The following supplement accompanies the article

Microtopographic refuges enhance recruitment and survival but inhibit growth of propagules of the tropical macroalga *Sargassum swartzii*

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Marine Ecology Progress Series 627: 61–70 (2019)

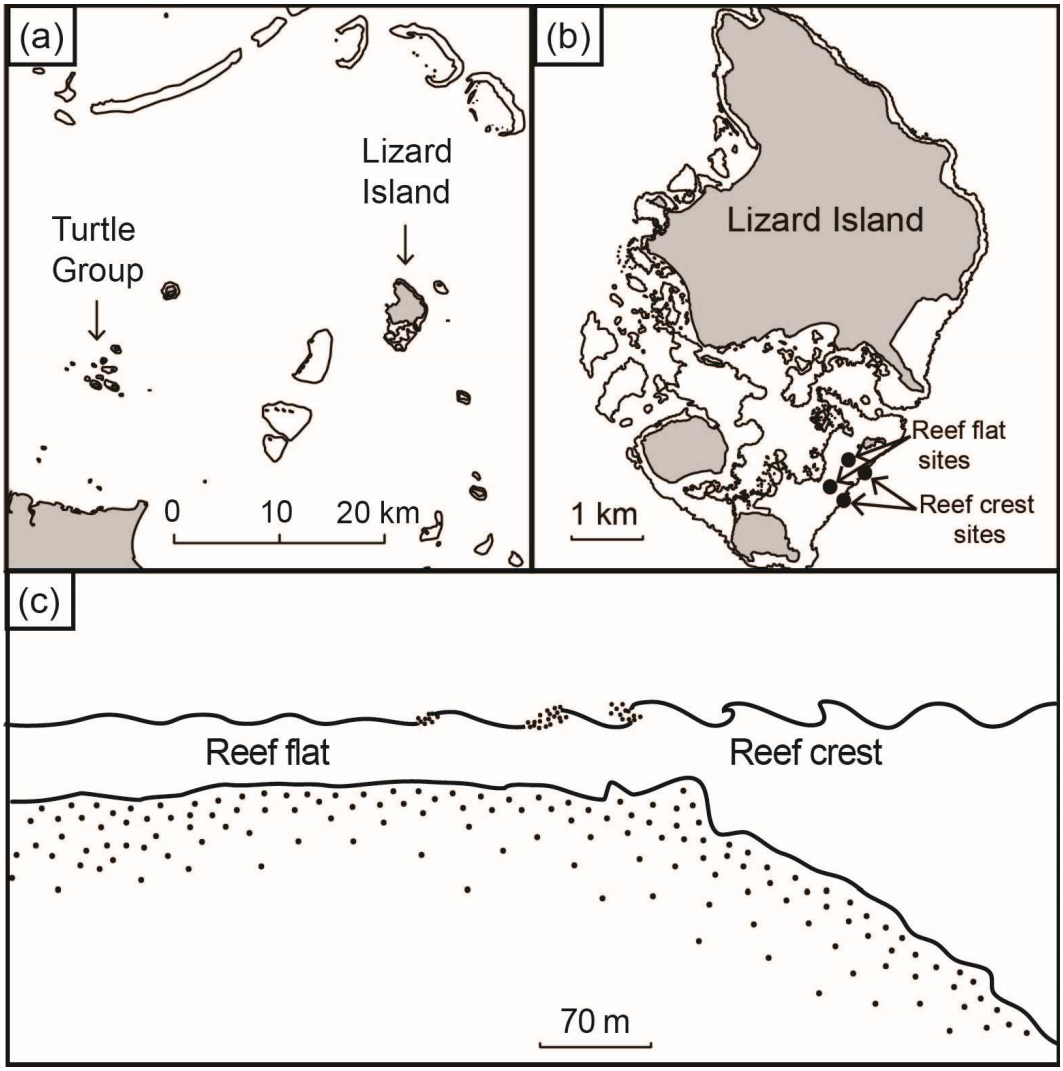

Fig. S1. (a) Position of Lizard Island relative to the Turtle Group Islands, the site of adult *Sargassum* collection; (b) map of Lizard Island showing the location of the exposed reef flat and reef crest sites where tiles were deployed; (c) schematic of the reef flat and reef crest habitats. Modified from Hoey & Bellwood (2009).

