

# BODY CONDITION OF THE PENÍNSULA VALDÉS RIGHT WHALE CALVES: A PRELIMINARY STUDY

Carina F. Marón,<sup>1,2\*</sup> Robert Ward,<sup>3</sup> Luciano O. Valenzuela,<sup>1,2</sup> Mariano Sironi,<sup>2,4,5</sup> Andrea Chirife,<sup>5</sup> Matías Di Martino,<sup>5</sup> Victoria J. Rowntree,<sup>1,5,6</sup> Marcela Uhart,<sup>5,7</sup> and Jon Seger<sup>1</sup>

<sup>1</sup>*University of Utah, Department of Biology, Salt Lake City, Utah, 84112, USA*

<sup>2</sup>*Instituto de Conservación de Ballenas, Capital Federal, Buenos Aires, 5411, Argentina*

<sup>3</sup>*Utah State University, Department of Nutrition, Dietetics, and Food Sciences, Logan, Utah, 84322, USA*

<sup>4</sup>*Universidad Nacional de Córdoba, Córdoba Capital, Córdoba, 5000, Argentina*

<sup>5</sup>*Programa de Monitoreo Sanitario Ballena Franca Austral, Puerto Madryn, Chubut, 9120, Argentina*

<sup>6</sup>*Ocean Alliance/Whale Conservation Institute, Gloucester, Massachusetts, 01930, USA*

<sup>7</sup>*Global Health Program, Wildlife Conservation Society, Puerto Madryn, Chubut, 9120, Argentina*

## ABSTRACT

An animal's reproductive success can be affected by a decline in food availability. Southern right whale females that calve off Península Valdés (PV), Argentina, have experienced high rates of calving failure as indicated by: a) having fewer calves than expected (longer calving intervals), and b) high calf mortality on their PV nursery ground.<sup>1,3</sup> Previous studies found that the PV whales experience longer calving intervals following El Niño events, when the abundance of Antarctic krill (a primary prey for the whales) declines.<sup>3</sup> However, it is still unknown whether malnutrition is playing a role in the large numbers of calves that have died at PV since 2005 (501 dead calves).

Krill contain essential polyunsaturated fatty acids (PUFA) that mammals require for gestation and lactation.<sup>2,4</sup> The nutritional value of Patagonian copepods, an alternative prey of the whales, remains unknown. A goal of my research is to determine whether calves that die at PV show signs of malnutrition. Fatty acid profiles and blubber thickness of calves were compared between calves that died in years with low (2003, 2004 and 2006) and high mortality rates (2005, 2007-2012). The proportion of PUFA increases with calf length, regardless of whether calves died in years of low or high mortality. This result indicates that the nutritional condition of calves improves during their first months of life. Calf blubber was thinner in high mortality years suggesting a decline in prey abundance in these years.

## ACKNOWLEDGEMENTS

We thank Denise Dearing and Colleen Farmer for helpful comments and discussions. The authors thank the Programa de Monitoreo Sanitario Ballena Franca Austral for sample collection. We also thank Roxana Schteinberg, Diego Taboada and all Instituto de Conservación de Ballenas volunteers for their logistic and institutional support. This work was supported by funds from Nagoya Fund (University of Utah, International Center), Conservation, Research and Education Opportunities International (CREOI), American Cetacean Society (ACS), Animal Behavior Society (ABS), Society of Marine Mammalogy, The Global Change and Ecosystem Center (GCEC). Field work was conducted under permits #38/10 and #83/11 from Dirección de

Fauna y Flora Silvestre de Chubut and #211/10 and #178/11 from Secretaría de Turismo y Áreas Protegidas and Organismo Provincial de Turismo, Chubut Province. Samples were exported from Argentina under permits Ministerio de Salud y Ambiente CITES Export Permit #035836, 035837, 035838 and imported into USA under permits NMFS-US CITES Import Permit #11US082589/9.

## **LITERATURE CITED**

- 1- International Whaling Commission. 2010. Report of the Southern Right Whale Die-Off Workshop. IWC Document SC/62/Rep, Centro Nacional Patagónico, Puerto Madryn, Argentina; Pp. 1-46.
- 2- Iverson SJ. 1993. Milk secretion in marine mammals in relation to foraging: can milk fatty acids predict diet? *Symp Zool Soc Lond.* 66:263-291.
- 3- Leaper R, Cooke J, Trathan P, Reid K, Rowntree V, Payne R. 2006. Global climate drives southern right whale (*Eubalaena australis*) population dynamics. *Biol Lett* 2(2):289-292.
- 4- Oftedal O. 2000. Use of maternal reserves as a lactation strategy in large mammals. *Proc Nutr Soc* 59:99-106.