

# Historical records of southern right whales (*Eubalaena australis*) of the province Río Negro, North Patagonia, Argentina (1991-2008)

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## ABSTRACT

The increase of the southern right whale (SRW *Eubalaena australis*) population might rise questions about the reoccupation of previous sites. This report is a compilation of historical records of SRWs along the coast of the Río Negro province, Northeast Patagonia, to evaluate the tendency of their occurrence in the area over the past decade. A total of 308 records (425 whales) were collected over distinct coastal regions in Northeast Patagonia. The majority of sightings were concentrated between the months July-October with a peak in August-September as was observed similarly in South Brazil, Uruguay and central Patagonia. Groups consisted out of 2 individuals on average whereas mother and calf pairs could be observed in only 11% of the sightings. There was a general increase in sightings over the subsequent years possibly explained by a cause-response relation of increasing sightings and increasing effort. The information presented in this report could suggest a similar hypothesis of reoccupation in the province of Río Negro, Argentina, as was suggested to be occurring along the southeastern coast of Brazil, Uruguay and the Santa Cruz province of Argentina. Data are too preliminary however, to determine the importance of this area for the reproduction and/or migration of this species. Nevertheless, the presented data completes an evolving database of the presence of SRWs along the whole Patagonian coast as was recommended by the International Whaling Commission in 2001. More data and systematic effort is needed to obtain the information on the ecology of SRWs in the Río Negro province, needed for the implementation of conservation measurements in the waters of the provincial jurisdiction, specially in the touristic area of the Natural Protected Area Bahía San Antonio.

**KEYWORDS:** SOUTHERN RIGHT WHALE, EUBALAENA AUSTRALIS, NORTHEAST PATAGONIA, INCIDENTAL SIGHTINGS, ECOLOGY

## INTRODUCTION

The distribution of southern right whales (SRWs *Eubalaena australis*) ranges between 18°S and 50°S (de Oliveira Santos *et al.*, 2001). Every year, these whales migrate from their summer feeding grounds to the coast of many southern continents and islands, mainly to mate and calve (Best, 2000; Payne, 1976; Whitehead *et al.*, 1986; Payne *et al.*, 1990; Rowntree *et al.*, 2001). The most important known calving areas for these whales are Península Valdés (Argentina), Santa Catarina (Brazil) (Flores *et al.*, 2000; Bastida and Lichtenstein de Bastida, 1984; Payne, 1986; Payne *et al.*, 1990; Rowntree *et al.*, 2001), South Africa (Best, 1970; 1981; 1990; 2000; Best and Underhill, 1990; Best and Ruther, 1992), Australia (Bannister, 1990; 2001; Burnell and Bryden, 1997; Burnell, 2001) and New Zealand (Patenaude *et al.*, 1988; Patenaude and Baker, 2001).

It was observed that SRWs can be seen along these coasts with high predictability (Best, 2000), information used previously by whalers to hunt them (Elwen and Best, 2004), depleting their population during the XVIII and XIX century (IWC, 2001). Nowadays SRWs seem to behave with the same predictability but, due to the past depletion of the population, to a lesser extend (Elwen and Best, 2004).

As it was estimated that the population of SRWs is growing annually (Best, 1990; Payne *et al.*, 1990; Cooke *et al.*, 2001), historical wintering grounds may gradually be reoccupied by these whales (de Oliveira Santos *et al.*, 2001; Iníguez *et al.*, 2003; Piedra *et al.*, 2006; Belgrano *et al.*, 2007).

This report was made to evaluate the occurrence of SRWs from 1991 up to 2008 along the northeastern coast of Patagonia, located, together with Uruguay (Piedra *et al.*, 2006), between the two important breeding areas Península Valdés and Santa Catarina at more or less 200km and 2000km respectively. The presented data might complete a gap of information along the Southwest Atlantic, taking into account that the achievement of information on the past and present distribution of SRWs was requested by the IWC (2001).

