

# Inshore occurrence of southern right whales (*Eubalaena australis*) at Subantarctic Marion Island

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**Opportunistic shore-based sightings of southern right whales *Eubalaena australis* for Marion Island (46°54'S, 37°45'E) were documented at five different times between 1974 and 2009. Whales were sighted between May and September and exclusively on the eastern lee side of the Island. Notwithstanding some observer biases over this time frame, the species appears to be an infrequent visitor to the inshore marine environment of Marion Island.**

**Key words:** *Eubalaena australis*, Marion Island, shore-based sightings; Southern right whale, vagrants.

Owing to their thick blubber, southern right whales are reluctant to venture into the tropics, and are usually found between 20° and 64° south (Fig. 1) (Best 2007). The fact that they float when dead, have a superior oil and whalebone yield, fidelity to congregate near calving grounds and their lack of speed must all have contributed to their exploitation by commercial whaling (Best 2007). Although protected in 1935, illegal whaling endured until 1971 (Tormosov *et al.* 1998). Between 1971 and 1998 the calving population off the coast of South Africa increased with 7.1% per year, similar to rates of increase recorded for populations off the coast of Argentina and Australia (Best 2007). In winter months southern right whales migrate to more temperate coastal waters off the southern continents, where females give birth and nurse their newborn in these sheltered areas (Best 2007). At other times of the year whales move south from the calving grounds to the foraging grounds where temperatures are cooler and overall biological productivity is higher (Perrin *et al.* 2002). In the south Indian sector of the Southern Ocean, right whales are mainly seen between 30°S and 40°S from October to December, between 40°S and 50°S around the Crozet Islands (CI) mainly from February to March, and in the area between 50°S and 60° S from December to April (Best 2007). Here we report on five photographically confirmed

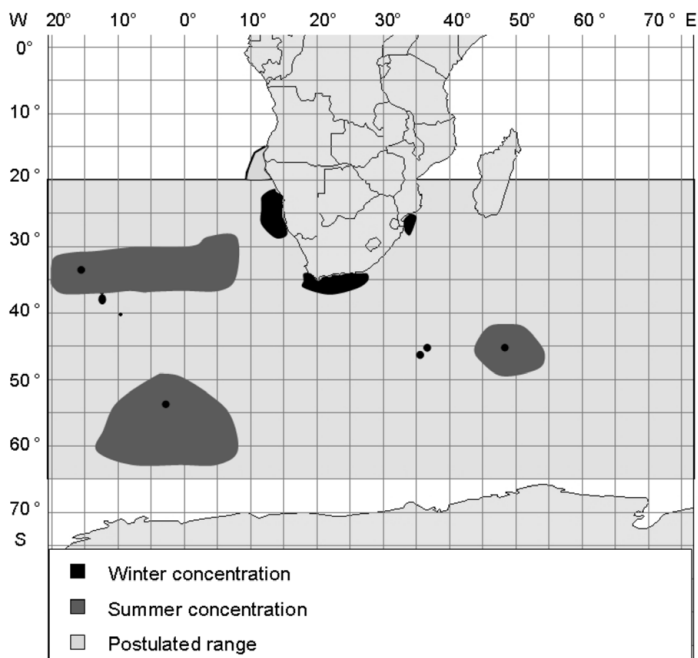
inshore sightings of the species at Marion Island (46°54'S, 37°45'E) over a period of 35 years.

The Prince Edward Archipelago consists of two small islands, Marion Island (MI) and Prince Edward Island which are located in the southern Indian Ocean (Pakhomov & Froneman 1999). Oceanographically, MI is situated directly in the path of the easterly-flowing Antarctic Circumpolar Current (ACC), between the Subantarctic Front (SAF) and Antarctic Polar Front (APF) (Fig. 2) (Lutjeharms 1985). Currently, the nearest southern right whale calving grounds to MI are ~1950 km distant, off the Western Cape Province, South Africa.

Sightings of southern right whales at MI were primarily recorded by elephant seal researchers during regular visits (every 7–10 days) on foot to all the beaches on the northeastern, eastern and southern side of the island (Fig. 3). Round island resights were conducted once a month. The research effort which is associated with the southern elephant seal (*Mirounga leonina*) mark-resighting programme has been repeated whole year round since commencement in 1983 (see de Bruyn *et al.* 2008 for details). As part of this highly structured pinniped monitoring programme, seal researchers were also required to record opportunistic sightings of killer whales (*Orcinus orca*). Additionally, dedicated land-based killer whale observation sessions were performed year-round since 2008, during which trained observers remained at set observation points (Fig. 3) and visually searched for killer whales for pre-determined (3-hour or 10-hour) lengths of time (Reisinger *et al.* 2011a).

