

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

**Second Report by the United Kingdom under
Article 17**

**on the implementation of the Directive
from January 2001 to December 2006**

**Conservation status assessment for:
S2027 Orcinus orca – Killer whale**

Please note that this is a section of the report. For the complete report visit <http://www.jncc.gov.uk/article17>

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S2027 *Orcinus orca* Killer whale

Audit trail compiled and edited by JNCC and the UK Inter-Agency Marine Mammal Working Group

This document is an audit of the data and judgements on conservation status in the UK's report on the implementation of the Habitats Directive (January 2001 to December 2006) for this species. Superscript numbers accompanying the headings below, cross-reference to headings in the corresponding Annex B reporting form. This supporting information should be read in conjunction with the UK approach for species (see 'Assessing Conservation Status: UK Approach').

1. Range Information^{2.3}

The killer whale is widespread from polar to tropical waters of both hemispheres, but most abundant at high latitudes. It is found both over continental shelves and in deep offshore waters. Around the British Isles, the main area of distribution is the north and west; killer whales are found along the shelf edge, especially north of Shetland, in inshore waters around the Northern and Western Isles and in the northern North Sea (Map 1.1; Reid *et al.* 2003). They are occasionally seen in the south-west, but generally absent from the southern North Sea, Irish Sea and English Channel (Evans *et al.* 2003). There are also a few records from deep water further offshore (Weir *et al.* 2001; Stone 2003). Although present in UK waters throughout the year, there may be seasonal movements, as sightings rates in coastal waters are higher in summer (Evans *et al.* 2003).

1.1 Surface area of range^{2.3.1}

Unknown

Orcinus orca is known to use only a portion of UK waters (see Map 1.1), and this is highly variable both seasonally and inter-annually. Because of the migratory nature of this species, it would be difficult to estimate UK surface area with any degree of accuracy or certainty. For this reason, range area has been reported as Unknown.

Range is a difficult parameter to define for marine mammals since they are highly mobile and their distribution can vary considerably in time and space across Member States. While understanding the distribution of marine mammal species might be helpful in assessing their conservation status and while range can be subjected to qualitative assessment, the data do not enable a quantitative estimate of surface area at present.

1.2 Date of range determination^{2.3.2}

Not applicable

1.3 Quality of range data^{2.3.3}

Moderate

A national sightings database is run by the SeaWatch Foundation. This includes opportunistic sightings at sea by a large number of, mainly amateur, observers, together with some effort related data. Although such a large dataset is useful for showing distributional range, coverage varies between areas and time of the year. The effort related sightings data to 1998 was incorporated along with other datasets (SCANS and European Seabirds at Sea

(ESAS) records) to produce the Atlas of Cetacean Distribution in North-West European Waters (Reid *et al.* 2003; Map 1.1).

