DCLDE Rotterdam 2024

ABSTRACTS

Commando Materieel en IT
Ministerie van Defensie

Ministerie van Landbouw,
Natuur en Voedselkwaliteit

TNO

Rijkswaterstaat
Ministerie van Infrastructuur en Waterstaat

SOUND &
MARINE LIFE
PROGRAMME

BOEM BUREAU OF OCEAN ENERGY MANAGEMENT

Fisheries and Oceans Canada

Pêches et Océans Canada

Calling Behavior and Localization of Blue Whales in Southern California

G.M. Arrieta[1*], S. Wiggins[1], K.K. Cohen[1], B.J. Thayre[1], A. Širović[2], S. Baumann-Pickering[1]

[1]*Scripps Institution of Oceanography, University of California, San Diego, La Jolla, CA 92037, USA*

[2]*Department of Biology, Norwegian University of Science and Technology, 7491 Trondheim, Norway*

**garrieta@ucsd.edu*

Blue whales, Balaenoptera musculus, are a protected species and with a changing ocean the continual monitoring of these whales has become increasingly important. Blue whales produce low frequency sounds including short (1-4 s) down-sweeping D calls, commonly associated with foraging. This study used long term passive acoustic monitoring to investigate a new sequence of D calls observed in data collected between 2007 and 2020 in Southern California. D calls were detected using a combination of automated and manual methods in which a detector was run on the data and then verified by a skilled analyst. Blue whale D calls are often variable in time and in frequency, therefore the presence of sequential D calls has not been documented. Sequences were present in all years of this time series, but the highest number of sequences per year and per day was in 2019. Yearly, seasonal, and diel trends of all D calls and D call sequences were investigated to understand the occurrence of this newly reported call type. In addition, 28 D call sequences were characterized in detail and localized from two hours of data to understand their patterning and spatial distribution. The D calls during this time had an average 7.3 s +/- 1.7 s inter-call interval within a sequence and 7 calls +/- 1 call per sequence. The localization resulted in 194 locations for all D calls and an average location for each sequence. Average locations were scattered within a 250 m by 350 m area, indicating that an individual whale may be producing the sequences. Using the location for each call, source level was computed using received level and transmission loss. The average root mean square source level calculated over 30 to 80 Hz was 162.3 +/- 2.2 dB re 1µPa at 1 m. By combining both observations of calling behavior and localizations, we can gather insight into the temporal and spatial behavior of blue whales when emitting D call sequences. Understanding the occurrence of D calls is integral for getting accurate density estimation numbers for blue whale populations all over the world.