

### **Cold-water coral laboratory husbandry and research methods (BIOACID subproject 3.1.2)**

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The scleractinian coral *Lophelia pertusa* is the most common bioherm-forming cold-water coral with a cosmopolitan distribution. *L. pertusa* 'reefs' are hot-spots of biodiversity since their three-dimensional framework provides niches and nursery grounds for a variety of species, including commercially important fish species. In contrast to shallow-water corals from the tropics, very little is known about the ecophysiology of cold-water corals such as *L. pertusa* and their sensitivity towards climate change. In order to start filling this gap of information a multidisciplinary approach was set up at the IFM-GEOMAR during the last four years. Here we show an overview of our technical and methodological developments encompassing a wide spectrum of ecophysiological parameters (e.g. respiration, calcification, fitness, behavior). Additionally, we illustrate our advanced cold-water coral husbandry and  $p\text{CO}_2$ -manipulation system, currently used for long-term cultivation experiments on scleractinian and soft cold-water corals. Within this study, corals were incubated under present and elevated levels of temperatures and  $\text{CO}_2$  concentrations and further examined on the electrophysiological functioning of their calicoblastic epithelium.