

Short note | Nota breve

Seasonality of humpback whale *Megaptera novaeangliae* (Borowski, 1781) records in Cape Verde seas: evidence for the occurrence of stocks from both hemispheres?

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Keywords: Humpback whale, *Megaptera novaeangliae*, Cape Verde Islands, phenology

Humpback whales *Megaptera novaeangliae* perform the longest known migrations among mammalian species (Stone *et al.* 1990, Rasmussen *et al.* 2007), feeding at high latitudes during the summer and undertaking annual journeys to their wintering breeding grounds in warm and shallow tropical waters (Winn & Reichley 1985, Clapham & Mead 1999). Due to breeding site fidelity and temporal separation at low latitudes, gene flow between Northern and Southern Hemisphere populations appears to be very limited (Rizzo & Schulte 2009). However, inter-oceanic exchange has recently been documented (Pomilla & Rosenbaum 2005, Stevick *et al.* 2010), demonstrating that philopatry may not be as strong as previously inferred (cf. Baker *et al.* 1993, 1994, Valsecchi *et al.* 1997).

In the Atlantic Ocean, the seas of the Cape Verde archipelago constitute one of two known breeding grounds for Northern Hemisphere humpback populations, the other being in the Caribbean (Winn & Reichley 1985, Hazevoet & Wenzel 2000). While the total North Atlantic population was estimated at 10,752 animals in 1993 (Stevick *et al.* 2003), the eastern North Atlantic stock is thought to number only *ca.* 100 animals (Punt *et al.* 2006) and there exists substantial uncertainty about the size of the Cape Verde

breeding population (Smith & Pike 2009). Both the Caribbean and Cape Verde populations were severely depleted by commercial whaling, especially during the 19th century (Smith & Reeves 2010).

Wintering humpbacks arrive in Cape Verde seas in January (sometimes as early as December), while the last of the animals have generally left the area by mid May (Hazevoet & Wenzel 2000, PLS pers. obs.). In the Caribbean, wintering humpbacks were historically present from January through May (Reeves *et al.* 2001). In Cape Verde, there are photographic matches of animals previously photographed off Bear Island (Norway), in the Denmark Strait (west of Iceland) and in the Azores (Wenzel *et al.* 2009).

Other wintering areas of humpbacks in the eastern Atlantic, but populated by whales originating from the Southern Hemisphere, are situated in the Gulf of Guinea from northern Angola to Gabon (Rosenbaum & Collins 2006, Weir 2007, 2010) and from Nigeria westward to Côte d'Ivoire (Van Waerebeek *et al.* 2001, 2009, Van Waerebeek 2002, Weir 2010). Whether these two areas (possibly connected through continental shelf waters off Cameroon) constitute the breeding grounds of a single or multiple populations is as yet unclear. Humpbacks also winter around the islands of São Tomé, Príncipe and

Annobón (Weir 2010). Off Angola and Gabon, humpbacks are mostly seen from June to October (Rosenbaum & Collins 2006, Weir in press), but records later in the year are not uncommon, while in the northern Gulf of Guinea off Togo and Benin animals are regularly seen into December (Van Waerebeek *et al.* 2001, Van Waerebeek 2002, Weir 2010). Townsend's (1935) whaling charts show that humpbacks in Cape Verde seas were primarily caught from February to May, while in the Gulf of Guinea catches were from June to September.

During the afternoon of 15 August 2010, BG observed an adult humpback whale, accompanied by a small calf, travelling in a

westward direction at 16°34,6'N, 22°52,4'W (depth 30-35 m), off Santa Maria along the southern coast of Sal island, Cape Verde Islands (Fig. 1-2). According to local fishermen, more adult humpbacks had been seen in the area during that month. Previously, there was an atypical (i.e. outside of the usual January-May occurrence) record of a humpback in Cape Verde seas at 16°34'N, 24°23'W (southwest of Sal), 16 July 1993 (Reiner *et al.* 1996). In addition, there are two June records from Cape Verde seas (Table 1). No fluke photos for identification purposes of any of these humpbacks were taken and neither have genetic samples been collected.



Fig. 1-2. Humpback whale *Megaptera novaeangliae*, cow and calf pair, off Santa Maria, Sal, Cape Verde Islands, 15 August 2010 (Barbara Gravanita).

Date	Number	Location	Source
12 June 1994	one (sex unknown)	15°57'N, 23°42'W	Reiner <i>et al.</i> (1996)
15 June 2003	cow and calf pair	16°09'N, 22°54'W	P. López Suárez
16 July 1993	one (sex unknown)	16°34'N, 24°23'W	Reiner <i>et al.</i> (1996)
15 August 2010	cow and calf pair	16°34'N, 22°52'W	B. Gravanita

Table 1. Records of humpback whales *Megaptera novaeangliae* in the Cape Verde Islands outside of the usual January-May occurrence.

While the records in June possibly involve long staying animals of northern origin, those in July and August do not fit into the known seasonality of Northern Hemisphere humpbacks in Cape Verde. This leaves us with three options: 1) all of these June-August records relate to Northern Hemisphere animals that simply stay longer on their wintering ground than previously

documented, 2) they belong to Southern Hemisphere animals (although June would be rather early for them to have reached that far north), 3) they represent a mixture of animals from both hemispheres, some late, some early.

Other records of humpbacks off West Africa outside the documented seasonality of Northern Hemisphere humpbacks include stranding records from Guinea (Conakry) in

July and September and a live sighting *ca.* 24.5 km offshore at 09°19'N, 13°41'W, 1 October 2002 (Bamy *et al.* 2010). In Sierra Leone, humpbacks were seen off York (08°16'N, 13°11'W), 10 September 2010 (Kieranna McCormick *in litt.*) and a cow and calf pair was observed off Orango island (11°11'N, 16°30'W) in the Bijagós archipelago, Guinea-Bissau, 30 September 2009 (Anonymous 2009). In addition, Slijper *et al.* (1964) mapped several records of humpbacks off West Africa between 10°-20°N in September, as well as one in October. Perhaps most intriguing is the sighting of two adult humpbacks and a small calf two miles off Puerto Rico (27°46'N, 15°43'W), Gran Canaria, Canary Islands, 1 October 2007 (Vidal Martin *in litt.*). It should be noted that very little cetacean research has been carried out in the eastern Atlantic between Guinea-Bissau and Côte d'Ivoire and knowledge of species occurrence and species seasonality for this vast area is poor.

Elsewhere in the humpback whale's

range, evidence of geographical (but not temporal) overlap comes from areas in the eastern Pacific Ocean known to be used by wintering humpbacks of northern origin in January-February (Steiger *et al.* 1991, Acevedo & Smultea 1995, Calambokidis *et al.* 2000), e.g. sightings off Cocos Island and Costa Rica in August (Acevedo & Smultea 1995), sightings (matched by photo-identification to feeding grounds off the Antarctic Peninsula) off Central America in August and September (Rasmussen *et al.* 2007) and 19th century catches in the Golfo de Panamá in July to September (Best 2008).

In order to settle the assertion that humpbacks of Southern Hemisphere origin may sometimes wander as far north as the Cape Verde Islands, as well as the possibility of Northern Hemisphere humpbacks occasionally staying longer at their wintering grounds (and travelling further south) than documented so far, photo-identification matches or genetic evidence will be required.

ACKNOWLEDGEMENTS

We wish to thank Vidal Martin and Kieranna McCormick for providing details of their humpback whale observations. We also thank

Caroline Weir for helpfully reviewing the manuscript of this note. Randall Reeves helped in locating a literature reference.

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Received 20 February 2011
Accepted 30 March 2011