

# Short Communication:

## Rare record of a southern right whale (*Eubalaena australis* Desmoulins, 1822) with calf in Ilhéus, Bahia, northeastern Brazil

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Southern right whales (*Eubalaena australis*), especially mother and calf pairs, show high fidelity to their breeding grounds (Bannister, 1990; Best, 1990; Burnell and Brydem, 1997; Best, 2000; Rowntree *et al.*, 2001; Groch, 2005). In the Southwest Atlantic, its main breeding occurs in the coastal waters of the Valdés Peninsula in Argentina (Payne, 1986; Payne *et al.*, 1990) and in southern Brazil (Groch *et al.*, 2005; Klinowska, 1991) (Fig. 1). About 11% of the whales photo-identified in Argentina are re-sighted in Brazil (Best *et al.*, 1993; Groch, 2005; Groch and Flores, 2013) and it seems that Southwest Atlantic southern right whales could be one population with small significant genetic differences between the two winter breeding grounds (Ott, 2002, Carroll *et al.* 2020). Although the status of the global population is considered as Least Concern by the IUCN, with an estimated 13,600 individuals in 2009 (Cook and Zerbini, 2018), the southern right whale is still considered a threatened species in Brazil (Groch *et al.*, 2018; Portaria No. 444, de 17 de Dezembro de 2014), where it can be seen from Rio Grande do Sul (32°S) to Bahia states (13°S) (Richard, 2009). However, they are mainly present on the Santa Catarina state coast, between the south of Florianópolis (27°25'S, 48°30'W) and Cabo de Santa Marta (28°36'S, 48°48'W) (see Fig. 1, Southern Brazil Breeding ground) (Morais *et al.*, 2015). In Brazil there is an estimate of 555 individuals of southern right whales (Groch 2005), of which 200 are reproductive females (Projeto Pro Franca; Groch *et al.*, 2018).

This note reports an unusual observation of a mother and calf pair of southern right whales on 27 July 2021 off the coast of Ilhéus, Bahia state, northeastern Brazil. The sighting was made from a 29ft cruiser boat (brand *Cabrasmar*), with a 225HP inboard engine, during a whale watching tour in a humpback whale (*Megaptera novaeangliae*) breeding area. This area is 1,800km north of the main Brazilian reproductive area for southern right whales (Fig. 1). The sighting lasted from 09:07 to 09:15. At 09:09 a DJI mini 2 drone was launched for commercial recording. Flight duration was 6 minutes from take-off to end of observation. The flight altitude was between 106 and 121m above sea level following national regulations (Portaria No. 117, de 26 de Dezembro de 1996). Video recording and photos were taken with  $\times 1$ ,  $\times 2$  or  $\times 4$  digital zoom. The video was recorded in HD (1920  $\times$  1080 pixels), and the pictures were taken with a resolution of 4000  $\times$  3000 pixels. Video recording duration was 3min 23sec. Speed and GPS positions of the whales were recorded by the drone when flying directly above them. Mean swimming speed was measured using a Haversine formula for distance calculation between two GPS positions at a 5sec sampling frequency. Conditions for swimming speed measurement were available over a 40sec period. The presence of a calf was confirmed by drone. Body length of the calf relative to adult length was calculated using distance from the tip of the rostrum to the notch of the fluke using a Photoshop ruler tool on a unique footage print screen. We were then able to measure the length of both whales by recording with the same drone the image of a 5m long reference object (a ruler), flying at the same altitude and using the same digital zoom.