## METHODS

Historical and recent data on sightings of SRWs along the northern coast of the San Matías gulf, province Río Negro (41°2'S – 62°47'W to 40°45'S - 65°2'W), Northeast Patagonia, were recovered from the authors, dating from 1991 until 2008. For the purpose of this study, the coast of the province Río Negro was divided in distinct observation areas: Natural Protected Area Bahía de San Antonio (NPABSA), Natural Protected Area Caleta de los Loros (NPACL), Bahía Creek (BC), Bahía Rosas (BR), Natural Protected Area Punta Bermeja (NPAPB) and the Río Negro estuary (ERN)(fig. 1).

All data have been collected during land-based observations. Notes were taken on group size, group composition, location and environmental conditions when possible. Unpublished data from occasional sightings, journals and photographic regional banks have also been included.

The term 'group' was defined as individuals at a smaller distance, exhibiting the same general behaviour. Groups were classified as groups with calves and groups without calves, a calf being more or less half the size of an adult, swimming in close association with an adult and presenting orange coloured callosities. Statistical analysis was performed using STATISTICA 6.0 and Zar (1996).

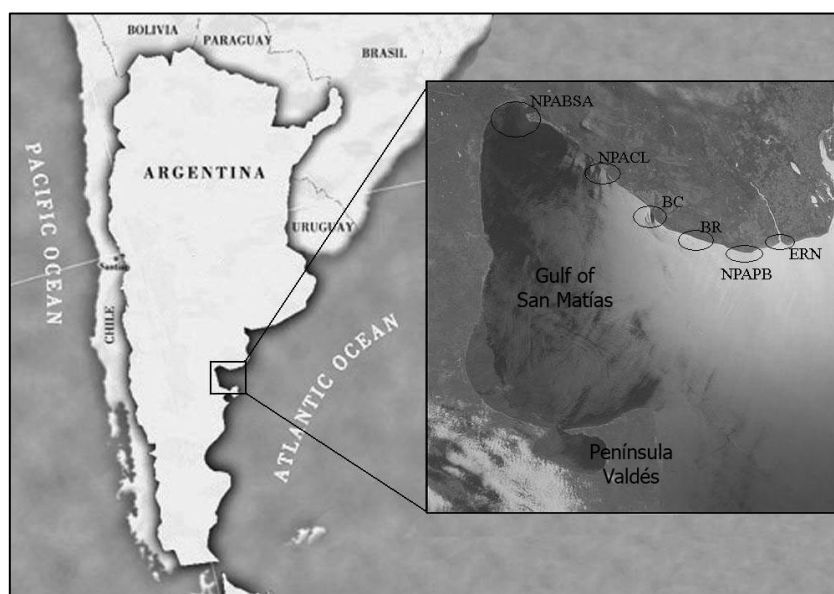


Figure 1: Location of the study area in Northeast Patagonia marking the different observation sites: References: Natural Protected Area Bahía de San Antonio (NPABSA), Natural Protected Area Caleta de los Loros (NPACL), Bahía Creek (BC), Bahía Rosas (BR), Natural Protected Area Punta Bermeja (NPAPB) and Río Negro estuary (ERN).

## RESULTS

### Frequency and locations

A total of 308 sightings (425 whales) were recorded between February 1991 and January 2008 along the northern coast of the Río Negro province, Northeast Patagonia. The majority of the sightings were recorded in the months July-October (79%), during which whales could be seen in all the observation sites.

Of all the sightings ( $n=308$ ), most were recorded in the Natural Protected Area Bahía de San Antonio (41%) and the Natural Protected Area Punta Bermeja (37%) followed by Natural Protected Area Caleta de los Loros (10%), Bahía Creek (6%), Bahía Rosas (3%) and the Río Negro estuary (3%) (fig. 2). Figure 3 visualizes the tendency

of the sightings per observation area per month, whereas figure 4 shows the increasing tendency to observe SRWs along the coast of Northeast Patagonia between 2001 and 2007 in the different study areas. Data before 2001 are too scarce per observation site to be presented.

