The Vertical Distribution of the Deepwater Coral *Lophelia pertusa* Derived from ROV Riser Inspection Videos

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The petroleum industry routinely collects video data using remotely operated vehicles (ROVs) when inspecting subsea equipment. Examples include: riser inspections, pipeline surveys, and pre-bottom clearances. These videos potentially contain valuable biological information. In this study we used ROV riser inspections of 14 production risers beneath the Shell Mars platform located in Mississippi Canyon block MC807A. The number of colonies of the cold water water coral *Lophelia pertusa* were estimated from video. Percent cover was measured at 10 m vertical intervals on each riser. Mean colony abundance was estimated by averaging the colony density within 10m vertical intervals over 14 risers. The results show that *L. pertusa* has a well-defined Gaussian distribution between ~280 – 700 m with a mode at 490m. Climatological profiles of temperature and salinity were combined with mean current velocity data from the ADCP on Mars (2005 – 2013) to develop a generalized additive model prediction colony abundance. The resulting model had an adjusted R^2 of 0.978 and used depth, minimum temperature, and mean current velocity as predictor variables. The model is currently being validated using data on *Lophelia* abundance measured at another platform. These results provide an estimate of where *Lophelia* will settle and grow given a uniform hard surface that extends throughout the water column. Similar insights into the vertical distributions of other coral and encrusting invertebrates can be extracted from these data. This research is part of the SERPENT Project.