

# Southern right whales (*Eubalaena australis*): a new touristic attraction in the Natural Protected Area Bahía de San Antonio, Northeast Patagonia?

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## ABSTRACT

In Argentina, the southern right whale (SRW *Eubalaena australis*) was declared a 'Natural Monument' in 1984, protecting the species in waters under national jurisdiction. In the Northeast Patagonian province Río Negro, the SRW is being protected since 1997 by the provincial law 3130. Recently in 2006, this province declared the SRW as a 'Natural Monument' in the waters under their jurisdiction by the provincial law 4066. With this law, a commercial whale-watching activity was approved and regulated strictly by provincial authorities, as was the first legalization on 'immersion with whales' in Argentina. Data on the sighting frequency (SF), group size and group composition of SRWs were obtained during a preliminary study from March 2007 to February 2008 in the Natural Protected Area Bahía de San Antonio (NPABSA), the most touristic coastal town of this Northeast Patagonian province. Data indicate a peak SF in September with an explicit increase and decrease in the months before and after respectively. The majority of the whales visiting the area were solitary animals (47.7%) followed by non-surface active groups (non-SAG's; 25%), mothers and calves (M&C; 20.5%) and SAG's (4.5%). 2.3% of the whale groups could not be classified. Whales in the study area were mainly resting or in a slow travelling behaviour (63.4%). 22% of the whales were seen socializing whereas only few groups were believed to be engaged in a courtship behaviour (4.9%). These data might suggest that the area is not a main reproductive area, possibly favouring the region for a whale-based tourism. On the other hand, the unpredictability of their daily presence and the average distance between the whale and the shore raises questions on the viability of such a whale-based business.

**KEYWORDS:** SOUTHERN RIGHT WHALE, *EUBALAENA AUSTRALIS*, WHALEWATCHING, CONSERVATION

## INTRODUCTION

Southern right whales (SRWs *Eubalaena australis*) were highly hunted during several decades, resulting in their near extinction. As a consequence, they were the first whales to be protected internationally and their protected status is being maintained by the International Whaling Commission (IWC, 2001). Even though nowadays the population is growing (Best, 1990; Payne *et al.*, 1990; Cooke *et al.*, 2001), they are still commercially important, providing valuable tourism income to many countries worldwide, including Argentina (Hoyt, 2001).

Whale-watching is one of the most rapidly growing eco-tourism activities in the world. In many cases it helps to improve the appreciation towards marine wildlife but on the other hand, the rapid growth of this activity has raised concern about the effects it might have on the whales themselves. It is known to induce short-term behavioural changes but it still remains uncertain whether it induces long-term behavioural changes (Rivarola *et al.*, 2001).

In Argentina, the SRW was declared as a 'Natural Monument' in 1984, protecting the species in waters under national jurisdiction. In the Northeast Patagonian province Río Negro, the SRW is being protected since 1997 by the provincial law 3130. Recently in 2006, this province declared the SRW a 'Natural Monument' in the waters under their jurisdiction by the provincial law 4066, as was done previously by all the other provinces of Argentine Patagonia. With this law, Río Negro approved a commercial whale-watching activity and authorized the first legal 'immersion with whales' activity of 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 WDCS, 1997; IFAW, 1999 and 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).

Bearing in mind this recommendation, the presented study is aimed to obtain initial information on the SRWs in the Natural Protected Area Bahía de San Antonio (NPABSA), the most touristic coastal area of the Río Negro province, essential for the evaluation of the recent authorized whale-based tourism and the implementation of accurate conservation measurements.

## METHODS

### Study area

This study was conducted in the Natural Protected Area Bahía de San Antonio, located in the northern region of the San Matías Gulf (40°50'S 64°50'W), province of Río Negro, Patagonia, Argentina (fig. 1). This bay is known for its shallow waters and its high biodiversity of marine fauna. It counts on three urbanized areas and is the most touristic coastal region of the Río Negro province, receiving more than 300.000 tourists between November and March (Unpublished Information Ministry of Tourism, Province of Río Negro 2007).