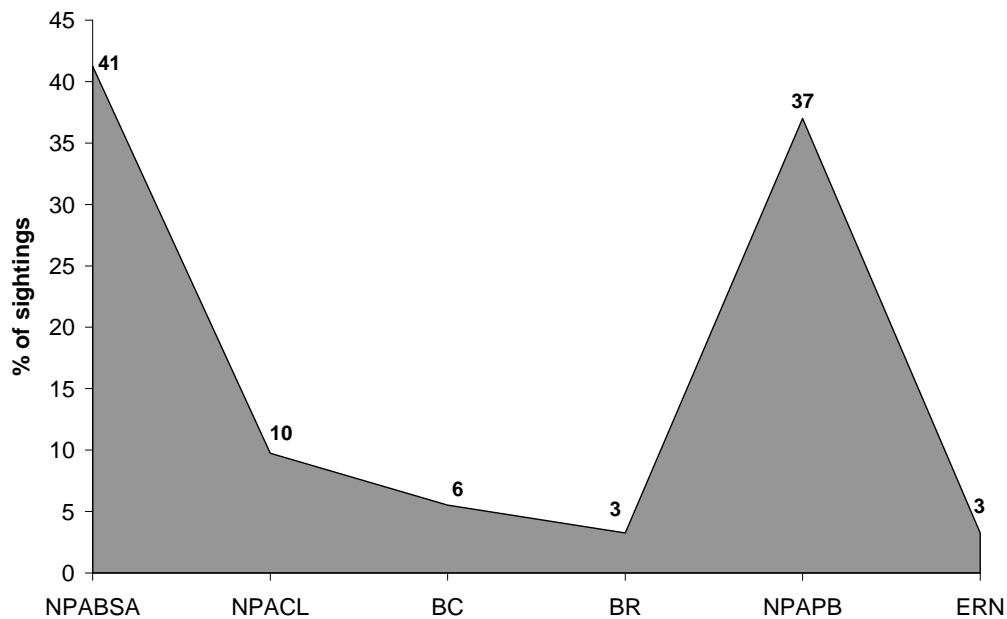


Figure 2: Percentage of SRW sightings between 1991-2008 over the different study areas in Northeast Patagonia ( $n=308$ ).

