

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 :

S1351: *Phocoena phocoena* - Harbour porpoise

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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S1351 *Phocoena phocoena* Harbour porpoise

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}

In the UK, this species is found widely distributed mainly in continental shelf waters (Map 1.1), with occasional animals found further offshore. In the north-east Atlantic, the main range extends from the Barents Sea to northern France, with smaller numbers along the coasts of the Iberian Peninsula and north-west Africa. From work in the western North Atlantic, individuals of this species are known to range over quite large areas, covering as much as 11289km² within a single month (Johnston *et al.* 2005).

1.1 Surface area of range^{2.3.1}

Unknown

Phocoena phocoena has been recorded throughout the UK continental shelf (i.e. within the 200m contour) (see Map 1.1). However, an area estimate for this is not currently available.

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}

Good

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).

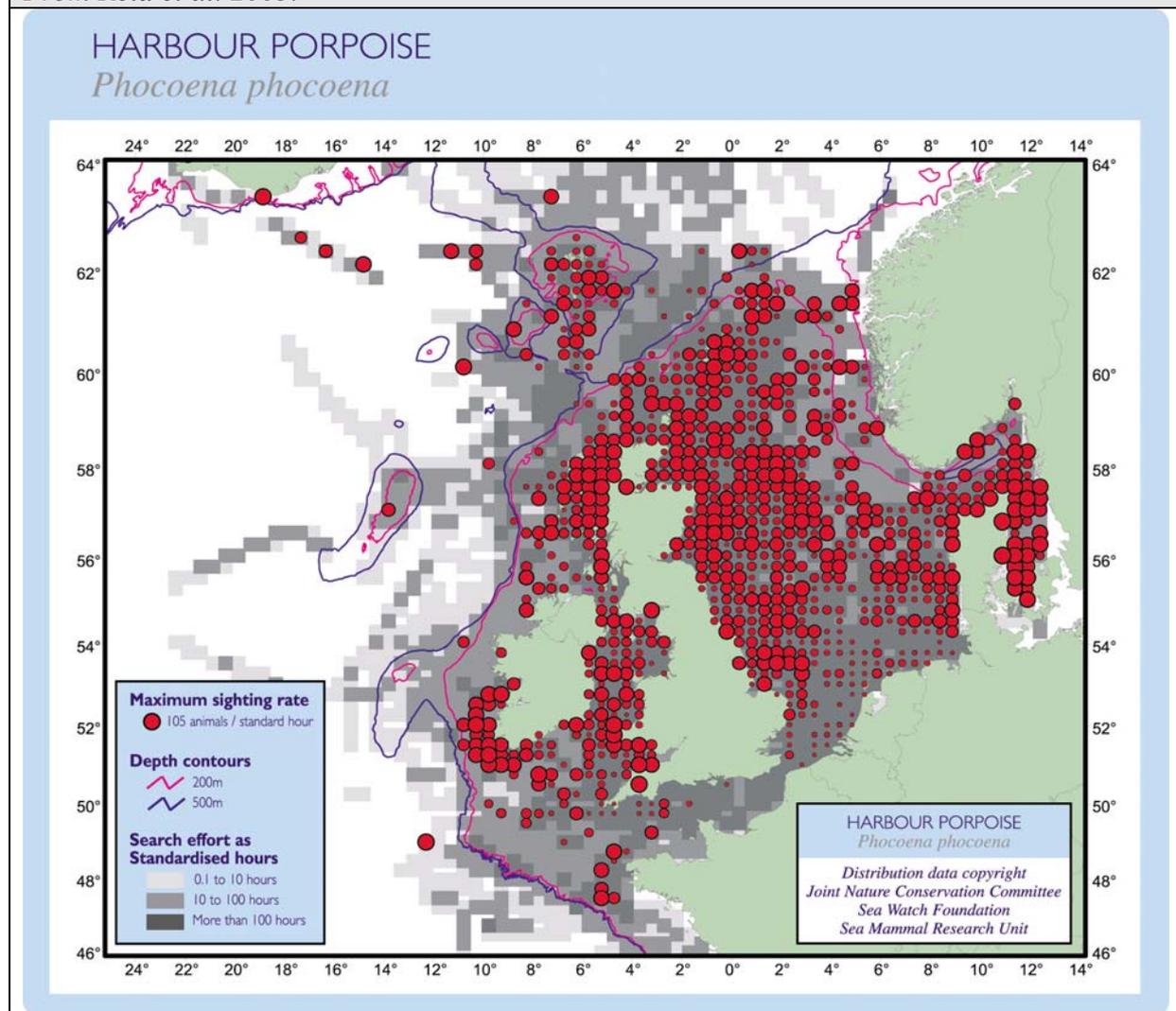
An area estimate for this species is not presented here. This could be done by modelling the area of occupancy using the data available, but it is considered that the effort involved in the modelling exercise would not justify the outcome.