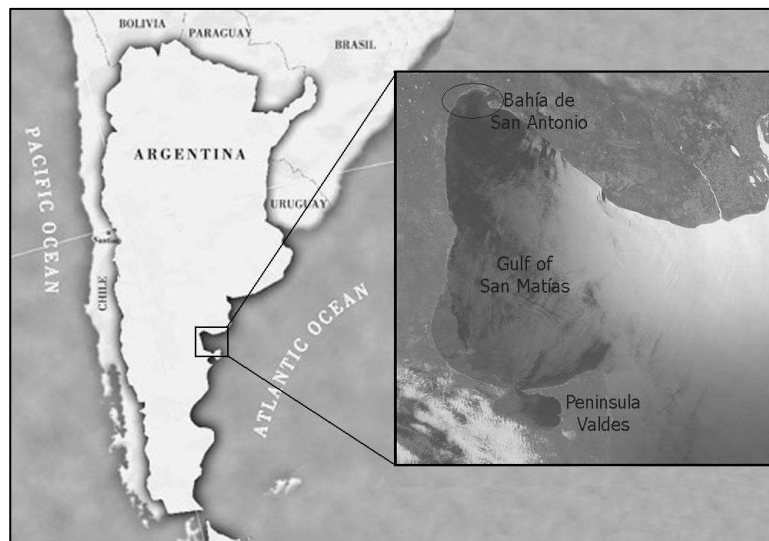


Fig. 1: Map of the coast of the Río Negro province, Patagonia Argentina, marking the study area Natural Protected Area Bahía de San Antonio.

### Sampling and analysis

Land-based observations were made from March 2007 until February 2008, using Nikon binoculars 8x40, a Kowa scope TSN-822 20-60x82 and a Kenko Volare scope 20x50. During these observations, data were taken concerning weather condition, sea state and time. Observations were cancelled with stormy weather (beaufort  $\geq 4$  or rainfall) due to the low sighting probability. Whales at more than 2km from the coast (estimated using several reference buoys) were registered as 'out of sight'.

Sighting frequency (SF) was defined simply as the amount of positive surveys per total amount of surveys per month. A 'whale group' was defined as individuals at a smaller distance, exhibiting the same general behaviour. When whale groups were seen, data were noted on group size and composition using following categories:

- (1) solitary whale
- (2) mother and calf (M&C), defined as an adult whale in close association with a whale notably smaller in size that presents orange coloured callosities
- (3) Surface Active Group (SAG), defined by their apparent courtship behaviour (see definition below; Kraus *et al.*, 2001)
- (4) non-SAG (Best *et al.*, 2003)
- (5) not classified (NC)

The main behavioural states were observed using the following categories (adapted from Taber and Thomas, 1982; Rowntree *et al.*, 1998; Best *et al.*, 2003)

(1) rest and slow travel (R and ST)

(2) medium and fast travel (MT)

(3) socializing, defined as two or more animals interacting at the surface with no apparent physical contact. Only in case of M&C, physical contact might occur.

(4) apparent courtship behaviour (SAG), defined as two or more animals (except M&C) interacting at the surface, less than one body length apart and with frequent physical contact (Kraus *et al.*, 2001)

(5) other

All statistical data were analysed using STATISTICA 6.0 and Zar (1996).

## RESULTS

A total of 127 surveys were conducted with an average observation effort of 4h/survey (SD=1.2), ranging between 1.7h and 7.3h, resulting in a total observation effort of 491h.

In total, 44 SRW groups (75 whales) were observed over the different months (fig. 2), with more than half seen in September (24 whale groups). The first whales were sighted inside the NPABSA as early as April but no steady build up was seen up to late July. A clear peak in SF (% of positive surveys) was found in September (71%) after which the SF declined again rapidly (fig. 2). Before August and after October 2007, the expectancy of surveys to result positive was less than 50%, although results for July, November and December might be biased by the low observation effort.