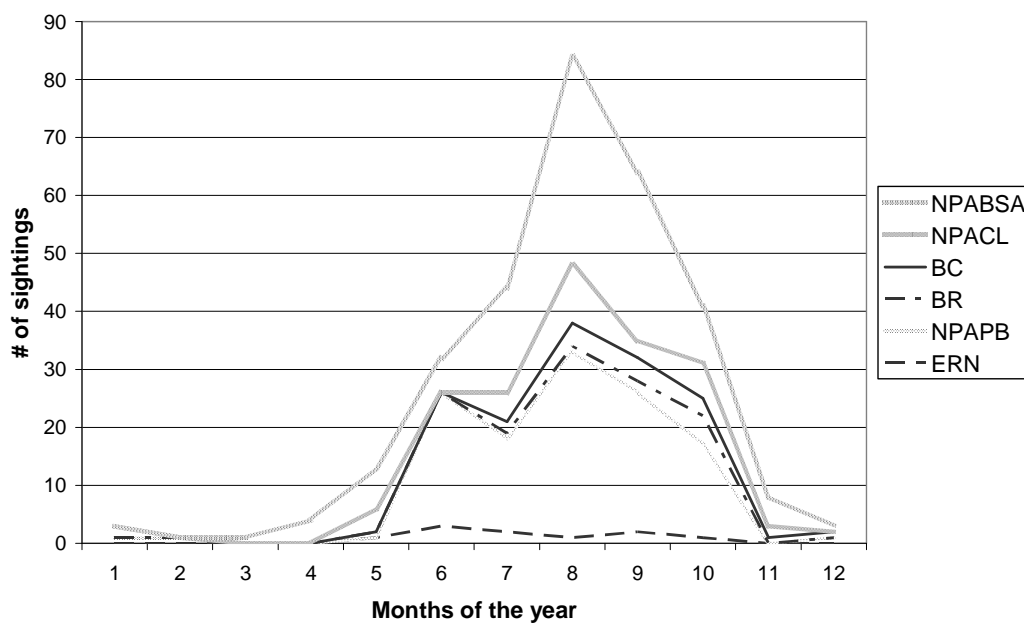


Figure 3: Sighting tendency of SRWs per study area in Northeast Patagonia between 1991-2008 ( $n=308$ ). References: Natural Protected Area Bahía de San Antonio (NPABSA;  $n=127$ ), Natural Protected Area Caleta de los Loros (NPACL;  $n=30$ ), Bahía Creek (BC;  $n=17$ ), Bahía Rosas (BR;  $n=10$ ), Natural Protected Area Punta Bermeja (NPAPB;  $n=114$ ) and Río Negro estuary (ERN;  $n=10$ ).

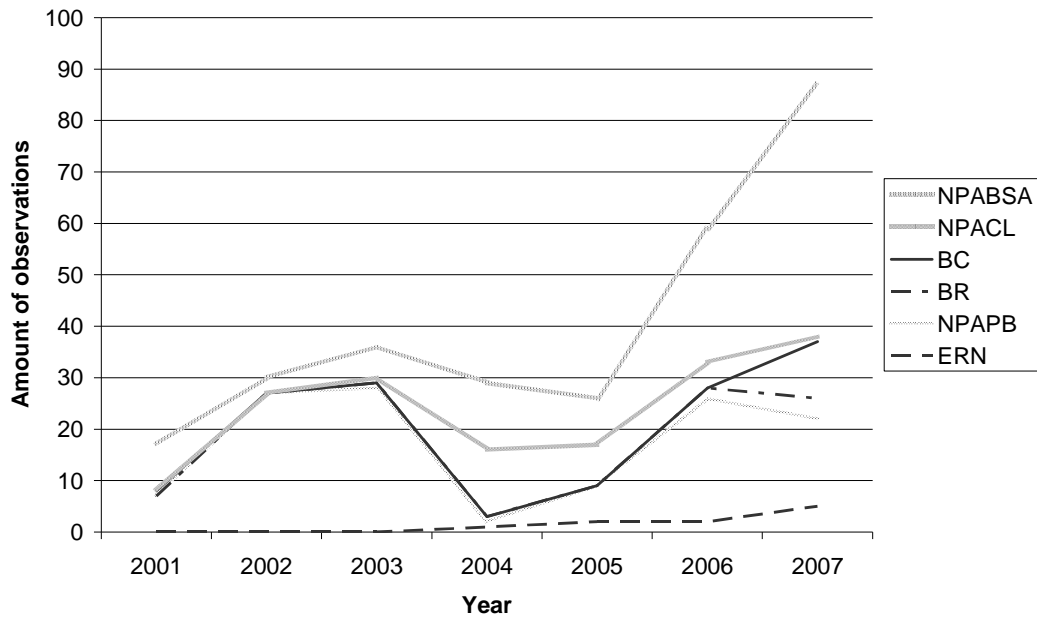


Figure 4: Tendency of SRW sightings along the coast of Northeast Patagonia between 2001-2007 ( $n=285$ ). References: Natural Protected Area Bahía de San Antonio (NPABSA;  $n=115$ ), Natural Protected Area Caleta de los Loros (NPACL;  $n=28$ ), Bahía Creek (BC;  $n=13$ ), Bahía Rosas (BR;  $n=8$ ), Natural Protected Area Punta Bermeja (NPAPB;  $n=111$ ) and Río Negro estuary (ERN;  $n=10$ ).

Additionally, data on the presence of SRWs are compared to other regions along the Atlantic coast of South America in table 1.

