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TITLE: Acoustic ground truthing of seismic noise in Chatham Rise, New Zealand

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ABSTRACT:

Noise generated by seismic survey is widely recognised as a pervasive pollutant to marine ecosystem. Between the 31st January and 21st March 2016, a geophysical research survey was conducted in Chatham Rise, New Zealand, to collect seismo-acoustic data using a Sercel seismic streamer in order to ground-truth the underwater noise impact assessment, conducted according to the DOC (NZ) Seismic Survey Code of Conduct. Data were analyzed to determine the received sound level at a distance up to 3 km from the source array. This paper establishes the method to predict the impact radii in order to validate the results obtained using Gardline 360M predictive model. The aim was to provide confidence to the capability of predictive modelling for estimating the impact zone of a seismic sound source. Data showed that multipath reflections can fluctuate significantly according to the seafloor topography; however, a very consistent trend can be obtained from direct propagation to confidently establish mitigation radii. Results show that the employment of a seismic streamer for the establishment of effective mitigation radii is technically feasible and may be used as a tool to ground truth predictive modelling as part of mitigation plans to reduce the potential risk of acoustic trauma.

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