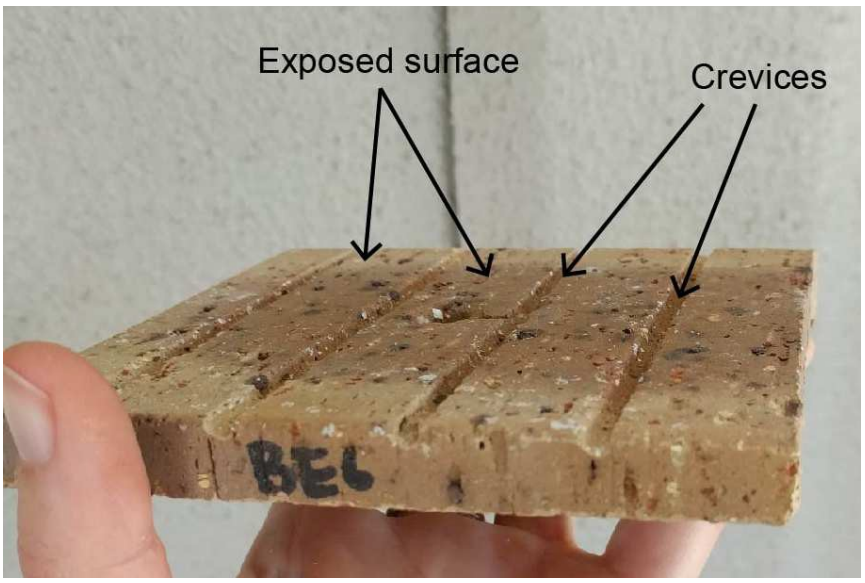

Fig. S2. Example of a tile onto which *Sargassum* propagules were settled, showing 3mm-wide crevices and exposed microhabitats.

Table S1. Model summary of propagule survival after 5-day deployment at Lizard Island

Term	**Estimate**	**SE**	**Conf. low**	**Conf. high**	**Rhat**	**ESS**
(Intercept)	0.70	0.07	0.58	0.84	1	1286
SurfaceExposed	–0.02	0.08	–0.17	0.13	0.998	1500
HabitatReef Flat	–0.06	0.10	–0.25	0.14	1	1232
TreatmentUncaged	0.10	0.10	–0.09	0.28	1	1343
SurfaceExposed:HabitatReef Flat	0.11	0.11	–0.10	0.33	0.999	1500
SurfaceExposed:TreatmentUncaged	–0.36	0.11	–0.60	–0.17	0.999	1500
HabitatReef Flat:TreatmentExposed	0.06	0.14	–0.21	0.35	1	1365
SurfaceExposed:HabitatReef Flat:TreatmentUncaged	0.18	0.15	–0.13	0.47	0.998	1500
b[(Intercept) id:BC1]	–0.15	0.11	–0.39	0.05	0.999	1222
b[(Intercept) id:BC10]	–0.05	0.10	–0.25	0.15	0.999	1500
b[(Intercept) id:BC11]	–0.08	0.11	–0.28	0.12	1.002	1500
b[(Intercept) id:BC12]	0.02	0.11	–0.18	0.22	1	1500
b[(Intercept) id:BC2]	–0.08	0.11	–0.29	0.12	1.001	1288
b[(Intercept) id:BC3]	–0.05	0.11	–0.26	0.15	0.998	1500
b[(Intercept) id:BC4]	–0.16	0.11	–0.38	0.04	1.004	1276
b[(Intercept) id:BC5]	0.09	0.11	–0.11	0.30	0.999	1189
b[(Intercept) id:BC6]	0.03	0.11	–0.19	0.23	1	1500
b[(Intercept) id:BC7]	0.30	0.13	0.04	0.55	1.003	1125
b[(Intercept) id:BC8]	–0.11	0.10	–0.32	0.09	0.999	1500
b[(Intercept) id:BC9]	–0.03	0.11	–0.24	0.17	0.999	1489
b[(Intercept) id:BE1]	0.05	0.10	–0.14	0.25	0.999	1500
b[(Intercept) id:BE10]	0.04	0.10	–0.16	0.24	0.999	1500
b[(Intercept) id:BE11]	0.01	0.11	–0.20	0.22	1	1500
b[(Intercept) id:BE12]	–0.08	0.11	–0.28	0.14	1.002	1500
b[(Intercept) id:BE2]	–0.11	0.11	–0.32	0.10	0.999	1470
b[(Intercept) id:BE3]	–0.07	0.11	–0.29	0.12	0.999	1440
b[(Intercept) id:BE4]	–0.09	0.10	–0.29	0.12	1.001	1500
b[(Intercept) id:BE5]	–0.08	0.11	–0.29	0.13	1.001	1415
b[(Intercept) id:BE6]	–0.16	0.11	–0.38	0.05	1	1500
b[(Intercept) id:BE7]	0.03	0.11	–0.17	0.25	0.998	1375
b[(Intercept) id:BE8]	0.00	0.11	–0.20	0.20	1.002	1382
b[(Intercept) id:BE9]	–0.08	0.11	–0.28	0.13	0.999	1500
b[(Intercept) id:SC1]	–0.08	0.10	–0.28	0.12	1	1500
b[(Intercept) id:SC10]	–0.09	0.11	–0.30	0.11	1	1500
b[(Intercept) id:SC11]	0.20	0.12	–0.03	0.42	0.999	1387
b[(Intercept) id:SC12]	–0.13	0.11	–0.35	0.08	1	1500
b[(Intercept) id:SC2]	0.30	0.13	0.06	0.56	0.999	1024