Authors / Location	Summer			Autumn			Winter			Spring		
	J	F	M	A	M	J	J	A	S	O	N	D
São Paulo, Rio de Janeiro and Espírito Santo, Brazil (de Oliveira Santos <i>et al.</i> , 2001 )							x	x	x	x	x	x
Santa Catarina, South Brazil (Parmejane and Groch, 2006)					x	x	x	x	x	x	x	x
Uruguay (Piedra <i>et al.</i> , 2006)							x	x	x	x	x	
Río Negro province, Patagonia Argentina (This report)	x	x	x	x	x	x	x	x	x	x	x	x
Península Valdés, Patagonia Argentina (Sironi <i>et al.</i> , 2005)				x	x	x	x	x	x	x	x	x
Santa Cruz province, Patagonia Argentina (Iñíguez <i>et al.</i> , 2003)	x	x	x	x	x	x	x	x	x	x	x	x

Table 1: SRW presence in the Southwest Atlantic, from North to South.

### Group size and composition

In 62% of the sightings ( $n=308$ ), group size could be estimated accurately showing that groups contained on average 2 individuals ( $SD=0.45$ ;  $n=191$ ) ranging from one to seven (fig. 5). The average group size was similar over the different study areas (fig. 6). The maximum amount of whales counted at the same time in the same area was 12 observed in NPABSA (September 2007;  $n=1$ ) and NPAPB (June 2007;  $n=1$ ).

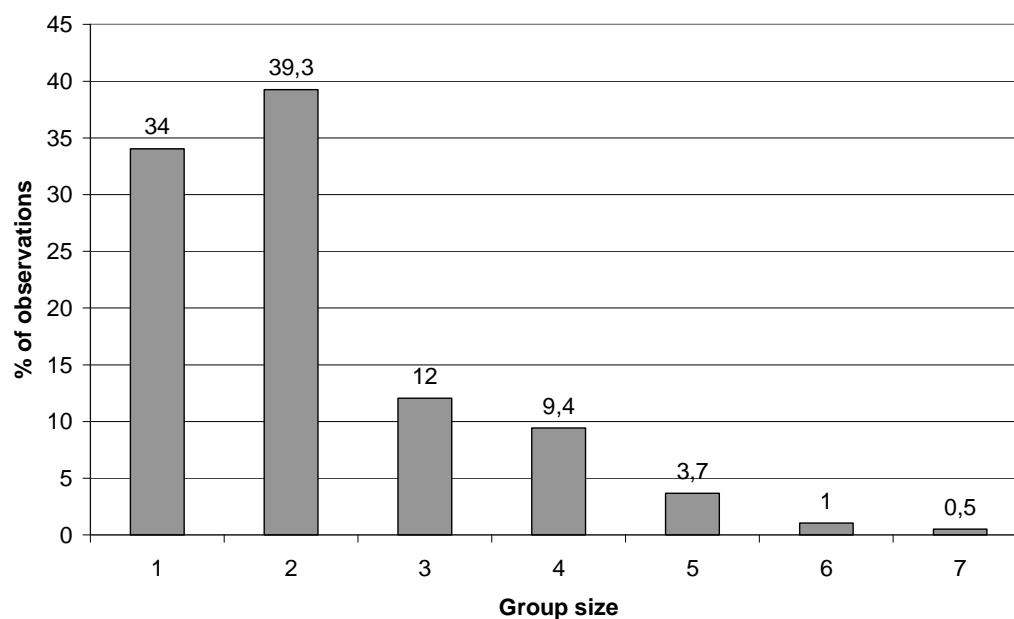


Figure 5: Group sizes of SRWs along the coast of Northeast Patagonia between 1991-2008 ( $n=191$ ).

