The following supplement accompanies the article

Spatial and temporal limits of coral–macroalgal competition: the negative impacts of macroalgal density, proximity, and history of contact

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Video S1: Experimental method used for transplanting corals in the field.
http://www.int-res.com/articles/suppl/m586p011_supp/

Text S1: Supplementary analyses assessing benthic macroalgal cover and canopy height

We assessed benthic macroalgal cover and canopy height in plots within the macroalgal-dominated area where macroalgae were not removed. A 25 x 25 cm quadrat divided into 25 equal (i.e., 5 x 5 cm) subsections was centered over each coral's attachment site, and percent cover of the dominant organisms/substrate types (e.g., macroalgae [to genus], live coral, dead coral, rubble, sand, etc.) within each 5 x 5 cm grid was estimated visually. Temporal differences in macroalgal cover within our plots were analyzed using a linear mixed effects (LME) model in R (v. 3.3.2) (R Core Team 2016) using the package nlme (Pinheiro et al. 2017). Models were fitted using restricted maximum likelihood with time (week) as a fixed factor and individual replicate quadrats from each plot as a random factor to account for spatial and temporal non-independence between samples. To control for heteroscedasticity, we modeled within-group error for each time point using the varIdent argument. Multiple comparisons of means were performed using generalized linear hypothesis test (glht) and Tukey's (HSD) test in the multcomp package (Hothorn et al. 2008). We also estimated the maximum and average height of the macroalgal canopy above the benthos within each quadrat by measuring the height of the tallest macroalga and the height of the canopy at five random points, respectively, within each quadrat using a ruler. Both maximum and average height data were then used to obtain a maximum and mean overall canopy height for macroalgae in each plot (n = 20 plots treatment^{-1}). Temporal differences in maximum and average canopy heights were analyzed separately with a one-way repeated measures ANOVA followed by Tukey post hoc tests using JMP (v. 13.0.0).

