Mick Baines

Monitoring a changing world – searching the past for long-term trends in the occurrence of cetaceans around the UK

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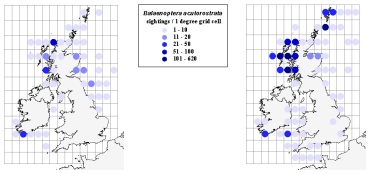
INTRODUCTION

Human impacts on ecosystems that affect cetaceans, such as climate change or gradual habitat degradation through pollution or fisheries, can be difficult to detect without long-term sources of data on abundance and distribution. In this context, the Sea Watch Foundation database of cetacean sightings from around the UK is of great historical interest, holding data from the last 30 years or more.

Sightings rates and plots of the distribution of sightings have been used to investigate long term trends. However, care should be taken in the interpretation of recent trends as some data from recent years are yet to be incorporated in the database.

Minke whale (*Balaenoptera acutorostrata*)

Sightings rates of minke whales in the UK showed a generally increasing trend through the 1990's, reaching a peak in 2001. Plots of reported sightings of minke whales, uncorrected for effort, also suggest an expansion of range in south-west Britain during the 1990's.



1980-1989 1990-1999

Common dolphin (*Delphinus delphis*)

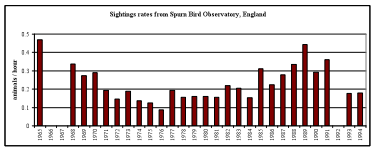
The current impression is that common dolphins have recently extended their range northwards to the northern Hebrides and into the North Sea. However, more sightings of this species were reported from the North Sea in the 1980's than in the 90's and from a greater geographical spread. Although this is a relatively abundant species, there are insufficient effort related data from past decades to gain a clear understanding of longer term trends.

Striped dolphin (*Stenella coeruleoalba*)

This is a species of warm waters, which is at the edge of its range in the UK and as such, it is a useful indicator of climate change affecting sea temperatures. Prior to the 1990's, only two sightings were reported, in 1977 and 1978, both off southwest Cornwall. Since 1990, 14 sightings have been reported, including four from the Hebrides, two from the North Sea coast of Scotland and one from eastern England.

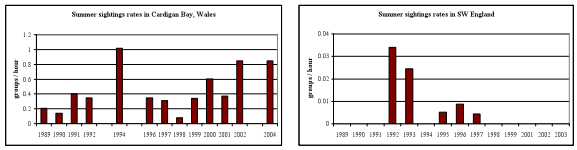
Harbour porpoise (*Phocoena phocoena*)

A particularly long data set from Spurn Bird Observatory, located on the North Sea coast of England, shows a decline in sightings rates of harbour porpoise, reaching a low point in the mid 1970's, with a subsequent increase in the following decade. In Shetland, where relatively high sightings rates of porpoises have been recorded, rates declined through the 1980's, then increased in the 1990's. In Cardigan Bay, Wales, sightings rates of porpoises also maintained an increasing trend through the 1990's.



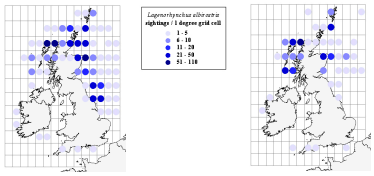
Bottlenose dolphin (*Tursiops truncatus*)

There are two main centres of population for this species in the UK: the Moray Firth in Scotland and Cardigan Bay in Wales. Changes in the distribution of the Scottish population have occurred in recent years, with an apparent movement of animals southwards along the coast to St Andrews' Bay and beyond. In Cardigan Bay, summer (June–Sept) sightings rates have shown an increasing trend since the mid 1990's, concurrent with decreasing sightings rates off Cornwall and Devon, suggesting a consolidation of the southwest UK population in Cardigan Bay. At the same time, there was a consistent trend for group size to decrease, suggesting a change in foraging strategy. Two key prey species in summer are bass (*Dicentrarchus labrax*) and migratory Salmonids (*Salmo trutta* and *S. salar*). Since the early 1990's bass have been the subject of an intensive commercial fishery off the southwest UK, and the dolphins in this region may have become more dependent on the protected Salmonid stocks that breed in Welsh rivers. However, we have no direct evidence to support this theory.



White-beaked dolphin (*Lagenorhynchus albirostris*)

The white-beaked dolphin is associated with cold northern waters and is close to the southern limits of its range in the UK. The distribution of reported sightings suggests a retraction of range towards the north since the 1980's, when their North Sea distribution extended south to 53°. They have since become uncommon south of the Scottish border.



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CONCLUSIONS

Distributional changes were observed in *Stenella coeruleoalba* and *Lagenorhynchus albirostris*, species which are close to the edge of their range in the seas around the UK. These changes may be linked to climate change resulting in increased sea surface temperatures.

Coastal species like *Tursiops truncatus* and *Phocoena phocoena* are more likely to be affected by human activities, such as fisheries impacts, disturbance and pollution. Trends in both species showed more complex patterns, with increases in abundance in some areas offset by decreases in others. Trends in the relative abundance of *T. truncatus* may be associated with changes in prey availability, which in turn may have been affected by changes in fishery practices. *P. phocoena* populations are thought to have been impacted by entanglement in certain types of fishing gear. However, trends in sightings rates might give grounds for optimism that this species is now less vulnerable than it was in the 1970's or 1980's.