

Long distance movements of female/immature sperm whales in the North Atlantic

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ABSTRACT

Sperm whales, *Physeter macrocephalus*, are known to range over large areas. Previous studies in the North Atlantic have shown movements of males between the Azores and Norway. This study reports on movements of females and immature males. A long term photo-id project has been running in the Azores since 1987 with images acquired from whale watching vessels as well as dedicated research platforms coordinated in a digitised catalogue of close to 3000 individuals. Images from this

catalogue were matched to other fluke photos in the NAMSC catalogue from the Canaries (181), Madeira (57), the Mediterranean (173), the Caribbean (166) and the Gulf of Mexico (205), with the help of the Phlex program, to explore movements of sperm whales between these areas. Twelve adults and one calf matched between the Azores and Canaries. One match was made between the Azores and Madeira and one between the Canaries and Madeira. There were no matches from the

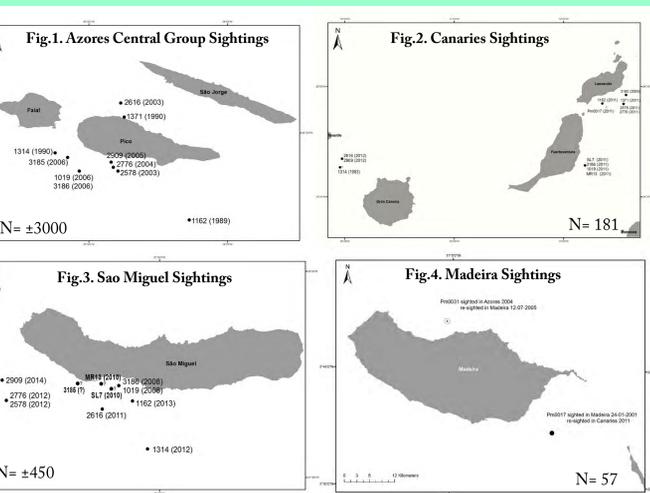
mid-Atlantic to the Caribbean. The lag time between the matches ranged between 1 month and 24 years. Some of these whales have made repeated migrations between the Azores & Canaries, in one case accompanied by a new calf. This suggests that female sperm whales may make latitudinal migrations. This information could be useful for management. It suggests segregated strong linkage between the mid Atlantic islands but does not indicate movement across the Atlantic so far.

INTRODUCTION

Sperm whales are present in all oceans, but little is known about their movements or migration patterns. Their preferred habitat is deep ocean waters off the continental shelf. Oceanic islands offer an opportunity to observe these animals relatively close to shore. This proximity to the coast, often allows lookouts (vigias) to spot the animals from land and direct vessels at sea. Fortunately, sperm whales can also be located using hydrophones to localise their powerful characteristic clicks. Sperm whale individuals can be identified by unique markings on the trailing edge of their flukes. As they mature, male sperm whales tend to spend more time in higher latitudes, where there is thought to be more food available. In this poster we looked at movements of female sperm whales and present results from fluke photos collected from various sources around the Atlantic.

METHODS

Sperm whale fluke photographs from around the North Atlantic were compared using Phlex & Match Europhlukes programs. In the Azores sperm whales were either located with a towed hydrophone or using a lookout on the cliff. Most of the images from the Azores have been taken from whale watching boats. Several types of boat have been used to collect images, ranging from RIBs to a 20m sailing boat. In Madeira a 12m motorboat with a towed hydrophone made systematic surveys around the islands in 2001-2002. From 2004 to 2012 a 16m



Figures 1-4. Location of the sighting (in most cases the first observation), of the animals included in this study in the different archipelagos. The position of 1314 in the Canaries and SL7, MR13 & 3185 in Sao Miguel, are an approximation as it was not possible to confirm coordinates in time to be included.



Figure 5. Sperm whale blow with Pico.

sailing boat made visual/acoustic systematic surveys around the islands and a RIB non-systematic surveys mainly in south of Madeira. Images have also been obtained from whale watching since 2004. In the Canaries, a 17m motorboat with a towed hydrophone carried out visual surveys in 1999-2000 & 2002-2008, and visual/acoustic surveys from 2008-2012. Effort in the Azores was concentrated from April-October, while in the Canaries it was from September-June.



Figure 6. Fluke of a sperm whale.



Figure 7. Animals resting on the Surface after a feeding dive.