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

Stable

A comparison of the density maps of the SCANS-94 and SCANS II surveys (Maps 1.2 and 1.3) and the map in the Atlas of cetacean distribution in north-west European waters (Map 1.1) reveals no evidence of a decline in range in UK waters. 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 *P. phocoena* in north-east Atlantic. Please note that this map potentially hides spatial and temporal variation. From Reid *et al.* 2003.



1.5 Range trend period^{2.3.6}

1994 – 2005

The reported trend has been informed by the cetacean Atlas (Reid *et al.* 2003) and latest SCANS survey, which together encompass data from 1979 to 2005.

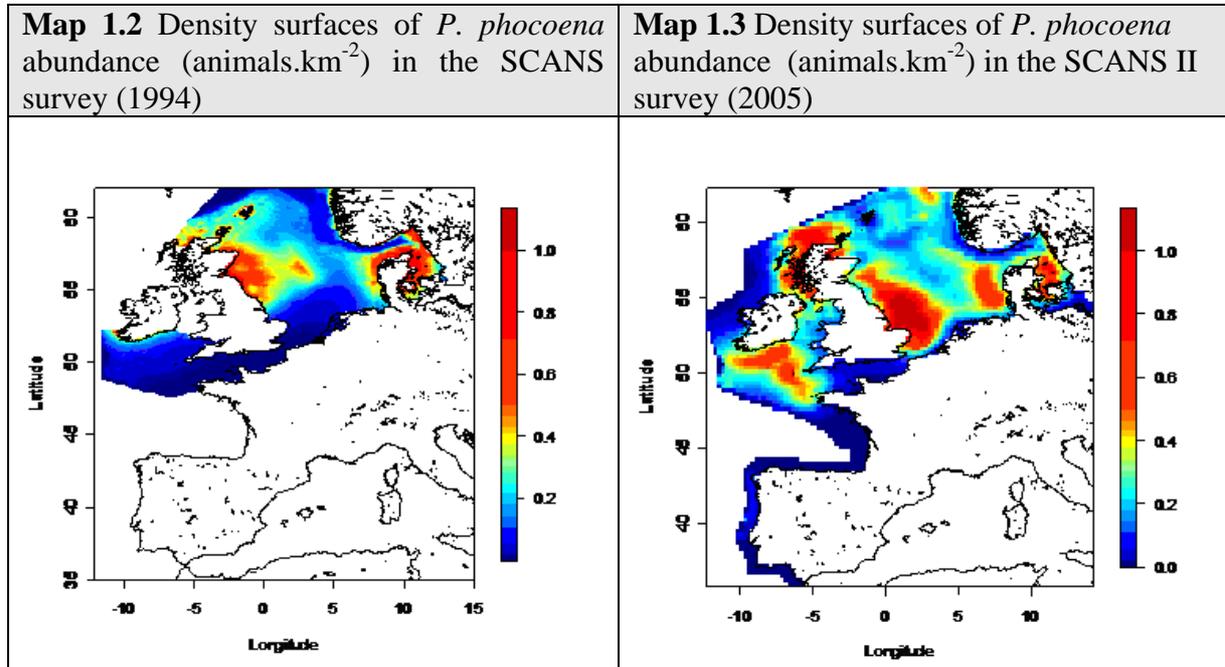
1.6 Reasons for reported trend in range^{2.3.7}

Not applicable

1.7 Favourable reference range^{2.7.1}

Unknown

Although a quantitative area estimate can not be provided, based on best 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 - in fact, there is some evidence of an increase in range with animals now occurring in certain southern UK waters – and the current range (although not quantified in km²) is considered equivalent to the favourable reference range. Therefore, the conclusion for this parameter is Favourable.

2. Population of the Species^{2.4}

2.1 Population estimate^{2.4.1}

328,200 individuals (UK and adjacent waters, shelf only)

A transfrontier approach to population size reporting has been adopted. The estimate reported above is a sum of broad regions (as defined by the SCANS II survey) that includes all the countries bordering the North Sea, Ireland and France. These areas included south central North Sea, north central North Sea, northern North Sea, western Scotland and Irish outer shelf, Celtic Sea, southern North Sea and Channel, Scottish Northern Isles, coastal western Scotland, Irish Sea, covering all of UK continental shelf waters.