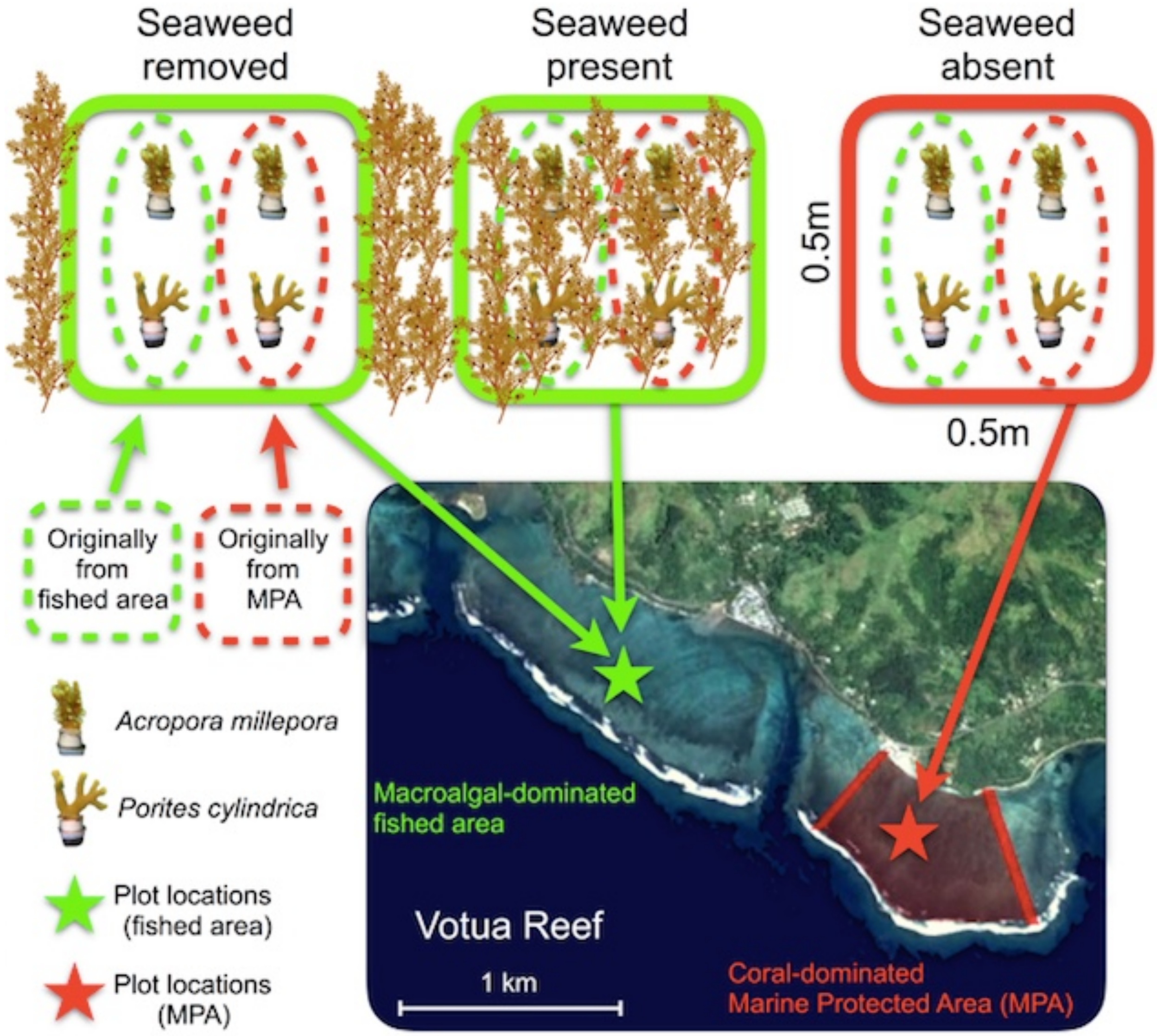

Fig. S1: Experimental design used for reciprocal transplant of corals to benthic plots in macroalgal- and coral-dominated areas with or without natural macroalgal assemblages.