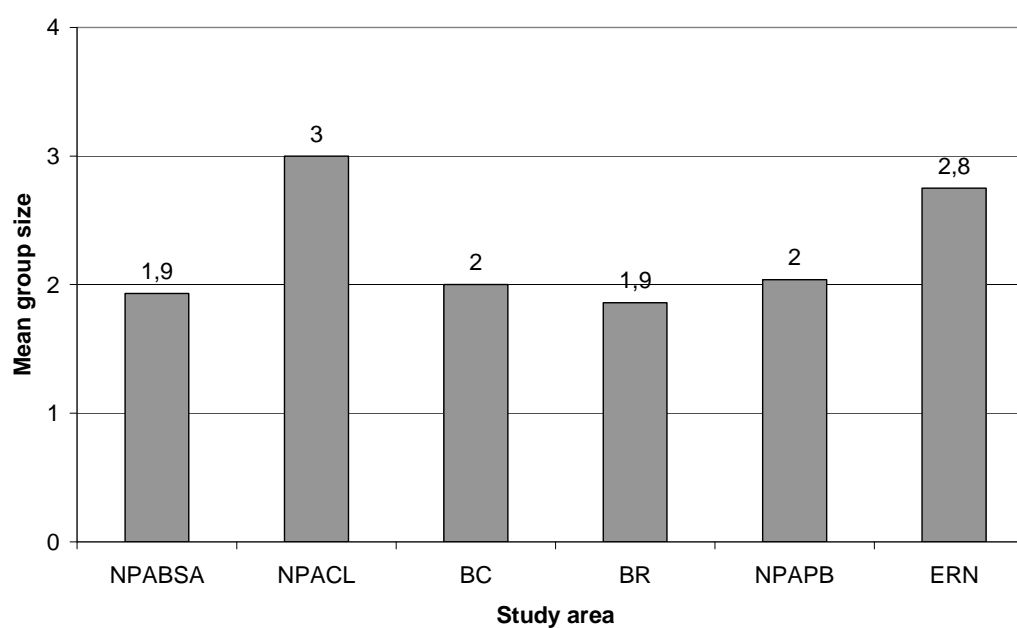


Figure 6: Mean group size for the different observation areas in Northeast Patagonia between 1991-2008 ( $n=191$ ). References: Natural Protected Area Bahía de San Antonio (NPABSA;  $SD=1.14$ ;  $n=68$ ), Natural Protected Area Caleta de los Loros (NPACL;  $SD=1.52$ ;  $n=28$ ), Bahía Creek (BC;  $SD=1.14$ ;  $n=7$ ), Bahía Rosas (BR;  $SD=0.69$ ;  $n=7$ ), Natural Protected Area Punta Bermeja (NPAPB;  $SD=0.98$ ;  $n=77$ ) and Río Negro estuary (ERN;  $SD=2.06$ ;  $n=4$ ).

Confident mother-calf pair observations represent only 11% of all sightings ( $n=308$ ) whereas up to 34% of the groups were observed without calves. Nevertheless, on 55% of the occasions, group composition could not be determined accurately (fig. 7).

