{rokbox title=|Method applied to measure living and dead layers of a colony at MRC :: Image: Authors|
thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-evaluacion-colonias-coral-aguas-frias-amp-vad-et-al-2017-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-evaluacion-colonias-coral-aguas-frias-amp-vad-et-al-2017.jpg{/rokbox}

Vad J, **Orejas C**, Moreno-Navas J, Findlay HS, Roberts JM., 2017. **Assessing the living and dead proportions of cold-water coral colonies: implications for deep-water Marine Protected Area monitoring in a changing ocean.**
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Abstract: Coral growth patterns result from an interplay of coral biology and environmental conditions. In this study colony size and proportion of live and dead skeletons in the cold-water coral (CWC) *Lophelia pertusa* (Linnaeus, 1758) were measured using video footage from Remotely Operated Vehicle (ROV) transects conducted at the inshore Mingulay Reef Complex (MRC) and at the offshore PISCES site (Rockall Bank) in the NE Atlantic. The main goal of this paper was to explore the development of a simple method to quantify coral growth and its potential application as an assessment tool of the health of these remote habitats. Eighteen colonies were selected and whole colony and dead/living layer size were measured. Live to dead layer ratios for each colony were then determined and analysed. The age of each colony was estimated using previously published data. Our paper shows that: (1) two distinct morphotypes can be described: at the MRC, colonies displayed a 'cauliflower-shaped' morphotype whereas at the PISCES site, colonies presented a more flattened 'bush-shaped' morphotype; (2) living layer size was positively correlated with whole colony size; (3) live to dead layer ratio was negatively correlated to whole colony size; (4) live to dead layer ratio never exceeded 0.27. These results suggest that as a colony develops and its growth rate slows down, the proportion of living polyps in the colony decreases. Furthermore, at least 73% of *L. pertusa* colonies are composed of exposed dead coral skeleton, vulnerable to ocean acidification and the associated shallowing of the aragonite saturation horizon, with significant implications for future deep-sea reef framework integrity. The clear visual contrast between white/pale living and grey/dark dead portions of the colonies also gives a new way by which they can be visually monitored over time. The increased use of marine autonomous survey vehicles offers an important new platform from which such a surveying technique could be applied to monitor deep-water marine protected areas in the future.

Keywords: Cold-water corals, *Lophelia pertusa*, Mingulay Reef Complex, PISCES site, Rockall

bank, Colony size, Dead framework, Ocean acidification, Deep-water marine protected areas, Monitoring