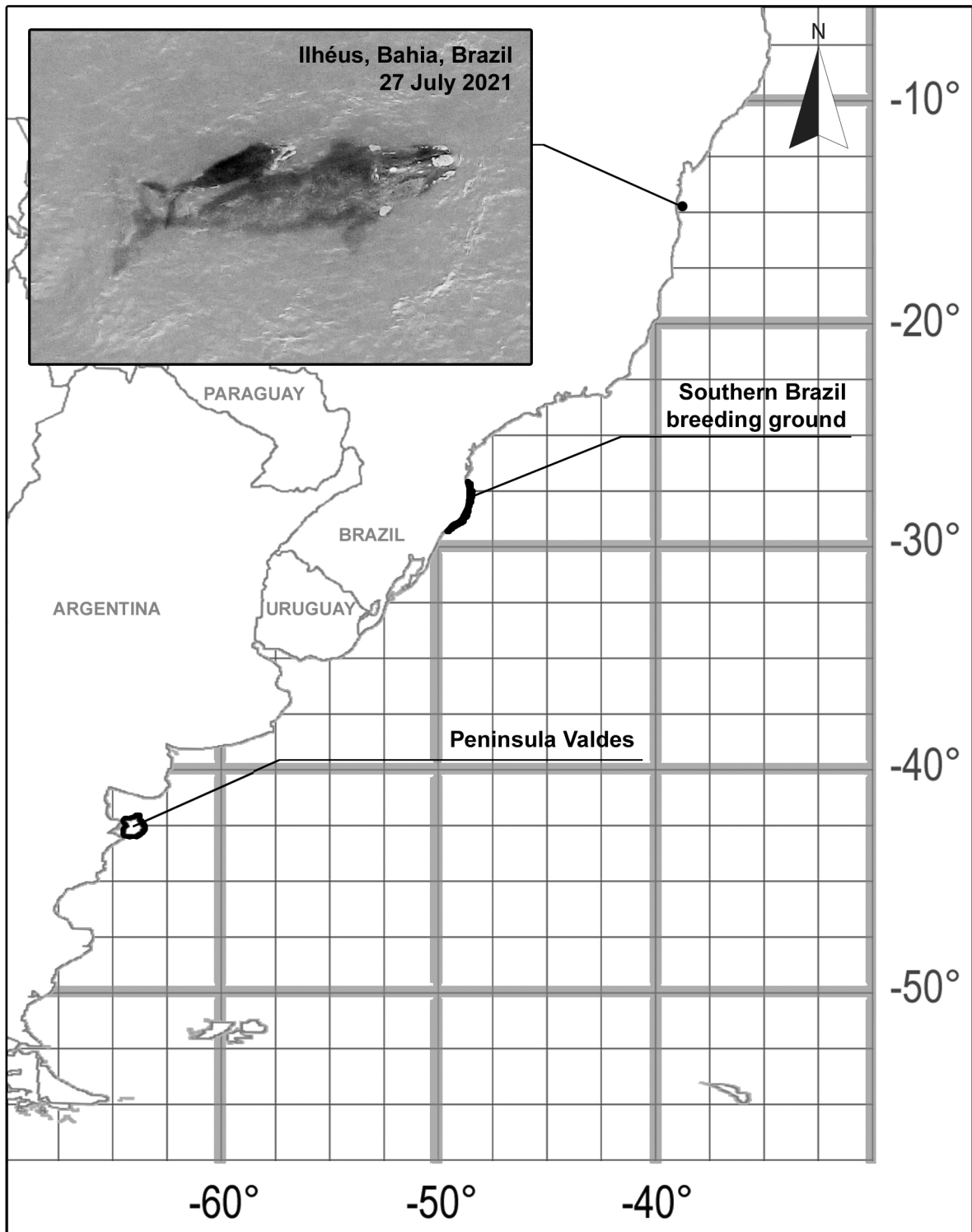


Fig. 1: Photo of southern right whales observed with localisation (black dot) and distribution of usual eastern South American high density breeding grounds of the species: the southern Brazil breeding ground and Peninsula Valdés. One degree of latitude corresponds to 60 n. miles or 111.12km.

The recording was made from  $14^{\circ}45.81'S$ ,  $38^{\circ}58.45'W$  to  $14^{\circ}45.34'S$ ,  $38^{\circ}58.64'W$  at a distance of 6.5km from the coast. The calf was approximately 41% of the female's length (Fig 1). Rostrum to notch lengths of calf and female were approximately 6m and 14.5m, respectively. Using an average size at birth of 5.30m (SD = 0.23) and a growth rate of 3.2cm d<sup>-1</sup> (SD = 0.45) (Christiansen *et al.*, 2018), we estimate that the observed calf was about 22 days old. During the sighting, the whales were floating on the surface, breathing and moving away from the

boat (North–Northwest direction). Drone footage showed the following behaviour sequence. First the calf was swimming towards the mother, moving away from the boat. The female was at a distance of 200 to 250m from the boat based on drone flying data. They then made a sharp turn (approximately 45° to the left in the opposite direction of the boat) and swam at a mean speed of 12.5 km/h (SD = 3.2; Min = 7.7 km/h; Max = 15.5 km/h). Instantaneous speed was 7.2 and 14.4 km/h. The measured speed was higher than the speed of 0.4 to 3.66 km/h reported for undisturbed whales (Best, 2000; Burnell, 2001; Lundquist *et al.*, 2013). This speed remains biologically plausible, as the speed of a southern right whale has been estimated to be 15–17 km/h during foraging behavior on the west side of the Antarctic Peninsula. (Hamner *et al.*, 1988). Underwater, the calf was aligned above the female’s tail and appeared to make no caudal movement. Just before breathing, the calf would go to one side or the other of the female’s tail. Numerous large white bands were present on the calf’s tail, probably remora fish.