The SCANS II survey undertaken in 2005 provided the first comprehensive estimate of abundance of small cetaceans in the whole European Atlantic continental shelf region, including UK waters. Harbour porpoise numbers in the whole area were estimated to be

386,000 (Coefficient of variation, CV = 0.20) (Hammond and McLeod 2006). The abundance estimate for the North Sea and adjacent waters (area equivalent to SCANS-94 survey, Hammond *et al.* 1995) was 335,000 (CV = 0.15) (see Table 2.1).

In north-west Europe, there may be a number of harbour porpoise sub-populations (as suggested by genetic studies), for example in the northern North Sea, southern North Sea, western Scotland and the Irish Sea (Tiedemann 1996; Walton 1997).

Table 2.1 Comparison of abundance estimates between summers of 1994 and 2005

Area surveyed	1994	2005
SCANS-94	341000 (CV=0.14)	~335000(CV=~0.21)
North Sea and Channel	250000	230000
Northern North Sea	239000	120000
Southern North Sea	102000	215000
Total	341000 (CV=0.14)	386000(CV=0.20)

2.2 Date of population estimate^{2.4.2}

2005

SCANS II survey.

2.3 Method of population estimate^{2.4.3}

2 = Extrapolation from surveys of part of the population, sampling

The SCANS surveys were carried out in the summer by teams of observers onboard research ships and small aircraft. The ships and aircraft used line transect methods to collect distance sampling data to estimate the number of animals in the European Atlantic continental shelf area.

2.4 Quality of population data^{2.4.4}

Good

The SCANS II survey used techniques to minimise known biases together with extensive survey coverage and so provide the most precise absolute abundance estimates currently available and possible for cetaceans. For cetaceans it is impossible to get a full census.

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

Stable

In 1994, the SCANS survey estimated the total abundance to be 341,000 (CV = 0.14) for the North Sea and adjacent waters (table 1). In 2005, SCANS II estimated the total abundance to be 335,000 (CV = 0.15) in a comparable area.

Historically, abundance/range is thought to have declined during the 20th century in some areas such as the central and southern North Sea and English Channel (e.g. Smeenk 1987; Evans *et al.*, 1992). However, porpoise numbers in these areas have been increasing in the last few years. Results from the SCANS II survey show an increase in porpoise sightings in the southern North Sea and English Channel (Hammond and McLeod 2006). In addition, countries such as France, Belgium and the Netherlands have been reporting increased

numbers of reported stranded harbour porpoises (Camphuysen 1994; Haelters and Jacques 2006; Hassani 2006; See ASCOBANS Advisory Committee meeting report 2006). Sightings records have also indicated an increase in harbour porpoise abundance in southern UK waters (Evans *et al.* 2003). Although it is not possible to detect trends from only two inter-decadal surveys, the fact that the numbers estimated from the two surveys are not statistically different suggests that population numbers might have remained stable in the last decade in UK waters.

2.6 Population trend period^{2.4.7}

1994 – 2005

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

313 Exploration and extraction of oil or gas

420 Discharges

490 Other urbanisation, industrial and similar activities

520 Shipping

690 Other leisure and tourism impacts not referred to above

621 Nautical sports

701 Water pollution

710 Noise nuisance

971 Competition

962 Parasitism

990 Other natural processes

Bycatch by a variety of fishing gear (particularly bottom-set gillnets) is the greatest anthropogenic threat to this species in the UK and adjacent waters. The UK has been funding research to identify which fisheries are responsible for bycatch and to develop mitigation measures to reduce this bycatch to as low a level as possible. Recent estimates suggest that around 400 porpoises die in UK fishing operations in the North Sea annually, with some further tens of animals in western Scottish waters. Estimates for bycatch in recent years in the SW of Britain will be generated in early 2007, but around 700 porpoises were estimated to die in the UK hake gillnet fishery annually in the early 1990s. Bycatch has nevertheless decreased in the last few years, due to a combination of reduced fishing effort and the use of acoustic "pingers" (Seafish 2003, 2006).

Since 1993 reported annual numbers of harbour porpoise stranded have steadily increased from 150 individuals to 472 in 2004 and 442 in 2005, making them the most common cetacean stranded in UK waters (Jepson, 2006). This increase probably reflects increased awareness/reporting or increased densities closer to shore rather than any increase in mortality rate.

Between 2000 and 2004, the most common causes of mortality of stranded animals at post-mortem were attack from bottlenose dolphins (22.7%), pneumonias due to infections (18.1%)

and bycatch (16.5%) (Sabin *et al.* 2002, 2003, 2004; Jepson 2006). A recent study demonstrated that individuals dying as a result of infectious disease had significantly higher levels of PCBs than healthy porpoises that died as a result of traumatic deaths such as bycatch (Jepson *et al.* 2005).