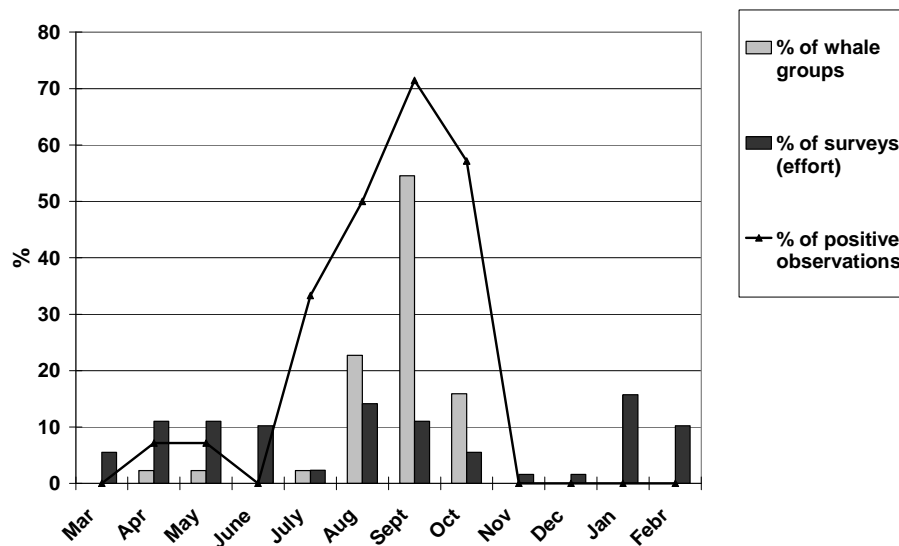


Figure 2: Percentage of observed whale groups ( $n=44$ ), percentage of surveys ( $n=127$ ) and % of positive surveys (SF) per month in Natural Protected Area Bahía de San Antonio, Patagonia, Argentina (2007).

Up to 47.7% of the observed whale groups ( $n=44$ ) consisted out of a solitary animal. Other group compositions were non-surface active groups (non-SAG's; 25%) consisting on average out of 2.3 individuals (SD=0.5), mothers and calves (M&C; 20.5%) and SAG's (4.5%) consisting out of 5 individuals (SD=1.4) on average. The composition of 2.3% of the whale groups could not be classified accurately (NC) (fig.3). In total, groups contained two animals on average (SD=1.14).

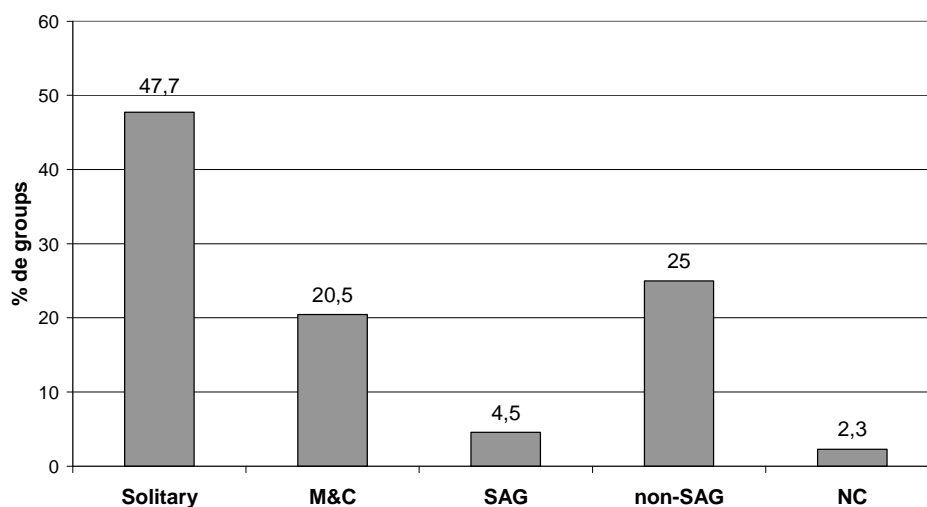


Figure 3: Group composition of SRWs in Natural Protected Area Bahía de San Antonio, Patagonia, Argentina, 2007 ( $n=44$ ).

Whales present in NPABSA were mainly resting or moving slowly from one site to another (63.4%;  $n=41$ ). 22% of the whales were seen to be socializing with each other, whereas only few groups were believed to be engaged in a real courtship behaviour (SAG; 4.9%) as was described by Kraus *et al.* (2001) and Best *et al.* (2003). About 7% of the observed whales were moving in medium or fast speed (MT) and 2% was engaged in another kind of behaviour (e.g. aerial activity) (fig. 4).