Following annexation of MI in 1947/1948 by South Africa (Cooper & Headland 1991), the earliest reported sightings of southern right whales are those of an adult individual of unknown sex seen in September 1974 (Condy & Burger 1975). The animal was noted over a period of several days while swimming in circles approximately five metres off the eastern coast about 1 km north of the

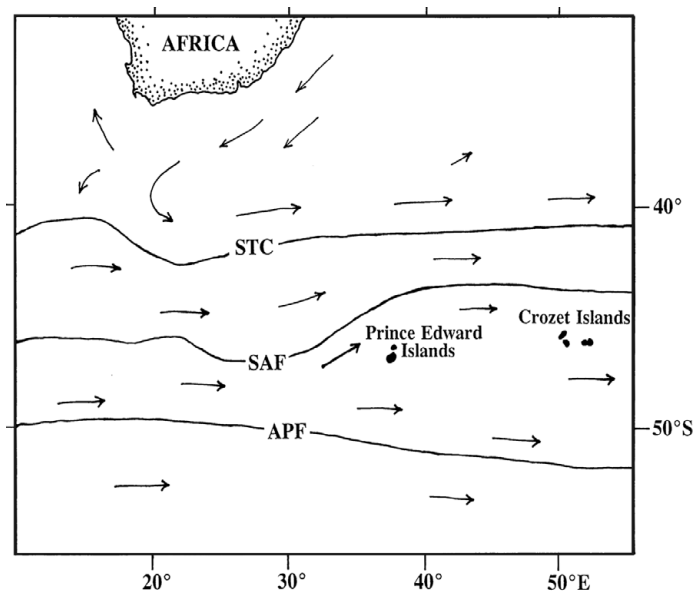
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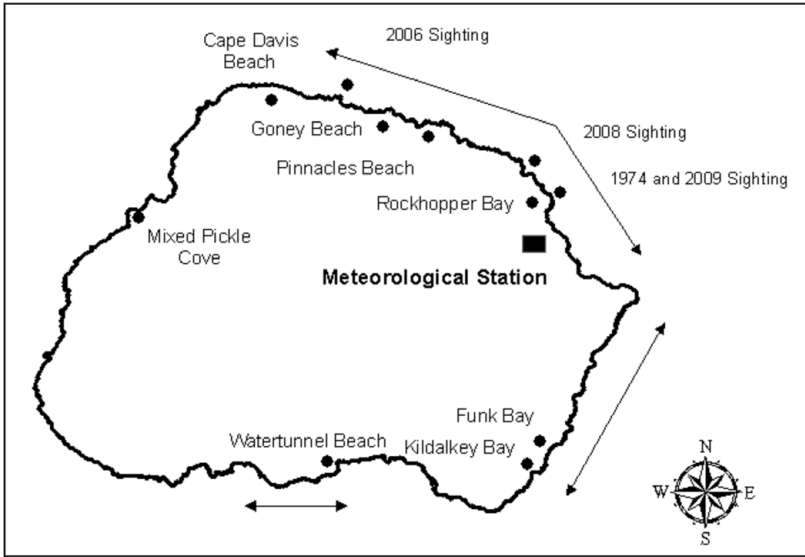
**Fig. 1.** Distribution map for southern right whales. (Reprinted with permission from Cambridge University Press, taken from Best, 2007.)

meteorological station (Fig. 3). Recent examination of photographs taken over that period confirms that two different individuals were involved (P. Best, pers. comm. 2010). During August 2006 an

adult of unknown sex was sighted and photographed in Storm Petrel Bay on the north coast of the Island (Fig. 3). This animal meandered in large circles and random patterns within this one bay for



**Fig. 2.** The position of Prince Edward Islands in relation to South Africa and the CI. Major frontal systems including the Subtropical Convergence (STC), Subantarctic Front (SAF) and Antarctic Polar Front (APF) are shown. (Reprinted with permission from Pakhomov & Froneman 1999.)



