
# Abundance and Distribution of Cetaceans

MSFD Descriptor: 1 - Biological diversity
MSFD Criteria: 1.1 - Species distribution; 1.2 - Population size;
4.3 - Abundance/distribution of key trophic groups/species

OSPAR COMMISSION

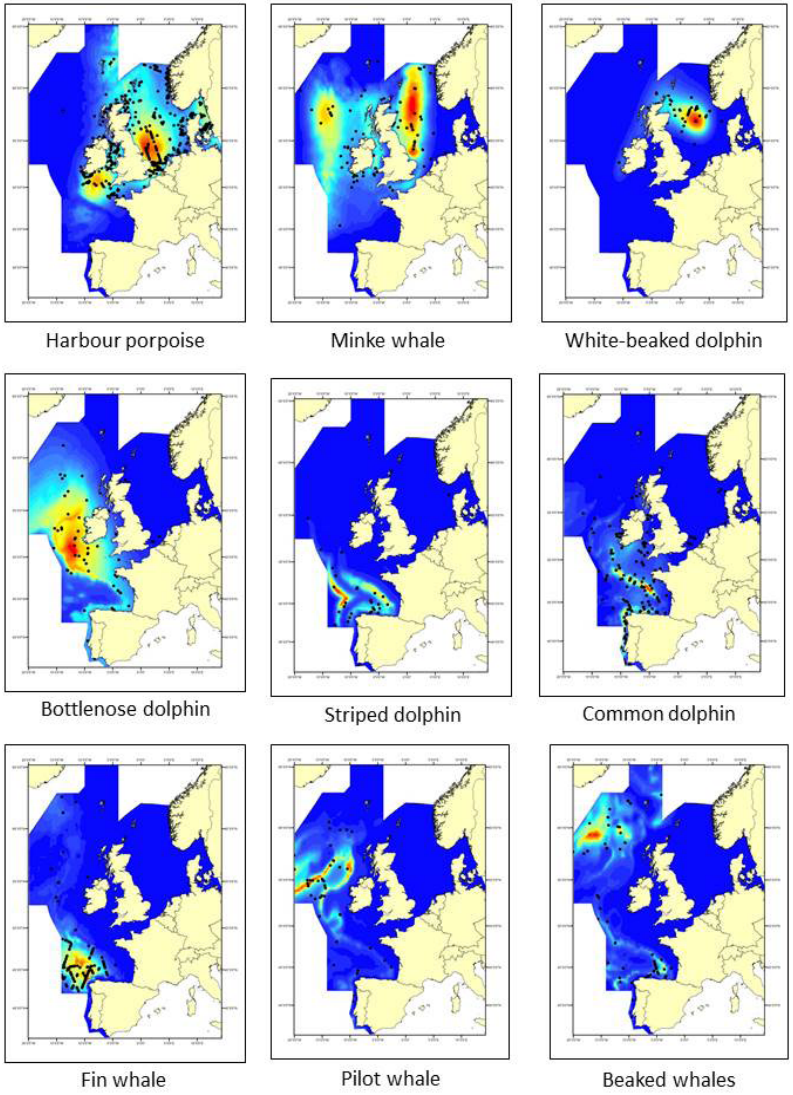
**Key Message** Cetaceans are widely distributed and abundant in the OSPAR Maritime Area. They are challenging to monitor. There is no evidence of changes in abundance for white-beaked dolphin, minke whale and harbour porpoise since 1994; there is insufficient evidence for other species. The distribution of harbour porpoise and minke whale has shifted southward in the Greater North Sea

## Background

Cetaceans are an important component of marine biodiversity in the North-East Atlantic Ocean. As apex predators, cetacean abundance and distribution are key indicators of environmental status, such as food web integrity. Thirty-six species of cetacean have been recorded in recent history within the Greater North Sea, Celtic Seas, and Bay of Biscay and Iberian coast. Many are widely dispersed oceanic species that are rarely seen and very difficult to monitor. As a result, this indicator is restricted to assessing species for which more robust data are available. The information originates primarily from a few dedicated large-scale surveys.