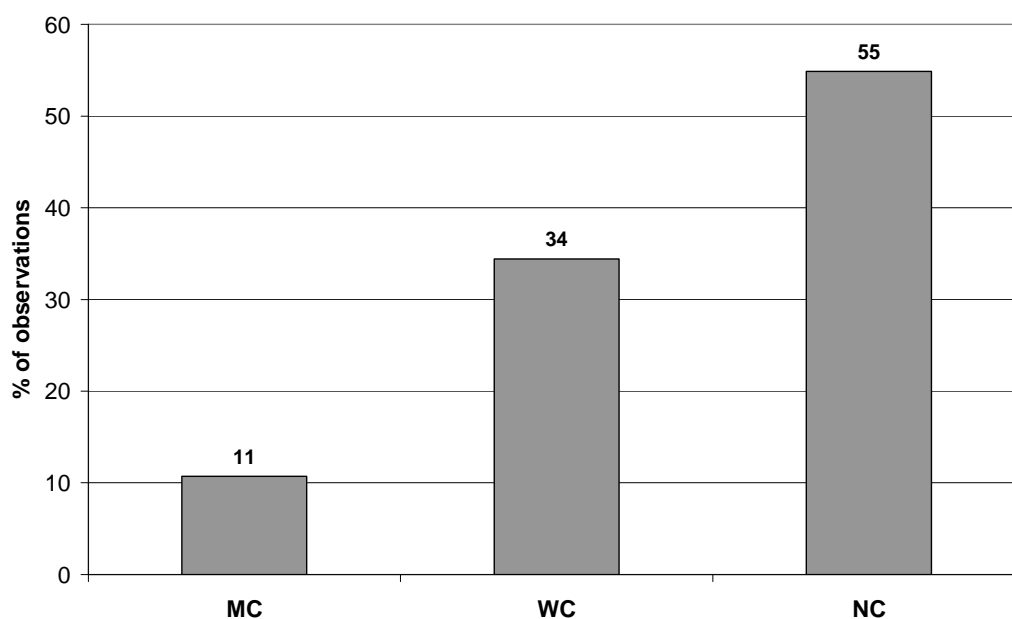


Figure 7: Group composition of SRW along the coast of the Río Negro province, Northeast Patagonia between 1991-2008 ( $n=308$ ; MC=group with calf; WC=group without calves; NC=not classified).

Figure 8 shows the presence of mothers and calves over the different months of the year in the NPABSA and NPAPB. Values for the other observation sites were negligible.

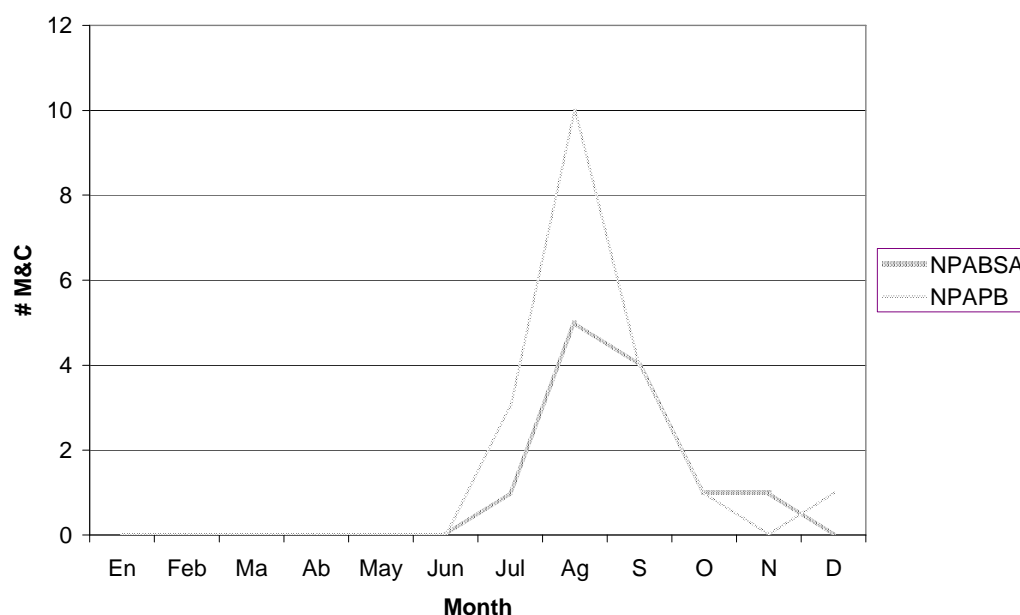


Figure 8: Tendency of SRW mothers and calves sightings in the Natural Protected Area Bahía de San Antonio (NPABSA) and Natural Protected Area Punta Bermeja (NPAPB) (1991-2008).

## DISCUSSION

In general, little is known about the presence of SRWs in the Southwest Atlantic outside of Península Valdés (Flores *et al.*, 2000; de Oliveira Santos *et al.*, 2001; Iñíguez *et al.*, 2003; Piedra *et al.*, 2006; Parmejane and Groch, 2006; Belgrano *et al.*, 2006, 2007; Palazzo and Groch, 2007). Data presented in this report provide the first information on the occurrence of SRWs along the northern coast of the Río Negro province, Northeast

Patagonia. Although it presents the combination of both systematic and occasional observations, uniting the effort of various authors, the amount of data obtained was noteworthy, recording over 300 SRW sightings.