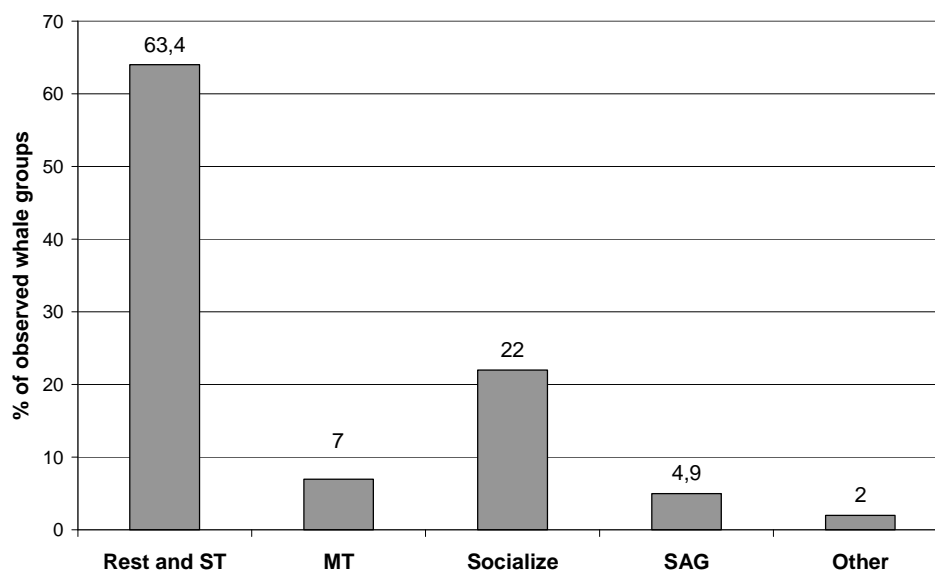


Figure 4: Main behavioural state of SRWs in Natural Protected Area Bahía de San Antonio, Patagonia, Argentina, 2007 ( $n=41$ ).

On 75% of the occasions ( $n=44$ ) the distance between the coast and the whales could be estimated using reference buoys, showing that up to 70% of the whales ( $n=33$ ) were observed at more than 1km from the shore, a rather large distance when compared to other locations (Payne, 1986; Best, 1990) but possibly explained by the overall shallowness of the bay.

## DISCUSSION

Preliminary data suggest that in 2007, September was the best month to see SRWs in NPABSA and that the sighting possibility before and after this month was notably lower.

With the SF we discuss to obtain preliminary information on the presence vs. absence of SRWs in the study area and the expectancy of our surveys to result positive, as it was our intention to evaluate the feasibility of a whale-based tourism in the area. This term does not take into account the amount of whales but merely reflects the frequency of positive surveys per month. A SF of '0' should therefore be interpreted with care, especially in the months November and December where a few whales were present in the NPABSA but, due to the low observation effort, were seen outside the surveys. Nevertheless, a similar abrupt decrease in SRW presence after October was also found in other regions on the northern coast of Rio Negro by Failla *et al.* (2008). In any case, data show the overall unpredictability of their daily presence, that, summed with the considerable distance at which whales were seen, might hinder a whale-based tourism and question its viability (Rivarola *et al.*, 2001).

The low amount of apparent mating groups (SAG's) might suggest in first instance that NPABSA is not a main breeding area, although data are preliminary. Furthermore, the relative low presence of M&C when compared to known calving grounds (Payne, 1990; de Oliveira Santos *et al.*, 2001, Sironi *et al.*, 2005), might also propose that the NPABSA is not a main calving nor nursing area, possibly favouring the region for a whale-based tourism, as it was reported that mothers and calves are the most vulnerable of all age-classes to the disturbance by human activity (Payne, 1986; Lundquist, 2007). In any case, further research is necessary to determine the importance of this area in the reproduction and/or migration of this species, since there is a general lack of information and understanding regarding these whales in this province despite the authorized whale-based tourism, making it therefore unfeasible at this point to create and maintain an accurate management plan.

This study provides first data on the ecology of SRWs in the NPABSA, Northeast Patagonia. We do discuss that this study, although including a large amount of effort, is concentrated on one year and on only a small area of the whole coastal jurisdiction of the Río Negro province. Nevertheless, the study area NPABSA includes the province's most touristic beaches, meaning that the need of information in this area is higher and the local implementation of conservation measurements towards SRWs a priority.

More research and effort is needed, as was requested by the provincial laws 3130 and 4066 (Failla, 2004), not only to evaluate the viability of a non-lethal use of SRWs in the province of Río Negro, but mostly to obtain information for the implementation of conservation measurements and accurate regulations. Moreover, such studies are necessary on a short term as it is still feasible to evaluate a touristic activity that is not being exploited nor promoted yet. It's to be hoped that management policies guided by research might create an educational, sustainable and economically viable industry with the least possible impact on the whales themselves.

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## REFERENCES

- Best, P.B. 1990. Trends of the inshore right whale population off South Africa, 1969 – 1987. *Marine Mammal Science* 6(2): 93-108
- Best, P.B., Scheaff, C.M., Reed, D., Palsboll, P.J. 2003. Composition and possible function of social groupings of southern right whales in South African Waters. *Behaviour* Vol. 140, 11-12.
- Cooke, J.G., Rowntree, V.J., Payne R. 2001. Estimates of Demographic parameters for southern right whales (*Eubalaena australis*) observed off Península Valdés, Argentina. *J. Cetacean Res. Manage.* (special issue) 2: 125-132.
- de Oliveira Santos, M.C., Siciliano, S., Pacheco de Souza, S., Pizzorno, J.L.A. 2001. Occurrence of southern right whales (*Eubalaena australis*) along southeastern Brazil. *J. Cetacean Res. Manage.* (special issue) 2, 153-156.