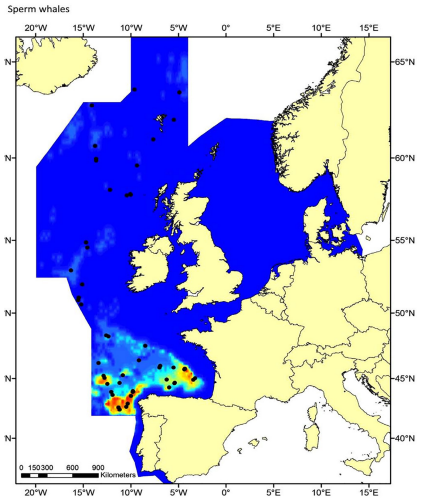
Some human activities affect the abundance and distribution of cetaceans. Historically, direct removal of individuals by hunting had severe effects on populations. Today, bycatch in fisheries is one of the major causes of mortality for small cetaceans. Other pressures such as chemical and noise pollution are known to affect individual animals, but the effects of these on populations are not yet well understood.

This assessment considers information on abundance and distribution and, where possible, assesses the status of the following species: harbour porpoise, offshore bottlenose dolphin, white-beaked dolphin, short-beaked common dolphin, striped dolphin, minke whale, fin whale, long-finned pilot whale, sperm whale and beaked whales (the latter as a combined species group). All of these species are also assessed under the European Union Habitats Directive. Coastal bottlenose dolphin and killer whale are considered separately within the Intermediate Assessment 2017.




## Results

Density distribution maps of cetaceans in the Greater North Sea, Celtic Seas, and Bay of Biscay and Iberian Coast indicate that cetaceans are distributed widely across the OSPAR Maritime Area (**Figure 1**). The relatively small amount of overlap in predicted high-use areas highlights how species use the marine area in different ways. Harbour porpoises are mostly restricted to continental shelf waters. Striped dolphin, and fin, sperm, beaked and pilot whales are primarily found in deep waters beyond the shelf edge. Bottlenose, white-beaked and common dolphins and minke whales are found in both shelf and deep waters. The most recent SCANS III survey in 2016 yielded population abundance estimates for harbour porpoise, common dolphin, striped dolphin, white-beaked dolphin, bottlenose dolphin, fin whale, minke whale, pilot whale, sperm whale and beaked whales (**Figure 2**). However, Irish and Icelandic waters were not covered by the SCANS III survey.




Sperm whales

Figure 1 (left and above): Maps of model-based density of various cetacean species from analyses of pooled SCANS-II, CODA and T-NASS data in summer 2005 and 2007 in the European Atlantic.
*Cetaceans are distributed widely across the area and the relatively small amount of overlap in predicted high-use areas highlights how species utilise the environment in different ways. SCANS-II: Small Cetacean Abundance in the European Atlantic and North Sea). CODA: Cetacean Offshore Distribution and Abundance in the European Atlantic (CODA, 2009). T-NASS: Trans North Atlantic Sightings Survey*

## Results cont...

There is insufficient information to assess changes in distribution over time except for harbour porpoise in the Kattegat / Belt Seas (where there are comprehensive data from 1994, 2005, 2012 and 2016), and harbour porpoise, white-beaked dolphin and minke whale in the North Sea, where there are comprehensive data from 1994, 2005 and 2016, and additional years for minke whale. Between 1994 and 2005, the distribution of harbour porpoise in the North Sea shifted markedly from primarily in the north to primarily in the south; this shift was maintained in 2016 and more sightings were made throughout the English Channel in 2016 than in previous years. There is some evidence of a similar but weaker pattern for minke whale. White-beaked dolphin distribution did not appear to change between 1994 and 2016.