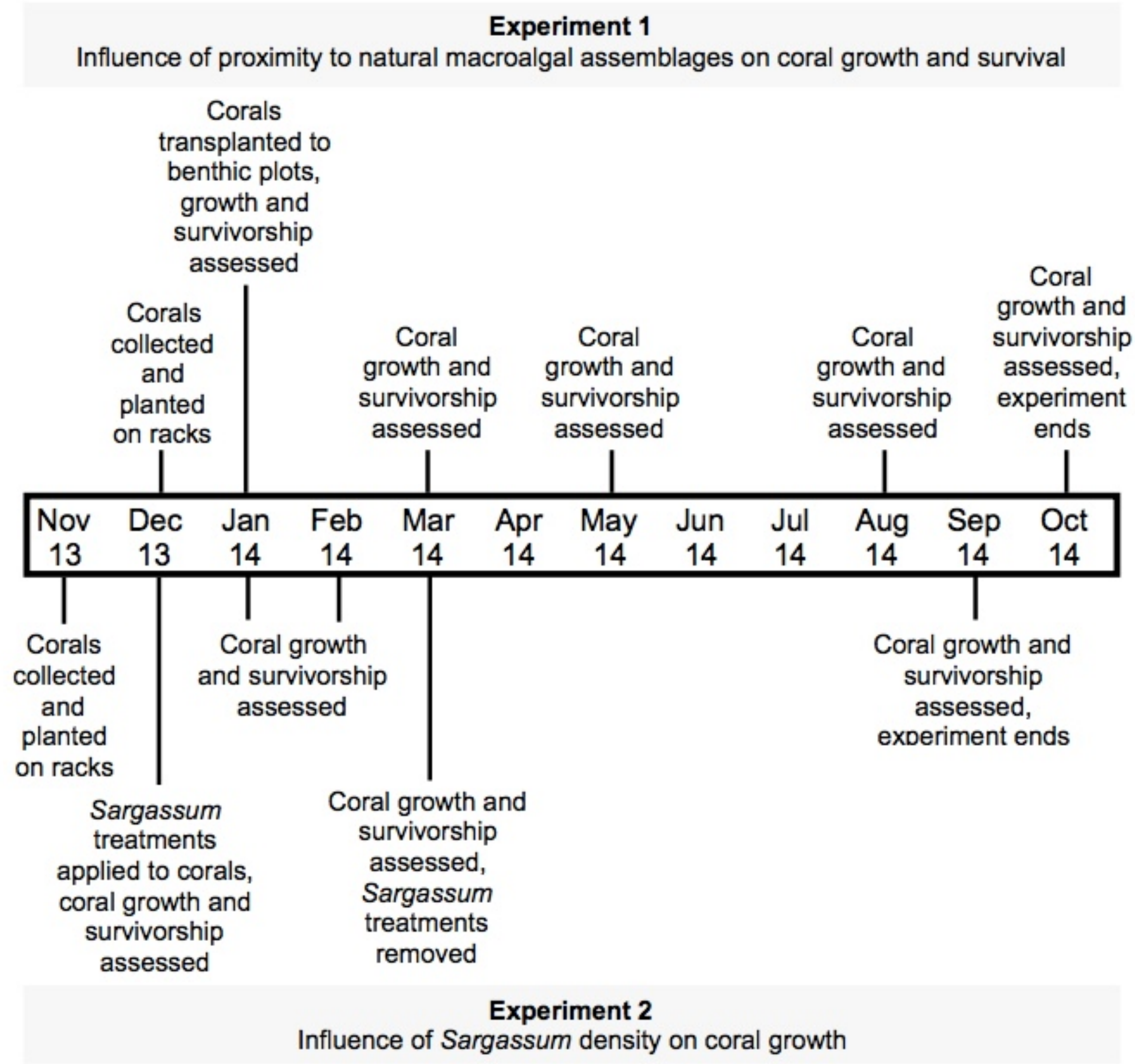

Fig. S2: A timeline of events for the experiments conducted in benthic plots (Experiment 1, top panel) and on elevated racks (Experiment 2, bottom panel) in macroalgal- and coral-dominated areas.