**Fig. 3.** Map of Marion Island, Southern Indian Ocean, showing the locations (Mixed Pickle Cove, Cape Davis, Goney Beach, Pinnacles Beach, Rockhopper Bay, Kildalkey Bay and Watertunnel Beach) where dedicated killer whale observations were made. Offshore dots indicate southern right whale sightings. (Adapted from Reisinger *et al.* 2011a.). Arrows indicate elephant seal researchers' search area every 7–10 days (since 1983). Offshore dots indicate southern right whale sightings.

at least an hour from initial observation. It appeared to be feeding, as the animal's mouth could be seen to open near the surface on several occasions. A juvenile animal (8–10 m) of unknown sex

was sighted in August 2008 in poor visibility (due to snow squalls) at Ship's Cove on the northeastern coast (Fig. 3). The animal was being harassed by three killer whales. The observed attack contin-



**Fig. 4.** Photograph of a juvenile southern right whale sighted in 2009 immediately north of the meteorological station at Marion Island.

ued for 20 min, with killer whales circling the whale within a distance of 10 m after which they moved off. For the next 2 hours the whale remained in the cove swimming in circles showing signs of fatigue with irregular breathing, although this subsided as time passed. The next morning the whale was nowhere to be seen. Most recently (in May 2009) a juvenile of the species was recorded in approximately the same location as the sightings in 1974. From photographs and the size of the head it could be classified as a very young animal (Fig. 4) (I. Peters, pers. comm. 2010). The latter was sighted alone; this could be as a result of the decreased visibility due to heavy mist on that particular day or the absence of other individuals. Interestingly, all animals appeared to behave similarly by swimming in circles or random meanders between about 5 m and 50 m off the coast.

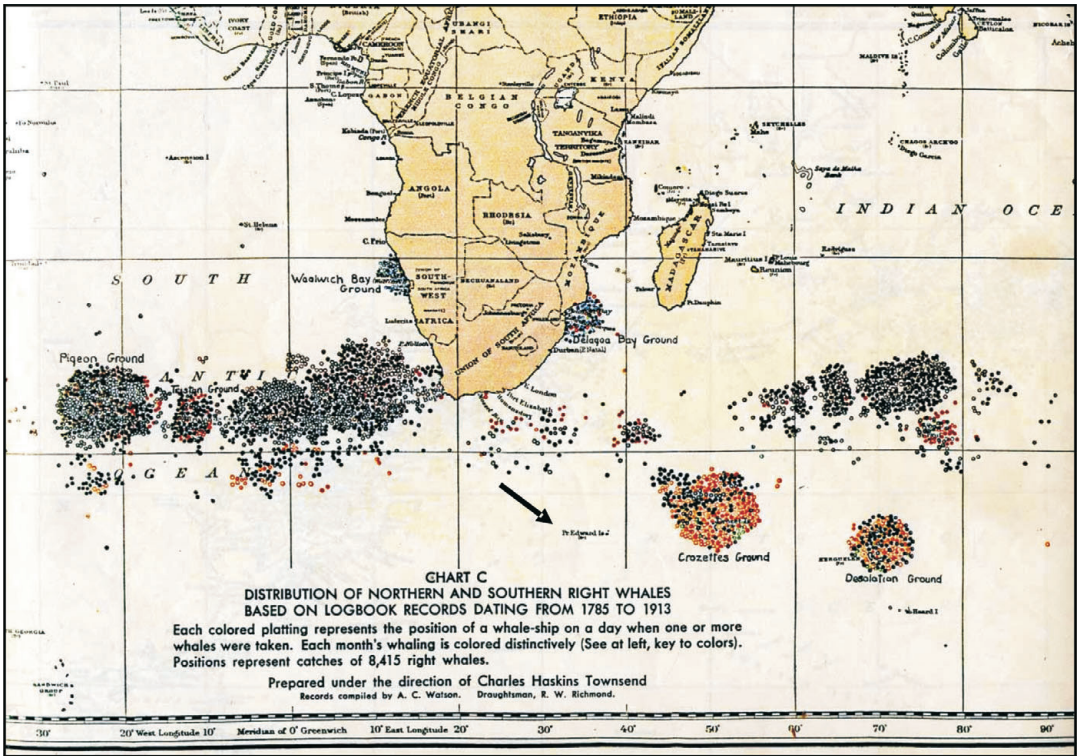
The low sighting frequency of southern right whales around the eastern and northern coasts of MI is unlikely to be markedly biased by observer presence given that an almost uninterrupted field presence of primarily pinniped biologists commenced in 1973 (Condy 1978; de Bruyn *et al.* 2008). These field workers routinely documented the presence of any unusual or rarely seen marine mammal species (e.g. Bester *et al.* 2006; de Bruyn *et al.* 2007; Reisinger *et al.* 2009) and additionally paid particular attention to the inshore waters for opportunistic killer whale (*Orcinus orca*) sightings (e.g. Keith *et al.* 2001; Tosh *et al.* 2008). Transients such as leopard seals (*Hydrurga leptonyx*) and humpback whales (*Megaptera novaeangliae*) are occasionally sighted when they visit the inshore area at MI (Bester *et al.* 2006; Ryan & Bester 2008). Leopard seals may be benefiting from locally abundant food resources such as penguins (Bester *et al.* 2006) and humpback whales may be resting in the calm waters. This poses but two hypotheses to the question of why right whales visit MI:

1) Some individuals, from the pelagic concentration of southern right whales around the CI (Best 2007), are possibly swimming diagonally across the ACC (Fig. 2) to their calving grounds off the coast of southern Africa, on their way stopping at MI. MI's coastline consists mainly of cliffs on the western side with sheltered pebble beaches on the eastern side (Condy 1978). Right whales were recorded only on the eastern side of MI; this could imply that whales rest in the calmer leeward side, although observer effort on the western side of MI, albeit relatively constant, is lower than on the eastern side. Sightings were in May 2009, August

2006, 2008 and September 1974 at the beginning and at the end of winter, respectively. This timing suggests that these animals are *en route* to more temperate grounds in low latitudes at the beginning of the austral winter and from these grounds to higher latitudes once winter has passed. It is therefore tempting to speculate that MI may only be an occasional *en route* stopover on an annual migration to the South African coastline (present study), although no links between the latter and the foraging area around the CI have been demonstrated (Best 2007). MI is also not in a direct line between the known foraging area (at CI) and the east coast of southern Africa (Fig. 1), a possible destination (Best 2007).

2) On the other hand, the waters around MI are frequently patrolled by killer whales (*Orcinus orca*), particularly the inshore areas (Reisinger *et al.* 2011a). Elsewhere killer whales have been observed attacking right whales. Such encounters are rarely sighted, but could be fatal for young or unaccompanied animals, as southern right whales usually group together for protection against killer whales (Best *et al.* 2010). Killer whale sightings occur throughout the year but peak between September–December and April–May (Reisinger *et al.* 2011a). The September to December peak coincides with breeding of southern elephant seals (*Mirounga leonina*) and penguin species (Condy *et al.* 1978; Reisinger *et al.* 2011a, b). This potential threat to right whales by killer whales may explain why few sightings of right whales have been realized, despite intensive observer presence for the past four decades.

The APF and Subtropical Convergence are considered as popular right whale feeding grounds; more specifically the area around CI at 45°S and Kerguelen Islands ('Desolation') at 49°S (Townsend 1935). Right whales must seek out and exploit extremely dense patches of prey in order to feed efficiently (Kenney *et al.* 1986) where they consume copepods (71.4%), euphausiids (24.3%) and crustaceans (4.3%) (Tormosov *et al.* 1997; Mate *et al.* 2010). MI lies west of these usual foraging regions (Fig. 5) and as such may be oceanographically unfavourable as a feeding ground. According to ship logbooks from 1785 to 1913 no sightings of southern right whales were made in the vicinity of the Prince Edward Islands (Townsend 1935) (Fig. 5). These five records between 1974 and 2009 are the only reported sightings of the species inshore at MI. Sightings of southern right whales at MI are infrequent and the species can be classi-



**Fig. 5.** Distribution of northern and southern right whales based on logbook records from 1785 to 1913 with arrow indicating Prince Edward Islands. (Adapted from Townsend 1935.)

fied as a rare vagrant at the Island. MI's position in the Southern Ocean potentially makes it a sheltered resting stop for a few individuals *en route* from the known Crozet Islands feeding grounds (February and March) to the winter calving grounds in southern Africa. Alternatively, passing individuals may be exploiting unpredictable food patches opportunistically.

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