

New findings:

Alaska coastal ecosystem responses to climate change

Over 3 years (2018-2021), researchers conducted an intensive study of coastal ecosystem of Sitka, AK. Climate change was simulated in tide pools by warming pools and adding CO₂ (ocean acidification) for 6 months.

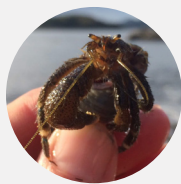
So far, here is what has been learned:



Adding CO₂ caused a coastal shellfish to develop thinner and weaker shells. (*Rangel et al. manuscript in preparation*)



The most extreme impacts of simulated climate change were seen in pools highest on shore (that naturally got hottest), especially during heat waves. This demonstrates tipping points leading to mass mortality. (*Additional data analyses are ongoing*)



Response of shellfish to high temperatures is influenced by their past experience, leading to large differences in sensitivity between species and across seasons and habitats. (*Rangel & Sorte in review at Marine Biology*)



Coastal primary producers are more likely to mitigate ocean acidification in the summer than in the winter, due to seasonal patterns in abundance. (*Sorte et al. in review at Global Change Biology*)



The most dominant organisms in habitats are not always the main drivers of ecosystem processes or mitigation of ocean acidification. (*Mahanes et al. in press at Biological Bulletin*)



Temperature and oxygen levels strongly influence coastal productivity and this needs to be accounted for in predictions under climate change. (*Bracken et al. published 2022 at Scientific Reports*)

For questions about these results, please contact project lead at csorte@uci.edu

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