Levels of some metals and organochlorine pesticides in harbour porpoises are consistent with these being phased out as active ingredients in marine antifouling paints (Jepson 2006). However, levels of polychlorinated biphenyls (PCBs) are considered stable (Jepson 2006).

Prey availability changes might also exert pressure on this species. The literature on porpoise diets in the north-east Atlantic suggests that there has been a long term shift from predation on clupeid fish (mainly herring *Clupea harengus*) to predation on sandeels and gadoid fish, possibly related to the decline in herring stocks since the mid-1960s (Santos and Pierce 2003). Around Shetland, for example, lower sightings rates were observed coinciding with depleted sandeel stocks (Evans *et al.*, 2003). Although based on a relatively small sample size, MacLeod *et al.* (2007a) noted in recent years, for north-east Scotland, a concurrent increase in the proportion of stranded porpoises for which the cause of death was due to starving and the lack of sandeels in the diet and suggested a link between the two. However, there has been some debate about the biological significance of this work (Thompson *et al.*, 2007). The original authors acknowledge that the phenomenon is limited to spring and that considerably more research covering a larger area is needed before the link between diet and starvation can be fully ascertained (McLeod *et al.*, 2007b).

Porpoise diets overlap extensively with diets of other piscivorous marine predators (notably seals) and many of the main prey species are also taken by commercial fisheries, although porpoises tend to take smaller fishes than those targeted by fisheries (Santos and Pierce 2003).

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

701 Water pollution

962 Parasitism

971 Competition

990 Other natural processes

Bycatch, water pollution, coastal development and increased competition with other top-predators due to changes in prey availability and distribution 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}

328,200 individuals (Equal to current: UK and adjacent waters, shelf only)

Population is being maintained at a relatively high abundance in the UK and adjacent waters. Therefore, based on expert opinion and in line with the UK approach, the current estimate has been set as a baseline favourable reference value. The estimate refers to the SCANS II survey areas that included UK waters. These were: South Central North Sea, North Central North

Sea, Northern North Sea, Western Scotland and Irish outer shelf, Celtic Sea, Southern North Sea and Channel, Scottish Northern Isles, Coastal Western Scotland, Irish Sea, covering all of UK continental shelf waters.

2.12 Population conclusion^{2.8}

Favourable

Population is stable and equal to the favourable reference population. The assessment is therefore Favourable.

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.

Around the UK, harbour porpoise occurs usually (but not exclusively) over water depths of 20-200m (Evans *et al.* 2003). Porpoises feed on a range of fish species and significant porpoise aggregations may reflect food availability. Elsewhere in the world, harbour porpoises tend to concentrate their movements in small focal regions (Johnston *et al.* 2005), which often approximated to particular topographic and oceanographic features and were associated with prey aggregations (Raum-Suryan and Harvey 1998; Johnston *et al.* 2005; Keiper *et al.* 2005; Tynan *et al.* 2005). Consequently, habitat use is highly correlated with prey density rather than any particular habitat type and it is highly likely that similar mechanisms operate in the eastern North Atlantic (Weir *et al.*, 2007).

There are possible limiting factors to use of some areas such as bycatch, prey depletion and pollution.

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

Published work on links between habitat and harbour porpoise distribution is extremely limited and confined mainly to the north-west Atlantic at present.

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}

Good prospects

Species is expected to survive and prosper.

Since 1994, conservation measures have been undertaken in the UK and adjacent waters, to protect, survey and monitor marine mammal abundance, health and distribution (see below); stable population trends indicate the effectiveness of such measures. Further, potential threats are not expected to affect long term viability (see Section 2.10). On this basis, prospects over the next 12 years have been identified as good.

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.

Work continues on the identification of possible sites for harbour porpoise SACs in UK waters.

4.1 Future prospects conclusion^{2,8} **Favourable**

5. Overall Assessment^{2,8} **Favourable**

All four parameters have been assessed as Favourable. Hence the overall conclusion is also Favourable.

Table 5.1 Summary of conclusions

Parameter	Judgement	Grounds for Judgement (in accordance with Annex C)	Reliability*
Range	Favourable	Range is stable and not smaller than the favourable reference range	2
Population	Favourable	Population is stable and not less than the favourable reference population	2
Habitat	Favourable	Area of habitat is sufficiently large and habitat quality is suitable for the long-term survival of the species	2
Future Prospects	Favourable	Main pressures and threats to the species are not significant; species expected to remain viable over the next 12 years	2
Overall Assessment	Favourable	All Favourable	2

*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.

A transfrontier approach to population size reporting has been adopted. Estimate given as sum of broad regions (as defined by the SCANS II survey), which include UK waters. These also include all the countries bordering the North Sea, Ireland and France.

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