arm length, but the [redacted]dditive effects of these two

Anthropogenic CO_2 is significantly changing the pCO_2, temperature, and carbonate [redacted]hemistry of seawater. Recent projections suggest that, within the next century, ocean pCO_2 will increa[redacted] by approximately 600–700 µatm (ocean acidification) and ocean tempera[redacted]res will increase by [redacted]3–3.0 °C (ocean warming).[1] The combined effects of these variables is ter[redacted]d marine climate stress. [redacted]ticular concern revolves around the capacity for marine climate stre[redacted] to inhibit the ability of m [redacted]ous s[redacted]es suggest two

opposing hypotheses for the way in which marine climate stress will influence echinoderm calcification, metabolic efficiency, and reproduction: either an additive or synergistic effect.[3,4]

In this study, were exposed to ocean water of either amb[redacted]ent, high temperature, high pCO_2, or high temperature and high pCO_2 for 60 days, and the regenerati[redacted] length of the amputated arm

factors resulted in smaller regenerated arms compared to a[redacted]bient conditions (Figure 1). Sea stars regenerating under high pCO_2 exhibited a lower proportion of calcified mass, which could be the result of a more energetically demanding calcification process associated with marine climate stress (Figure 2). These results indicate that . calcification is sensitive to increasing pCO_2, and that climate change will have an overall net negative effect on sea star arm regeneration. Such effects could translate into lower predation rates by a key consumer in the temperate rocky intertidal of North America.

[redacted]

[redacted]

[redacted]

[1] Caldeira and Wickett (2003). , 365. [2] Fabry et al. (2008). . . . 414- 432. [3] Bingham et al. (2000). . . ., 596-605. [4] Hu et al. (2014). . . ., 2411-2421.