« Ocean acidification may cause dramatic changes to phytoplankton

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# Gains and losses of coral skeletal porosity changes with ocean acidification acclimation

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Tags: biological response, chemistry, corals, calcification, growth, Mediterranean, field, morphology

Ocean acidification is predicted to impact ecosystems reliant on calcifying organisms, potentially reducing the socioeconomic benefits these habitats provide. Here we investigate the acclimation potential of stony corals living along a pH gradient caused by a Mediterranean CO2 vent that serves as a natural long-term experimental setting. We show that in response to reduced skeletal mineralization at lower pH, corals increase their skeletal macroporosity (features >10 μm) in order to maintain constant linear extension rate, an important criterion for reproductive output. At the nanoscale, the coral skeleton's structural features are not altered. However, higher skeletal porosity, and reduced bulk density and stiffness may contribute to reduce population density and increase damage susceptibility under low pH conditions. Based on these observations, the almost universally employed measure of coral biomineralization, the rate of linear extension, might not be a reliable metric for assessing coral health and resilience in a warming and acidifying ocean.

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