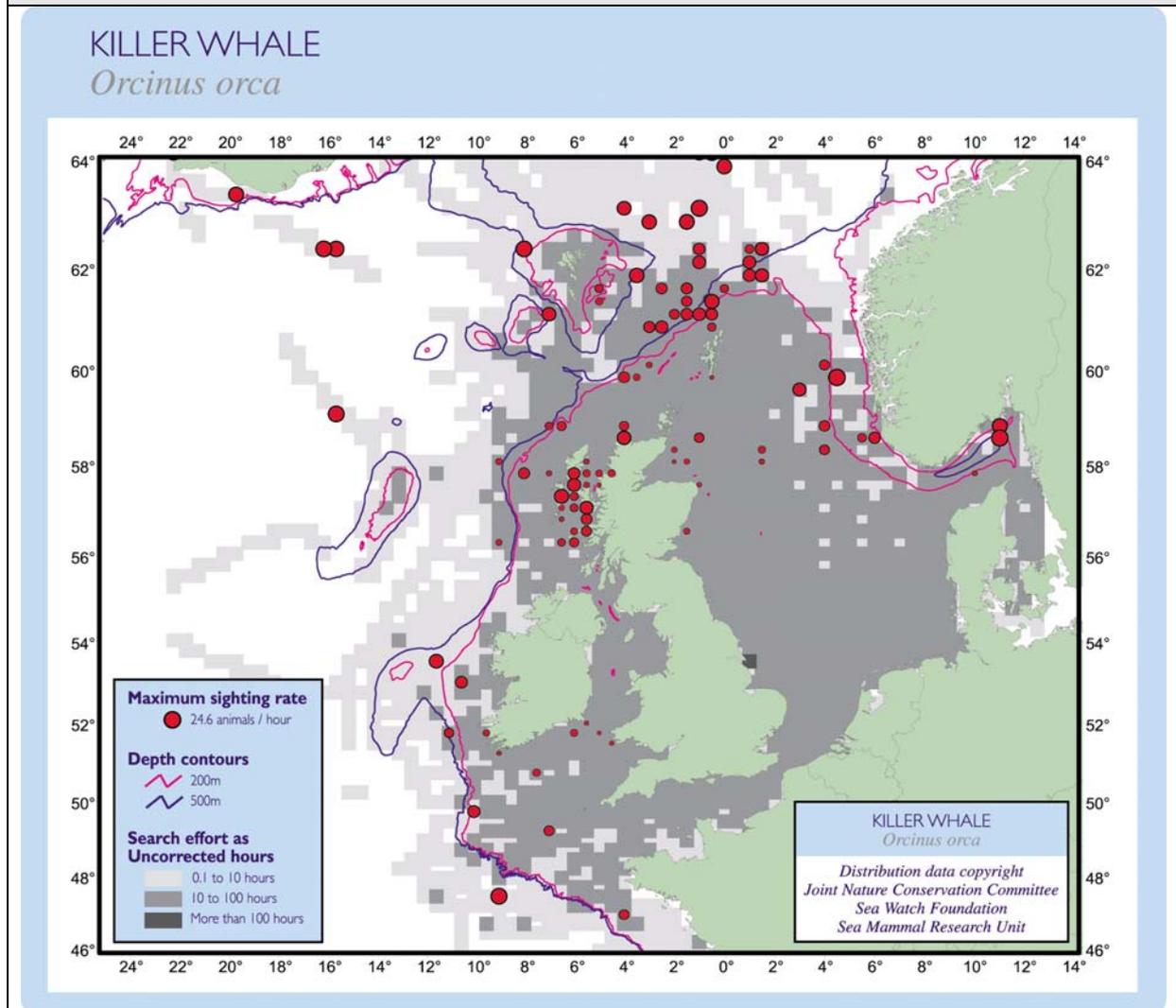
An area estimate for this species is not presented here. This could be done by modelling the area of occupancy using the data available, but it is considered that the effort involved in the modelling exercise would not justify the outcome.

1.4 Range trend^{2.3.4} and range trend magnitude^{2.3.5}

Stable

No evidence of decline in range in recent years nor historically. Marine mammals are wide-ranging, with large spatio-temporal variations in distribution and therefore it is very difficult to detect trends in range, or to know if apparent changes are long-term changes in range or in distribution within their range.

Map 1.1. Known distribution of killer whales in the north-east Atlantic. Please note that these maps potentially hide spatial and temporal variation. From Reid *et al.* 2003.



1.5 Range trend period^{2.3.6}

1979 – 1998

This is the time period encompassed by the data in the cetacean Atlas (Reid *et al* 2003).

1.6 Reasons for reported trend in range^{2.3.7}

Not applicable

1.7 Favourable reference range^{2.7.1}

Unknown

The decision tree in Note 1 has been used as a guide in determining the favourable reference range estimate (see ‘Assessing Conservation Status: UK Approach’) in conjunction with best expert judgement.

There has been no evidence of decline in range. Although a quantitative area estimate can not be provided, based on expert judgement, current range has all significant ecological variations of the species included for a given biogeographical region, and is sufficiently large to be considered suitable for the survival of the species for the foreseeable future.

1.8 Range conclusion^{2.8}

Favourable

There has been no evidence of decline in range, and the current range (although not quantified in km²) is considered equivalent to the favourable reference range based on best available information and expert judgment. Therefore, the conclusion for this parameter is Favourable.