Southern right whale cow-calf pairs are generally observed closer to shore and in shallow water. In Brazil, southern right whales are observed mainly between 0.5 and 9km from shore, in water shallower than 10m (Danilewicz *et al.*, 2016). Our record at 6.5km of the coast with a depth of 30m corroborates previous recordings. Few observations of this species have been made in the state of Bahia. Since 1990, southern right whales have been regularly observed in the Abrolhos bank, approximately 350km south of Ilhéus (Engel *et al.*, 1997; Seminara *et al.*, 2019). Currently, an average of three groups is sighted each year at the Abrolhos bank, as reported by Silva (2013). During 2021, two sightings of southern right whale mother-calf pairs were made ‘on the way to the Abrolhos bank’ meaning further South than Bahia state and heading North (Karina Groch, Instituto Australis, pers. comm. 27 July 2021). Another potential record of a southern right whale was reported between Caravelas, Bahia, Brazil and Abrolhos marine park on 20 or 21 August 2021 (Milton Marcondes, Projeto Baleia Jubarte, research coordinator, pers. comm.). The adult female observed in Ilhéus had a callosity pattern very similar to an individual sighted in Abrolhos in 2002 (Karina Groch, Instituto Australis, pers. comm.). As altitude imposed on any UAVs flying above and around cetaceans without specific licence is high: 100 and 150m by Brazilian law and good practice guidelines, respectively, being the same limit for airplane and helicopter (Portaria Nº 117, de 26 de dezembro de 1996), no clear identification could be done. The northernmost record in the western Atlantic

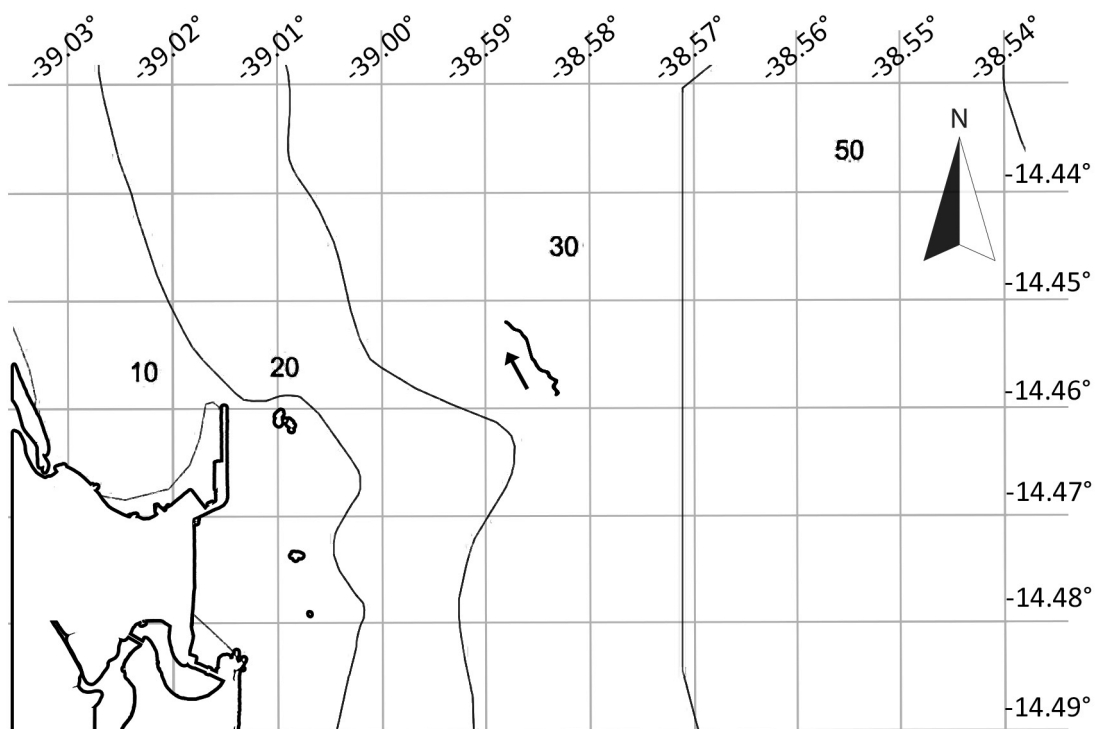


Fig. 2: View of the drone’s flight above the mother-calf pair of southern right whales. Representation made from the drone’s flight log. The black arrow indicates the direction of movement of the whales. One minute of degree of latitude corresponds to one n. mile or 1.85km.

of this species was in 2001, in Salvador, close to 13°S (Van Waerebeek, 2008 citing Baracho *et al.*, 2002). The northernmost southern right whale record in the eastern Pacific was made off Lima, Peru at 12°10.03'S; 77°02.28'W (Orihuela and Cortegana-Arias, 2013; García-Cegarra *et al.*, 2020). In South Africa, small-scale changes in the distribution patterns of southern right whales have been observed, mainly due to population growth (Elwen and Best, 2004). Southern right whale sightings at low latitudes may indicate that the end of whaling activity and full protection of the species are allowing populations to recover and repopulate ancient breeding grounds in the South Pacific and South Atlantic Oceans (Santillan *et al.*, 2004; Silva, 2013). This hypothesis is supported by a 29.8% estimated population growth rate for calving females in southern Brazil between 1997 and 2003, a rate biologically unrealistic if reproduction is the only source of population growth rate (Groch *et al.*, 2005). It has been suggested that this relatively rapid increase of the number of calving females is a consequence of immigration from other wintering grounds, such as Peninsula Valdés (Groch *et al.*, 2005). With the number of whales increasing, they are probably expanding their distribution throughout their historical 2,400km range from Bahia to Santa Catarina States (Groch *et al.* 2005 citing Ellis 1969).

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