Abstract

Although sea urchins play a central role in determining the structure and functioning of macroalgal communities in many parts of the world, past research in southern Chile has failed to identify strong effects of urchin grazing, despite the prevalence of coralline-dominated communities and abundant urchins, which indicate a likely structuring role for urchins. Here, we conducted experimental removals of the most common urchin, the green sea urchin Arbacia dufresnii, on a single bedrock wall in the Magellan Strait, Chile. We monitored the responses of invertebrate and macroalgal communities relative to a control wall 6 times over 64 wk. The structure of macroalgal communities on each wall remained similar until more than 40 wk after urchin removal, at which time the community structure diverged, with significantly more macroalgae present on the urchin removal wall. These changes coincided with the onset of early summer and were likely driven by greater settlement, recruitment and growth of algae in the absence of urchins. After 64 wk, the abundance of chitons, bryozoans, mussels and the small bivalve Hiatella solida was also significantly greater on the urchin removal wall. Herbivory by A. dufresnii on these high latitude rocky reefs appears to have a potential structuring effect on benthic assemblages, although further replicated field experiments are required to document where and when these effects may occur.