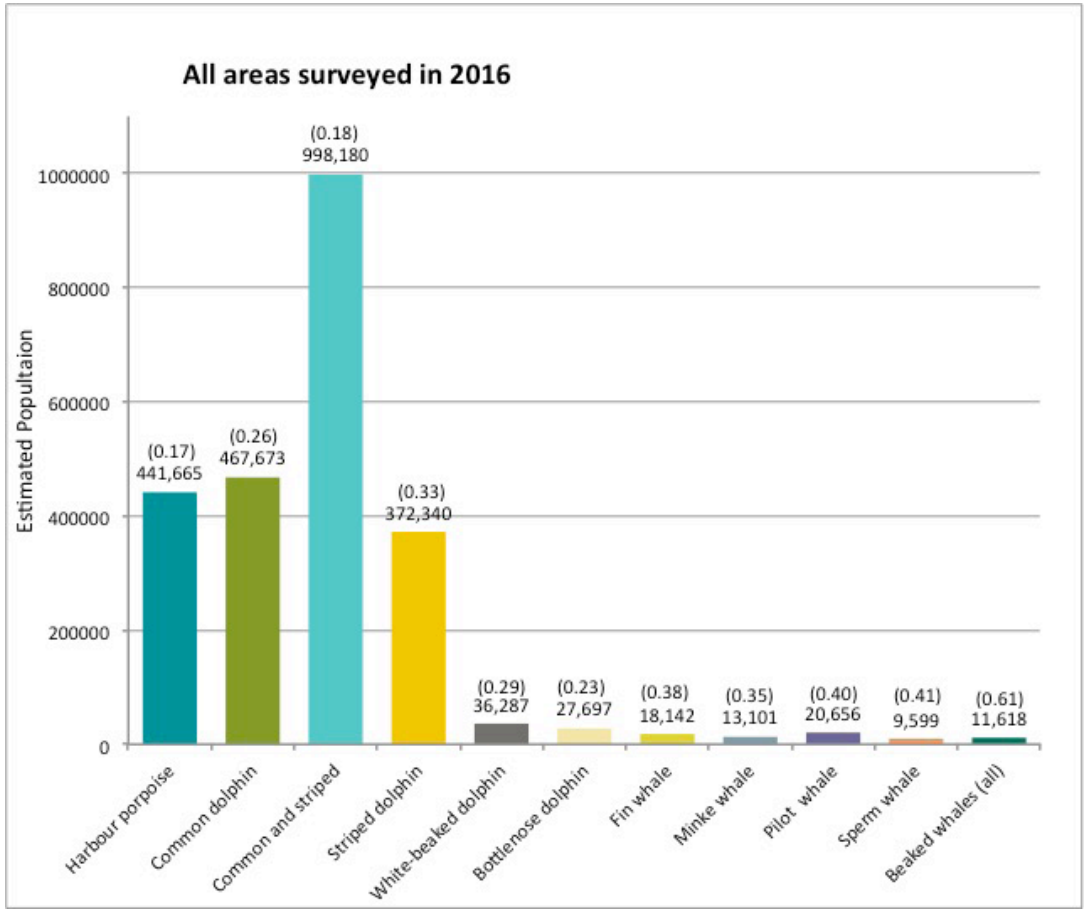



Figure 2: Population abundance estimates from the SCANS III survey in 2016, including the coefficient of variation (cv) values

Three or more comparable estimates of abundance are only available for harbour porpoise, white-beaked dolphin and minke whale in the North Sea, and harbour porpoise in the Skagerrak / Kattegat / Belt Seas. There is no evidence of any trend in abundance for these species in these regions. For other species, it is not possible to assess with any confidence whether populations are decreasing, stable or increasing. Nevertheless, the most recent estimates of abundance for 2016 are similar to or larger than earlier estimates for comparable areas.

There is moderate confidence in the methodology and low confidence in the data availability.

## Conclusion

Cetaceans are widely distributed in a range of habitats and are overall abundant throughout the OSPAR Maritime Area. It is estimated that more than 1.5 million individual cetaceans live in the Greater North Sea, Celtic Seas, and Bay of Biscay and Iberian Coast. For most species there are only two comparable estimates of abundance and a robust trend assessment is not possible. The longer time series of estimates for harbour porpoise, white-beaked dolphin and minke whale in the North Sea, and harbour porpoise in the Kattegat / Belt Seas, show no evidence of any change in abundance since 1994. However, for harbour porpoise in the North Sea, a substantial southward shift in distribution occurred between 1994 and 2005, and was maintained in 2016 most likely due to changes in prey availability.

There is a continued need for large-scale surveys, ideally undertaken more frequently than to date, to increase the power to detect trends.

## Knowledge Gaps

Historical data on abundance and distribution of cetaceans are scarce or lacking, so for most species the data are insufficient to assess their status. Given the lack of data, it is not possible to identify whether there is a cause-effect relationship between human activities and cetacean population size and distribution. The power to detect trends could be improved by increasing the frequency of large-scale surveys. To date, large-scale surveys have been undertaken during summer, resulting in a lack of seasonal information at the large scale.

The availability of data from other large-scale surveys will help address knowledge gaps in the future.

This document was published as part of OSPAR's Intermediate Assessment 2017.

The full assessment can be found at www.ospar.org/assessments