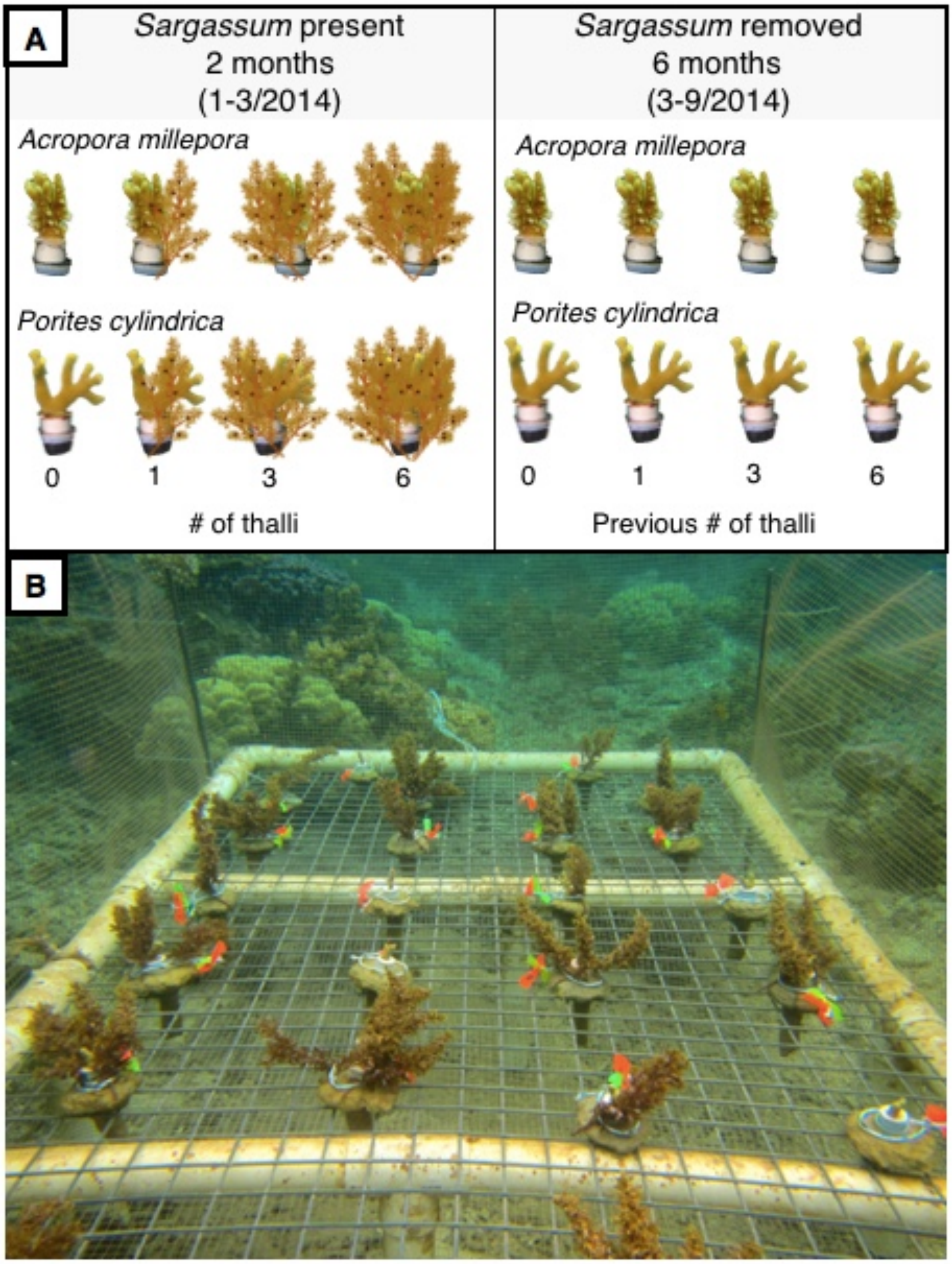

Fig. S3: Experimental design used for coral-macroalgal pairs in the coral growth experiment conducted on elevated metal racks.

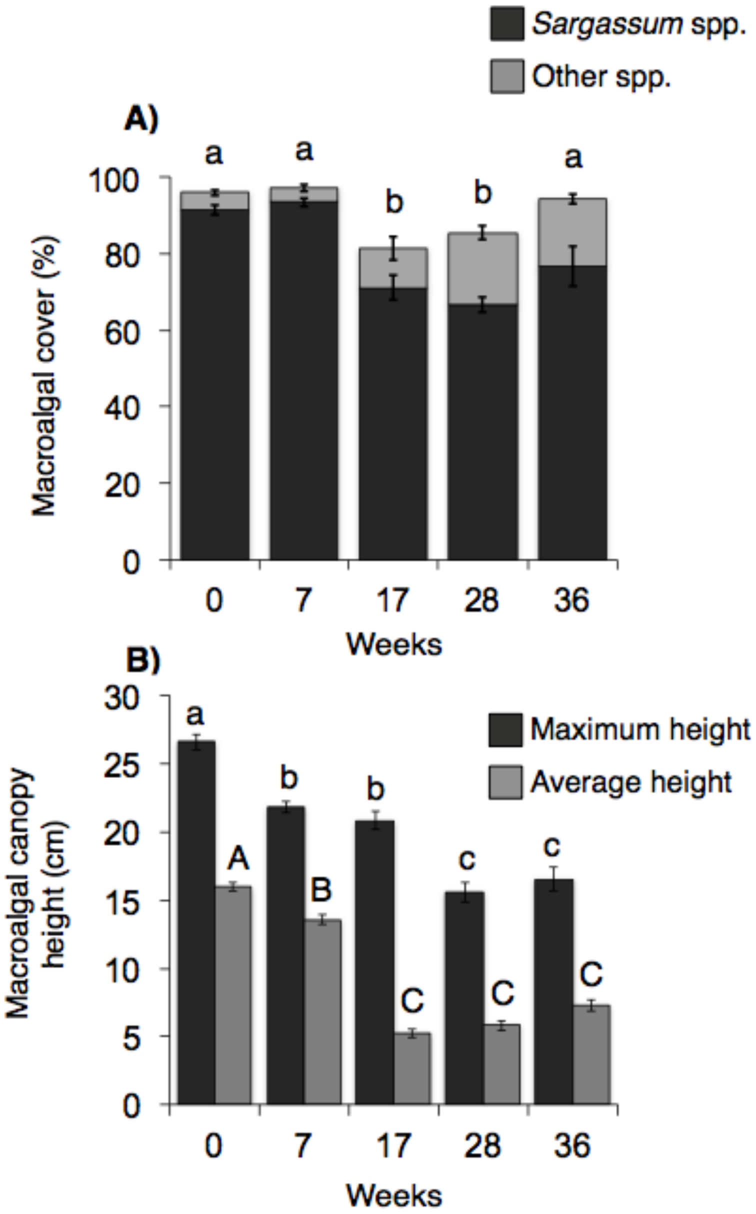

Fig. S4: A) Algal percent cover, January-October 2014, within plots in the macroalgal-dominated area where natural macroalgal assemblages were present. Temporal differences in percent macroalgal cover were analyzed using a linear mixed effect model ($p < 0.001$) and letters denote significant differences ($p < 0.05$) among times via Tukey tests. **B)** Maximum (black bars) and average (gray) macroalgal canopy height in plots with macroalgae during January-October 2014. One way repeated measures ANOVA were used to analyze temporal differences in maximum canopy height ($F(4,73) = 30.76$, $p < 0.001$) and average canopy height ($F(4,72) = 93.04$, $p < 0.001$). Letters denote significant differences ($p < 0.05$) among months via Tukey tests.

LITERATURE CITED

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