DISCUSSION

With the information available it appears that female sperm whales make limited latitudinal migrations of around 1500km, rather than longer movements across the Atlantic. These movements may be seasonal; with the whales spending the summer in the Azores and migrating to the Canaries during the winter months. Sperm whale females stay with their groups for long periods of time, possibly their entire lives. Several of these re-sighted animals show long term associations (1019 & 3186; 2776, 2578 & 1371; and 2909 & 2616). It is interesting that SL7 was seen with 1019 & 3186 in the Canaries but has never been observed with them in the Azores, despite repeated sightings there. 2909 has only been seen twice on the same day as 2616, once in 2005 in the Azores and once in the Canaries. The lookouts in the Azores are an invaluable resource. These lookouts, in conjunction with the use of a directional towed hydrophones helps to ensure that most members of groups are photographed during repeated encounters over a day. More than 25 years of effort around the Central Group of the Azores, has created an impressive collection of id photos. One individual, 1019, for example has been observed over 27 years, including 2 trips to the Canaries with a calf. Smaller catalogue sizes from Cape Verde islands (2) and Madeira (57) most likely explain the low number of matches between these areas. No matches were made with sizeable catalogues from the Caribbean (166), Gulf of Mexico (205) or the Mediterranean (173).

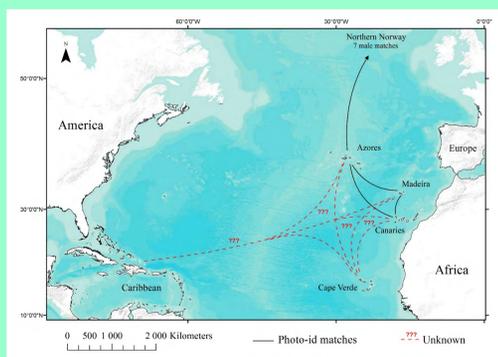


Figure 8. Atlantic view – more unknown than known!

Table 1. Summary of the recaptures in the different areas and years.

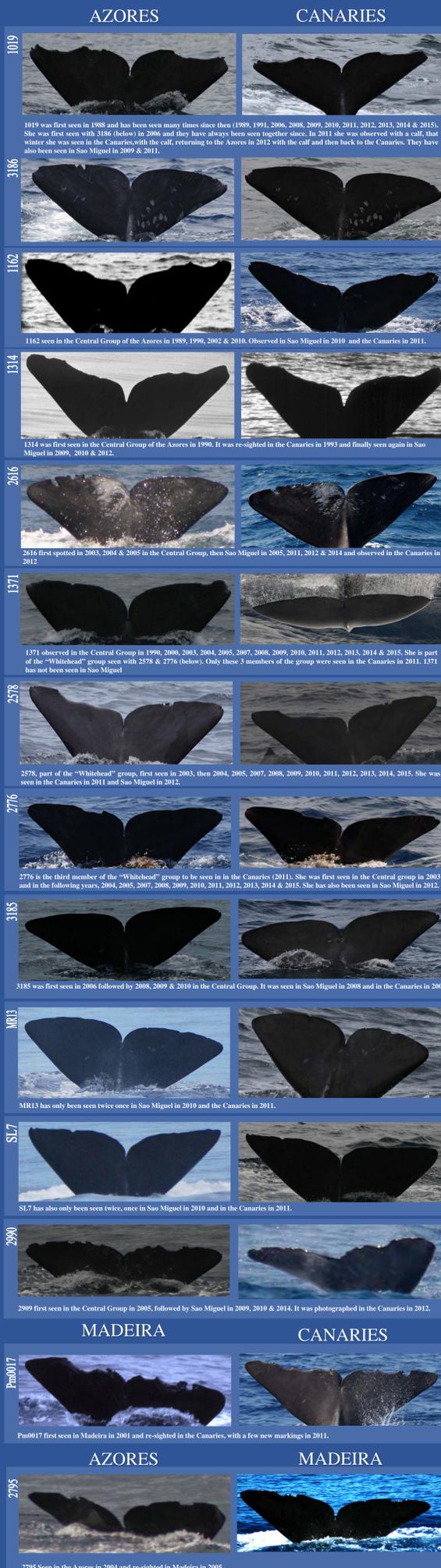
ID	Central Group	Canaries	Sao Miguel	Madeira
1019	1988, 1989, 1991, 2006, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015	2011, 2012	2009, 2011	
3186	2006, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015	2011, 2012	2009, 2011	
1162	1989, 1990, 2002, 2010	2011	2010	
1314	1990	1993	2009, 2010, 2012	
2616	2003, 2004, 2005	2012	2005, 2011, 2012, 2014	
1371	1990, 2000, 2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015	2011		
2578	2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015	2011	2012	
2776	2003, 2004, 2005, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015	2011	2012	
3185	2006, 2008, 2009, 2010	2009, 2011		
MR13		2011	2010	
SL7		2011	2010	
2909	2005	2012	2009, 2010, 2014	
Pm0017		2011		2001
2895	2004			2005

RESULTS

Individual sperm whales can be identified by markings along the trailing edge of their flukes. A comparison was made between catalogues from study areas around the North Atlantic and Mediterranean. Matches of females/immature sperm whales were found between the Azores (Central and Eastern Groups) to the Canaries. There was one match from the Azores to Madeira and one match from Madeira to the Canaries. There were no matches to the Caribbean or Cape Verde. To date, several males have been matched to Northern Norway, Tromsø & Andenes, which have been presented elsewhere.



Figure 9-10. Sperm whale breaching in Azores



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