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Acoustically derived growth rates of sperm whales (*Physeter macrocephalus*) around Ischia and Ventotene Islands (Italy): preliminary results

Measuring the size of individuals and quantifying their growth are fundamental to answering many ecological questions.

Acoustic methods for estimate the size of sperm whales (*Physeter macrocephalus*) by measuring the inter-pulse interval (IPI) of their clicks have been applied in some different studies; however, very few data on the growth rate of sperm whale individuals in the Mediterranean Sea is available to date.

We recently started to apply this method to recordings made around Ischia and Ventotene Island (Tyrrhenian Sea), Italy, in order to estimate the size and the growth of sperm whales that have been photo-identified and recorded at least two times in two different years between 2004 and 2012. This dataset includes 20 whales of different sex and age class.

Two individuals - one of unknown sex named 'Norma' and one immature male named 'Brunone' - were the first whales that we analysed over three years (2004-2005-2006). IPIs were manually derived (using Rainbow Click Software) from a limited number of clicks (out of a total of 283.932 clicks) selected through a simple random sampling. Body lengths were estimated using different formulas (Clarke, 1978; Gordon, 1991; Goold, 1996; Growcott, 2011).

Unconcernedly from the applied formula, both whales showed: a) a similar length in 2004; b) an increasing IPI over time, with an estimated growth rate between 0 and 0,227; c) a quicker growth rate between 2005-2006 than 2004-2005. Furthermore, the immature male Brunone seems to grow up significantly faster than the other whale Norma.

To proceed with the analysis of the other individuals of the dataset, we will use automatic methods to generate IPIs in order to match results with our manually derived preliminary findings.

Primary author: PACE, Daniela Silvia (University of Rome 'La Sapienza', Department of Environmental Biology - Italy and Oceanomare Delphis Onlus, Rome - Italy)

Co-authors: MIRAGLIUOLO, Angelo (Oceanomare Delphis Onlus, Rome - Italy); MUSSI, Barbara (Oceanomare Delphis Onlus, Rome - Italy); VIVALDI, Carlotta (Oceanomare Delphis Onlus, Rome - Italy); DERNOWSKI, Richard (Oceanomare Delphis Onlus, Rome - Italy)

Presenter: PACE, Daniela Silvia (University of Rome 'La Sapienza', Department of Environmental Biology - Italy and Oceanomare Delphis Onlus, Rome - Italy)