2. Population of the Species^{2.4}

2.1 Population estimate^{2.4.1}

Unknown

The killer whales occurring in UK waters are likely to be part of a wider North Atlantic population; but their precise relationship is not known, neither is the population abundance. Sighting surveys in the eastern north Atlantic (mainly from Iceland to the Faroes) indicate a population of between 3500 and 12500 individuals (Klinowska 1991; Reid *et al.* 2003), while around 3100 individuals were estimated for the area comprising the Norwegian and Barents Seas, as well as Norwegian coastal waters and some 6600 whales for Icelandic and Faroese waters (Reyes 1991 and refs. therein).

2.2 Date of population estimate^{2.4.2}

Not applicable

2.3 Method of population estimate^{2.4.3}

Not applicable

2.4 Quality of population data^{2.4.4}

Poor

2.5 Population trend^{2.4.5} and population trend magnitude^{2.4.6}

Unknown

2.6 Population trend period^{2.4.7}

1994 – 2006

2.7 Reasons for reported trend in population^{2.4.8}

Not applicable

2.8 Justification of % thresholds for trends^{2.4.9}

Not applicable

2.9 Main pressures^{2.4.10}

210 Professional fishing

520 Shipping

690 Other leisure and tourism impacts not referred to above

621 Nautical sports

701 Water pollution

710 Noise nuisance

990 Other natural processes

Animals of this species are likely to be affected by disturbance from tourist vessels, high levels of contaminants, noise disturbance and direct exploitation (marine aquaria trade). Incidental takes have occurred during fishing operations, but are rare.

It is unlikely that any one of these pressures could affect this species long-term viability in UK waters, but the combined action of the pressures might possibly affect the species. Often with cetaceans it is difficult to link cause and effect and to distinguish natural from human impacts.

2.10 Threats^{2.4.11}

210 Professional fishing

690 Other leisure and tourism impacts not referred to above

621 Nautical sports

701 Water pollution

990 Other natural processes

Disturbance from tourist vessels, high levels of contaminants, noise disturbance and direct exploitation may continue to affect this species but if controlled it should not threaten the long term viability of the species in UK waters.

2.11 Favourable reference population^{2.7.2}

Unknown

There is insufficient information to provide a favourable reference population estimate at this time.

2.12 Population conclusion^{2.8}

Unknown

Trends and favourable reference population are unknown. Hence, the conclusion for this parameter is also unknown.

3. Habitat for the Species in the Biogeographic Region or Sea^{2.5}

Cetacean habitats (e.g. feeding and breeding areas) vary temporally and spatially and are influenced by natural and anthropogenic factors (e.g. Ingram *et al.*, 2007; MacLeod *et al.*, 2007; Weir *et al.*, 2007). It is often difficult to determine what features characterise cetacean habitats and in quantifying their extent.

This species occurs in deep waters beyond the edge of the continental shelf as well as in coastal waters (Weir *et al.* 2001; Reid *et al.* 2003). The waters north and west of the UK as well as the area of North Sea between Shetland and Norway are likely to be important feeding grounds (Couperus 1993; Macleod *et al.* 2003). Fisher *et al.* (1998) noted that killer whales may feed on mackerel shoals in inshore waters and that they also take seals. The seasonal pattern of sightings around Shetland may reflect feeding movements between inshore waters (summer) and offshore waters (winter) (Luque *et al.* 2006). They also forage near pelagic trawlers, taking advantage of the mackerel and herring fisheries in this area (Luque *et al.* 2006), however no bycatch has been recorded in these fisheries.

3.1 Surface area of habitat^{2.5.2}

Unknown

As with other cetaceans, the surface area of their habitat is difficult to quantify and may vary significantly seasonally and between years.

3.2 Date of estimation^{2.5.3}

Not applicable

3.3 Quality of data on habitat area^{2.5.4}

Poor

No information is available on habitat area.

3.4 Habitat trend^{2.5.5}

Unknown

Habitat trend information is not available.

3.5 Habitat trend period^{2.5.6}

1994 – 2006

3.6 Reasons for reported trend in habitat^{2.5.7}

Not applicable

3.7 Suitable habitat for the species (in km²)^{2.73}

Unknown

3.8 Habitat conclusion^{2.8}

Favourable

Although there is an acknowledged difficulty associated with defining habitats for cetaceans, the judgement of Favourable was based on the relatively high level of spatial and temporal variability in the behaviour and ecology of all cetaceans. Additionally, where range and/or population is considered to be in a Favourable condition, it has been assumed that habitat must also be considered to be Favourable.