Donnelly, B.G. 1967. Observations on the mating behaviour of the southern right whale *Eubalaena australis*. *S. Afr. J. Sci.* 63(5):176-81.

Failla, M. 2004. Consideraciones generales sobre el potencial aprovechamiento turístico de la ballena franca austral (*Eubalaena australis*) en el golfo San Matías, Río Negro, Patagonia, Argentina. *Informe técnico de la Dirección de Fauna Silvestre de Río Negro, Ministerio de Producción. Gobierno de Río Negro*. 55pp.

Failla, M., Vermeulen, E., Carabajal, M., Arruda, J., Godoy, H., Lapa, A., Mora, G., Urrutia, C., Balbiano, A., Cammareri, A. 2008. Historical records of southern right whales (*Eubalaena australis*) of the province Río Negro, North Patagonia, Argentina (1991-2008). Paper SC/60/BRG1 presented to the International Whaling Commission, 2008.

Hoyt, E. 2001. Whale watching 2001: Worldwide tourism numbers, expenditures, and expanding socioeconomic benefits. *IFAW, Yarmouth Port, MA, USA*. 158 pp.

IFAW, Thethys Research Institute and Europe Conservation. 1995. *Report of the Workshop on the Scientific Aspects of Managing Whale Watching*, Montecastello di Vibio, Italy. 40 pp.

IFAW, WWF, and WDCS. 1997. *Report of the International Workshop on the educational Values of Whale Watching*, Provincetown, Massachusetts, USA. 40 pp.

IFAW. 1999. *Report of the Workshop on the Socioeconomic Aspects of Whale Watching*, Kaikoura, New Zealand. 88 pp.

IFAW. 2000. *Report of the Closing Workshop to Review Various Aspects of Whale Watching*, Tuscany, Italy. 103 pp.

International Whaling Commission 1986. Behaviour of Whales in Reaction to Management. Report of the Scientific Committee. *Rep. int. Whal. Commn.* (special issue 8).

International Whaling Commission 2001. Report of the workshop on the comprehensive assessment of right whale. *J. Cetacean Res. Manage* (special issue) 2:1-60

Kraus, S.D., Hatch, J.J. 2001. Mating strategies in the North Atlantic Right Whale (*Eubalaena glacialis*). *J. Cetacean Res. Manage.* (special issue) 2: 237-244.

Lundquist, D.J. 2007. Behaviour and movement of southern right whales (*Eubalaena australis*): effect of boats and swimmers. Thesis submitted to the Office of Graduate Studies of Texas A&M University in partial fulfilment of the requirements for the degree of Master of Science.

Payne, R. 1986. Long term behavioural studies of the southern right whale, *Eubalaena australis*. *J. Cetacean Res. Manage.* (special issue) 10:161-167.

Payne, R., Rowntree, V., Perkins, J.S., Cooke, J.G., and Lankester, K., 1990. Population size, trends and reproductive parameters of right whales (*Eubalaena australis*) off Península Valdés, Argentina. *Rep. int. Whal. Commn.* (special issue) 12:271-8.

Rivarola, M., Campagna, C., Tagliorette, A. 2001. Demand-driven commercial whale-watching in Península Valdés (Patagonia): conservation implications for right whales. *J. Cetacean Res. Manage.* (special issue) 2: 145-151.

Rowntree, V.J., MxGuinness, P., Marshall, K., Payne, R., Sironi, M., Seger, J. 1998. Increased harassment of right whales (*Eubalaena australis*) by kelp gulls (*Larus dominicanus*) at Peninsula Valdés, Argentina. *Marine Mammal Science* 14(1):99-115.

Sironi, M., Schteinbarg, R., Losano, P., Carlson, C. 2005. Sustainable whale-watching at Península Valdés, Argentina: An assessment by owners and captains of local whale watch companies. Paper SC/57/WW2 presented to the International Whaling Commission, June 2005. 9pp. [Available from [secretariat@iwcoffice.org](mailto:secretariat@iwcoffice.org)].

Taber, S.M. and P.O. Thomas. 1982. Calf development and mother-calf spatial relationships in southern right whales. *Animal Behavior* 30:1072-1083.

Zar, J. H. 1996. Biostatistical analysis. *Prentice-Hall*. 662 pp.