The majority of sightings were observed in NPABSA and NPAPB, probably due to the higher observation effort in these areas. A comparable peak in sightings was found over the months August-September in all observation sites. This peak was also similar to the one observed along the southeastern coast of Brazil (Flores *et al.*, 2000; de Oliveira Santos *et al.*, 2001; Parmejane and Groch, 2006), Uruguay (Piedra *et al.*, 2006) and Península Valdés (Payne, 1986). Moreover, the exact peak in August coincides with the local peak of calf observations. Note that mother and calf pairs were only observed in the NPABSA and NPAPB. This matter, however, is discussed with the combination of the large amount of non-classified group compositions and the lower effort in NPACL, BC, BR and ERN.

During the period 1991-2008, SRWs could be seen at least once in every month of the year in one of the observation sites, although it must be said that data from the summer months were extremely scarce. When compared to other regions of the Southwest Atlantic, it is found that the presence of SRWs during the summer months was rarely found and/or was not published for many sites.

The presented preliminary data might show an increasing tendency of the presence of SRWs in Northeast Patagonia over the last decade. Although this might be a mere reflection of an increasing observation effort, a cause-response interaction between increasing sightings and increasing effort may not be denied. This hypothesis might be further supported by the similar evolution in sighting tendency along the different observation sites on the northern coast of the Río Negro province. Cooke *et al.* (2001) estimated an annual growth rate of 6.9% for the Argentine SRW population. This recovery might be reflected in the distribution of the SRWs and the reoccupation of historical wintering sites. Such hypothesis has been suggested for South Brazil (Flores *et al.*, 2000; de Oliveira Santos *et al.*, 2001), Uruguay (Piedra *et al.*, 2006) and Southeast Patagonia (Iñíguez *et al.*, 2003; Belgrano *et al.*, 2007), and might be suggested in Northeast Patagonia by this report.

Data are too preliminary however, to conclude whether or not the area is a reproduction area. Mothers with calves (MC) were recorded in only 11% of the sightings, therefore suggesting that the study area is not a main calving nor nursing ground. On the other hand, the large amount of unclassified group compositions (55%) combined with a mean group size of 2 individuals, might underestimate the quantity of MC in the area. The observed group sizes, however, do question the hypothesis of a breeding ground, as typical mating groups were found to be larger on average by Best *et al.* (2003). In any case, further research is needed to clarify this point of discussion, utilizing the methodology of photo-identification on a short term base to determine the importance of this region for the reproduction and/or migration of SRWs.

In Argentina, the SRW was declared 'Natural Monument' in 1984, protecting this species in waters under national jurisdiction. In the province of Río Negro, the SRW is being protected since 1997 by the provincial law 3130, additionally indicating the requirement to investigate the SRWs along the coasts under provincial authority. Recently in 2006, the SRW was declared 'Natural Monument' in Río Negro by the provincial law 4066 as was done previously in the other Argentine Patagonian provinces (Failla, 2004). With this law, a commercial whale-watching activity was approved by provincial authorities, as was the first legalization on 'immersion with whales' in Argentina. The effect of tourism based on cetaceans has been the aim of several workshops in the last years (IFAW, Tethys Research Institute and Europe Conservation, 1995; IFAW, WWF and WDCCS, 1997; IFAW, 1999; 2000) pointing out that there is a great individual variety of responses within and among cetacean species particularly while they reproduce, feed or migrate. It was therefore recommended that one should evaluate in each case and species the biggest quantity of possible impact factors (IWC, 1986).

At this point, the authorities of the Río Negro province are composing regulations and an accurate management plan for the approved whale-based tourism. For this reason, further systematic research should provide us with the information needed for the composition and implementation of such conservation measurements, especially for the actual touristic Natural Protected Area Bahía de San Antonio.

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