



Recent strandings of sperm whale, *Physeter macrocephalus*, in southern Peru

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On early hours of 03 July 2015 a cetacean stranded at the Llostay Beach (18°10'26"S, 70°38'36"W), department of Tacna, in the Peruvian southern coast (Figure 1). The cetacean was a sperm whale (*Physeter macrocephalus*) with an injury in the anterior portion of the mandible. Before examining the carcass, teeth were extracted by fishermen and a portion of the left caudal fluke was cut for unknown reasons.

The lower jaw exhibited 21 pairs of functional teeth. Measurements of the animal followed Norris (1961) (Table 1). Sex was identified as female based on the presence of mammary slits on each side of the urogenital slit, which are not present in males of this species (Clarke, 2005) (Figure 2). No additional measurements were taken prior to carcass burying by local authorities. Using Lockyer's formula (1976), body weight was estimated at 5.35 metric tons. The specimen was likely sexually immature based on total length of sperm whale females, that reach sexual maturity at 8.3-9.2m (Shirihai and Jarrett, 2006). Female sperm whales from the Southeast Pacific Ocean become sexually mature at 6.5 years of age, and length of 8.2m (Clarke *et al.*, 2011). Physical maturity, however, is attained at about 30 years of age and 10.6m of length (Whitehead, 2009). In the southeast Pacific, sperm whales reach physical maturity at an age of 33.5 years and a length of 11.2m (Clarke *et al.*, 2011). Therefore, the sperm whale that stranded in Peru was likely a physically immature female.

This stranding took place during an El Niño Southern Oscillation ENSO event¹. According to the Peruvian Sea Institute² an anomalous surface sea temperature of +2.19°C took place in the far south of Peru during the first four days of July, when the stranding occurred. Anomalous sea surface

temperatures have been linked with sperm whale occurrences in Peruvian waters (García-Godos, 2006; Pizarro-Neyra, 2010). On the other hand, the cause of death remains unknown. Although ship strikes and fish net entanglement have been documented as causes of death of sperm whales in South America (Van Waerebeek *et al.*, 2007, García-Godos *et al.*, 2013), in this case the connection between these events is not supported by evidence.

Prior to this event, a sperm whale stranded in 2009 at Los Palos Beach (18°17'S, 70°27'W), 21km to the south in a straight line (Pizarro-Neyra, 2010). In southern Peru at least six sperm whale strandings have occurred in the last fifteen years (Table 2). Furthermore, an important number of sperm whale strandings took place in Ecuador and Chile during the last thirty years (Chiuliza *et al.*, 1998; Galletti and Cabrera, 2007). However, the relationship of these facts with ENSO events is not clear. A new sperm whale stranding occurred during the morning of 03 September 2015 in Pozo de Lizas Beach, department of Moquegua (17°42'S, 71°20'W), southern Peru. The specimen was an immature male with a length of 12.4m and died after four hours of landing. The cause of the stranding was entanglement in a fishing gear with a buoy.

¹NOAA (2015) *ENSO: Recent evolution, current status and predictions*. Update prepared by Climate Prediction Center / NCEP 6 July 2015 http://meteorologia.florianopolis.ifsc.edu.br/webmeteoro_ifsc/40e92c96e271b39eef29a2e38a7f1be/reuniao_climatica/imagens/enso_evolution-status-fcsts-web.pdf

²IMARPE (2015) *Boletín semanal de la temperatura superficial del agua de mar (°C) en el litoral peruano*. N°25/2015, período: 01-07 de julio del 2015. Laboratorio de Hidrofísica Marina /LHFM. <http://www.imarpe.pe/imarpe/archivos/boletines/imarpe_bltsm_tsm_sema25_2015.pdf> Consulted on 11 November 2015.



Figure 1. Female sperm whale stranded at Llostay Beach, Tacna, southern Peru.



Figure 2. Mammary slits of the sperm whale stranded at Llostay Beach, Tacna, southern Peru.

Table 1. Measurements of a female sperm whale, *Physeter macrocephalus*, stranded in July 2015 at Llostay Beach, Peru.

Measurement	Record (m)
Length, total, from anterior tip of the rostrum to the notch of the caudal flukes	8.20
Length from anus to notch of caudal flukes	1.60
Length from the tip of upper jaw to anterior insertion of flipper	1.28
Length of left flipper (anterior insertion to tip)	0.79
Width of left flipper	0.32
Width of the right caudal fluke	1.08

Table 2. Sperm whale, *Physeter macrocephalus*, strandings in southern Peru (2001-2015). NA = not available

Date	Locality, Department	Sex	Source
Winter 2001	Mejía, Arequipa	Female	Zanabria ³
July 2009	Pozo de Lizas, Moquegua	Male	García-Godos <i>et al.</i> (2013)
December 2009	Los Palos, Tacna	Male	Pizarro-Neyra (2010)
Summer 2012	Mollendo, Arequipa	NA (calf)	García-Godos <i>et al.</i> (2013)
July 2015	Llostay, Tacna	Female	This work
September 2015	Pozo de Lizas, Moquegua	Male	This work

³Zanabria, U. (2010) Lista de especies de mamíferos marinos que frecuentan el Área Marino Costera del Santuario Nacional Lagunas de Mejía. Page 49 in Abstracts, *II Congreso de la Sociedad Peruana de Mastozoología*, 12-16 September 2010, Arequipa, Peru.

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