4. Future Prospects^{2.6}

Unknown

There is insufficient information to make a judgement on future prospects at this time.

Since 1994, conservation measures have been undertaken in the UK and adjacent waters, to protect, survey and monitor marine mammal abundance, health and distribution. These are discussed below. However, in the absence of current population numbers and trend data, it is not possible to make a confident judgement regarding their effectiveness in protecting this species, or likely success over the next 12 years. For this reason, despite the measures discussed below, prospects have been reported as Unknown for this reporting round.

Threats, Legislation and Conservation Action

It is important to stress that many human activities that have the potential to affect the assessed species are already regulated with the conservation of marine mammals and other wildlife in mind. Assuming that these measures are maintained and further measures are taken should other pressures emerge, then the future prospects for cetacean species in UK waters should be Favourable. However the effects of lesser understood impacts are hard to predict. Many cetaceans occurring in UK waters will also use waters of other Member States and those of non-Members, so co-ordination of conservation measures through, for instance ASCOBANS (Agreement on the Conservation of Small Cetaceans in the Baltic and North Seas) is essential to avoid activities in other waters affecting the animals occurring in UK waters.

The Habitats Directive is being implemented by identifying and protecting appropriate sites and monitoring bycatch. To further implement the directive, a surveillance strategy for cetaceans is being developed linking to a proposed Joint Cetacean (data handling) Protocol that hopes to get contributors from different countries in Europe in order to enable transboundary approaches to evaluating the conservation status of cetaceans. It is expected that an update of the “Atlas of cetacean distribution in north-west European waters”, published by JNCC in 2003, will result from this project. In 2005, the UK was a major supporter of the EU LIFE Nature project SCANS-II project which completed a survey for cetaceans in the European Atlantic continental shelf and will make recommendations for monitoring cetacean populations. A new project, CODA 2007 (Cetacean Offshore Distribution and Abundance) aims to estimate abundance of cetaceans, and investigate their habitat preferences in European Atlantic waters off the continental shelf to the north of Portugal.

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. The “UK small cetacean bycatch response strategy” was published in 2003 and is being implemented through research and monitoring into the extent of bycatch and mitigation measures.

Legislation has been reviewed in order to provide these species with extra protection from disturbance. In addition, Scottish Natural Heritage recently produced the “Scottish Marine Wildlife Watching Code”, designed to protect and promote enjoyment and to raise awareness about how best to watch marine wildlife with minimal disturbance.

The Joint Nature Conservation Committee (JNCC) has developed guidelines aimed at minimising the risk of acoustic disturbance to marine mammals from seismic surveys that are

being implemented by the Department of Trade and Industry. Further guidance will be developed in 2007-08 on other activities that disturb cetaceans. The UK Ministry of Defence (MOD) has undertaken a number of measures during 2005 to address the potential impact of military sonar and noise in the marine environment.

The UK government funds a national strandings scheme which aims to provide a co-ordinated approach to the investigation of cetacean strandings in order to assess the number and trends of stranded cetaceans, and potential causes of death.

As a response to the 1992 Convention on Biological Diversity the UK has developed biodiversity action plans (BAP) for all cetacean species. The long term goal of these plans is to increase the range and number of cetaceans in UK waters, ultimately via reducing anthropogenic mortalities and impacts. The UK has been committed to supporting several international agreements and conventions on the conservation of marine mammals and the marine environment in general (e.g. ASCOBANS, OSPAR).

The UK's position within the International Whaling Commission has been, amongst others, to support the moratorium on commercial whaling, to work towards placing the issue of environmental threats to cetaceans permanently on the IWC agenda and to ensure that international trade in whale products is prohibited.

4.1 Future prospects conclusion^{2.8}

Unknown

Insufficient information to make a judgement at this time.

5. Overall Assessment^{2.8}

Unknown

Although Range and Habitat have been assessed as Favourable, the Unknown conclusions for Population and Future Prospects trigger an overall conclusion of Unknown based on the Commission's guidance.