Term	Estimate	SE	Conf. low	Conf. high	Rhat	ESS
b[(Intercept) id:SC3]	0.08	0.11	–0.12	0.30	1.002	1500
b[(Intercept) id:SC4]	–0.03	0.11	–0.24	0.19	0.999	1493
b[(Intercept) id:SC5]	–0.04	0.11	–0.22	0.20	1	1442
b[(Intercept) id:SC6]	–0.01	0.11	–0.21	0.21	0.998	1452
b[(Intercept) id:SC7]	0.05	0.10	–0.15	0.24	1.001	1500
b[(Intercept) id:SC8]	–0.14	0.11	–0.35	0.07	1	1255
b[(Intercept) id:SC9]	0.07	0.10	–0.13	0.29	1.006	1500
b[(Intercept) id:SE1]	–0.02	0.11	–0.21	0.19	1.001	1500
b[(Intercept) id:SE10]	–0.06	0.11	–0.26	0.15	0.998	1500
b[(Intercept) id:SE11]	–0.07	0.10	–0.26	0.15	1.001	1500
b[(Intercept) id:SE12]	0.03	0.11	–0.18	0.24	1.002	1500
b[(Intercept) id:SE2]	0.01	0.10	–0.20	0.20	0.999	1347
b[(Intercept) id:SE3]	0.09	0.11	–0.11	0.30	1.001	1208
b[(Intercept) id:SE4]	0.10	0.11	–0.11	0.30	1.001	1278
b[(Intercept) id:SE5]	0.20	0.12	–0.03	0.43	0.999	1062
b[(Intercept) id:SE6]	0.15	0.11	–0.08	0.36	0.999	986
b[(Intercept) id:SE7]	0.09	0.11	–0.09	0.33	1.001	1158
b[(Intercept) id:SE8]	–0.01	0.10	–0.22	0.19	1.001	1500
b[(Intercept) id:SE9]	0.09	0.11	–0.11	0.32	0.998	1500
b[(Intercept) id:_NEW_id]	0.00	0.16	–0.30	0.35	1	1500
sigma	0.19	0.02	0.15	0.23	1.004	892
Sigma[id:(Intercept),(Intercept)]	0.02	0.01	0.01	0.05	1.002	1051
mean_PPD	0.69	0.03	0.63	0.74	0.999	1500
log-posterior	–56.62	9.47	–75.33	–38.55	1.006	837

Table S2. Tidy output of the difference in slope estimates for planned contrasts comparing the survival of propagules between habitats and treatments

Habitat	Treatment	Estimate	SE	Conf. low	Conf. high	P(difference between crevice and top surface) (%)
Reef Crest	Uncaged	0.378	0.079	0.228	0.531	100
Reef Crest	Caged	0.019	0.077	–0.134	0.169	59.6
Reef Flat	Uncaged	0.091	0.073	–0.048	0.235	89.4
Reef Flat	Caged	–0.086	0.081	–0.257	0.062	85.6

LITERATURE CITED

Hoey AS, Bellwood DR (2009) Limited functional redundancy in a high diversity system: a single species dominates key ecological process on coral reefs. Ecosystems 12: 1316–1328