement nets to use pingers under the criteria laid out in the regulation. Inshore Vessel Monitoring System (iVMS) devices are being implemented for under-12 metre fishing vessels, allowing data on latitude, longitude, course and speed to be recorded and help improve the management and sustainability of the marine environment. Legislation to make iVMS mandatory on under-12 metre vessels is expected to come into effect in 2024 in England. In Scotland, consultation on the introduction mandatory electronic tracking for under-12 metre vessels was carried out in late 2023. Legislation requiring iVMS for under-12 metre vessels operating in Welsh waters has been in place since 2022. Since February 2022 it has been mandatory for under-10 metre fishing vessels in English and Welsh waters to create and submit a catch record for every fishing |

trip through the Catch Recording Application (Catch App or Record your Catch). Data is collected on vessel, trip, gear, area fished and catch and can be used to inform on fishing activity by gear type and species. Furthermore, the UK Marine Wildlife Bycatch Mitigation Initiative (published August 2022) aims to improve our understanding of bycatch and entanglement of sensitive marine species through monitoring and scientific research, identify 'hotspot" or high-risk areas/gear types/fisheries in which to focus monitoring and mitigation, and develop and implement effective measures to minimise bycatch/entanglement. Currently work is progressing towards development of a bycatch risk framework across all PET species to apply all available evidence and support targeted monitoring.