Table 5.1 Summary of conclusions

Parameter	Judgement	Grounds for Judgement (in accordance with Annex C)	Reliability*
Range	Favourable	Current range is stable and not smaller than the favourable reference range	2
Population	Unknown	No or insufficient reliable information available	N/A
Habitat	Favourable	Area of habitat is sufficiently large and habitat quality is suitable for the long term survival of the species	2
Future Prospects	Unknown	No or insufficient reliable information available	N/A
Overall Assessment	Unknown	Two Favourable judgements and two Unknowns	N/A

*1=High, 2=Moderate, 3=Low

High – Expert opinion is that the concluding judgement accurately reflects the current situation based on a professional understanding of the species. For range, population, and habitat, quality of data used to establish the current estimate has been identified as “good”; data used to inform trends is comprehensive and up to date.

Moderate – A greater understanding of the feature, or the factors affecting it, is required before a confident concluding judgement can be made by experts. For range, population, and habitat, the current estimate and/or trend are based on recent, but incomplete or limited survey data; or alternately, a comprehensive, but outdated (pre-1994) review.

Low – Judgements, and comprising estimates, are based predominately on expert opinion.

N/A – Assessment conclusion is “unknown”, on the basis of insufficient reliable information

6. Other Relevant Information^{2.7.4}

Range is a difficult parameter to define for marine mammals since they are highly mobile and their distribution can vary considerably in time and space across Member States. While understanding the distribution of marine mammal species might be helpful in assessing their conservation status and while range can be subjected to qualitative assessment, the data do not enable a quantitative estimate of surface area at present.

7. References

COUPERUS, B. 1993. Killer whales and pilot whales near trawlers east of Shetland. *Sula* **7**, 41-52

EVANS, P.G.H., ANDERWALD, P. & BAINES, M.E. 2003. *UK Cetacean Status Review*. Report to English Nature and the Countryside Council for Wales. 159

FISHER P.R., ADAM M. & BROWN E.G., 1998, Killer whales (*Orcinus orca*) in Shetland waters. In: Fisher P.R. (Ed.), *Shetland Sea Mammal Report*. *Shetland Sea Mammal Group*, Lerwick, 12–16.

INGRAM, S.N., WALSH, L., JOHNSON, D. & ROGAN, E., 2007. Habitat partitioning and the influence of benthic topography and oceanography on the distribution of fin and minke whales in the bay of Fundy, Canada. *Journal of the Marine Biological Association of the United Kingdom*, **87**, 149-156.

KLINOWSKA, M. 1991. Dolphins, *Porpoises and Whales of the World*. The IUCN Red Data Book. IUCN, Gland, Switzerland.

LUQUE, P.L., DAVIS, C.G., REID, D.G., WANG, J. & PIERCE, G.J. 2006. Opportunistic sightings of killer whales from Scottish pelagic trawlers fishing for mackerel and herring off North Scotland (UK) between 2000 and 2006. *Aquatic Living Resources* **19**, 403–410.

MACLEOD, C.D., WEIR, C.R., PIERPOINT, C. & HARLAND, E.J., 2007. The habitat preferences of marine mammals west of Scotland. *Journal of the Marine Biological Association of the United Kingdom*, **87**, 157-164

MACLEOD, K., SIMMONDS, M.P. & Murray, E., 2003. Summer distribution and relative abundance of cetacean populations off north-west Scotland. *Journal of the Marine Biological Association of the UK*, **83**, 1187-1192.

REID, J.B., EVANS, P.G.H. & NORTHRIDGE, S.P., 2003. *Atlas of cetacean distribution in north-west European waters*. Peterborough: Joint Nature Conservation Committee,. 76

REYES J.C. 1991. *The conservation of small cetaceans: a review. Report prepared for the Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals*. UNEP / CMS Secretariat, Bonn

STONE, C.J., 2003. *The effects of seismic activity on marine mammals in UK waters, 1998-2000*. Peterborough: Joint Nature Conservation Committee Report No. 323

WEIR, C.R., POLLACK, C., CRONIN, C. & TAYLOR, S. 2001. Cetaceans of the Atlantic Frontier, north and west of Scotland. *Continental Shelf Science*, **21**, 1047-1071

WEIR, C.R., STOCKIN, K.A. & PIERCE, G.J., 2007. Spatial and temporal trends in distribution of harbour porpoises, white-beaked dolphins and minke whales off Aberdeenshire (UK), north-western North Sea. *Journal of the Marine Biological Association of the United Kingdom*, **87**, 327-338.